

Master's Thesis

First-time going concern audit reports and financial statement disaggregation

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Abstract

I examine the effect that first-time going concern audit reports (GCARs) have on corporate disclosure disaggregation. In the context of this thesis, disclosure disaggregation refers to the amount of non-missing data items found in the annual Balance Sheet and Income Statements of companies, with fewer items being omitted used as an estimator of a superior disaggregation level. Correspondingly, a higher level of disaggregation would be indicative of better disclosure quality, attributable to the larger detail of information provided to the financial statements users (Blackwell, 1951).

I calculate disaggregation levels by implementing the disclosure quality model, developed by Chen et al. (2015) and interrelate it with the instances of going concern reports for US companies in the period between 1995 and 2016. I look at both the overall fineness of the data in the financial releases, as well as the Balance Sheet and Income Statement individually. Furthermore, I examine the effects that an incumbent Big 4 auditor has on disaggregation following a GCAR. Lastly, I look at the time variations in disclosure disaggregation scores in the two-year period after the retraction of the first-time going concern opinion.

I find statistically significant results, indicating that there is, in fact, an upwards shift in disclosure disaggregation following the going concern audit report. This relation is even more pronounced in instances when the company is a client of a Big 4 auditor. Finally, I detect that in the post period after the retraction of the going concern opinion, firms tend to once more reduce their financial disclosure disaggregation levels as a direct consequence of the retraction. The findings I observe continue to be significant when I implement controls for firm fundamentals, incumbent auditor characteristics and macroeconomic variations.

Keywords: Going Concern; Disclosure Disaggregation; Disclosure Quality; Incumbent Auditor; GAAP line items;

Data accessibility: The data utilised in this thesis is publicly accessible from the acknowledged sources.

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Chapter 1: Introduction

1.1 Introduction

This thesis focuses on investigating the changes in firms' disclosure disaggregation practices in instances when they receive a first-time going concern audit report (GCAR), as well as the most significant influences, which affect those changes. The estimation of disclosure disaggregation of financial disclosures is made by employing the DQ scoring methodology of Chen et al. (2015). It does so by utilising the quantity of non-missing GAAP data items in companies' annual reports. The fundamental underlying assumption is that the quality of the disclosed data is a function of its level of fineness, that is, the more disaggregated it is, the higher the quality of the financial disclosure (Blackwell, 1951).

The foremost objective is to evaluate whether firms, which have received a first-time GCAR release more disaggregated information as computed with the above-described model. The rationale behind this perception is that since going-concern opinions provide previously undisclosed information to outside observers, they initiate a follow-up negative market response (Jones, 1996; Kausar et al., 2009; Menon and Williams, 2010). Accordingly, companies attempt to moderate this adverse outcome by implementing different strategic policies meant to elevate disclosure quality with the goal of recovering stakeholder confidence and decreasing the elevated cost of capital (Nagarajan and Sridhar, 1996; Elliott et al., 2011; Akamah et al., 2017). Considering these depicted premises, the research question, that this thesis examines states:

RQ: Do firms in distress disclose more disaggregated financial information?

Following contemporary empirical reasoning, firms can decide to elevate their disclosure disaggregation levels as a method of improving their disclosure quality in response to the first-time going concern audit report. They would employ disaggregation, as it would address the main concerns that companies have following a GCAR, particularly to lower information asymmetry, diminish stock volatility, drop the cost of capital and obtain more precise analyst forecasts (Lang and Lundholm, 1993; Lang and Lundholm, 1996; Healy et al., 1999; Bushee and Noe, 2000; Kothari et al., 2009; Chen et al., 2015). Consequently, it is

important to analyse whether firms disclose finer information, resulting from the issuance of a first-time GCAR.

The second point of interest of this thesis focuses on the influence that Big 4 auditors have on disclosure disaggregation in firms following the issuance of a first-time GCAR. The perception behind this hypothesis is that if companies are audited by a Big 4 auditor, the risk tolerance for misstatements will be lower (Libby and Brown, 2013) and the adjacent premiums higher (Boone et al., 2013). Subsequently, Big 4 auditors would be hesitant to consent to the supplementary risks, associated with the releases of finer disclosure data (Kothari et al., 2009).

The third and final analytical construct, which is empirically evaluated, focuses on the variation of disaggregation scores in the years following the retraction of the first-time going concern auditor report. It is essential to investigate this, as the contemporary literature suggests that the increase in disclosure disaggregation resulting from a GCAR would typically infer a responsibility by management to support, in the long term, a higher quality of information releases (Einhorn and Ziv, 2008). Nonetheless, since the market responds rapidly and efficiently to GCAR withdrawals (Kausar et al., 2008), companies might choose to re-aggregate their disclosures data, as this has the effect of decreasing the additional expenses accompanying finer releases (Graham et al., 2005). Subsequently, it is noteworthy to observe whether firms reduce their DQ scores in the subsequent years after the retraction of the first-time GCAR.

1.1.1 Summary of empirical results

The first hypothesis I test centres around the disclosure disaggregation policies of firms, which have been issued a first-time GCAR. In correspondence with recent empirical literature (Nagarajan and Sridhar, 1996; Elliott et al., 2011; and Akamah et al., 2017), I perceive a statistically significant result which indicates that after the issuance of a first-time going concern report, companies tend to increase their financial release disaggregation as measured by its DQ score. The results are statistically significant for both the base DQ score and its components, the DQ score of the Balance Sheet (DQ_BA) and the DQ score of the Income Statement (DQ_IS). The assessment is executed with a total of 63,961 observations. The results remain significant at $p < 0.01$ together with implemented controls for auditor size, individual firm characters and macroeconomic factors.

The second hypothesis measures the outcome that Big 4 audit firms have on the disaggregation score of a business after the issuance of its first GCAR. I discover a statistically

significant connexion between auditor size (*Big_4*) and disclosure disaggregation (*DQ*), as well as its components (*DQ_BA* and *DQ_IS*). Nonetheless, in contrast to what contemporary theoretical literature suggests (Reichelt and Wang, 2010; DeFond and Lennox, 2011 and Xu et al., 2013), the correlation I detect is positive. I attribute this to the notion, that Big 4 auditors are essentially prepared to accept the additional risks, associated with increased disclosure data disaggregation. This is accredited to the substantial confidence of Big 4 auditors in their ability to identify prospective misstatements in a timely manner.

The third and last hypothesis I examine aims to detect the time-sensitive variations in DQ scores in the periods after the first-time going concern report is retracted. I find that in contradiction of contemporary literature (Graham et al., 2005; and Einhorn and Ziv, 2008), companies do essentially decrease their DQ scores in the two-year post period following the retraction of the first-time GCAR. The finding is made with regard to the changes in respective DQ scores from the year of the GCAR issuance (*DQ_Ante*) to the post period after the first-time GCAR withdrawal (*DQ_Post*). The results are significant at $p < 0.1$ and an overall of 7,896 observations. In the latter analysis, I once more apply controls for auditor size, distinct firm fundamentals and macroeconomic considerations and reach the same empirical conclusions.

1.1.2 Contribution

This study aims to provide empirical results, which are relevant to investors, market analysts and policy-makers. Exploring the answer to the research question has several aspects.

Firstly, it provides readers with an opportunity to gain a superior understanding of how the act of issuing a first-time GCAR by the incumbent auditor of a company affects its disclosure quality as measured by the estimated disclosure disaggregation score. The extent of this outcome will be dependent on the intensity and persistence of the market reaction, the size of the incumbent auditor and the strategy the company develops to address the GCAR. Examining these after-effects has the potential to support investors and market analysts in identifying and evaluating shifts in corporate disclosure practices around the date of issuance of a going concern audit report. Additionally, the model can be used to build and evaluate expectations of the most probable market reactions and their consequences.

Secondly, policy-makers could benefit from the model provided in this thesis, as the findings it offers to provide supplementary data that could be utilized in the process of designing and applicating the necessary legislation focused around going concern reports.

Understanding the incentives behind shifts in corporate disclosure policies has the potential to help accommodate further improvements in legal disclosure quality requirements.

Thirdly, this research contributes to the existing literature by providing more evidence on the persistence of changes in disclosure quality as measured by disaggregation after an issuance of a first-time GCAR. Specifically, the evaluation of the fluctuations in disclosure quality scores during the time ranging from the year of issuance of the GCAR to two years after its retraction postulates insight into the operational interactions between the market and individual companies. This in turn would provide substantiation on the reliability of first-time going concern audit reports as an efficient and timely measure for conveying increased company risks.

1.2 Outline of the subsequent chapters

The subsequent chapters of the thesis employ the following structure; *Chapter 2* provides an in-depth literature review. It focuses on the theoretical background of agency theory and the principal-agent problem. A focus is placed on the direct and indirect methods to determine corporate disclosure quality, including empirical examples to substantiate those approaches. The market implications of distinctive disclosure policies are also examined. Furthermore, the chapter provides a description of going concern audit reports, depicts their institutional background and discusses their accuracy. Subsequently, an exploration is made regarding the level of informativeness of going concern reports in relation to investor decisions. Finally, *Chapter 2* provides contextual embedding for the subsequent development of the main research hypothesis.

Chapter 3 outlines the development of the three main hypothesis of this thesis and relates them to the research question. Specifically, it looks into the correlations between first-time going concern audit reports, disclosure disaggregation and the role of Big 4 auditors and the empirical literature evaluating their associations. Lastly, it considers the long-term trends in corporate disclosure disaggregation strategies and focuses on the ways, in which companies might modify their disclosure strategies following the retraction of the first-time GCAR.

Chapter 4 outlines the research methodology implemented. It does so by discussing the essence and practical application of the disclosure quality (DQ) assessment model of Chen et al. (2015). Furthermore, it outlines the assumptions behind the four regressions, which are employed to test the hypothesis, developed in *Chapter 3* and connect them to the DQ scoring model. Subsequently, a detailed description of the variables used and their interactions is

provided. The essence and rationale behind the sample selection process are specified, as well as the construction of the finally analysed sample. Lastly, the chapter provides descriptive statistical information concerning the selected variables.

Chapter 5 focuses on the results of the regressions of the empirical models used. It evaluates the correlation between disclosure disaggregation and going concern audit reports and its long-term effects, as well as the role that Big 4 auditors have in terms of determining the DQ score of a company. The chapter contains a discussion of the obtained results and the interaction properties between the different variables. The findings are also interconnected and assessed in terms of their correspondence to the utilized empirical literature.

Chapter 6 provides an extensive summary of the theoretical background and empirical findings in regard to all three tested hypotheses in this thesis. It determines the concluding findings on the matter of the research question and the three tested hypotheses. Lastly, it recognises the particular limitations of the employed research methodology.

Chapter 2: Literature review

2.1 Theoretical background

This chapter provides an extensive background analysis of prior literature regarding agency theory, firm disclosure policies and going concern audit reports.

Firstly, a brief overview is made on the significance of agency theory and the concept of information asymmetry in relation to their correlation to corporate disclosure measures. Next, an in-depth review of the empirical methods employed to assess disclosure quality is provided, with a well-defined distinction made between direct and indirect disclosure quality measures. Subsequently, in the context of different disclosure methodologies, disclosure disaggregation is examined as a way of disclosure quality measurement. The market implications of disclosure disaggregation are also examined, as the concept of disaggregation is a vital component used extensively in the empirical model of this thesis.

Secondly, a theoretical analysis is carried out on the characteristics and institutional background of going concern audit reports (GCARs). A focus is placed on the factors, which contribute to the likelihood of GCAR issuance. Furthermore, the actual information content and accuracy of going concern audit reports is assessed. Finally, the short-term and long-term market effects of GCARs are examined, as well as their significance to disclosure decisions in companies.

2.1.1 Information asymmetry and agency theory

Agency theory plays a fundamental role in understanding the relation between the management of a company and its stakeholders. This concept is particularly important in the context of disclosure policies. The theoretical framework of agency theory is discussed by Ross (1973) and Jensen and Meckling (1976), who regard a principal-agent relation as an agreement, under the terms of which an individual or a group of individuals (principals) are to engage another person or people (agents) in order to execute a service on their behalf. In practice, this usually includes allocating a specific degree of authority and autonomy to the agent.

Nonetheless, assuming both parties are utility maximizers, there are doubts as to whether the agent will always act in the best interest of the principal. In the context of information disclosure, this could be expressed by means of corporate management being reluctant to release important information which may be considered harmful or discredited due to its controversial nature.

Hill and Jones (1992) extend the literature on principle-agent theory by taking into consideration the individual perspectives of agents and stakeholders. In this manner, they observe and describe the incentive mechanisms and power allocation behind specific actions of principles and agents. They determine that a natural market phenomenon, the so-called brief market disequilibrium, which can be attributable to both exogenous and endogenous causes, may lead to temporary power discrepancies between managers and stakeholders. Subsequently, agents can use this phenomenon and exploit it for their own benefit.

The rationale behind agency theory has also been examined by Eisenhardt (1989). In a summary paper, the author provides information, extracted from twelve prior academic studies. Each of them provides an unambiguous confirmation, related to the construct validity of the principal-agent construct and thus concluding that agency theory provides both a credible and empirically evaluable outlook on cooperative effort dynamics.

2.2.2 Principles and types of corporate disclosure

The release of periodic disclosure materials by businesses to the market is a fundamental aspect of the reporting process of each public company. This fundamental notion aims not only to decrease information asymmetry but ultimately to ensure that as much information as possible is available to interested outside observers.

The available literature on corporate disclosure distinguishes two main disclosure classifications; mandatory disclosure and voluntary disclosure (Hassan and Marston, 2010).

Mandatory disclosure is labelled as information, publicized in the fulfilment of disclosure requirements usually stemming from legislative sources. In contrast, voluntary disclosure is described as information made available in excess of mandatory disclosures. Furthermore, disclosure data can differ amid firms concerning the number of items disclosed, its timing and the nature of the news publicized (Hassan and Marston, 2010).

When it comes to communication channels, information can be made available to the public via either formal (official disclosures, conference calls etc.) or informal outlets (typically social media accounts) (Gibbins et al., 1990).

The prerequisite for corporate disclosures arises resulting from the existence of information asymmetry between investors and managers and the development of subsequent agency conflicts (Healy and Palepu, 2001). To address this conflict of interest and display a culture of transparency, companies are incentivized to both increase the quality of their financial and non-financial reporting and provide as many voluntary disclosures as feasible.

To achieve this goal, firms employ a wide range of strategies, each of which may be viewed as a function of multiple crucial factors. These factors are empirically examined by Brown and Hillegeist (2007), who find that companies adjust their strategic objectives to increases in the quality of both mandatory and voluntary disclosures with the goal of mitigating the negative effects of information asymmetry. Accordingly, the results of the study also provide evidence that better reporting quality restricts the opportunity of investors to trade on the market using private information.

The conclusion, reached by Brown and Hillegeist (2007) is also sustained and expanded by Lambert et al. (2007) and Graham et al. (2005). The latter authors investigate the incentives behind firms' decisions to engage in voluntary disclosures and identify three key factors, which are believed to be the driving force behind voluntary disclosures. These include the objective to demonstrate a reputation for openness and transparency; the intention to decrease information risk connected to the firm's stock performance; and the aim to compensate for any apparent deficiencies in the currently employed mandatory reporting framework.

Analogously to Graham et al. (2005), Einhorn and Ziv (2008) also note that managers would commonly want to evade setting precedents in relation to their disclosure practices. They suggest that this is due to the concern that these precedents can be interpreted by the market as an implicit commitment to provide similarly increased disclosures in the future, which in terms may lead the company to experience difficulties in consecutively maintaining them.

2.3 Disclosure Quality

2.3.1 Assessing disclosure quality

The comprehensive understanding of the content of corporate disclosures, as well as the assessment of their quality, is a fundamental concern of every active market participant.

Ideally, companies would provide high-quality financial releases, which would enable all users to gain an objective understanding of the current financial state of firms. Those financial releases would provide a consistent way of comparison between businesses, as well as offer a broad outlook on the consequences of different market events (Mercer, 2004)

Stemming from the fact that disclosures may provide a subjective representation of the firm's current state due to their indeterminate quality, a measuring method must be adopted, which would detect the level of quality of different disclosures. Stemming from the fact that disclosure quality is a latent variable (meaning that it cannot be observed directly and must be measured with the use of additional intermediating variables), so-called proxies are employed, which provide a reasonable indication of the level of disclosure quality. (Bartholomew, 1987) However, it must be noted that the use of proxies usually creates certain distortions in the overall results of these measurements.

Reviewing the academic literature, two main categories of disclosure quality proxies can be identified. The first are proxies, which rely on directly examining the initial disclosure vehicle, whereas the second are proxies, that do not directly assess the preliminary disclosure vehicle, but rather rely on external influences (Hassan and Marston, 2010).

2.3.2 Indirect assessment measures of disclosure quality

The first method of evaluation of corporate disclosure examined is the so-called indirect method. It is implemented by providing estimates and assigning disclosure scores, which differ, depending on the perceived level of quality of the financial disclosures. The process of evaluation is usually carried out with the use of a questionnaire or by conducting a personal interview. In a historical perspective, the most recognizable example of implementing such an evaluation has been done by the Association for Investment Management and Research (AIMR). The association employed a methodology, which calculated an aggregate disclosure score, based on obtained rating scores, provided by financial analysts (Hasaan and Marston, 2010). Since then, multiple academic studies have made use of this model, including Sengupta

(1998); Healy et al. (1999) and Botosan and Plumlee, (2002). Though, it is essential to state that implementing AIMR scoring has been withdrawn from use since 1997 (Core, 2001).

Another example of using a survey-based evaluation is the scoring method, developed by The Credit Lyonnais Securities Asia (CLSA). The model uses exclusively yes/no answers, as to promote an increased level of objectivity. It has been used in a study on voluntary disclosure and transparency by Krishnamurti et al. (2005).

There are limitations, which arise when using questionnaires as an information collecting method. Some of them include information distortions due to bias in the partakers, the use of deceptive questions and unreasonable extremes in the indicated results (Gillham, 2000; Frazer and Lawley, 2000).

The number of analysts, who follow the company, as well as the precision of their estimates can also be used to indirectly assess the quality of corporate disclosures. This has been examined by Lang et al. (2003) and Irani and Karamanou (2003). The reasoning behind this rationale is that superior disclosures would be easier to interpret and more informative to analysts, thus companies with superior disclosure policies tend to have greater analyst following. Several studies support this finding, including Lang and Lundholm (1993) and Lang and Lundholm (1996).

2.3.3 Direct assessment measures of disclosure quality

The second major group of disclosure evaluation methods includes applying direct proxies, which focus on and evaluate the original disclosure vehicle. There are several distinctive methods, by the use of which disclosures can be analysed directly.

The first of these methods is content analysis. As defined by Krippendorff (2004) "Content analysis is a research technique for making replicable and valid inferences from texts...". The two types of content analysis are the manual and the automated content analysis. In previous literature, several studies can be identified, which utilize manual content analysis. These include Hackston and Milne (1996), Beretta and Bozzolan (2004) and Linsley and Shrivies (2006). Nevertheless, this type of data evaluation is highly labour-intensive and therefore can cause certain limitations (Beattie and Thomson, 2007). Alternatively, the automated content analysis provides quicker and more precise information gathering and processing. A specific limitation when using the latter type is that it may fail either when it comes to providing an interpretation of specific linguistic devices used in the disclosure (Milne

and Adler 1999) or when the language of the disclosure is not recognized by the software (Kothari et al. 2009).

The second measure of disclosure quality used is what is known as a disclosure index. As described by Marston and Shrikes (1991) a disclosure index comprises of wide-ranging lists of designated items, which could be disclosed in a company's financial reports. A disclosure index is highly flexible, as it could be built around mandatorily and/or voluntary published corporate information. Furthermore, it can encompass data reported in either one or multiple disclosure vehicles and can comprise information reported by the company itself or made public by external sources (Hassan and Marston, 2010). Disclosure indexes are valuable, as they provide a suitable basis for direct comparison between previous and contemporary research due to their universality (Marston and Shrikes, 1991). That's why they are one of the most widespread proxies for disclosure quality measurement in empirical studies. Examples include Inchausti (1997), Depoers (2000), Ali et al. (2004), Coy and Dixon (2004), Hassan et al. (2009) and Chen et al. (2015).

There are several specifics, which must be considered when constructing an index-based model. First, different weights assigned to individual items or groups of items can give the index a greater flexibility and objectivity (Richardson and Welker, 2001). A potential disadvantage of using indexes is cited by Hassan et al. (2009). It focuses on the fact that since the initial research model is self-constructed and thus based on the judgment of the author, it can misrepresent some of the data. Consequently, the output of the model is consistent only to the degree to which the index employed is appropriate in those specific conditions.

The third direct proxy, which can be used to measure disclosure quality are voluntary forecasts, issued by the management of the company, as their accuracy can infer to the expected quality of mandatory disclosures. Ng, et al. (2008), focus on the way disclosure quality and information asymmetry affect the market. They do so, by looking into prior management forecasts, evaluating their respective accuracy and time frames, and based on the results the authors construct a proxy for disclosure quality. Nevertheless, a concern when implementing this model is that managers could be incentivized to use their self-generated forecasts to obscure earnings management practices. Likewise, Coller and Yohn (1997) use quarterly earnings forecasts released by management to evaluate the level of information asymmetry in the market.

Further methods exist, which can be utilized to evaluate disclosure quality using direct assessment. One includes observing the frequency, in which disclosures are provided by the firm, with the higher frequency being an indication of superior quality (Penno, 1997, Schrand

and Verrecchia, 2004 and Brown et al., 2004). An alternative method puts an emphasis on the voluntary disclosure trends of good and bad earnings news and observing the subsequent market reaction (Skinner, 1994 and Ali et al., 2007).

Regardless of the method of disclosure quality evaluation used, no model provides an ideal depiction of reality. According to case-specific circumstances, some methods can be viewed as more representative than others, but nonetheless, all of them exhibit a certain type of deficiency.

2.3.4 Disclosure policies and their market implications

Each company retains a different disclosure policy, therefore the market consequences following each disclosure can marginally differ. Disclosure literature provides empirical data in relation to associations between various disclosure policies and corporate governance structures, market analyst forecasts and capital market consequences (Healy and Palepu, 2001)

Primary, when considering corporate governance structures, Eng and Mak (2003) find that the ownership structure and the composition of the board of directors directly affect voluntary disclosure. Specifically, the authors state that increases in outside directors decrease the overall quantity of disclosures, whereas significant government ownership has the converse effect. Additionally, Graham et al. (2005) and Einhorn and Ziv (2007) conclude that firms tend to limit voluntary disclosures because they want to avoid setting a precedent which might not be sustainable in the long term. Finally, Gibbins et al. (1990) find evidence that firms tend to enhance their disclosure information by employing outside agents, normally auditors, to validate it.

Secondly, deliberating the attributes of market analyst forecasts, Healy et al. (1999) evaluate the effects of increased voluntary disclosures by observing increases in analyst disclosure ratings. They discover that firms with higher analyst ratings have increases in stock returns, superior analyst following and their stocks tend to be more liquid. Moreover, Lang and Lundholm (1996) investigate the correlation between firm disclosure practices and the number of analysts following each firm. They conclude that firms issuing more informative disclosures have a superior analyst following and consequently that their forecasts are more precise and feature a lesser amount of dispersion. Nevertheless, as pointed out by Mulford and Comiskey (2002), caution must be applied when considering the attributes of market analyst forecasts due to the possibility, that managers may be inclined to engage in earnings management practices, as to align the financial results with analyst forecasts.

Thirdly, contemplating the capital market outcomes in relation to different disclosure policies, there are several distant trends. Healy et al. (1999), Bushee and Noe (2000) and Kothari et al. (2009) document favourable stock market effects with the increase in disclosure quality, which is expressed in the decrease of stock volatility for the observed companies. Studying the cost of equity, Sengupta (1998), Hail (2002), Lambert et al. (2006), Kothari et al. (2009) and Dhaliwal (2011) all agree, that either increasing disclosure or enhancing the level of disclosure quality leads to a significant reduction in the cost of equity for companies. This outcome can be attributed to the perceived decline in information asymmetry between the company and the market.

2.4 Disclosure Disaggregation

2.4.1 Using disaggregation as a disclosure quality measure

Using financial statement disaggregation as a measure of quality is in nature a type of direct assessment of the disclosure vehicle. The logic behind using disclosure disaggregation as a measure of disclosure quality implies that a higher level of disaggregation of the data would be an indicator of an improved overall quality. This is mathematically based on the Blackwell theorem, which states that all other things held constant, finer information would be a property of higher quality information (Blackwell, 1951). Supporting this notion, studies including Hail (2002) and Chen et al. (2015) estimate the level of disclosure quality by using models, which calculate the amount of disaggregation in the disclosed information.

To demonstrate that disclosure quality is positively affected by disaggregation, Chen et al. (2015) design a disclosure quality (DQ) score model constructed around the quantity of non-missing items in the Balance Sheet and Income Statement. Afterwards, the authors apply three validation tests, aiming to examine the relation between DQ scores and analyst forecast dispersion, bid/ask spreads and the firms' cost of equity capital. These are specifically chosen by Chen et al. (2015), as they are commonly used in prior literature as reliable disclosure quality proxies. The results indicate that the scoring model relates to those metrics in a predetermined manner, providing evidence that the model successfully captures disclosure quality.

Due to the complexity of the business environment, there are multiple reasons, which might drive firms to provide more detailed disclosures. For instance, Ali et al. (2014) suggest that firms operating in more concentrated industries disclose more aggregated information due

to rising proprietary costs and could nonetheless have lower analyst rankings. Botosan (1997) argues in favour of quantitative data, stating that it is more representative in nature than qualitative data. A potential limitation of using quantity as a measure of quality is put forward in a follow-up study by Botosan (2004), stating that quantifying qualitative information in released disclosures is challenging and may lead to distortions in the disclosure quality determination. This is a valid concern, as in its essence measuring disaggregation focuses specifically on the quantitative aspect of the information. The basis behind this claim of Botosan (2004) is that quantitative information tends to be viewed as more credible and accurate by some investors. Opposingly, Gibbins et al. (1990) find, both quantitative and qualitative disclosures play a vital role in carrying information content.

Ultimately, as of this moment, there is no clear consensus on whether qualitative or quantitative information is a better indicator when assessing disclosure quality.

2.4.2 Disaggregation as a disclosure approach

There is empirical evidence that managers seldom have incentives to actively aggregate or disaggregate disclosure information.

D'Souza et al. (2010) ascertain, that opportunistic managers, who are prone to intervene in the financial reporting process tend to limit disclosures at the aggregate level by withholding comprehensive line items from investors. The effect is stronger in cases when the aim of the firm is to engage in earnings smoothing or to meet or just beat market expectations. Researching that concept Nagarajan and Sridhar (1996), Elliott et al. (2011) and Akamah et al. (2017), determine that managers typically aggregate data to discourage external scrutiny in unwanted aspects of the company's operational performance.

An alternative rationale, which can determine the level of disaggregation, focuses on the management's forecasts in relation to the expected firm performance. Hirst et al. (2007) examine the market effects of the firm disclosing more disaggregated data in its own forecasts. The authors find that finer management forecasts are viewed as more credible by investors, with this effect being even stronger when the market considers that managers have lower incentives to manage earnings. The increase in forecast precision due to greater disaggregation of earnings data is also supported by Fairfield et al. (1996) and Hewitt (2009).

A firm's auditors could also influence the level of disaggregation, which is presented in the disclosure. When corporate financial reports use finer information, for the incumbent auditor this translates to a higher level of effort to provide the same level of reasonable

assurance (Beck et al., 2016 and Koh et al., 2017). It is estimated that this upsurge in effort can trigger concerns in auditors, who perceive more disaggregated data as riskier due to the higher probability of failure to detect misstatements. Subsequently, auditors might be inclined to discourage the practice of increasing the level of information disaggregation in corporate disclosures, as to keep the extent of audit risk to an acceptable level. This likelihood of this occurring is also discussed in the paper of Libby and Brown (2013), with the authors reaching similar conclusions.

2.5 Going Concern

2.5.1 Going concern audit report framework

The Public Company Accounting Oversight Board (PCAOB) is a United States-based organisation, founded with the goal of reviewing the auditing practices of independent public auditors, as to safeguard public and investor interest through the encouragement of objective and independent audit reports. It was created with the ratification of the Sarbanes-Oxley Act (SOX) in 2002 (PCAOB, 2018).

The SOX bill, as it was approved by the U.S. Congress, contains eleven sections, which are intended to “protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes” (Sarbanes-Oxley Act, 2002). The bill was conceived following several scandals, which included major companies in the United States.

All rules, implemented and endorsed by the PCAOB must beforehand be accepted by the U.S. Securities and Exchange Commission (SEC). It, in term, was created for and focuses on the preserving of fair and efficient markets and the expedition of capital formation by means of defending the interests of investors. (U.S. SEC, 2018).

The going concern auditor report (GCAR) is outlined in accounting standard (AS) 2415, released by the PCAOB and subsequently ratified by the Securities and Exchange Commission (SEC) and it is applied for all qualifying public entities within the United States. In the document, it is stated that an auditor “has a responsibility to evaluate whether there is substantial doubt about the entity's ability to continue as a going concern” and if there is such a doubt, convey the information in a timely basis (AS 2415, 2018).

Accounting standard 2415 further emphasizes, that having carried out the necessary auditing procedures, the auditor should further identify management’s plans, their effect on the

financial statements of the entity and recognize any relevant subsequent events. When issuing the final auditor's opinion, the auditor has the responsibility to cite the specific reason, for which he or she believes that a going concern opinion should be issued. Furthermore, this information should be prominently indicated in the explanatory paragraph section, immediately following the opinion paragraph as found in the standard model audit report (PCAOB, 2018).

2.5.2 Probability of issuance of GCARs

The likelihood, that a company will be issued a going concern audit report is a notion, which has been assessed by Geiger et al. (2005) and Sercu et al. (2006). The authors of those studies determine that the prospect that a company will be issued a GCAR has significantly increased following the fiscal year of 2001. The effect can be credited to the implementation of the Sarbanes-Oxley Act in the middle of 2002. This influence is additionally observed and documented by Carson et al. (2013).

When investigating the literature, concerned with the relation between auditor size and the number of publicized going concern opinions, early research had not found any causal relations. Specifically, Mutchler et al. (1997) do not detect a significant variation in GCAR frequencies in Big 6 auditors versus their non-Big 6 counterparts. In contrast, contemporary authors like Reichelt and Wang (2010) and DeFond and Lennox (2011) provide contradictory results on the same issue. These studies find a correlation, suggesting that clients of Big 4 auditor companies are less prone to be issued a GCAR.

Nevertheless, this can be attributable to client-specific characteristics, as the average profile of a Big 4 client would commonly be a reasonably large company in a decent financial situation, which is less likely to be facing potential issues that merit the issuance of a GCAR. Furthermore, as revealed by Xu et al. (2013), the finding that Big 4 clients tend to have fewer CGARs issued could also be the subject of influence by the stricter standards employed by Big 4 auditors when considering their professional judgements that lead to a GCAR.

2.5.3 Accuracy of GCARs

When a company is associated with a going concern audit report, it indicates that there are difficulties with the general performance of the company, some of which may lead to liquidation.

Deliberating the accuracy of going concern reports, Francis (2011) finds that whilst there appear to be companies, which go bankrupt without having been issued a pending GCAR,

almost all firms that become insolvent have been issued a going concern audit report at least once. Support for this concept is found by Lennox (1999), who conclusively estimates that there is a positive correlation between the issuance of a GCAR and a firm's subsequent debt default filings. Extending this research, Carson et al. (2013) conclude that going concern audit reports predict actual bankruptcy filings accurately in approximately 60% of cases.

The empirical literature has determined, that there are three predominant problems, that companies are most likely to be facing when they are issued a GCAR. These include profitability problems, liquidity problems and severely elevated leverage. As stated by Kida (1980), Mutchler (1985) and Koh and Killough (1990) profitability problems are one of the most common reasons leading up to the issuance of a CGAR. Secondly, Koh (1991) and Lennox (1999) identify re-occurring liquidity problems as the second most plausible driver of audit opinion qualifications. Lastly, the research papers of Dopuch et al. (1987) and Raghunandan and Rama (1995) focus on elevated leverage concerns as a GCAR cause.

2.5.4 Information content and effects of GCARs

Evaluating the information content, which going concern audit reports carry is essential for comprehending the market dynamics and evaluating the causal-effect relations that occur after its issuance.

Early research into the market reaction of going concern audit reports has shown that the issuance of a GCAR is correlated with a significant negative abnormal market return in the period leading up to its issuance. However, no significant market reaction during the issuance itself is documented by those studies (Elliott 1982; Davis 1982; Dodd et al., 1984). The underlying assumption, governing those results was that the authors believed that GCARs did not provide investors with new information. Rather, GCARs just reasserted data, which had already been incorporated in the market prices. This leads to the logical conjecture that the issuance of GCARs was completely expected by the market

Nonetheless, contemporary literature provides an indication, that the going concern audit report is useful in providing new, previously private information to investors. To test that hypothesis, Keller and Davidson (1983) examine individual investor reactions to specific qualified audit opinions by using trading volume as a proxy. They discover that going concern reports do convey information, formerly unincorporated in market prices. They also uncover, that continuing qualifications of audit opinions in the periods following the first-time GCAR

do not drive a similar individual investor reaction as the first one. This leads to the deduction that investor decision models recognize the prospect of GCAR persistence.

The persistence of qualified audit opinions was also explored by Firth (1978) and Mutchler (1985) who find that if a firm has received two or more consecutive GCARs, there is a reasonable probability that it will similarly receive a qualified opinion in the following year.

By evaluating cumulative abnormal returns in the three- and five-day periods surrounding the issuance of GCAR, Jones (1996) likewise finds evidence that returns are lower for GCAR-issued firms than for their respective counterparts, leading once more to the premise that the auditor's going concern opinion drives a market response. Menon and Williams (2010) perceive negative excess returns at the time a going concern opinion is released. They determine, that the market not only reacts to GCARs, but that investors also modify their estimates in line with the auditor's assessment.

Interestingly, Menon and Williams (2010) also determine that certain GCAR characteristics have the capacity to modify the extent of the market reaction. Specifically, these are the GCARs content, whether the firm would violate a debt covenant with its issuance and the level of institutional holdings of the firm's stocks.

In terms of market price reflection, Kausar et al. (2009) find that there are negative and significant stock-price returns in the twelve months following the issuance of a GCAR. This effect is also observed in a United Kingdom-based study, conducted by Taffler et al. (2004).

Additionally, Kausar et al. (2009) determine that the market reacts swiftly and efficiently to good news in the form of GCAR withdrawal, with very limited abnormal returns detected in the 12-month post-withdrawal period.

Dopuch et al. (1986), examine the effect of publishing adverse audit opinions in widely-available media outlets. The examined hypothesis states that media announcements of "subject to" audit opinions are associated with a negative stock price reaction. The study concludes that the increase of media coverage on unfavourable audit opinions drives an adverse market response.

Blay et al. (2011) focuses on the manner auditors use a going concern opinion as a tool for communicating risk to the market. After the issuance of a GCAR, the authors detect a shift in market perceptions, more specifically changes in investor valuation models' emphasis from both income statement and balance sheet to a balance sheet-only focus. Furthermore, the study highlights further alterations in the investor focus from inventory to cash, receivables, and long-term assets and liabilities. All these changes can be interpreted as an indication that the market identifies the issuance of a GCAR as a warning of increased risk of abandonment.

Lastly, the influence of going concern audit reports and the cost of equity is assessed by Amin et al. (2014). The paper institutes a substantial positive correlation between the two variables, which relates a first-time going concern opinion to increases in the firm's cost of equity capital, with increase varying between 3.3% and 5.7%.

The contemporary literature on the content of going concern audit reports clearly indicates that they have value to investors and provide previously unknown information to the market. GCARs have an adverse effect on the market's perception of the firm, however, these effects do not persist once the adverse opinion is retracted.

2.6 Summary of literature review

The literature evaluation chapter is apportioned into four subdivisions, with each one focusing on a particular aspect of the development and assessment of the examined main research question and its following three hypotheses.

The first section determines that there are underlying foundations with specific characteristics, which produce the principal-agent affiliation (Ross, 1973; Jensen and Meckling, 1976 and Hill and Jones, 1992). Afterwards, the utilization of the two main principles of corporate disclosure by managers - mandatory and voluntary disclosures (Hassan and Marston, 2010), as well as the disclosure channels (Gibbins et al., 1990) are examined. It is determined that specific enticements that companies have incentivise them to change disclosure policies in anticipation of expected future benefits (Brown and Hillegeist, 2007; Lambert et al., 2007; Graham et al., 2005 and Einhorn and Ziv, 2008).

The second section emphasizes on disclosure quality and its measures. Two robust groups are acknowledged – indirect and direct quality measures (Hassan and Marston, 2010). The indirect measures do not directly examine the disclosure vehicle and are therefore less reliable. Examples include the usage of AIMR scores (Sengupta, 1998; Healy et al., 1999 and Botosan and Plumlee, 2002), surveys or questionnaires (Gillham, 2000 and Frazer and Lawley, 2000) or the sum of analysts following a company (Lang et al., 2003 and Irani and Karamanou, 2003).

Alternatively, the direct valuation approaches include the use of content analysis to directly examine the disclosure vehicle, making them more consistent and thus a preferred choice in empirical literature. (Hackston and Milne, 1996; Beretta and Bozzolan, 2004 and Linsley and Shrives, 2006), Instances of those include implementation of disclosure indexes (Inchausti, 1997; Depoers, 2000; Ali et al., 2004; Coy and Dixon, 2004; Hassan et al., 2009 and Chen et al., 2015) and the measurement of the precision of voluntary management forecasts (Penno,

1997; Schrand and Verrecchia, 2004 and Brown et al., 2004). Additionally, it is maintained that various factors drive distinctive disclosure policies, including the level of management commitment (Graham et al., 2005 and Einhorn and Ziv, 2007), the stock market performance and the current cost of equity (Sengupta, 1998; Healy et al., 1999; Bushee and Noe, 2000; Hail, 2002; Lambert et al., 2006; Kothari et al., 2009 and Dhaliwal, 2011).

The third section stipulates a focus on exercising disclosure disaggregation as a method for disclosure quality measure, as well as its practical implementation. It is argued that superior disaggregation provides higher quality disclosures (Blackwell, 1951; Hail, 2002 and Chen et al., 2015). Nevertheless, the limitations of such methods are evident (Botosan, 2004). It is determined that there is a functional aspect of the management's decisions to disaggregate (Nagarajan and Sridhar, 1996; Elliott et al., 2011 and Akamah et al., 2017), supplemented by the role of the auditor (Libby and Brown, 2013; Beck et al., 2016 and Koh et al., 2017).

The fourth section provides an insight into the going-concern reporting framework and its institutional background (AS 2415, 2018; PCAOB, 2018 and U.S. SEC, 2018). The probability of going concern issuance is evaluated based on a number of firm factors (Geiger et al., 2005; Sercu et al., 2006 and Carson et al., 2013). It is established that auditor characteristics significantly affect disclosure accuracy (Reichelt and Wang, 2010; DeFond and Lennox, 2011 and Xu et al., 2013) with evidence suggesting that Big 4 auditors deliver greater GCAR accuracy (Lennox, 1999; Francis, 2011 and Carson et al., 2013). The reasons that generally lead to a GCAR issuance are also evaluated, with cited financial issues being the main cause behind GCARs (Kida, 1980; Mutchler, 1985; Dopuch et al., 1987; Koh and Killough, 1990; Koh, 1991; Raghunandan and Rama, 1995 and Lennox 1999).

Ultimately, the information content and perseverance of going-concern audit reports are assessed, with early research not observing a market reaction after the initial GCAR (Elliott, 1982; Davis, 1982 and Dodd et al., 1984), but later studies detecting evidence for its existence (Keller and Davidson, 1983; Mutchler, 1985; Jones, 1996 and Menon and Williams, 2010). The negative market reaction in terms of corporate security price reflection and cost of equity shifts as a consequence of going concern audit reports is documented, with the market reacting swiftly to both GCAR issuances and withdrawals (Taffler et al., 2004; Kausar et al., 2009 and Amin et al., 2014).

Table 1, provided on the succeeding page offers a recap of the most pertinent papers in relation to the development of the hypothesis tested in *Chapter 3*. In that sense, the table provides summary information on each of the studies' employed research questions, the samples selected and the most pertinent findings in relation to this thesis.

Table 1
Summary of the fundamental literature used in the developed model

Authors	Research question	Sample size	Results
<i>A. Blay, M. Geiger, D. North; (2001)</i>	Examine whether the auditor's going-concern modified opinion is a trusted method of risk communication to the market.	431 matched firm pairs	Detected market focus shifts from an emphasis on both income statement and balance sheet to a balance sheet-only focus in the year a company receives a first-time GCAR.
<i>A. Kausar, R. Taffler, C. Tan; (2008)</i>	Observe the market response to announcements of first-time GCARs and the consequences of their later withdrawal.	1,046 first-time GCAR firms	Discovered that the market swiftly and fully reacts to GCAR withdrawal notices, but tends to underreact to the initial GCAR publications, causing a decrease of 14% over the one-year period subsequent to the GCAR.
<i>R. Libby, T. Brown; (2013)</i>	Study if deliberate voluntary disaggregation of income statement figures increases the trustworthiness of income statement numbers, attributable to auditors permitting for fewer misstatements in the disaggregated data.	75 auditors assessing the materiality of misstatements	Determines that disaggregating items can reduce the tolerable by the incumbent auditor error in the disaggregated quantities, thus increasing the dependability of the disaggregated disclosure information.
<i>S. Kothari, Xu Li, J. Short; (2009)</i>	Analyse and document empirical evidence on the capital market systematic consequences of mandatory disclosures.	5,350 firm observations	Identified that when favourable disclosures are released, the company's risk profile as proxied by its cost of capital, stock return volatility and analyst forecast dispersion, declines considerably. In contrast, adverse releases are supplemented by significant upsurges in the aforementioned risk metrics.
<i>S. Chen, B. Miao, T. Shevlin; (2015)</i>	Construct a contemporary disclosure quality index, centred upon on the quantity of non-missing data items in the Balance Sheet and Income Statement of US-based firms.	125,873 observations from Compustat firms	Develop a novel disclosure measure, which measures disclosure disaggregation in US firms and tests its validity by successfully correlating it to prior disclosure quality measures. These include the properties of analyst forecasts, the corporate securities spread on the stock market and the cost of equity capital for the business.

Chapter 3: Hypothesis development

Contemporary empirical literature indicates that the act of issuing of going concern audit reports by the incumbent auditors of a company has a statistically significant effect on specific market performance factors for the affected businesses. Unambiguously, recent studies determine that GCARs undeniably introduce a new, particular amount of previously unrevealed information to the market, causing it to respond accordingly (Jones, 1996; Kausar et al., 2009; Menon and Williams, 2010).

It is important to establish the notion that, among other information announcement methods, the going concern audit report is very distinct. It is an unambiguous information postulating vehicle, which auditors exclusively use to communicate increased risk to external parties, which their substantive procedures have detected and acknowledged (Libby and Brown, 2013). Accordingly, individual and institutional investors, market analysts and all further parties affected by the auditor's going concern report become increasingly predisposed to exercise greater caution and require clearer and more reliable information when presented with the financial releases of the company in question.

In order to counteract the negative effects that a going concern audit report has on the reputation and market performance, companies are usually inclined to consider and apply different strategies. These would have the key aim to regain stakeholder confidence in the stability of the business, improve stock performance and lower cost of equity capital to its pre-GCAR levels (Nagarajan and Sridhar, 1996; Elliott et al., 2011; Akamah et al., 2017).

Nevertheless, it is important to distinguish that the tactics, which companies choose to carry out their post-GCAR recovery are greatly dissimilar and are likely to be determined by multiple internal and external factors. However, the goals of those strategies for each entity would be practically identical, providing a basis for intermediate comparison. This applies only to the extent that only a first-time GCAR is concerned. In instances, when either there are multiple consecutive GCARs issued to a single business entity or in which an entity has been issued a GCAR in a past period and it has subsequently been retracted, the ability to compare those strategies diminishes significantly. The diminishment in comparability is further retained by the finding, that once a business has received a GCAR, it is incredibly likely that it will be issued a further one in the adjacent future (Firth, 1978; Mutchler, 1985).

One particular strategy of interest for the purposes of this thesis focuses on the fact, that companies are prone to swiftly address the going concern negative consequences and regain

the trust of their stakeholders by effectively increasing the quality of their financial disclosures (Brown and Hillegeist, 2007). In effect, businesses expect that this action would convince the market, that all necessary precautions are being taken to address the GCAR. Furthermore, this action implies that in the future there will be a greater amount of information provided in upcoming financial releases and that potential adverse audit opinions would be, to a higher degree expected and incorporated in stock prices before their issuance (Einhorn and Ziv, 2008).

The reviewed literature also suggests multiple techniques by which companies can increase the quality of their disclosures (Healy and Palepu, 2001). Nonetheless, for the purposes of this thesis, the focus will be placed on the method used to attain superior disclosure quality by increasing the fineness of the disclosed data, also acknowledged as disclosure disaggregation. For businesses, this may be considered as the most economically viable option, because implementing it requires significantly less effort and a more limited monetary investment than its alternatives, such as increasing the amount or the frequency of voluntary disclosures.

When firms increase the disaggregation level of the published financial statements, this action should in principle have a counteractive effect on the negative outcomes that are associated with a GCAR (Kothari et al., 2009). Particularly, the increased disaggregation would then lead to lower information asymmetry, which in term would decrease the expected abnormal returns of stocks after the issuance of a GCAR. Secondly, the disclosed finer information will lower the cost of equity capital for the firm. Thirdly, it will lead to the publication of more accurate analyst forecasts due to the increased information density (Lang and Lundholm, 1993; Lang and Lundholm, 1996; Chen et al., 2015). Lastly, it would also have a positive effect in diminishing the company's stock volatility (Healy et al., 1999; Bushee and Noe, 2000; Kothari et al., 2009).

Therefore, it is consistent that one would expect that management will be willing to implement practices, which in turn deliver higher disclosure disaggregation of the financial statements. All of the positive outcomes, which stem from the change of the disclosure policy would have the positive influence of reaffirming the market position of the firm. Additionally, since the negative outcomes of the going concern audit report are ultimately the result of the work done by the external auditor, the management of the business in question would be incentivized to provide proof that they acknowledge the cited problems and are investing an effort in mitigating them in accordance with the best interest of investors. The strength of this incentive is highly dependent on the governance structure of the organisation (Eng and Mak, 2003).

Considering the aforementioned setting, the first hypothesis I want to test aims to determine whether the functional management of companies, which have been issued a first-time going concern audit report actively take deliberate action to address the negative outcomes of the first-time GCAR issued to the company they govern. Specifically, I want to examine whether companies raise the level of disclosure disaggregation in their financial releases as a response to the issuance of a first-time GCAR. In its null form, the first hypothesis states:

H1: Receiving a first-time GCAR does not drive firms to disclose more disaggregated information.

After the determination of the effects that GCARs have on disclosure disaggregation behaviour in United States-based firms, a subsequent exploration in regard to the size of their incumbent auditor and its effects on disclosure disaggregation will be made.

All auditing companies, which are currently a part of the Big 4 share specific similarities in respect of the work that they carry out. Firstly, every one of them has a relatively large capital structure and is very well financed. Secondly, in view of their individual client bases, Big 4 auditors commonly tend to service larger and financially sound entities. This can be attributed to the fact that Big 4 auditors tend to charge higher premiums than their smaller counterparts, which prevents firms in an insecure financial position to afford their services (Boone et al., 2013). Considering these two factors and taking into consideration what previous research has determined on the effect of having a Big 4 auditor, it can be established that in contrast to a smaller audit firm, a Big 4 company predictably provides their clients with an overall higher level of audit quality. This is further supported by the notion, that since larger audit companies are more risk-averse in terms of avoiding litigation, they prudently select their customers and reject potential clients, who they recognize as bearing higher than tolerable risks (Libby and Brown, 2013).

Deliberating on all the aforementioned factors, it is thought-provoking to consider if a company, which has just been issued a first-time going concern audit report by a Big 4 audit firm would experience changes in the disclosure disaggregation level of its financial releases after the fact. Since prior empirical literature asserts that Big 4 auditors have a higher than average audit quality, (Boone et al., 2013), therefore it is viable to presume that their going-concern evaluations would also in term be more accurate than the established industry average.

As a logical consequence of this, I hypothesize that firms, which have been issued a first-time GCAR will not feature an increase of the overall level of fineness of data in their

respective disclosures. This hypothesis is additionally retained by the supposition, that if a firm is audited by a Big 4 auditor, the adverse market reaction due to the issuance of the GCAR would be less adverse than if the auditor is a non-Big 4 company, as due to the higher audit quality of the bigger auditor, the market would be more expectant of the upcoming GCAR.

Subsequently, since based on my theoretical construct I argue that the adverse market reaction is the central driver for increasing disclosure disaggregation, I anticipate observing a relatively static disclosure disaggregation level in firms audited by Big 4 auditors after the issuance of a first-time GCAR. Instead, I predict those firms will employ different strategies, such as an increased marketing effort or product cost cutbacks to address the issuance of the GCAR, rather than resort to disclosure disaggregation.

Furthermore, an additional incentive that firms, which are audited by Big 4 companies have not to increase their disclosure disaggregation may be the unwillingness of the incumbent auditor to actively tolerate this action. The rationale behind the probable reluctance on behalf of the auditor to tolerate this is the effectively increased audit risk and the considerably higher probability of stakeholder litigation due to the higher quantity of potentially materially misstated disclosure information (Kothari et al., 2009).

Considering these interactions between auditors and firms, it is important to note that the size of the incumbent auditor highly correlates to the disclosure decisions the firm makes. Toward empirically testing in what manner having a Big 4 auditor affects the amount of disclosure disaggregation level of firms, which have been issued a first-time going concern opinion, the second hypothesis states the following:

H2: Firms with Big four auditors do not change their disclosure disaggregation in response to a first-time GCAR.

Prior research, related to corporate disclosure practices and more specifically - the likelihood that a firm will alter the amount of revealed information in its disclosures denotes, that governing managers commonly tend to be reluctant to increase the quantity of disclosure information provided. The logic behind this refusal by managers is that in their view, such increases suggest a future commitment for the company they govern to continue publishing its more detailed disclosure releases (Einhorn and Ziv, 2008). Specifically, this commitment could expose companies to supplementary future costs, related to increases in audit fees and amplified effort and expenses to generate the financial statements themselves (Koh et al., 2017).

Nevertheless, it is imperative to note that market does, in fact, expect of a certain base level of disaggregation of the disclosed financial data. Reductions in the fineness of data, even if they do not lower the disclosure level below the market minimum, would nonetheless have an unfavourable outcome on the market performance and investor perception of the firm in question. Research suggests that this negative effect is stronger for firms, which have been reluctant or slow to issue voluntarily disclosures in the past, thus making them appear as less trustworthy (Elliott et al., 2011).

In view of the theoretical constructs on disclosure practices, I want to assess whether US-based firms, which after having been issued a going-concern audit report and have subsequently increased the level of disclosure disaggregation of their releases continue to maintain the level higher than before the initial issuance date of the GCAR. This company behaviour can be affected by the manner, in which the market reacts to the announcements and withdrawals of first-time GCARs (Kausar et al., 2008). Subsequently, companies might also lower the fineness of the disclosed data, as they may not consider it necessary to invest the additional effort and costs associated with keeping it elevated (Graham et al., 2005).

In terms of establishing an applied time frame of the expected fluctuations and observe this phenomenon in corporate disclosure policies, a reference period is needed. Due to the swift market reaction to GCAR withdrawals, it is reasonable to expect that the financial statements released two fiscal years following the retraction of the first-time GCAR are representative of the long-term overall trend. This indicates, that if a decrease in company disaggregation levels is to occur, there is reasonable assurance that it will materialize in the two-year period.

To empirically investigate the concept, I employ the third and lastly tested hypothesis of this thesis, which in its null form states:

H3: The altered disclosure disaggregation of firms following the issuance of a first-time GCAR does not revert back to its initial level following the GCAR retraction.

Chapter 4: Research design

This chapter is based around the implemented research design and its separate components. Firstly, it focuses on the theoretical framework and the practical application of the disclosure quality (DQ) assessment model of Chen et al. (2015). It does so by exploring the method used to calculate the DQ score for both the Balance Sheet and the Income Statement, as well as the implemented weighing mechanism and its limitations.

Furthermore, this chapter introduces the regression models used to test the three main hypotheses, as well as the underlying assumptions behind those regressions. Subsequently, a detailed description of each dependent, independent and control variables is provided, including their expected signs and detected interaction effects.

Additionally, the underlying rationale behind the sample selection process is indicated in detail, leading up to the construction of the final sample. Descriptive statistical figures are provided, focusing both on the individual variables of interest and going concern frequency occurrence by year. Lastly, the chapter incorporates a correlation table, exhibiting the associations between the individual variables.

4.1 The disaggregation quality (DQ) scoring model

The research design, which I apply in the context of this thesis incorporates the utilization of disaggregation quality (DQ) scores for each company. The scores are used to measure its level of disclosure disaggregation of its Balance Sheet and its Income Statement. In its entirety, the DQ scoring base model was developed by Chen et al. (2015). By utilizing the model, the authors were able to objectively make a time-series comparison of the disclosure quality of different US industries.

The disclosure quality scoring model is intended to assess financial release quality by evaluating the fineness of the disclosed data. In a nutshell, it functions by totalling the non-disclosed items in the Balance Sheet and Income Statement of companies and scaling them to the amount of the total items (Chen et al., 2015)

According to its authors, the model possesses certain advantages over the alternative, more traditional approaches used to survey disclosure quality. Firstly, its effectiveness in measuring disclosure quality originates from the fact that it is constructed exclusively on Balance Sheet and Income Statement line items, identified either in the corporate financial releases or in their respective footnotes. This allows the DQ scoring model to incorporate as much data as practically viable while remaining unbiased in terms of not allowing for the omission of items, which researchers might consider insignificant. In this sense, it provides a more objective research methodology than other alternatives.

Secondly, Chen et al. (2015) point out that DQ scoring has an operational advantage over other disclosure quality assessing approaches, attributable to the nature of the information it utilizes. Specifically, the data the model utilizes as an input is effortlessly transformed to

machine-readable information, leading to an exceedingly efficient manner of studying sizeable quantities of the data.

Lastly, the model provides a wide practical application for researchers, originating from the circumstance that it can be used to calculate DQ scores for virtually all industrial firms, which have statistics accessible in the Compustat database, disregarding of the time period. (Chen et al., 2015) Subsequently, the DQ score model provides an advantage over contemporary disclosure measures, which could either suffer from limited availability of data, a small size of the sample or high information processing expenditures.

4.2 Calculating the DQ scores

4.2.1 Functional Compustat model

Before constructing the DQ scores of US-based companies by using the methodology of Chen et al. (2015), the three so-called “Balancing Models” that Compustat uses to record company data have to be considered. These models are in actuality the designated templates, which the Compustat system employs to both collect corporate financial information and categorize and outline the relations within the records. These models are allocated accordingly, one for each of the three main financial statements that all companies are obliged to provide. Namely, those statements are the balance sheet, the income statement, and the statement of cash flows. The templates, which provide the information used as the primary input in generating DQ scores are those of the Balance Sheet and Income Statement. The cash flow statement is not exploited in the construction of the DQ scores due to a perceived insignificant variation of omitted items (Chen et al., 2015).

In Appendix A, a condensed version of the aforementioned two Compustat templates of interest is attached. In the table, the first column provides the names of the group accounts for both the balance sheet and income statement. All items from this column can be further disaggregated to their respective “subaccounts”. Each of the group accounts is linked to a unique mnemonic code, located in column three.

In essence, to first calculate the Balance Sheet DQ score, each group account is taken and disaggregated to a number of parent accounts, which in turn are also broken up to subaccounts. This generates the three-level functional hierarchy in accordance with the methodology of Chen et al. (2015), a visual representation of which provided in Appendix B.

In the latter appendix, an illustration by means of using the Inventory parent account is given, with each of its comprising subaccounts presented accordingly. Secondly, its classification as a part of the Current Assets - Total group account is displayed.

Since the calculation of DQ scores is based on the overall count of non-missing items in firms' financial disclosures, it is important to clearly identify the two possible circumstances, when Compustat would categorise a disclosure item as missing. As described by Chen et al. (2015), the first situation of this occurring would be the firm in question possesses the underlying business activity but does not upload the financial data concerning it to the Compustat database, thus the system appropriately interprets it as omitted. The second possible scenario occurs if a firm does not possess the underlying business operation to support a specific line item and subsequently does not report it because of this. The aim of the DQ score model is to focus on and correctly identify the first circumstance, whilst eliminating the prospect of erroneously categorising the second one, emanating distortions of the results.

4.2.2 Treatment of non-missing accounts

There are instances, in which the manner of calculating balances on the balance sheet subaccounts must be adapted, as to provide structural validity to the model. The first concern that needs to be addressed according to Chen et al. (2015) is the aforementioned scenario, in which the firm's parent account balance in Compustat is zero (which occurs in cases, in which the firm in question has no underlying operation of this type). In this occasion, all connected subaccounts are to be omitted from the calculation. This is one of the screening controls, implemented by the authors, which aims to ensure that the validity of DQ scores is not undermined for including practically non-existent operations.

The second screening control used to ensure the models' reliability is checking whether the subaccounts of any parent account sum up to it in the cases, where this is anticipated. For instance, if two out of the three presented subaccounts add up to the net sum of the parent account, then no information is noted as missing. This needs to be ensured, as Compustat still identifies those empty subaccount fields as missing and not as simply zero.

In contrast, when the subaccount total sum is different from the sum of the parent account, the DQ model accurately highlights a single subaccount as omitted. Nevertheless, in instances when two out of four or more subaccounts have missing Compustat fields, the model counts only one as missing. Chen et al. (2015) acknowledge this and attribute it the fact, that

there is no viable manner, by using which to actively differentiate amongst truly missing items and intentionally omitted ones.

Using these two controls proves beneficial, as it considerably diminishes the probability of Type 1 statistical errors from occurring by as much as 56% (considering a line item as being omitted when it is not) (Chen et al., 2015). Lastly, it is important to state that due to its limitations, the DQ scoring model only detects aggregation of financial statement items due to their omission and is unable to distinguish aggregation by applying different account classifications.

When considering the calculation of the DQ score for the Income Statement, a similar classification is made. Nevertheless, in contrast to the afore-explained Balance Sheet approach, Chen et al. (2015) use no intermediary group of “parent” accounts in the examination of the Income Statement. This is attributable to the principally dissimilar structure of the two disclosure vehicles. Specifically, the smaller number of line items in the Income statement leads to a substantial loss in variation if a “parent” group is generated, making this approach unfeasible. Additionally, when examining the structure of the Income Statement accounts, it is clear that some of the line items are not in practice always defined as the sum of their respective subaccounts.

The full lists of subaccounts, their full names and the upper-level group they are assigned to for both the Balance Sheet and the Income Statement are provided in Appendix C and Appendix D respectively. While the names of the accounts and their descriptions in the tables are similar to those of Compustat, the tables themselves are constructed by Chen et al (2015).

4.2.3 Weighing the individual DQ scores

In the DQ score model developed by Chen et al. (2015), a different weight allocation is placed on each Balance Sheet group. The aim of doing so is to achieve a better representation of the economic importance of the separate clusters. The weighing scheme works by considering the number of missing items in the group in relation to the total items. Then it scales the result to the number of assets in that particular group to the aggregate asset value.

The process is repeated for each of the groups. Ultimately, all the resulting figures, derived from the eleven main Balance Sheet groups are added up, leading up to a semi-final Balance Sheet DQ score which should theoretically fluctuate between 0 and 2. For practical

purposes, the output is subsequently divided by 2, leading to the final Balance Sheet DQ score ranging in-between 0 and 1, with a greater value signifying a superior disaggregation level.

To better visualize this process, the following formula for the DQ score of the Balance Sheet is used by Chen et al. (2015):

$$\sum_{k=1}^{11} \left\{ \left(\frac{\# \text{ Nonmissing Items}}{\# \text{ Total Items}} \right)_k \times \frac{\$ \text{ Assets}_k}{\$ \text{ Total Assets}} \right\} \div 2,$$

In the above formula, k refers to a specific group account. When examining the Balance Sheet groups which can be found in Appendix C, 11 principal groups can be identified. These include a total of 25 parent accounts which, in turn, have exactly 93 subaccounts.

When calculating the DQ score of the Income Statement, seven main group accounts can be classified with the use of the approach of Chen et al. (2015). Subsequently, those can be interconnected to a total of 51 subaccounts. Identical to the previous technique, which was used on the Balance Sheet, the amount of non-missing items in each subaccount is taken and apportioned by the total number of subaccounts in that group. This action is reiterated for each group.

There are two points of concern, which lead to difficulties in applying the value-weighting model used on the Balance Sheet for the Income Statement. The first is the fact that the Income Statement comprises of both positive and negative line items, thus, implementing a weighing scheme for individual items against each other, similar to the approach employed in the Balance Sheet, in this case would not produce a meaningful result. The second concern is connected to a potential predisposition the results, as the DQ score will be drastically affected by the significant variation that individual line items tend to have. To circumvent these issues, Chen et al. (2015) employ an equal-weighting scheme for the score calculation of the Income Statement. This means that, analogous to the methodology taken to calculate the DQ score of the Balance Sheet, the number of non-missing group items is taken and scaled to the number of total items in that group. Nonetheless, contrary to the overall asset scaling for each group to the level of total assets employed for the DQ_BA, in the DQ_IS no total asset scaling is applied.

Finally, the arithmetic average of the DQ scores obtained from both the Balance Sheet and the Income Statement is calculated. This is done so as to merge the individually calculated disaggregation scores of the Balance Sheet and Income Statement and produce the comprehensive DQ score of the examined firm. It, in turn, is used to capture the disclosure

quality of the financial statements of the company as substantiated by the detected level of disaggregation.

4.3 DQ score regression models

This emphasis of the produced models is put on the evaluation of three central premises, all of which are related to investigating the effects that going-concern audit opinions have on the corporate DQ scores.

The first regression, which is developed, aims to determine the probability of changes in firm DQ scores in accordance with the issuance of a first-time GCAR and the moderating effect Big 4 audit firms have on this relation. Consequently, it empirically tests the first and second examined hypothesis and employs the following regression:

$$DQ = \alpha + \beta_1 \text{Going_concern} + \beta_2 \text{Big_4} + \beta_3 \text{Auditor_change} + \beta_4 \text{Debt} + \beta_5 \text{GDP_change} + \beta_6 \text{LogAT} + \beta_7 \text{Neg_Cf} + \beta_8 \text{Restr} + \beta_9 \text{Industry} + \beta_{10} \text{Sales_turnover} + \beta_{11} \text{Special_it} + \beta_{12} \text{Stock_change} + \varepsilon$$

In the model, *DQ* is the dependent variable and it represents the observed DQ score of a firm. The DQ scores are estimated with the model, developed by Chen et al. (2015).

The Greek letter α in the regression represents the intercept, where the function curve meets the Y axis.

In line with the prior literature, the expectation would be that DQ scores would normally increase after the issuance of the GCAR. The first independent variable of interest, which is titled *Going_concern* signifies whether the firm has been issued a GCAR. It is an indicator variable; hence it could have a value of either 0 (the firm has not been issued a GCAR) or 1 (the firm has been issued a still pending GCAR).

The second variable of significance, which will be examined is named *Big_4*. It has the purpose of estimating whether a company, which uses the services provided by any of the Big 4 audit firms (Big 5 for observations before 2001) experiences a statistically significant change in its disclosure quality. Subsequently, by doing so it will test the second hypothesis of this thesis. The *Big_4* variable is also an indicator variable and it has a value of 0 if the company does not have a Big 4 auditor and otherwise has a value of 1.

The regression also includes control variables, which aim to assess if the relation between DQ scores and the aforementioned independent variables of relevance is in fact objective. In the case of the first regression, the applied controls used are:

Auditor_change = Controls for instances of auditor change. It is used, as when a firm experiences an auditor switch, as the new auditor might be reluctant to accept additional risk by allowing further disaggregation of the client's financial statements, especially if the new auditor is a Big 4 company (Gibbins et al., 1990). This effect can be even more prominent if the audited company is large or has a complex accounting system. The expected sign for this variable is negative, as an auditor alteration would negatively impact short-term disclosure disaggregation.

Debt = Controls for the portion of long-term debt, that the company has acquired. Depending on the amount of debt, the debt issuers may require a higher level of disclosure quality of the business, as to ensure that it will be able to repay its obligations. This is particularly valid if the company has taken in debt covenants (Dopuch et al., 1987 and Raghunandan and Rama, 1995). Subsequently, the business may increase transparency by raising its disclosure disaggregation level. The anticipated sign for this variable is positive, as with increased financial obligations, debt issuers would demand more detailed disclosures to ensure that the firm is financially sound.

GDP_change = Controls for the changes in the gross domestic product (GDP) for the United States, adjusted for 2009 US dollars. This accounts for shifts in macroeconomic factors, which can affect the comprehensive level of DQ scores of all entities operating in the United States. The projected signs for this variable are both positive and negative, as due to the diverse nature of macroeconomic events, it is difficult to estimate how specifically they will impact DQ scores.

LogAT = Controls for the size of the company in question, as this is a fundamental determinate of the expected level of disaggregation (Chen et al., 2015). This can be attributed to the fact that the investor and creditor pools of larger businesses usually have more diverse information needs. The predicted sign for this variable is positive, as larger companies would have incrementally more parties interested in their financial disclosures and would thus be required to disaggregate them more to meet their specific information needs.

- Neg_Cf** = Controls for instances, in which the company has realized a negative cash flow from operations for the year. This can indicate that there are potential issues in the internal revenue-generating processes of the business, which lead to liquidity problems (Koh, 1991 and Lennox, 1999). These can, in turn, incentivise the governing managers to aggregate disclosure data to omit particular unfavourable figures. The expected sign for this variable is negative, as with negative cash flows being a short-term indicator of decreased firm performance, managers might be incentivised to aggregate financial data to divert investor attention from latent issues.
- Restr** = Controls for the occurrence of recent corporate asset restructurings. This control is included, as to accommodate changes in the departmental or functional configuration of business, which can lead to temporary decreases in performance and reporting quality due to complications in the disclosure process (Chen et al., 2015). The anticipated sign for this variable is negative, as restructuring activities tend to lead to a short-term decrease in corporate performance during the adjustment phase, leading to managers being disposed to aggregate disclosure data to conceal it from potential investors.
- Industry** = Controls for companies operating in the services industry. As determined by Chen et al. (2015) and Ali et al. (2014), companies operating in the manufacturing and services industries have divergent levels of disclosure disaggregation due to specific regulation and disclosure requirement factors. The projected signs for this variable are both positive and negative, as different manufacturing or service companies' information disclosure strategies, as well as the information requirements of their stockholders, fluctuate considerably.
- Sales_turnover** = Controls for the contemporary annual performance of the business, as to identify whether decreases in the year-to-year profitability of the company lead to decreases in disclosure disaggregation levels (Kida, 1980; Mutchler, 1985 and Koh and Killough, 1990). The predicted sign for this variable is positive, as higher sales turnover would typically indicate that the firm has an increased number of transactions, which might be of interest to interested outside parties which demand more detailed information in that regard.
- Special_it** = Controls for the fluctuations in the number of special items revealed in the Income Statement. An increase of special items can be an incentive for management to aggregate reported data, as to reduce the risk of additional

scrutiny in the financial disclosures due to the abnormal nature of the transactions (D'Souza et al., 2010). The expected sign of this variable is negative, as with a greater number of special items, firm managers would have superior incentives to aggregate financial releases to conceal discrepancies, intentional or otherwise.

Stock_change = Controls for variations in the yearly market performance of a company's securities. High volatility can lead to negative market outcomes (Healy et al., 1999; Bushee and Noe, 2000 and Kothari et al., 2009), which the firm can counteract with increases in disclosure disaggregation. The anticipated sign of this variable is positive because, with a greater stock fluctuation, investors and market analysts will require more data during the analysis of the company. This is a concern, which can be alleviated with the release of more detailed disclosure information.

Subsequently, as to obtain supplementary data on the individual components of the DQ scoring model of Chen et al. (2015) and their interaction with the aforementioned variables, the first regression will be executed two more instances. Nevertheless, the dependent variable tested will be altered each time. The first regression will be carried out with the dependent variable being the DQ score of the Balance Sheet (*DQ_BA*) and the second regression with the dependent variable being the DQ score of the Income Statement (*DQ_IS*). The control variables will remain as they were in the initial regression.

The fourth and last regression examined in this thesis focuses on determining the persistence of changes in DQ scores over time and more explicitly, how the retraction of a first-time GCAR affects the mandatory disclosure behaviour of companies. This is done as to observe this and correspondingly test the validity of the third hypothesis. The equation used has the following formulation:

$$DQ_Diff = \alpha + \beta_1 Auditor_change + \beta_2 Big_4 + \beta_3 Debt + \beta_4 GDP_change + \beta_5 LogAT + \beta_6 Neg_Cf + \beta_7 Restr + \beta_8 Industry + \beta_9 Sales_turnover + \beta_{10} Special_it + \beta_{11} Stock_change + \varepsilon$$

Comparably to the previous equation, this one incorporates a dependent variable which focuses on the DQ score. However, in this instance, the dependent variable, denoted as *DQ_Diff* is not simply the DQ score of the firm, but rather the arithmetic difference between

the DQ score of a company through the year of its first-time GCAR issuance and its DQ score two years after the aforementioned GCAR's retraction. Once more, all DQ score values used are calculated with the model of Chen et al. (2015).

In the regression, the point of interest in terms of hypothesis three is the intercept (a). In line with the predictions made in the hypothesis development chapter, if the intercept is statistically significant and has a positive sign, that would indicate that firm's DQ score has decreased in the two-year period following the first-time GCAR retraction. Therefore, it can be established that its disclosure policies have deteriorated in terms of disaggregation.

The interval of two years between the GCAR retraction and observation of the DQ_Post score is provided as such, because it is expected that if companies reduce the fineness of their financial disclosures in the post period, they will do so not immediately after the GCAR retraction, but at a later period. The rationale behind this is that corporate governance would want to distance themselves from the GCAR before adversely altering disclosure policies.

Nevertheless, it is unclear whether the disclosure effect will be positive or negative, as previous empirical literature is rather divided on the matter. In terms of control variables, the same ones which are included in the prior models will be implemented in this one accordingly.

A comprehensive table with all dependent and independent variables and their explanation is provided in Appendix E.

4.4 Sample description

4.4.1 Sample selection

The data, used for the purposes of this research is downloaded exclusively from the Wharton Research Data Services (WRDS) system. The statistics regarding going concern audit reports (GCARs) and information concerning the firm's auditor is obtained by means of the Audit Analytics subsystem. All corporate financial reports and their respective components required are obtained from the Compustat database.

The initial sample consists of 24,126 unique firms (total number of firm-year observations is 369,964) which have valid annual data about their financial disclosures components, going concern opinions and incumbent auditor information uploaded concerning the period between 1995-2016. The initial year is such, as the Audit Analytics database contains no information for the years before 1995. The fiscal year 2017 is not included in the sample, because all the strategy shifts, which are employed as a consequence of first time

going-concern audit opinions issued during that period have not been completely incorporated in the companies involved. Following the calculation of the Balance Sheet and Income Statement DQ scores by implementing the methodology of Chen et al. (2015) there are 117,929 observations which remain.

Since the focus of examination of this thesis is exclusively on firms with a pending first-time GCAR, companies that have obtained several consecutive GCARs are excluded. This is due to the fact, that the disclosure response of a firm to a first-time GCAR would be different from the response of a consecutive GCAR. This is due to the fact, that follow-up GCARs produce a dissimilar firm reaction from the primary GCAR. Additionally, any business, which has been issued a GCAR but, it is not its first one is likewise omitted. Both of these factors contribute to the outcome that each individual company appears only once in the selected sample. Companies, which are without data on whether they have been issued a first-time going concern opinion are also removed. Lastly, all financial and utility firms are dropped since they utilize a special Compustat balancing model that is incompatible with the currently applied research methodology and would otherwise lead to an unreliable estimation of DQ scores for such firms. To address the concerns of there being a survivorship bias in the selected sample, firms which no longer operate are not removed. This leaves the final combined Compustat and Audit Analytics sample, with which I test the first and second hypothesis containing a grand total of 70.500 observations.

To test the third hypothesis, I further modify the data by leaving only two specific observations per gvkey (the unique firm identifier). Those are the observation containing the DQ score from the prior year of the company's GCAR and the DQ score two years after the GCAR retraction for that particular firm. This leads to a final sample for testing the third hypothesis of 7953 observations.

Table 2
Sample selection progression

Procedure executed on the sample	Remaining observations
<i>Preliminary merged sample from Compustat and Audit Analytics (Finance companies were omitted before retrieving the data);</i>	369,964
<i>Removal of utility companies;</i>	361, 852
<i>Removal of observations with missing base data needed to balance DQ scores in the DQ_BA;</i>	120,792
<i>Removal of observations with a figure for total assets equal to zero;</i>	120,004
<i>Removal of observations with omitted going concern status data;</i>	76,054
<i>Removal of observations of businesses with multiple issued GCARs;</i>	20,561
<i>Final sample used for the testing of hypothesis (H1) and (H2);</i>	20,561
<i>Removal of observations of firms, which never had their GCAR retracted (in cases where it is still pending or the company has gone bankrupt before its withdrawal);</i>	8,952
<i>Final sample used for the testing of hypothesis (H3);</i>	8,952

4.4.2 Descriptive Statistics

The following logical phase of the analysis of the sample includes a discussion of the characteristics of the individual variables used in the empirical evaluation. In accordance with this objective, *Table 3*, which is incorporated below provides concise information on all relevant variables, both dependent and independent.

Table 3
Summary information on all relevant variables

Variable	Mean	Std. Dev.	Min	Max
<i>DQ</i>	.5330374	.0641528	.234306	.9078809
<i>DQ_BA</i>	.4210056	.0831342	.1263775	.9995918
<i>DQ_IS</i>	.6450693	.0837304	.3225108	.9512987
<i>Going_concern</i>	.0343404	.1821034	0	1
<i>Big_4</i>	.7188369	.4495701	0	1
<i>LogAT</i>	5.549118	2.417773	-6.907755	12.92702
<i>Industry</i>	.2159858	.4115074	0	1
<i>Special_it</i>	-3.862235	63.81076	-3935.37	10193.8
<i>Sales_turnover</i>	2886.982	14460.49	-244.189	483521
<i>Debt</i>	11.27136	130.1932	-.5037574	8437.2
<i>Restr</i>	.9995319	.0216304	0	1
<i>Auditor_change</i>	.9466241	.2247835	0	1
<i>Stock_change</i>	.5560955	.2079911	0	1
<i>Neg_Cf</i>	.277461	.4477491	0	1
<i>GDP_change</i>	13.02238	2.611922	6.71032	17.65206

In the table, the first column provides the name of the variable in question, while the second and third provide the mean value of the observations and the associated standard deviation. Subsequently, the last two columns provide the minimum and maximum value for each of the variables of interest.

It is important to note, that the variables controlling for auditor changes (*Auditor_change*), size of the auditor (*Big_4*), issuance of a first-time GCAR (*Going_concern*), indicating negative cash flows from operations (*Negative_Cf*), accounting for restructuring costs (*Rest*), controlling for stock volatility (*Stock_change*) and *Industry* all have a value range between 0 and 1. This is due to their nature as indicator variables, aiming to capture the categorical consequence of a specific interaction. The full list of variable descriptions, including the method used to generate them is included in Appendix E.

An emphasis should be made on the variables *DQ*, *DQ_BA* and *DQ_IS*, which denote the disaggregation quality level as calculated with the DQ score model of Chen et al. (2015). From *Table 3*, it is evident that the mean DQ score for the sample is .5330. This statistical

figure is derived from the average means of the means of the disclosure scores of the Balance Sheet (DQ_BA) and Income Statement (DQ_IS). Observing the latter, it is evident that the Income Statement (mean .6450) has a higher DQ score mean than the Balance Sheet (mean .4210), which is in contrast to the findings of Chen et al. (2015). Nevertheless, this difference can be attributed to the significantly different time period that the data encompasses, as well as the fact that it focuses only on firms with issued first-time GCARs.

Although the theoretical range of DQ scores according to the author's model ranges from 0 to 1, in the contemporary sample used the scope of values is between .2343 and .9078. This indicates that there are no firms, which hypothetically provide all disclosure information, but nonetheless, this is to be expected as the list of items the model classifies is rather extensive. The standard deviation between the DQ_BA and the DQ_IS is rather similar, at .0831 and .0837 correspondingly, with the aggregate DQ score featuring one as low as .0641.

Correspondingly to the results of Chen et al. (2015), I also identify the increasing trend that DQ scores have over time. Figures one and two in Appendix F provide a graphical illustration of this tendency, with *Figure 1* focusing on the overall DQ score and *Figure 2* distinguishing the individual components of the DQ score – the DQ_BA and the DQ_IS. In the latter, the upwards trend is similarly evident.

In the aforementioned Appendix, figures three, four and five offer histograms, demonstrative of the distribution of the DQ score and its components within the designated statistical sample. Whereas *Figure 3*, focusing on the DQ score itself shows a reasonably normal distribution, *Figure 4* and *Figure 5* indicate a certain level of skewness, which is more prominent in the case of the DQ_BA, indicating that firms in the sample tend to have more and larger indeterminate fluctuations when the Balance Sheet is concerned, rather than the Income Statement.

In terms of the occurrence frequency of first-time going concern opinions, *Table 4* below provides the annual amount for each of the years in the utilized sample.

Table 4
Going concern occurrence frequency

Year	Frequency	Percentage	Cumulative Percentage
1995	0	0.00	0.00
1996	0	0.00	0.00
1997	2	0.03	0.03
1998	25	0.31	0.34
1999	294	3.69	4.03
2000	637	7.99	12.01
2001	677	8.49	20.50
2002	614	7.70	28.20
2003	489	6.13	34.33
2004	446	5.59	39.92
2005	403	5.05	44.98
2006	360	4.51	49.49
2007	412	5.17	54.66
2008	450	5.64	60.30
2009	372	4.66	64.97
2010	342	4.29	69.25
2011	347	4.35	73.61
2012	420	5.27	78.87
2013	435	5.45	84.33
2014	422	5.29	89.62
2015	434	5.44	95.06
2016	394	4.94	100.00
Total	7,975	100%	100%

The first column of the table indicates the year of the observations, while the second denotes the total amount of first-time GCARs for that particular year. The third and fourth column provides the percentage of going-concern opinions in relation to the total quantity and the accumulative proportion respectively. A total of 7,975 first-time GCARs are examined for the purposes of this thesis, encompassing the 19 fiscal years from 1997 and 2016.

While in the sample, there are no observed first-time GCARs in 1995 and 1996, after the fiscal year 2000 the relative amount of GCARs is fairly stable. This can be perceived in the third column, where it is apparent that after 2000 the relative amount fluctuates around 5% and

6%. This indicates, that with the selected sample the results obtained will be more representative of the periods after 2000. What is also seen in the data is the effect that the tighter regulations of the Sarbanes-Oxley act have had on going-concern opinions (Geiger et al., 2005 and Sercu et al., 2006). Specifically, the statistically significant drop of those opinions is seen after 2002. Lastly, the long-term tendency observed in the frequency of first-time GCARs clearly shows, that the number of them issued is in decline.

Lastly, *Table 5* features a Pearson correlation matrix for all variables of interest. The star signifies a significance level of five percent.

From the chart, it is evident that the DQ score is highly correlated to the DQ_BA and DQ_IS due to the reason that it is fundamentally based on them. The correlation coefficients I identify are similar to those calculated by Chen et al. (2015). Furthermore, it is evident that all other variables, besides the special items (*Special_it*) are correlated to the base DQ score. The same is true for DQ_IS, but in it, there seems to be no correlation with the going concern (*Going_concern*) variable. When considering the DQ_BA, the only uncorrelated variables are the restructuring provision (*Restr*) and the going concern estimator (*Going_concern*).

Is important to note that all variables show a significant correlation to the Big_4 variable at 95% confidence level. This variable is used in the empirical section of this thesis to control auditor size. Finally, when checking the assumptions in the tested regressions, the results that Stata provides do not reveal any evidence of multicollinearity in-between the variables.

Table 5
Correlation table for all variables

	<i>DQ</i>	<i>DQ_IS</i>	<i>DQ_BA</i>	<i>Going_concern</i>	<i>Big_4</i>	<i>LogAT</i>	<i>Industry</i>	<i>Special_it</i>	<i>Sales_turn</i>	<i>Debt</i>	<i>Restr.</i>	<i>Auditor_chan.</i>	<i>Stock_change</i>	<i>Neg_Cf</i>	<i>GDP_change</i>
<i>DQ</i>	1.0000														
<i>DQ_IS</i>	0.7710*	1.0000													
<i>DQ_BA</i>	0.7668*	0.1824*	1.0000												
<i>Going_concern</i>	0.1016*	-0.0004	0.1572*	1.0000											
<i>Big_4</i>	-0.1018*	-0.0525*	-0.1043*	-0.1720*	1.0000										
<i>LogAT</i>	-0.1750*	-0.0901*	-0.1794*	-0.2697*	0.5418*	1.0000									
<i>Industry</i>	0.1350*	0.0859*	0.1219*	0.0007	0.0011	-0.1017*	1.0000								
<i>Special_it</i>	-0.0054	-0.0006	-0.0076*	0.0031	-0.0320*	-0.0949*	0.0137*	1.0000							
<i>Sales_turnover</i>	-0.0763*	-0.0456*	-0.0719*	-0.0356*	0.1172*	0.3781*	-0.0699*	-0.1035*	1.0000						
<i>Debt</i>	-0.0606*	-0.0572*	-0.0364*	-0.0157*	0.0538*	0.1969*	-0.0418*	-0.1300*	0.3580*	1.0000					
<i>Restr</i>	-0.0076*	-0.0079*	-0.0037	-0.0031	-0.0094*	-0.0149*	0.0037	-0.0000	-0.0046	-0.0069	1.0000				
<i>Auditor_change</i>	0.0589*	0.1096*	-0.0195*	-0.0415*	-0.0677*	0.0098*	-0.0215*	-0.0063	0.0261*	0.0032	0.0034	1.0000			
<i>Stock_change</i>	0.0151*	-0.0317*	0.0601*	0.2220*	-0.2416*	-0.4777*	0.0654*	0.0160*	-0.1683*	-0.0817*	0.0039	-0.0322*	1.0000		
<i>Neg_Cf</i>	0.1430*	0.0866*	0.1335*	0.2224*	-0.2274*	-0.4657*	-0.0033	0.0255*	-0.1111*	-0.0507*	-0.0023	-0.0263*	0.3935*	1.0000	
<i>GDP_change</i>	0.2880*	0.2748*	0.1677*	-0.0242*	-0.0931*	0.2118*	-0.0315*	-0.0098*	0.0718*	0.0267*	-0.0074*	0.1048*	-0.2464*	-0.0756*	1.0000

*Coefficients are based on the Pearson correlation matrix. * indicates a statistical significance of $p < 0.05$. Complete list of variable definitions is available in Appendix E.*

Chapter 5: Empirical results evaluation

5.1 Evaluation of the first and second hypothesis

The first assessment I carry out has the purpose to determine the underlying association between the corporate release quality as measured by the disclosure disaggregation score of a company and the first-time going concern auditor's report. To do so, I perform three regressions, introducing as dependent variables the *DQ* score and its components *DQ_BA* and *DQ_IS* and the indicator *Going_concern* as the primary independent variable of interest. In *Table 6* the results of this regressions are presented.

Table 6
Regression results for DQ, DQ_BA and DQ_IS

Variable	Predicted Sign	Coefficient for <i>DQ</i>	t-value	Coefficient for <i>DQ_BA</i>	t-value	Coefficient for <i>DQ_IS</i>	t-value
<i>Going_concern</i>	+	.01932***	15.07	-.0137886***	-7.76	.0524287***	32.47
<i>Auditor_change</i>	-	.0052749***	4.49	.0049734**	3.06	.0055763***	3.77
<i>Big_4</i>	-	.0095369***	15.85	.0175921***	21.10	.0014817	1.96
<i>Debt</i>	+	-.0000104***	-5.90	-.0000213***	-8.74	5.28e-07	0.24
<i>GDP_change</i>	±	.0083771***	92.09	.0099876***	79.25	.0067666***	59.06
<i>Industry</i>	±	.0189888***	35.31	.017683***	23.74	.0202945***	29.97
<i>LogAT</i>	+	-.0063334***	-44.28	-.00717***	-36.18	-.0054968***	-30.51
<i>Neg_Cf</i>	-	.0106765***	18.75	.0132581***	16.81	.0080949***	11.29
<i>Restr</i>	-	-.0125813	-1.18	-.0249558	-1.69	-.0002067	-0.02
<i>Sales_turnover</i>	+	-4.82e-09	-0.27	2.33e-08	0.93	-3.30e-08	-1.44
<i>Special_it</i>	-	-.0000272***	-7.81	-.0000257***	-5.32	-.0000287***	-6.54
<i>Stock_change</i>	+	-.0146722***	-11.70	-.0217005***	-12.49	-.007644***	-4.84
<i>Intercept</i>		.4594798***	42.43	.5691597***	37.94	.3497998***	25.65
<i>Adjusted R²</i>		= 0.1772		= 0.1208		= 0.1168	
<i>Observations</i>		= 63,943		= 63,943		= 63,943	

Regressions are performed with dependent variables *DQ*; *DQ_BA* and *DQ_IS*. The level of significance is denoted with *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. A complete list of variable definitions is available in Appendix E.

In *Table 6*, the top row indicates the equation, which is used to test the assertions of the designer model. Underneath it, the table is apportioned into eight distinctive columns. The first one provides the variable name, while the second one provides the predicted sign, which represents the conjectural relation that each of the independent variables is expected to have to the dependent variable disclosure quality (*DQ*), as calculated with the methodology of Chen et al. (2015).

The next two columns display the results of the regression, with column three focusing on the coefficient and the associated sign and column four centring around the t-value of each variable. The subsequent four columns employ a similar rationale to columns three and four, with the dissimilarity being that they denote the results from an identical regression as the one tested beforehand but differing in terms of the dependent variable input being the disclosure quality of the Balance Sheet (*DQ_BA*) and the disclosure quality of the Income Statement (*DQ_IS*) respectively.

The latter two rows of the table provide information regarding the adjusted R^2 of each of the regressions and the number of observations used. All of the regressions for this test are performed with 63,943 observations. The number of stars, used besides some of the coefficients, signify a statistically significant outcome at 90%, 95% and 99% accordingly indicated as one, two or three stars.

In terms of examining the relation between first-time going concern audit reports and disclosure disaggregation, the results indicate that there, in fact, is a statistically significant relation in all of the tested regressions, with t-values being 15.07 for the initial *DQ* regression, -7.76 for *DQ_BA* and 32.47 for *DQ_IS*. The predicted positive signs match for the *DQ* and *DQ_IS*, but is negative for *DQ_BA*, indicating that companies in the sample tend to elevate their overall disclosure disaggregation levels after a first-time GCAR, but the result is primarily determined from the increase in the Income Statement. This in term is counterintuitive to the findings of Blay et al. (2011), who find that after the GCAR issuance modifications occur in investor valuation models', with emphasis shifting from Income Statement and Balance Sheet to the Balance Sheet only.

When examining the auditor attributes, it is evident that both the size of the current auditor and instances of auditor changes drive a statistically significant reaction in almost all examined models. The exception of this is the coefficient of .0014 for auditor size for the *DQ_IS*, which is not statistically significant. In contrast to what Beck et al. (2016) and Koh et al. (2017) suggest, I find that the connection between disclosure quality and auditor size and auditor change is positive, rather than negative. This suggests that both Big 4 auditors, as well

as new auditors to the company, tend to increase the level of disclosure disaggregation of their clients, regardless of the additional risk associated with this. This is also sustained by Xu et al. (2013).

When considering the level of debt, the results are contradictory in terms of the predicted signs, with significant results for the coefficients being produced for DQ (-.00001) and DQ_IS (-.00002). The model denotes that companies tend to marginally reduce the level of disaggregation with higher levels of incurred debt. This is in divergence with what Dopuch et al. (1987) and Raghunandan and Rama (1995) indicate, but since the coefficients are rather small, this effect could be attributable to the differences in the sample selection process and the dissimilar time periods.

The changes in the gross domestic product (*GDP_change*), the size of the company (*Log_AT*) and the industry, in which it is operating (*Industry*) also seem to cause meaningful changes in the level of DQ scores in all performed regressions. These correspondences are suggested by Ali et al. (2014) and Chen et al. (2015). Furthermore, all the results are highly statistically significant, with t-values ranging from 23.74 to 92.09. These indicate that the DQ score and its components are in fact very much affected by widespread macroeconomic factors and specific company-related characteristics.

One point of interest is that, contrary to the expectation of the authors, the size of the company negatively affects the levels of DQ scores, with the values of all coefficients being negative (-.006 for DQ, -.007 for DQ_BA and -.006 for DQ_IS). This can be attributed to the rationale that larger companies might employ alternative strategies to improve their disclosure quality, instead of increasing disaggregation as the literature suggests (Brown and Hillegeist, 2007).

I find that negative cash flows from operations (*Neg_Cf*) tend to have a statistically significant effect on all instances of DQ scores, with t-values calculated being 18.75 for DQ, 16.81 for DQ_BA and 11.29 for DQ_IS. Nonetheless, the effect is conflicting to the interaction the primary literature suggests (Koh, 1991 and Lennox, 1999), which suggests that the sign would be negative, rather than the positive one I detect. This could be explained by the fact, that companies, facing financial difficulties could be incentivised to aggregate disclosure data in order to hide potential issues from investors in their aggregated releases (Nagarajan and Sridhar, 1996; D'Souza et al., 2010; Elliott et al., 2011 and Akamah et al., 2017).

When considering the restructuring (*Rest*) and sales turnover (*Sales_turnover*), no statistically significant results are available. Furthermore, all the coefficients produced is fairly small. This, together with the significant results obtained in relation to negative cash flows

(*Neg_Cf*) indicate that cash flows are a considerably better predictor of DQ scores than the annual sales turnover.

The magnitude of special items (*Special_it*) appears to be statistically significant and conforming to the predicted sign in all three regression instances, but all coefficients are rather low, ranging between -.000026 and -.000029. Nevertheless, they indicate that the quantity of special items does in fact negatively relate to DQ scores in the way predicted by D'Souza et al. (2010).

In terms of stock volatility (*Stock_change*), the model suggests that it is in fact connected to the DQ score and its components and the relation is statistically significant on all instances, with coefficients for -.02 for DQ, -.02 for DQ_BA and -.01 for DQ_IS respectively. Nonetheless, the predicted sign is not similar, indicating that larger shifts in the stock volatility of corporate securities, in fact, drive DQ scores down. This is in contrast to the findings of Healy et al. (1999), Bushee and Noe (2000) and Kothari et al. (2009), who maintain that stock volatility usually decreases in the presence of higher quality disclosures. These findings might indicate, that the positive market effects of increased disaggregation, in the long run, may be diminished by other factors, which tend to lead to an increase in stock volatility. Nevertheless, further research is needed to establish this relationship.

Lastly, when studying the adjusted R² totals, it is evident that the base DQ model features the highest one of the three regressions at .1772, with the figures for DQ_BA and DQ_IS being .1208 and .1168 respectively. In the instance of these models, this means that the independent variables used in the base DQ score regression provide a superior predictor of what causes initiate fluctuations in corporate DQ scores than the DQ_BA and DQ_IS.

5.2 Evaluation of the third hypothesis

The subsequent *Table 7*, proposes insights into the long-term trends in DQ scores variation, following the issuance of a first-time GCAR and thus tests the third hypothesis of this thesis.

By looking at the DQ scores of the year of issuance of the first-time going concern audit reports (*DQ_Ante*) and the DQ scores of those same firms two years after its retraction (*DQ_Post*), a new variable can be generated - *DQ_Diff* (equal to *DQ_Ante* minus *DQ_Post*). Subsequently, performing a regression with *DQ_Diff* as a dependent variable and the already established independent variables, if the intercept of this regression is positive and significant (indicating that the mean value of the dependant variable *DQ_Diff* is positive and significant

when the independent variables are applied), this would be an indication that a decrease in the overall DQ scores of the examined firms has occurred in the period following the GCAR retraction.

The first row of *Table 7* specifies the regression model, which is performed to determine the variations in the dependent variable (*DQ_Diff*). The table follows a similar structure to the previous *Table 6*, but due to the nature of the observations included in it, their number is limited to 7,896. The primary column provides the variable name, the second the predicted sign of the coefficient and the third and fourth the actual coefficient and its associated t-value. The stars indicate statistically significant results for 90%, 95% and 99% for one, two and three stars correspondingly. For the full list of variable definitions, refer to Appendix E.

Table 7
Regression results for DQ_Diff

Variable	Predicted Sign	Coefficient for DQ_Diff	t-value
$DQ_Diff = \alpha + \beta_1 Auditor_change + \beta_2 Big_4 + \beta_3 Debt + \beta_4 GDP_change + \beta_5 LogAT + \beta_6 Neg_Cf + \beta_7 Restr + \beta_8 Industry + \beta_9 Sales_turnover + \beta_{10} Special_it + \beta_{11} Stock_change + \varepsilon$			
<i>Auditor_change</i>	-	-0.0030007	-1.03
<i>Big_4</i>	-	-0.0029414	-1.59
<i>Debt</i>	+	-1.84e-06	-0.37
<i>GDP_change</i>	±	.0028011***	10.25
<i>Industry</i>	±	.0001548	0.09
<i>LogAT</i>	+	-0.0020939***	-4.66
<i>Neg_Cf</i>	-	.0001006	0.06
<i>Restr</i>	-	-0.0771197**	-2.81
<i>Sales_turnover</i>	+	1.53e-07*	2.16
<i>Special_it</i>	-	-0.0000336	-1.69
<i>Stock_change</i>	+	.0013238	0.34
<i>Intercept</i>		.0559836*	2.01
<i>Adjusted R²</i>		= 0.0916	
<i>Observations</i>		= 7,896	

*Regression is performed with dependent variables DQ_Diff. The level of significance is denoted with *** p<0.01, ** p<0.05, * p<0.1. A complete list of variable definitions is available in Appendix E.*

As previously specified, the coefficient of interest in the table is the intercept. Since it features a positive value of .0559 and is statistically significant at 90% (t-value of 2.01), it can be determined that post values of the DQ score two years after the retraction of the first-time GCAR (*DQ_Post*) is mostly lower than the initial value during the year of issuance of the first-time GCARs (*DQ_Ante*).

As a consequence of this finding, it can be determined that firms do in fact lower to a certain extent their disclosure disaggregation levels in the two-year post period following the retraction of the first-time GCAR. The selected time frame of two years after the retraction of the first-time going concern report for the measurement of *DQ_Post* is considered sufficient, as prior literature suggests that the market commonly reacts rapidly to GCAR withdrawals (Taffler et al., 2004 and Kausar et al., 2009).

Implementing further associations to preceding empirical findings, Graham et al. (2005) and Einhorn and Ziv (2008) suggest that firm managers might be reluctant to break previously set disclosure precedents, however I observe that managers do in fact tend to break those precedents. This effect can be partially attributed to the finding of Graham et al. (2005), who states that firms might not tolerate the additional expenses associated with the elevated disclosure quality. An alternative rationalisation is that, as time has passed after the initial GCAR issuance, most firms which have managed to survive insolvency have already employed different strategies to counteract the negative effects of the GCAR and thus are no longer willing to risk the additional exposure instigated by the increased disclosure disaggregation.

Additionally, macroeconomic factors, including the GDP movements (*GDP_Change* with a coefficient of .0028), as well as the size of the company (*LogAt* with a coefficient of -.0021) feature a statistically significant effect on the dependent variable *DQ_Diff* at $p < 0.01$, with signs, identical to those in the regressions in *Table 6*. The presence of restructuring costs (*Restr*) also affect *DQ_Diff* (t-value of -2.81), indicating that following restructurings a slight statistically significant decrease of DQ scores usually occurs.

Lastly, it can be determined that the level of yearly sales also affects DQ scores, however the coefficient is rather minor ($1.53e-07$ and a t-value of 2.16). This effect can be attributed to the aspiration of the business to lower its cost of equity capital in a time of financial distress (Sengupta, 1998; Hail, 2002; Lambert et al., 2006; Kothari et al., 2009 and Dhaliwal, 2011).

The variables used to indicate auditor modifications (*Auditor_change*), auditor firm size (*Big_4*), occurring debt expenses (*Debt*), the firm's operating industry (*Industry*), the presence of negative cash flows (*Neg_Cf*), the level of special items (*Special_it*) and the stock

volatility of the company (*Stock_change*) do not feature a statistically significant coefficient in the above-explained model. The adjusted R^2 of the regression is .0916, indicating that this amount of variation in *DQ_Diff* can be explicated by the employed independent variables.

Chapter 6: Concluding remarks

This thesis focusses on answering the research question: “Do firms in distress disclose more disaggregated financial information?” For the purposes of addressing this subject, I define firms in distress as those, which have been issued a first-time going concern audit report by their incumbent auditors. The measure of financial data disaggregation, which is utilized includes the usage of the DQ scoring model of Chen et al. (2015). It functions by calculating the quantity of non-missing line elements in the Balance Sheet and Income Statement of companies and thus generating an indicatory score between zero and one as a proxy for the level of disaggregation. The rationale behind this is based on the Blackwell theorem, denoting that finer information is frequently correlated to superior information quality (Blackwell, 1951).

The first hypothesis I test aims to evaluate whether firms, that have received a first-time GCAR disclosure more disaggregated information. The reasoning behind this is that since going-concern opinions introduce new information to outside observers, they drive a subsequent negative market response (Jones, 1996; Kausar et al., 2009; Menon and Williams, 2010). Corporate managers attempt to address this adverse reaction by implementing diverse strategic policies to regain stakeholder confidence and lower the cost of the company's equity capital (Nagarajan and Sridhar, 1996; Elliott et al., 2011; Akamah et al., 2017). Consequently, increasing disclosure disaggregation levels as a method of improving disclosure quality following a first-time going concern audit report would have the effect of lowering information asymmetry, decreasing stock volatility, reducing the cost of capital and principal more accurate analyst forecasts (Lang and Lundholm, 1993; Lang and Lundholm, 1996; Healy et al., 1999; Bushee and Noe, 2000; Kothari et al., 2009; Chen et al., 2015).

Correspondingly to the inferences of contemporary literature, I find that a first-time going concern reports do drive a positive upward shift in the firm's financial disclosure disaggregation as measured by DQ scores. The results are statistically significant for both the base DQ score, as well as its components, the DQ score of the Balance Sheet (*DQ_BA*) and the DQ score of the Income Statement (*DQ_IS*). All control variables, excluding the restructuring cost (*Rest*) and the sales turnover (*Sales_turnover*), demonstrate statically

significant results. The regression is performed with 63,961 observations, with the variable of interest connected to the going concern state (*Going_concern*) remaining significant at $p < 0.01$ alongside implemented controls for auditor size, firm characters and macroeconomic influences.

The second evaluated hypothesis focuses on the effect that Big 4 auditors have on disclosure disaggregation after the issuance of a first-time GCAR. The underlying perceptions behind this notion are that if companies are serviced by an incumbent Big 4 auditor, this auditor will tolerate lower audit risks (Libby and Brown, 2013) and would accordingly charge higher premiums (Boone et al., 2013). Subsequently, Big 4 auditors may not be willing to accept the additional risks accompanying the disclosure of finer financial information (Kothari et al., 2009).

To empirically assess the effect that the audit company has on the disaggregation score of the business, I evaluate whether clients of Big 4 auditors experience statistically significant changes in their DQ scores after the issuance of their first-time GCAR. I do so by evaluating the coefficients of the *Big_4* variable in the regressions shown in *Table 6*. I determine that there is, in fact, a connexion and it is significant for disaggregation (*DQ*) and its components (*DQ_BA and DQ_IS*). Nevertheless, the correlation is positive, rather than negative as the literature would suggest, which indicates that Big 4 auditors appear to be prepared to bear the supplementary risks associated with the disclosure of finer information, as they are confident in their capability to perceive prospective misstatements. The results hold after implementing the control variables for firm factors and macroeconomic effects.

The third hypothesis focuses on the time variation in disclosure scores after the retraction of a first-time going concern report. Increasing disclosure disaggregation typically implies an obligation by management to release higher quality information (Einhorn and Ziv, 2008) and limiting disclosures tend to lead to negative outcomes (Elliott et al., 2011). Combining this with the circumstance that the market reacts swiftly to GCAR retractions (Kausar et al., 2008) could lead companies to aggregate the data in their disclosures, as to reduce the costs associated with finer disclosures (Graham et al., 2005). These instances postulate, that firms may decrease their disclosure disaggregation scores in the periods following the retraction of their first-time GCAR.

In accordance with the aforementioned literature, I find that companies do in fact actively diminish their DQ scores in the period of two years after the retraction of the first-time GCAR. This implies that managers may have implemented further strategies, other than disaggregation as to oppose the negative market effects of the GCAR. Furthermore, it shows

that they tend to disregard previous disclosure disaggregation precedents, which they have set in order to reduce the associated overhead costs. The finding is significant at $p < 0.1$ and a total of 7,896 observations. In the regression, I once more control for auditor size, firm fundamentals and macroeconomic factors.

6.1 Recommendations

Taking into consideration the findings of this thesis, there are implications that would be of benefit to stakeholders, market analysts, auditors and policymakers.

Primarily, when considering corporate stakeholders and market analysts, it is essential to communicate that an incremental increase of disclosure disaggregation scores does not necessarily mean an effective increase in the trustworthiness of the publicized information. In other words, while a larger amount of data is made available to interested parties, that data still should be objectively analysed and critically evaluated against through observing the underlying economic activities of the firm. This is necessary, as the management incentive behind the detected increase in DQ scores after a first-time GCAR is the aim to address negative market outcomes. Consequently, the information provided may be biased and rather than serve the purpose of objectively informing, it rather functions to advance management interests.

Next, incumbent auditors can utilize the changes in DQ scores to tangibly consider the implications of greater disaggregation on the audit risk and costs of their engagements. Notably, those risks are dependant not only on the level of DQ scores but also on supplementary factors, such as the size of the auditor, the size and characteristics of the client firm, as well as macroeconomic influences. Subsequently, auditors have to independently contemplate all those factors, together with DQ score changes in order to assess the inherent risk of the engagement, including the associated engagement costs in that regard. This is needed, as auditors are inclined to act not only in the best interest of the client but also of the public that they serve. Ideally, an effort should be made to postulate both the uppermost level of disaggregation judged appropriate and a preservation of the emphasis of reporting quality disclosure data.

Lastly, policymakers can benefit from utilizing the long-term DQ scores data, provided by the model to evaluate the disclosure performance and implemented policies of different companies, as well as correlate that information to the determined accuracy of the released numbers. This would enable policymakers to gain a superior understanding of the dynamics

and incentives behind disclosure disaggregation changes. This in term would facilitate the creation and implementation of legislation, aimed to discourage prejudiced financial reporting, meant to mislead the parties interested in the financial releases.

Ultimately, using the model, developed in this thesis would allow for a more in-depth observation of how first-time GCARS affect disclosures disaggregation for both the current fiscal year, as well as the following ones whilst taking into consideration the anthropological factors which modify this association. If implemented accordingly, it could positively impact the reduction of information asymmetry between managers and financial statement users.

6.2 Limitations

There are several limiting elements, that need to be considered in connection with this thesis. Firstly, the DQ score model developed by Chen et al. (2015) does not include an examination of the statement of cash flows and I am therefore unable to obtain conclusions based on changes in its aggregation levels. This would mean that any changes, however significant they may be, which occur in the cash flow statement, as well as their effects, are only indirectly observed with the changes in the examined variables. This means that no direct conclusions to disclosure disaggregation in relation to the cash flow statement could be drawn.

Secondly, there might be an intermediary interaction effect concerning mandatory and voluntary corporate releases, which can be neglected and principal an upward predisposition of DQ estimates of the used model. This would mean that as companies release voluntary disclosures in larger amounts, greater detail or via more diverse outlets, this would impact the level of expected disaggregation in the mandatory financial statements, effectively reducing them. The implemented in this model does not account for such influences.

Thirdly, the DQ scoring model does not postulate a timely manner with which to detect disaggregation shifts, as the mandatory financial statements examined are typically released at the end of each fiscal year. This leads to the conclusion that disclosure disaggregation scores are driven not by particular events, but rather the collective proceedings of the entire fiscal year. An exception of this are cases, in which the events are so significant (as with the case of first-time going concern reports), that they tend to overshadow smaller occurrences.

When considering the first-time going concern audit report, the model does not consider the precision, which it is issued, but rather relies on the condition that the incumbent auditor's decision to issue it is accurate. This means that the detected correlation between DQ scores and first-time GCARS is highly dependent on the appropriateness of the incumbent auditor to issue

that first-time GCAR. Subsequently, since not all GCARs issued are accurate in terms of either timing or rationale for issuance, this introduces unexpected fluctuations in the obtained results, which the implemented model does not account for. This is particularly important, as contemporary research has shown that GCARs usually have an accuracy of approximately 60% (Carson et al., 2013).

In light of those limitations, prospective researchers involved in the continuous exploration of this subject should take into consideration those factors and the acknowledged indirect effects on the observed results when they decide to utilize the model developed in this thesis.

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*Appendixes**Appendix A*

Table 8
Compustat Balancing Model

Item Description	Balancing	Mnemonic
ASSETS		
Current Assets		
Current Assets - Total		<i>ACT</i>
Non-Current Assets		
Property Plant and Equipment		<i>PPENT</i>
Investment and Advances - Equity		<i>IVAEQ</i>
Investment and Advances - Other		<i>IVAO</i>
Intangible Assets - Total		<i>INTAN</i>
Assets - Other - Total		<i>AO</i>
Assets - Total	<i>ACT + PPENT + IVAEQ + IVAO + INTAN + AO</i>	<i>AT</i>
LIABILITIES & SHAREHOLDERS'		
EQUITY		
Current Liabilities		
Current Liabilities - Total		<i>LCT</i>
Long-Term Liabilities		
Long-Term Debt - Total		<i>DLTT</i>
Deferred Taxes and Investment Tax Credit		<i>TXDITC</i>
Liabilities - Other		<i>LO</i>
Liabilities - Total	<i>LCT + DLTT + TXDITC + LO</i>	<i>LT</i>
Noncontrolling Interest - Redeemable - Balance Sheet		<i>MIB</i>
Shareholders' Equity		
Preferred/Preference Stock (Capital) -		<i>STK</i>
Common/Ordinary Equity - Total		<i>CEQ</i>

Stockholders Equity - Parent - Total	$PSTK + CEQ$	EQ
Noncontrolling Interest - Nonredeemable		$MIBN$
Stockholders Equity - Total	$SEQ + MIBN$	TEQ
Sales/Turnover (Net if Excise Tax TXW)		$SALE$
Operating Expenses - Total	$COGS + XSGA$	$XOPR$
Cost of Goods Sold		$COGS$
Selling, General and Administrative Expenses		$XSGA$
Depreciation and Amortization - Total		DP
Interest and Related Expense		$XINT$
Nonoperating Income (Expense) - Total	$IDIT + NOPIO$	$NOPI$
Nonoperating Income (Expense) - Excluding Interest Income		$NOPIO$
Interest Income - Total		$IDIT$
Special Items		SPI
Pre-tax Income	$OIADP - XINT + NOPI + SPI$	PI
Income Taxes – Total		TXT
Income Taxes - Current	$TXFED + TXS + TXFO + TXO$	TXC
Income Taxes - Deferred	$TXDFED + TXDS + TXDFO$	$TXDI$
Noncontrolling Interest - Income Account		MII
Income Before Extraordinary Items		IB
Dividends - Preferred/Preference	$IB - DVP$	DVP
Income Before Extraordinary Items – Available for Common	$XI + DO$	$IBCOM$
Extraordinary Items and Discontinued Operations		$XIDO$
Extraordinary Items (including Accounting Changes CCHG)		XI
Discontinued Operations		DO
Net Income (Loss)	$IBADJ + XIDO$	$NIADJ$
Net Income (Loss)	$IBADJ + XIDO$	$NIADJ$

This table represents the balancing model that Compustat uses for the Balance Sheet and Income Statement. They are utilized in the calculation of DQ scores by using the methodology of Chen et al. (2015). The first column provides the name of the accounts, the second provides the balancing scheme and the third provides the mnemonic name of the accounts used.

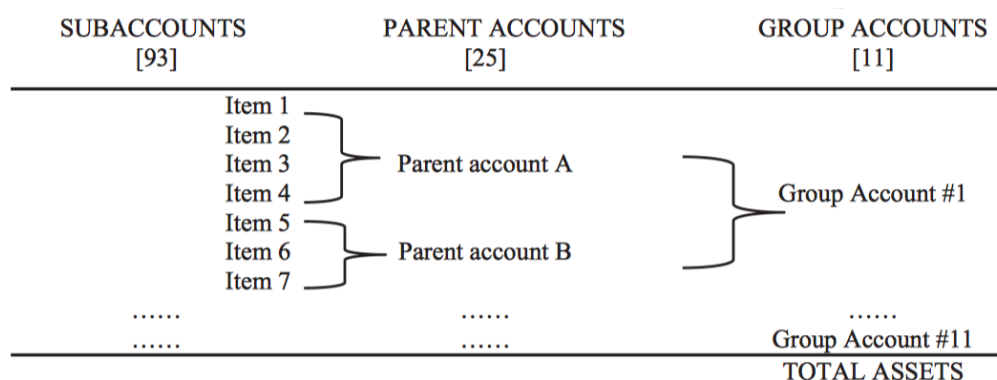
Since the group account CITOTAL (Total Comprehensive Income) is not included in Compustat's Balancing Model, the accounts associated with it are classified as income statement accounts instead of balance sheet accounts.

For the full names of the accounts, refer to Appendixes C and D.

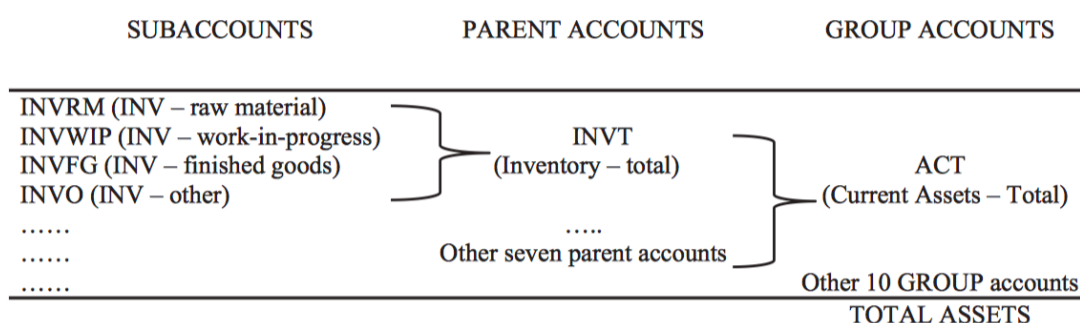
Appendix B

Table 9

Linking structure of Subaccounts Parent Accounts and Group Accounts



EXAMPLE



The linking structure, implemented by Chen et al. (2015) for linking subaccounts to parent accounts, and them in turn to group accounts in the process of constructing the disclosure quality score of the Balance Sheet. The example provided focuses on the Inventory account and its embedding within the developed model.

Appendix C

Table 10
Groups index for the Balance Sheet DQ (DQ_BA)

Subaccount	Details	Parent	Group
<i>ACODO</i>	Other Current Assets Excl Disc. Operations	<i>ACO</i>	<i>ACT</i>
<i>ACOX</i>	Current Assets - Other - Sundry	<i>ACO</i>	<i>ACT</i>
<i>XPP</i>	Prepaid Expenses	<i>ACO</i>	<i>ACT</i>
<i>ACDO</i>	Current Assets of Discontinued Operations	<i>ACOX</i>	<i>ACT</i>
<i>ACO</i>	Current Assets - Other - Total	<i>ACT</i>	<i>ACT</i>
<i>CHE</i>	Cash and Short-Term Investments	<i>ACT</i>	<i>ACT</i>
<i>INVT</i>	Inventories - Total	<i>ACT</i>	<i>ACT</i>
<i>RECT</i>	Receivables - Total	<i>ACT</i>	<i>ACT</i>
<i>CB</i>	Compensating Balance	<i>CH</i>	<i>ACT</i>
<i>CH</i>	Cash	<i>CHE</i>	<i>ACT</i>
<i>IVST</i>	Short-Term Investments - Total	<i>CHE</i>	<i>ACT</i>
<i>INVFG</i>	Inventories - Finished Goods	<i>INVT</i>	<i>ACT</i>
<i>INVO</i>	Inventories - Other	<i>INVT</i>	<i>ACT</i>
<i>INVRM</i>	Inventories - Raw Materials	<i>INVT</i>	<i>ACT</i>
<i>INWIP</i>	Inventories - Work in Process	<i>INVT</i>	<i>ACT</i>
<i>RECCO</i>	Receivables - Current - Other	<i>RECT</i>	<i>ACT</i>
<i>RECD</i>	Receivables - Estimated Doubtful	<i>RECT</i>	<i>ACT</i>
<i>RECTR</i>	Receivables - Trade	<i>RECT</i>	<i>ACT</i>
<i>RECUB</i>	Unbilled Receivables	<i>RECT</i>	<i>ACT</i>
<i>TXR</i>	Income Tax Refund	<i>RECT</i>	<i>ACT</i>
<i>ALDO</i>	Long-term Assets of Discontinued Operations	<i>AO</i>	<i>AO</i>
<i>AODO</i>	Other Assets excluding Discontinued Operations	<i>AO</i>	<i>AO</i>
<i>AOX</i>	Assets - Other - Sundry	<i>AO</i>	<i>AO</i>
<i>DC</i>	Deferred Charges	<i>AO</i>	<i>AO</i>
<i>AOCIDERGL</i>	Derivatives Unrealized Gain/Loss	<i>ACOMINC</i>	<i>CEQ</i>
<i>AOCIOOTHER</i>	Accum Other Comp Inc - Other Adjustments	<i>ACOMINC</i>	<i>CEQ</i>
<i>AOCIPEN</i>	Accum Other Comp Inc - Min Pension Liab Adj	<i>ACOMINC</i>	<i>CEQ</i>
<i>AOCISECGL</i>	Accum Other Comp Inc - Unreal G/L Ret Int in Sec Assets	<i>ACOMINC</i>	<i>CEQ</i>
<i>RECTA</i>	Retained Earnings - Cumulative Translation Adjustment	<i>ACOMINC</i>	<i>CEQ</i>
<i>CAPS</i>	Capital Surplus/Share Premium Reserve	<i>CEQ</i>	<i>CEQ</i>
<i>CEQL</i>	Common Equity - Liquidation Value	<i>CEQ</i>	<i>CEQ</i>
<i>CEQT</i>	Common Equity - Tangible	<i>CEQ</i>	<i>CEQ</i>

<i>CSTK</i>	Common/Ordinary Stock (Capital)	<i>CEQ</i>	<i>CEQ</i>
<i>RE</i>	Retained Earnings	<i>CEQ</i>	<i>CEQ</i>
<i>TSTK</i>	Treasury Stock - Total (All Capital)	<i>CEQ</i>	<i>CEQ</i>
<i>CSTKCV</i>	Common Stock-Carrying Value	<i>CSTK</i>	<i>CEQ</i>
<i>ACOMINC</i>	Other Comprehensive Income (Loss)	<i>RE</i>	<i>CEQ</i>
<i>REA</i>	Retained Earnings - Restatement	<i>RE</i>	<i>CEQ</i>
<i>REAJO</i>	Retained Earnings - Other Adjustments	<i>RE</i>	<i>CEQ</i>
<i>REUNA</i>	Retained Earnings - Unadjusted	<i>RE</i>	<i>CEQ</i>
<i>REUNR</i>	Retained Earnings - Unrestricted	<i>RE</i>	<i>CEQ</i>
<i>SEQO</i>	Other Stockholders- Equity Adjustments	<i>RE</i>	<i>CEQ</i>
<i>TSTKC</i>	Treasury Stock - Common	<i>TSTK</i>	<i>CEQ</i>
<i>TSTKP</i>	Treasury Stock - Preferred	<i>TSTK</i>	<i>CEQ</i>
<i>DCLO</i>	Debt - Capitalized Lease Obligations	<i>DLTT</i>	<i>DLTT</i>
<i>DCS</i>	Debt - Consolidated Subsidiary	<i>DLTT</i>	<i>DLTT</i>
<i>DCVSR</i>	Debt - Senior Convertible	<i>DLTT</i>	<i>DLTT</i>
<i>DCVSUB</i>	Debt - Subordinated Convertible	<i>DLTT</i>	<i>DLTT</i>
<i>DCVT</i>	Debt - Convertible	<i>DLTT</i>	<i>DLTT</i>
<i>DD</i>	Debt - Debentures	<i>DLTT</i>	<i>DLTT</i>
<i>DD2</i>	Debt - Due in 2nd Year	<i>DLTT</i>	<i>DLTT</i>
<i>DD3</i>	Debt - Due in 3rd Year	<i>DLTT</i>	<i>DLTT</i>
<i>DD4</i>	Debt - Due in 4th Year	<i>DLTT</i>	<i>DLTT</i>
<i>DD5</i>	Debt - Due in 5th Year	<i>DLTT</i>	<i>DLTT</i>
<i>DFS</i>	Debt - Finance Subsidiary	<i>DLTT</i>	<i>DLTT</i>
<i>DLTO</i>	Other Long-term Debt	<i>DLTT</i>	<i>DLTT</i>
<i>DLTP</i>	Long-Term Debt - Tied to Prime	<i>DLTT</i>	<i>DLTT</i>
<i>DM</i>	Debt - Mortgages & Other Secured	<i>DLTT</i>	<i>DLTT</i>
<i>DN</i>	Debt - Notes	<i>DLTT</i>	<i>DLTT</i>
<i>DS</i>	Debt-Subordinated	<i>DLTT</i>	<i>DLTT</i>
<i>DUDD</i>	Debt - Unamortized Debt Discount and Other	<i>DLTT</i>	<i>DLTT</i>
<i>GDWL</i>	Goodwill	<i>INTAN</i>	<i>INTAN</i>
<i>INTANO</i>	Other Intangibles	<i>INTZ</i>	<i>INTAN</i>
<i>MSA</i>	Marketable Securities Adjustment	<i>IVAO</i>	<i>IVAO</i>
<i>BASTR</i>	Average Short-Term Borrowings Rate	<i>BAST</i>	<i>LCT</i>
<i>BAST</i>	Average Short-Term Borrowings	<i>DLC</i>	<i>LCT</i>
<i>DDI</i>	Long-Term Debt Due in One Year	<i>DLC</i>	<i>LCT</i>
<i>NP</i>	Notes Payable - Short-Term Borrowings	<i>DLC</i>	<i>LCT</i>
<i>DRC</i>	Deferred Revenue - Current	<i>LCO</i>	<i>LCT</i>
<i>LCOX</i>	Current Liabilities - Other - Sundry	<i>LCO</i>	<i>LCT</i>
<i>XACC</i>	Accrued Expenses	<i>LCO</i>	<i>LCT</i>
<i>AP</i>	Accounts Payable - Trade	<i>LCT</i>	<i>LCT</i>
<i>DLC</i>	Debt in Current Liabilities - Total	<i>LCT</i>	<i>LCT</i>

<i>LCO</i>	Current Liabilities - Other - Total	<i>LCT</i>	<i>LCT</i>
<i>TXP</i>	Income Taxes Payable	<i>LCT</i>	<i>LCT</i>
<i>DRLT</i>	Deferred Revenue - Long-term	<i>LO</i>	<i>LO</i>
<i>DPACO</i>	Depreciation (Accumulated) - Other	<i>DPACT</i>	<i>PPENT</i>
<i>DPACT</i>	Depreciation and Amortization (Accumulated)	<i>PPENT</i>	<i>PPENT</i>
<i>FATB</i>	PPE - Buildings	<i>PPENT</i>	<i>PPENT</i>
<i>FATC</i>	PPE - Construction in Progress	<i>PPENT</i>	<i>PPENT</i>
<i>FATE</i>	PPE - Mach. & Equip.	<i>PPENT</i>	<i>PPENT</i>
<i>FATL</i>	PPE - Leases	<i>PPENT</i>	<i>PPENT</i>
<i>FATN</i>	PPE - Natural Resources	<i>PPENT</i>	<i>PPENT</i>
<i>FATO</i>	PPE - Other	<i>PPENT</i>	<i>PPENT</i>
<i>PPEGT</i>	PPE - Total (Gross)	<i>PPENT</i>	<i>PPENT</i>
<i>DVPA</i>	Preferred Dividends in Arrears	<i>PSTK</i>	<i>PSTK</i>
<i>PSTKC</i>	Preferred Stock - Convertible	<i>PSTK</i>	<i>PSTK</i>
<i>PSTKL</i>	Preferred Stock - Liquidating Value	<i>PSTK</i>	<i>PSTK</i>
<i>PSTKN</i>	Preferred/Preference Stock - Nonredeemable	<i>PSTK</i>	<i>PSTK</i>
<i>PSTKR</i>	Preferred/Preference Stock - Redeemable	<i>PSTK</i>	<i>PSTK</i>
<i>PSTKRV</i>	Preferred Stock - Redemption Value	<i>PSTK</i>	<i>PSTK</i>
<i>ITCB</i>	Investment Tax Credit (Balance Sheet)	<i>TXDITC</i>	<i>TXDITC</i>
<i>TXDB</i>	Deferred Taxes (Balance Sheet)	<i>TXDITC</i>	<i>TXDITC</i>

This table provides an index for the accounts used in the calculation of the Balance Sheet disclosure score as described in the model of Chen et al. (2015). The first column provides the code of the subaccount, while the second provides its name as it is presented in Compustat. The third and fourth column provide the embedding structure implemented by Chen et al. (2015). All abbreviations of sub-accounts, parent accounts and group accounts are identical to those used in the Compustat system.

Appendix D**Table 11***Groups index for Income Statement DQ (IS_DQ)*

Subaccount	Details	Group
<i>CIBEGNI</i>	Comp Inc - Beginning Net Income	<i>CITOTAL</i>
<i>CICURR</i>	Comp Inc - Currency Trans Adj	<i>CITOTAL</i>
<i>CIDERGL</i>	Comp Inc - Derivative Gains/Losses	<i>CITOTAL</i>
<i>CIOOTHER</i>	Comp Inc - Other Adj	<i>CITOTAL</i>
<i>CIPEN</i>	Comp Inc - Minimum Pension Adj	<i>CITOTAL</i>
<i>CISECGL</i>	Comp Inc - Securities Gains/Losses	<i>CITOTAL</i>
<i>ESUB</i>	Equity in Earnings - Unconsolidated Subsidiaries	<i>NOPI</i>
<i>FCA</i>	Foreign Exchange Income (Loss)	<i>NOPI</i>
<i>IDIT</i>	Interest and Related Income - Total	<i>NOPI</i>
<i>INTC</i>	Interest Capitalized	<i>NOPI</i>
<i>IRENT</i>	Rental Income	<i>NOPI</i>
<i>NOPIO</i>	Nonoperating Income (Expense) - Other	<i>NOPI</i>
<i>AQP</i>	Acquisition/Merger Pre-tax	<i>SPI</i>
<i>DTEP</i>	Extinguishment of Debt Pre-tax	<i>SPI</i>
<i>GDWLIP</i>	Impairments of Goodwill Pre-tax	<i>SPI</i>
<i>GLP</i>	Gain/Loss Pre-tax	<i>SPI</i>
<i>NRTXT</i>	Nonrecurring Income Taxes After-tax	<i>SPI</i>
<i>RCP</i>	Restructuring Costs Pre-tax	<i>SPI</i>
<i>RDIP</i>	In Process R&D Expense	<i>SPI</i>
<i>RRP</i>	Reversal - Restructuring/Acquisition Pre-tax	<i>SPI</i>
<i>SETP</i>	Settlement (Litigation/Insurance) Pre-tax	<i>SPI</i>
<i>SPIOP</i>	Other Special Items Pre-tax	<i>SPI</i>
<i>WDP</i>	Write-downs Pre-tax	<i>SPI</i>
<i>ITCI</i>	Investment Tax Credit (Income Account)	<i>TXT</i>
<i>TXC</i>	Income Taxes - Current	<i>TXT</i>
<i>TXDFED</i>	Deferred Taxes-Federal	<i>TXT</i>
<i>TXDFO</i>	Deferred Taxes-Foreign	<i>TXT</i>
<i>TXDI</i>	Income Taxes - Deferred	<i>TXT</i>
<i>TXDS</i>	Deferred Taxes-State	<i>TXT</i>
<i>TXFED</i>	Income Taxes - Federal	<i>TXT</i>
<i>TXFO</i>	Income Taxes - Foreign	<i>TXT</i>
<i>TXO</i>	Income Taxes - Other	<i>TXT</i>
<i>TXS</i>	Income Taxes - State	<i>TXT</i>
<i>TXW</i>	Excise Taxes	<i>TXT</i>
<i>ACCHG</i>	Accounting Changes - Cumulative Effect	<i>XIDO</i>

<i>DO</i>	Discontinued Operations	<i>XIDO</i>
<i>DONR</i>	Nonrecurring Disc Operations	<i>XIDO</i>
<i>XI</i>	Extraordinary Items	<i>XIDO</i>
<i>XINTD</i>	Interest Expense - Long-Term Debt	<i>XINT</i>
<i>AM</i>	Amortization of Intangibles	<i>XOPR</i>
<i>COGS</i>	Cost of Goods Sold	<i>XOPR</i>
<i>DFXA</i>	Depreciation of Tangible Fixed Assets	<i>XOPR</i>
<i>DP</i>	Depreciation and Amortization	<i>XOPR</i>
<i>STKCPA</i>	After-tax stock compensation	<i>XOPR</i>
<i>XAD</i>	Advertising Expense	<i>XOPR</i>
<i>XLR</i>	Staff Expense - Total	<i>XOPR</i>
<i>XPR</i>	Pension and Retirement Expense	<i>XOPR</i>
<i>XRD</i>	Research and Development Expense	<i>XOPR</i>
<i>XRENT</i>	Rental Expense	<i>XOPR</i>
<i>XSGA</i>	Selling, General and Administrative Expense	<i>XOPR</i>
<i>XSTFO</i>	Staff Expense - Other	<i>XOPR</i>

This table provides an index for the accounts used in the calculation of the Income Statement disclosure score as described in the model of Chen et al. (2015) The first column provides the code of the subaccount, while the second provides its name as it is presented in Compustat. The third column provides the respective group account, as identified by Chen et al. (2015) All abbreviations of sub-accounts and group accounts are identical to those used in the Compustat system.

*Appendix E***Table 12***Variable definitions*

Variable	Variable type	Variable Description
<i>DQ</i>	Dependent variable	Denotes the overall disclosure score of a company, as calculated by using the model of Chen et al. (2015);
<i>DQ_BA</i>	Dependent variable	Denotes the Balance Sheet disclosure score of a company, as calculated by using the model of Chen et al. (2015);
<i>DQ_IS</i>	Dependent variable	Denotes the Income Statement disclosure score of a company, as calculated by using the model of Chen et al. (2015);
<i>DQ_Diff</i>	Dependent variable	Denotes the DQ score of a firm during the first-time GCAR issuance year minus the DQ score of the same firm two years after the GCAR retraction as calculated by using the model of Chen et al. (2015);
<i>DQ_Ante</i>	Dependent variable	Denotes the disclosure score of a company during the year of the initial GCAR issuance as calculated by using the model of Chen et al. (2015);
<i>DQ_Post</i>	Dependent variable	Denotes the disclosure score of a company two years after the initial GCAR retraction as calculated by using the model of Chen et al. (2015);
<i>Big_4</i>	Independent variable	Indicates if the firm has a Big 4 auditor (Big 5 for observations before 2001); (equal to one if the company has a Big 4 (5) auditor, zero otherwise);
<i>Going_concern</i>	Independent variable	Indicates whether the business has been issued a first-time going concern (equal to one if a first-time GCAR has been issued and zero otherwise);
<i>Auditor_change</i>	Control variable	Indicates if the company has had an auditor change in the last two years (equal to one the firm has had an auditor switch and zero otherwise);
<i>Debt</i>	Control variable	Indicates the ratio of long-term debt the company has in relation to the logarithm of its total assets;

<i>GDP_change</i>	Control variable	Captures the change in gross domestic product (GDP) for the United States, adjusted for 2009 US dollars;
<i>LogAT</i>	Control variable	Indicates the natural logarithm of aggregate corporate assets of the firm in billions of US\$ for year t;
<i>Neg_Cf</i>	Control variable	Indicates if the company has realized a negative cash flow from operations in year t (equal to one if it has negative cash flows and zero otherwise);
<i>Restr</i>	Control variable	Indicates recent corporate asset restructurings (equal to one if there are non-zero restructuring costs before tax and zero otherwise);
<i>Industry</i>	Control variable	Indicates whether the company operates in the services industry (equal to one if the main operations of the business focus on services and zero otherwise);
<i>Sales_turnover</i>	Control variable	Indicates to the quantity of gross sales in year t;
<i>Special_it</i>	Control variable	Indicates the total value of special items in the income statement, scaled to the logarithm of the total assets;
<i>Stock_change</i>	Control variable	Denotes the difference between the highest and lowest trading price of firm stocks on the market, scaled by the highest for year t;

This table provides variable definitions for all variables, used in the examined regressions. The first column designates the name of the variable, the second column identifies it as a dependent, independent or control variable and the third provides a brief narrative on how the variable is computed.

Appendix F

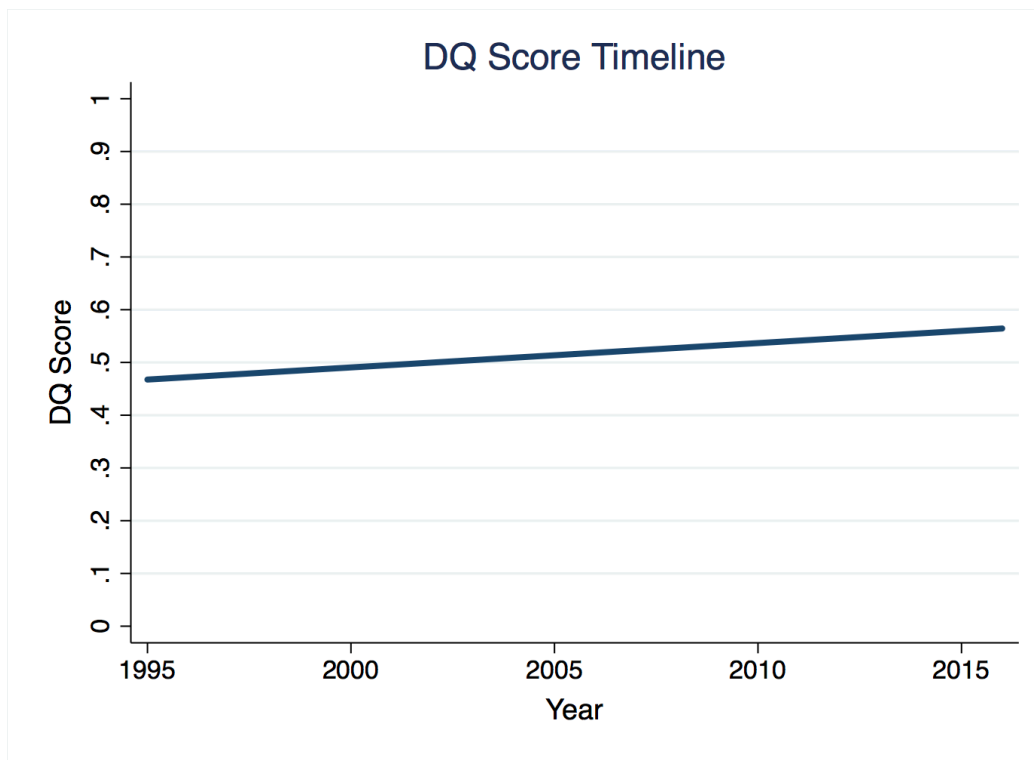


Figure 1 DQ Timeline of DQ score changes between 1995 and 2016;

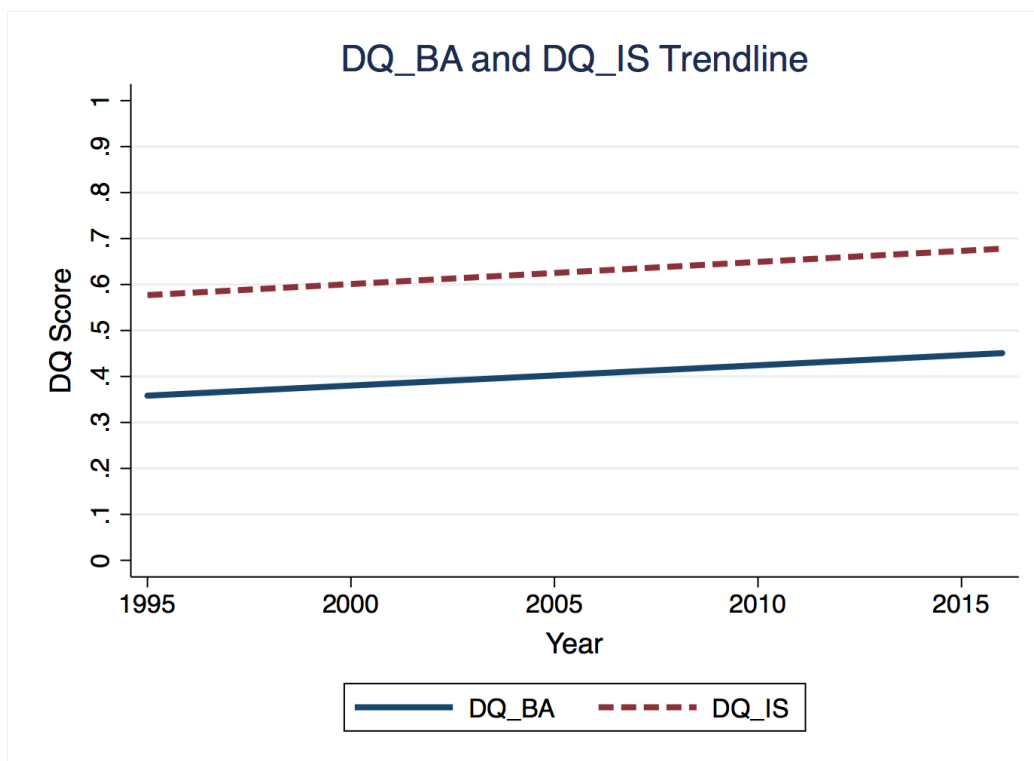


Figure 2 Timeline of DQ_BA and DQ_IS scores changes between 1995 and 2016;

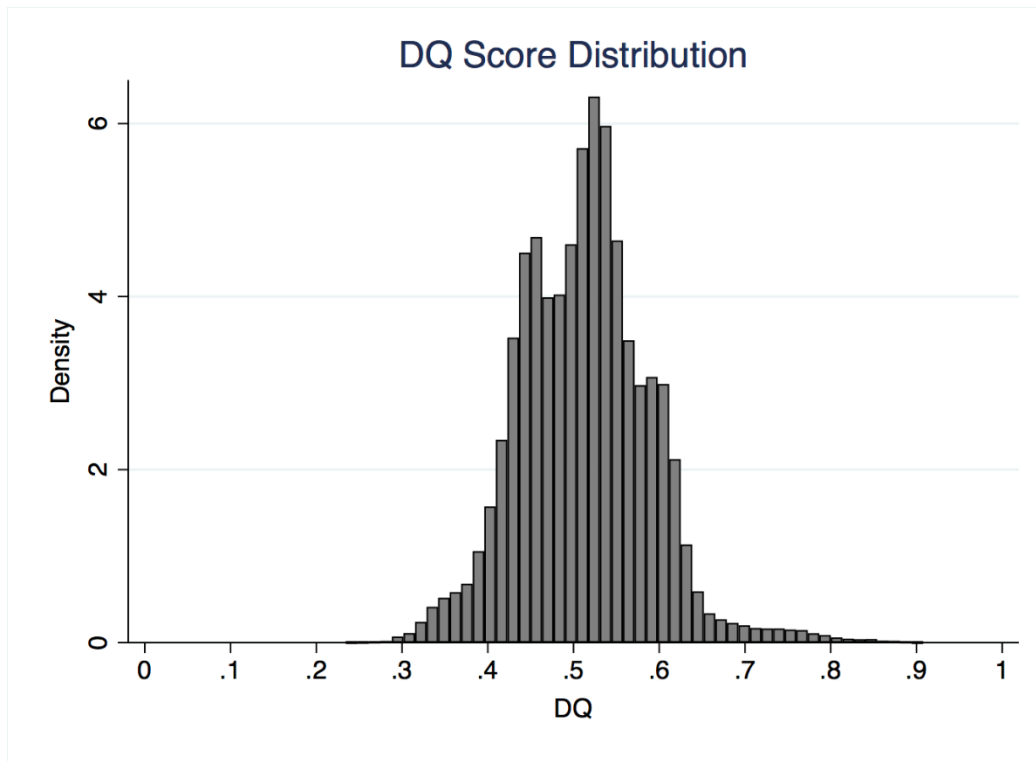


Figure 3 Distribution of DQ scores in the complete sample (1995-2016);

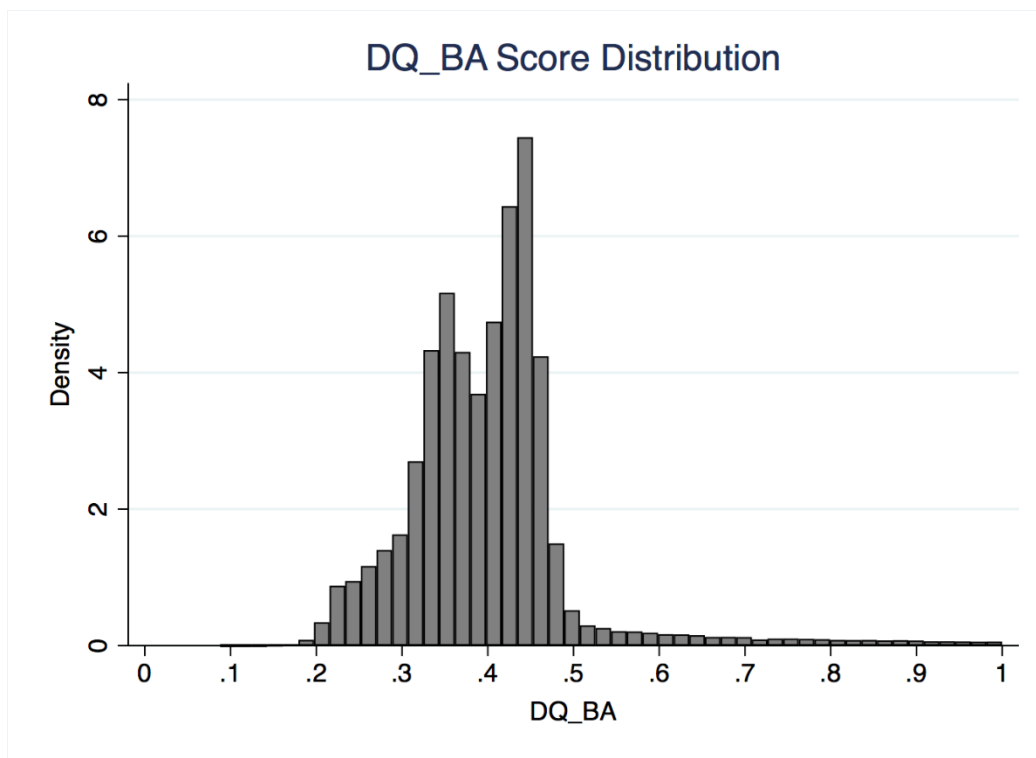


Figure 4 Distribution of DQ_BA in the complete sample (1995-2016);

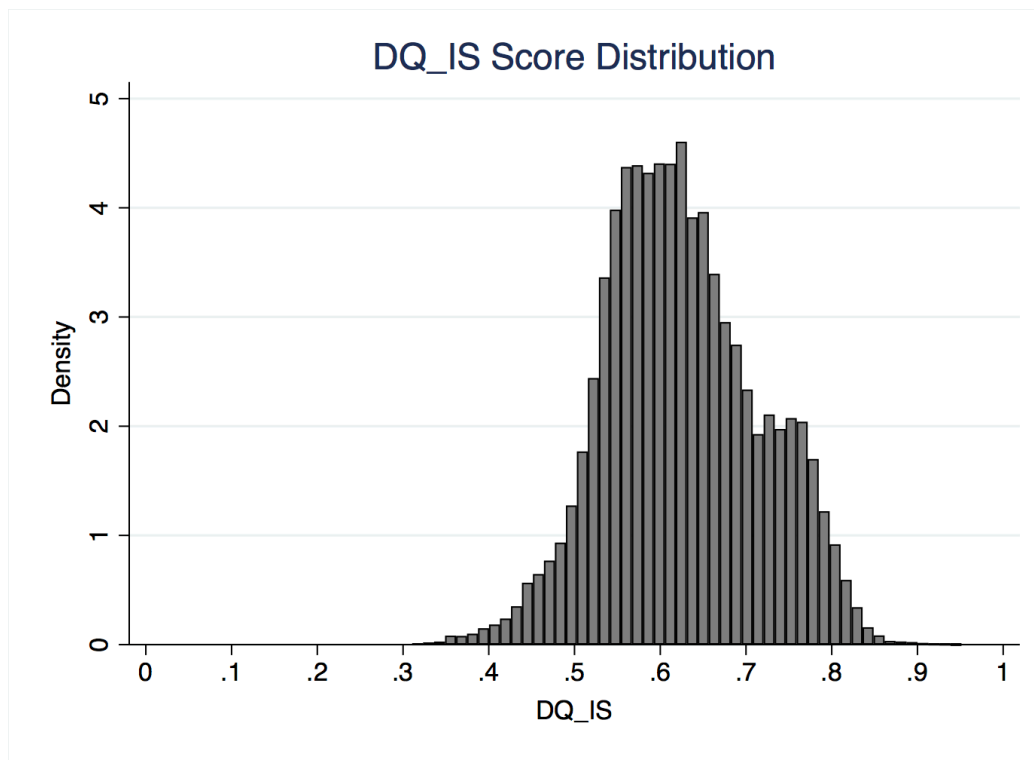


Figure 3 Distribution of DQ_IS scores in the complete sample (1995-2016);