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THE IMPACT OF THE AUDITEE'S INDUSTRY ON TYPE II AUDIT MISCLASSIFICATIONS

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ABSTRACT OF THE MASTER'S THESIS

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Abstract

The purpose of this thesis is to contribute to the literature concerning Going Concern opinions and their relative misclassifications. Firms prepare their financial statements under the Going Concern assumption, under which the firm is expected to continue operating during the normal course of business without facing bankruptcy risks. Auditors are required to deliver an opinion concerning the appropriateness of the Going Concern assumption.

Past literature refers to Type II audit misclassifications when discussing those misclassifications occurring when auditors fail to modify an audit report for Going Concern, and the client subsequently files for bankruptcy within one year from the issuance of the report. Type II audit misclassifications are often seen as "audit failures" by regulators and investors, as auditors failed to warn about the Going Concern issues of their clients, and the same also have consequences for auditors, who face potential litigation fees and reputation loss in case they do not render a GCO to a firm that subsequently fails. The focus of this thesis is for this reason on Type II audit misclassifications.

Past research has broadly studied factors influencing GCO issuances and their relative misclassifications (e.g., client size, audit tenure, auditor dependency).

This study explores whether the industry the auditee belongs to can be a potential determinant of increased likelihood of Type II misclassifications. A distinction between complex industries (e.g., Construction, Financial services, IT services) and non-complex industries is made following a previous line of research and binary logistic regression models are used to analyze the association between the industries and the likelihood of Type II audit misclassifications. The hypotheses are that an increased likelihood of Type II audit misclassifications might be observed in complex industries and, specifically, in the IT services industry, as these industries are more unpredictable due to revenue-recognition and measurement processes that are heavily influenced by accruals and longer-than-average operating cycles.

The results show that the likelihood of auditors failing to issue a GCO when needed is higher when the client belongs to a complex industry and if it belongs to the IT services industry alone. These findings might be helpful for the decision-making process of those investors who positively weigh a clean audit report of a firm for their investment decisions. Further, this increased likelihood of Type II audit misclassifications in the aforementioned industries might serve as groundwork for future research and for practitioners, as additional audit procedures and audit requirements might be needed when clients belong to complex industries.

Keywords

Auditing, Going Concern Reporting, Type II audit misclassifications, Auditee's Industry

Additional information

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1 INTRODUCTION

1.1 Background

After the corporate accounting scandals of the early 2000s and the global financial crisis of 2007-2008, the auditing profession has been scrutinized by legislators and the public in general. Business environments tend to become increasingly unpredictable (e.g., due to globalisation, fast-paced changes in technologies) and constant market fluctuations might dramatically make it harder for any professional involved in making assessments tied to financial data, to provide the public with reliable information. The focus of this thesis will be on auditors' primary product: audit reports.

An auditor has the duty of establishing whether the audited client has prepared and disclosed financial information concerning its operations, results, and financial positions in accordance with applicable reporting frameworks and in a manner that is representative of reality (i.e., without material misstatements). Alongside this primary duty, an auditor is also responsible for delivering an assessment as to whether the auditee can continue to operate as a going concern in the foreseeable future. Going concern is the assumption under which firms operate and it refers to their ability of generating profits and meeting their obligations when they become due during the normal course of operations (ISA 200, ISA 570). If a firm stop being a going concern, it means it has to file for bankruptcy and, thus, it has to liquidate its assets. An auditor's assessment concerning the going concern feasibility can be erroneous to a different set factor (e.g., audit tenure, auditor economic dependence from the client, client size) and, in literature, these errors are referred to as audit misclassifications (Hardies et al., 2016, 2018, Geiger et al., 2002). The thesis will focus on Type II audit misclassifications, which are those occurring when an auditor does not issue a going concern opinion and the auditee files for bankruptcy within 12 months, thereby failing to warn investors or any other relevant party on a timely manner of the bankruptcy likelihood relative to the interested firm.

Geiger et al. (2002) and Hardies et al. (2018) highlighted the importance of researching factors affecting the occurrence of Type II errors as, contrary to Type I errors (i.e., GCO is issued but the auditee does not subsequently fail), such misclassifications are

sometimes referred to as ‘audit failures’ since they might hamper the trust that the public has in capital markets. Assurance regarding the ability of an organization to continue as a going concern, which in a way can be interpreted as assurance about its financial health, followed by an extreme opposite event such as bankruptcy clearly represents a loss for the auditor in terms of reputation and, possibly, in terms of litigation expenses. Therefore, lawmakers pay particular attention to such misclassifications and have advocated for continuous studies concerning the factors affecting them, as if Type II errors in audit reports were to occur too often, the public would lose trust in the credibility of auditors’ judgments, and the capital markets would be overall worse off. However, previous researchers (e.g., Carson et al., 2013) pointed out that ‘audit failure’ does not necessarily reflect an error caused by professional negligence. (Geiger et al., 2002, Hardies et al, 2018).

1.2 Contribution and relevance

The thesis is thus inspired by the extensive research that has been made around GCOs, and its aim is that of providing further empirical evidence and enlarge the body of work that surrounds said topic. Specifically, the research will focus on the kind of audit misclassification that occurs when an auditor fails to issue a GCO before bankruptcy or, in other words, when an auditor does not issue a GCO (therefore stating that the auditee can continue to operate as a going concern in the foreseeable future) and the audited entity files for bankruptcy within a year from the disclosure of the audit opinion. Furthermore, as stated before, the focus of this thesis will be on this kind of audit misclassification, for previous research has pointed out how the costs faced by the auditor (in terms of reputation loss, legal fees, etc.) and the community at large are greater when compared to those occurring when an auditor issues a GCO and the auditee does not subsequently file for bankruptcy (Hardies et al., 2018). This thesis will therefore expand on the topic by collecting more empirical data on the matter and by trying to find statistically significant factors that might impair the ability of an auditor to issue a GCO when it should be issued. Specifically, this research establishes whether the industry the auditee (i.e., firm being audited) belongs to influences the likelihood of Type II audit misclassifications.

According to the International Code of Ethics for Professional Accountants, when determining whether to undertake an audit engagement or not, an auditor shall determine whether they meet all the requirements that would allow for an effective audit engagement. Among the different requirements, the auditor shall determine whether they possess sufficient knowledge with respect to the industry the client belongs to and, in some cases, the participation of an external professional possessing expertise related to the industry might be needed during the audit procedure, as some industries pose a greater challenge to the auditors rather than others (International Code of Ethics for Professional Accountants, IESBA). Therefore, the rationale behind choosing the industry as a potential factor that could increase the likelihood of Type II misclassifications lies around the inherent complexity of some industries, and the goal of this research is that of trying to understand whether the industry plays a role in affecting audit errors, thereby trying also to determine whether even more particular care and pre-engagement evaluations are needed when auditing firms belonging to specific industries. Furthermore, Maletta and Wright (1996) advocated for an emphasis on industry-related considerations before and during the audit process, for they found that the kind of financial reporting misstatements and their relative severity varies greatly across different industries. Specifically, they stated that the occurrence and magnitude of misstatements varies across industries and, thus, specific strategies during the audit process might lead to more desirable outcomes (Maletta et al., 1996). This finding further supports the research question of this thesis, as it shows that audit engagements might be affected by the existing differences between firms and the goal is that of understanding whether these differences affect the audit engagements also in terms of one of their main outcomes, that is the going-concern reporting accuracy.

1.3 Structure of the study

The remainder of this study is organized as follows. Chapter two deals with the literature review concerning Going Concern opinions. An overall description of the regulations affecting GCOs and the auditor's role in GCO reporting is provided. In addition, consequences of GCOs are reported and divided among consequences for future and current stakeholders, consequences for the auditor and the auditee, and the creditors' reactions to GCOs. Following, a description of the factors affecting GCO issuances and their misclassifications is provided and the factors analysed were

divided between auditor-related, auditee-related, and factors concerning the relationship between the two parties. The final section of the literature review reports past research on the implications of the auditee's industry on audit quality. Chapter three presents the hypotheses and the rationales used to develop them. Chapter four presents a description of the research design, including the criteria used for sample selection and the methodology used. Chapter five presents the empirical findings, providing descriptive statistics, correlations, and regression results, alongside useful descriptions for interpreting the results. The final chapter presents the final discussions and potential limitations affecting the study.

2 LITERATURE REVIEW

2.1 Auditor's role in Going Concern reporting.

According to the third and fifth paragraphs of the International Standard on Auditing 200 (ISA 200, IAASB, 2016), auditors are expected to gather, following standardized procedures, enough audit evidence that can lead them to conclude, with reasonable assurance, that the auditee's financial statements have been prepared in accordance with the applicable framework and, thus, they are conformed to specific standards (e.g., IFRS). Furthermore, the auditor's function is that of bridging the information gap between those preparing the financial statements and different stockholder groups (e.g., lenders, shareholders), therefore providing the latter with assurance concerning the reliability of the information disclosed by the interested entity. The sixth and seventh paragraph of ISA 570 (IAASB, 2016) refer, instead, to the auditor's responsibility of delivering an assessment regarding the future ability of the audited entity to operate under the assumption of going concern. Going concern refers to the assumption under which organizations operate and, specifically, it refers to the ability of entities to continue their operations in the foreseeable future, thereby being able to meet obligations; if a company stops being a going concern, it means that it has gone bankrupt and, therefore, the role of auditors in this matter is crucial in trying to warn investors in a timely manner about whether conspicuous risks that the firm might not be able to continue as a going concern arise. If the auditor collects enough audit evidence pointing towards the auditee's future inability to continue as a going concern, then the auditor shall issue a going concern opinion (GCO). However, the auditor's judgment might be erroneous due to different factors that cannot be controlled directly by the auditor (e.g., macroeconomic factors, geopolitical events), therefore the judgement cannot be interpreted as an unarguable guarantee and the auditor cannot be held liable if they acted according to the due-diligence standards tied to their profession. (IAASB, 2016).

Carson et al. (2013) noted how the global financial crisis started in 2008 has rekindled legislators' and the public's attention towards the crucial warning role that auditors are expected to play in monitoring financially distressed firms. Notwithstanding ISA 570 stating that auditors are supposed to deliver an assessment of the appropriateness of

management's use of the going concern assumption during the preparation of the financial statements, and stating that such assessment can still be erroneous due to uncontrollable and/or unforeseeable factors (e.g., management fraud, specific negative external events), it seems that statutory bodies and investors place a disproportionate weight on this aspect of the duties pertaining the auditing profession. In fact, such is the importance of delivering accurate assessments concerning the going concern feasibility of an entity, that misclassifications in this respect (e.g., failing to warn investors in time of a firm's bankruptcy) are often labelled as audit failures. (Carson et al., 2013).

Maffei et al. (2019) additionally highlight via Harwood et al. (1994) how a GCO can be a quite reliable tool in predicting the future bankruptcy of audited entities, showing that, generally, when presented with adequate audit evidence and transparency from management, auditors will deliver accurate assessments of the future business viability of the auditee. For this reason, it is important to condition studies concerning GCOs by using firms that show sign of financial problems. This is a pivotal criterium that allows for homogeneity in the situations faced by different auditors, as predicting the feasibility the going concern assumption for a non-financially distressed client can be much more challenging to do through standard audit procedures. (Maffei et al., 2019).

Furthermore, Geiger et al. (2021) remind about the particular care needed when judging auditors' modus operandi with respect to rendering a GCO or not. If on one side – especially after the Sarbanes Oxley Act of 2002 and the Financial Crisis of 2007-2009 – auditors face conspicuous and substantial costs in terms of litigation fees and reputation loss when failing to deliver a GCO when it is due, on the other side it should not be overlooked the fact that there is still a client-service provided relationship between auditee and auditor, which comes with its inherent intricacies and complicates the analysis background when dealing with this kind of research. As an example, auditors might refrain from issuing a GCO in circumstances where they fear that doing so would actually end up in a "self-fulfilling prophecy" causing an already financially troubled firm to not be able to figure its way out of the financial distress because of post-GCO announcement problems (e.g., difficulties in raising additional capital). (Geiger et al., 2021).

2.2 Regulations concerning GCOs.

The International Auditing and Assurance Standards Board (IAASB) developed the International Standards on Auditing (ISAs), which are widely followed all around the world, including Europe and North America. IAASB provides a comprehensive set of standards and procedures aimed at harmonizing audit procedures and practices and reduce comparability problems that might arise between companies located in different countries. This serves the purpose of increasing the efficiency of international capital markets by allowing auditors to operate under a unified framework and, thus, allowing them to deliver qualitative auditing. (IAASB).

The European Audit Directive and the European Audit Regulation of 2014, which amended the European Audit Directive on statutory audits of 2006 are other bodies of work aimed at harmonizing audit procedures across different countries in order to achieve a homogeneous degree of quality when it comes to statutory audits. The EU directives, as well as IAASB with ISA 570, express that audit engagements should include an evaluation from the auditor as to whether the auditee can continue operating under the assumption of Going Concern alongside determining the fairness of the presentation of the financial performance, cash flows, and condition of the audited firm. In addition, IAASB also advocates for inclusion of the so-called “emphasis of matter paragraph” which is supposed to disclose further information as to why the auditor has decided to modify the audit opinion for Going Concern. (EU Directive 56 on Auditing, 2014; IAASB, 2016).

However, it is worth noticing that the higher degree of harmonization achieved by the EU Directive of 2014 does not entail a complete homogeneity among different countries in terms of specific audit procedures used. Each country’s audit legislation remains affected by its own legal system. However, despite differences in some practical matters, the bottom line is still that of auditors having to assess whether the assumption of Going Concern is appropriate. Therefore, meanwhile some technicalities and interpretations may vary, ISA 570 about Going concern is applied by statutory auditors across different countries. (EU Directive 56 on Auditing, 2014).

2.3 GCO-reporting accuracy and its consequences.

Previous literature (e.g., Geiger et al., 2002, Hardies et al., 2018) refers to the accuracy of GCOs by treating the judgement delivered by the auditor as the outcome of statistical hypotheses testing. If we see the establishment of whether a GCO needs to be rendered or not as hypothesis testing, we will have "*there is enough evidence to support that Company XYZ can continue as a going concern in the foreseeable future*" as the null hypothesis and vice-versa as alternative hypothesis. Following this, if an auditor were to fail to reject the null hypothesis when it actually needed to be rejected, they would have committed a Type II error. In other terms, it is the error that occurs when an auditor fails to issue a GCO and the auditee subsequently files for bankruptcy.

The comprehensive study about audit reporting for going concern by Carson et al. (2013) also highlights Type I misclassifications, which are those audit errors tied to going concern reporting that occur when an auditor issued a GCO, and the auditee does not subsequently file for bankruptcy within a year of the GCO-rendering. However, as opposed to Type II errors, this kind of misclassifications only result in a potential loss in audit revenue resulting from the client wanting to change external auditor after being issued a GCO in the annual report. As a matter of fact, the costs faced by auditors in this case are considerably lower than the costs that they would otherwise have incurred in case of a Type II misclassifications, which leads to an overall propensity of auditors to be conservative and rather issue a GCO even when the auditee's business is fundamentally viable. (Carson et al., 2013).

However, Francis (2011) argues that despite a relatively high level of audit quality all around, followed by a smaller ratio of Type II misclassifications when compared to Type I ones (which is due as explained in the previous paragraph to the smaller costs faced by the auditor in case of the latter), it is still relevant to research the underlying reasons that lead to the occurrence of unrendered GCO opinions when they are actually needed, as the consequences faced by investors, regulators, and policy-makers can be severe. The author also highlights, however, how it can be very challenging to define audit quality as it not something that can be defined by a binary classification. In fact, audit quality can be expressed as a function of many factors (e.g., Big 4 vs non-Big 4

auditor, audit tenure, client size, experience, industry specialization) and it thus falls into a multi-layered framework of evaluation. (Francis, 2011).

The research conducted by Chang et al. (2009) corroborates the importance of studying the nature and implications of audit quality, as it has material effects on the very firms' capital structure, and it can therefore impact future business viability. Indeed, the findings of the study point towards higher audit quality (which is often proxied by the size of the external auditor in the engagement) being a determinant factor in easing the access of firms to equity capital and allowing them to keep their debt ratios unaltered irrespective of the current state of the market. This shows how investors and creditors view a competent auditor as a credible form of assurance to guide their decision-making, leading to the fact that increased audit quality allows for a material decrease in the cost of capital. (Chang et al., 2009).

Francis (2011) reminds also that if audit quality is proxied by the ability to deliver accurate GCOs, academics and practitioners must be aware of the intricate consequences that the accuracy therein of going concern reporting can have on the market overall, as it can increase the occurrence of self-fulfilling prophecies as well as improving the ability to raise capital and thus increasing the efficiency of capital markets, and for this reason it is relevant to study what influences GCO-accuracy in order to drive it upwards and avoid that it has unwanted effects on the market. (Francis, 2011).

In addition, Geiger et al. (2005) provide further empirical evidence showing the shift that audit quality, as proxied by GCO accuracy, has experienced in the post Sarbanes Oxley act era. The research points to the overall reduction of Type 2 misclassification rates, accompanied by an increase of Type 1 error rates, which furtherly shows how the provisions have successfully driven auditors towards more conservative evaluations by modifying the cost function tied to audit engagements.

For what concerns a more detailed breakdown the consequences tied to GCO reporting accuracy, it is beneficial to follow the differentiation employed by Geiger et al. (2021), whereby GCOs have material influences on both current and future stakeholders, as

well as lenders and, naturally, the two parties involved in the audit engagement (i.e., audit client and auditor).

2.3.1 The consequences of GCO-reporting accuracy for current and future stakeholders.

Geiger et al. (2021) highlights the GCO as being a determinant factor in influencing share prices as opposed to modified opinions that are not also modified for going concern. That is, the market seems to heavily price an audit opinion modified for going concern, meanwhile an opinion that is simply qualified because of non-pervasive material misstatements (i.e., misstatements that do not influence severely the overall presentation given by the financial statements) does not seem to negatively influence the decision of market participants. They also highlight how the phenomenon might be exacerbated by the increased selling of securities belonging to a firm that received a GCO by bigger investors (e.g., institutional investors), thereby triggering a wider reaction in the market. The research also points to the fact that the negative reactions are more prominent when the auditee receives a GCO for the first time, which per se is reflected in an increased risk of continuing its operations, due to an increase in the cost of capital (Geiger et al., 2021).

In support of first-time GCOs being the most critical, Harris et al. (2015) collected empirical evidence testifying that the informativeness of GCOs decreases in case of multiple ones. The phenomenon can be explained by differences in audit size, whereby smaller auditors might actually be more prone to issue a GCO due to lack of proper expertise and/or resources to establish whether a specific client can continue operating under the assumption of going concern. Furthermore, some auditors might also be influenced by changes in top management and/or the board, whereby the decision to issue a GCO might become more likely in case a new executive or board member has had experiences in firms that were financially distressed. As the informativeness of issued GCOs decreases, so do the negative effects brought about by the event, showing that investors become gradually less concerned about it and regain trust in the entity's ability to properly manage its business despite auditors' concerns. This might, again, shed light on why smaller firms might be at higher risk of actually having to file for bankruptcy when receiving a GCO. (Harris et al., 2015).

Kausar et al. (2008) provided empirical evidence delineating interesting nuances to the phenomenon by comparing the negative abnormal returns of the stocks of firms that were issued a GCO for the first time against the returns of the same stock after the respective companies received a positive audit opinion, such as the withdrawal of the previously rendered going concern opinion. The findings point to the fact that the market is slower at acknowledging the negative event represented by the GCO, shown by lower-than-expected negative returns. However, for what concerns the opposite event, it seems that the market does not react in unexpected ways. Kausar et al. (2013) argue that this phenomenon might be caused by the intrinsic nature of stocks that received a GCO, which might be perceived by unexperienced or irrational investors as ripe opportunities to make trading profits. Therefore, the inability of retail investors to assess the gravity of a GCO rationally and correctly might explain why the magnitude of the negative reactions is not as high as expected. Barber and Lyon (1997) advocate for always controlling for firm size when conducting studies involving measurements of long-run abnormal returns. In fact, Kausar et al. (2008) also specified that the results concerning the underreaction to first time GCOs might also be due to the fact this kind of information becomes known to a larger share of the public when bigger firms are involved. This might explain why retail investors might skew the results via their risk tolerant behaviour. Overall, the phenomenon shows the importance that going concern opinions have on the market, and the implications they have on current and future stakeholders, further stressing the interest that academics and practitioners have had on the matter. In sum, a better understanding of the dynamics involved in GCO reporting (by both studying the interested parties' side, and the investors' side) might help regulators in the betterment of the efficiency of capital markets.

Overall, it is important to acknowledge the importance of GCOs to current and future stakeholders as previous research shows they do have an influence on share prices and, thus, they might have material repercussions on the current and future performance of GCO-issued firms. However, as it can be noted by looking at past research (e.g., Kausar et al., 2008), the degree to which the market seems to acknowledge GCOs differs, showing that audit reports modified for Going Concern do have different level of informative power depending on contextual factors.

2.3.2 Creditors' reactions to GCOs.

Geiger et al. (2021) via Menon and Williams (2010) summarize the dynamics of GCO reporting for what concerns the risks tied to the auditee's future financial viability and also provide further interesting insights on the investors' behaviour which are consistent with the findings of other studies (e.g., Kausar et al., 2008, Kausar et al., 2013). Most importantly, they remind that the informative power of going concern reporting represents a non-trivial factor when it comes to studying such events and their consequences. Indeed, it seems that this auditor-delivered assessment provides information that does not seem to be derived from investors by the means of publicly available data (e.g., financial statements). This supports the theory that many creditors might a priori restrain from providing further capital to firms that received a GCO, increasing the likelihood that the negative audit report itself might increase the likelihood of bankruptcy (i.e., self-fulfilling prophecy). The study also sheds further light on the investors' behaviour with respect to GCO reporting, and the findings are in line with Kausar et al. (2008), showing that institutional investors only respond appropriately to GCOs, as shown by more negative market reactions, as opposed to lesser reactions to GCOs of companies which stock is owned by retail investors. (Geiger et al., 2021).

Contrary to previous research findings and what is expected from theoretical knowledge, Niemi and Sundgren (2012) found that institutional creditors might not be negatively influenced by modified opinions containing warnings of potential going concern problems. By using archival data on SMEs from Finland, they concluded that there is no significant increase in the use of trade credit relative to debt financing obtained by banks, meaning that institutional creditors might not find a GCO as being very informative for their lending decisions. Theory would suggest than when a GCO is rendered, small and medium firms might increase their level of trade credit to make up for a lack of long-term debt availability, which would also be accompanied by an increase in the risk premium, but according to the findings there is no significant association between banks' lending decisions and GCOs (Niemi and Sundgren, 2012). On the other hand, and in support of other studies and theory predictions, Chen et al. (2016) provide empirical evidence characterizing modified audit opinions (MAOs) as being a statistically relevant factor in determining the favourability of the debt terms

arranged by institutional lenders. The effects are especially exacerbated when the MAO is modified also for Going Concern issues. The study points to the fact that an auditee receiving a GCO is not entirely denied the possibility to obtain debt financing. However, the size of the loan is considerably reduced, the interest rate associated to the loan is higher, and in most cases the general terms are worse, and the contract requires the presence of a collateral to the loan (Chen et al., 2016). Even though past research presents mixed results, it seems unarguable that the consequences of GCO-reporting can be complex and not straightforward to predict and creditors, as the other stakeholders involved in the event, assume different stances depending on the level of information asymmetry between what is publicly known about the interested auditee, and what can be inferred through private sources of information.

As it can be inferred from past research (e.g., Menon and Williams, 2010; Niemi and Sundgren, 2012; Chen et al., 2016), the creditors' propensity to lend further capital to GCO-issued firms also varies greatly depending on contextual factors. It is thus pivotal to interpret the research findings on the matter by taking into account the particular characteristics of the observations involved in the study of interest. In fact, as the mixed results show, some creditors might be completely reluctant to issue further capital to firms that have been issued GCOs (thereby also intrinsically increasing the likelihood of self-fulfilling prophecies), meanwhile other creditors' lending decisions might be unaffected by GCOs.

2.3.3 Consequences for the Auditor and the Auditee.

Past literature has shown that the main risks associated to client bankruptcy and Going Concern reporting are the potentially ingent settlements to be paid in case of investor-initiated litigations, potential reputation losses suffered as a result of lack of due diligence and/or expertise, and the potential loss of audit revenue caused by the client's dissatisfaction brining to auditor switching (e.g., Carcello and Palmrose, 1994, Carcello and Neal, 2003, Kaplan and Williams, 2013, Wright and Wright, 2014, Hardies et al., 2018). Specifically, Carcello and Palmrose (1994) obtained convincing preliminary results that underlined the modified audit opinion modified also for Going Concern being a useful pre-emptive tool for auditors to avoid litigation claims. However, they also stressed the importance of looking at the timeliness of the GCO

rendered. In fact, they found that issuing a GCO only in the year before bankruptcy might actually only lead to a reduction of the fees auditors might have to pay to investors. In general, the results show that auditors should care about Going Concern reporting accuracy as it can save them conspicuous litigation fees, and in other case allow them to pay smaller fees. By using a simultaneous equation approach, Kaplan and Williams (2013) confirm and extend the results obtained by Carcello and Palmrose (1994), and they concluded, using a larger sample size, that the expected benefits arising from issuing a GCO find significant empirical evidence, suggesting that auditors are better off evaluation their Going Concern reporting decisions in a strategic way, in order to avoid or decrease potential litigation fees. Again, these findings shed light on the informative power GCOs can have for investors, as they have the power to shift decision-making (initiating a lawsuit vs not initiating it).

For what concerns the other relevant risk faced by auditors when modifying an audit report for Going Concern, that is the risk of auditor switching, Carcello and Neal (2003) document on the audit committee characteristics being a pivotal factor in determining what will be the post-audit report treatment for the auditor. In fact, their results point to the fact that the more independent (i.e., no material levels of ownership within the firm) the client's audit committee is, the lower the risk faced by the auditor of being changed after the issuance of a GCO. This result underlines that independent audit committee are better able to objectively react to the assessments provided by the external auditor and, consequently, they can better protect the auditor's interest in continuing to serve the company against management's will. Kim (2016) supports this theory by providing further evidence showing that overconfidence is a managerial trait that might lead executives to more likely switch auditors after a negative audit report. This other side of the literature shows how auditors are faced with a tradeoff when deciding whether to render a GCO (i.e., potential loss of a client vs. potential litigation fees to be paid), and that the specific characteristics of, among others, management, audit committee, the severity of financial distress have a weight in this tradeoff.

Moving on to discuss the implications that GCOs have on the other party involved in the audit engagement, that is the auditee, it would be beneficial to mention the findings obtained by Amin, Krishnan, and Yang (2014), who reported an increase in the cost of equity capital subsequent to an audit report modified for Going Concern. Alongside

increased difficulties in accessing debt financing or, in other circumstances, an increase in the cost of debt capital via increased interest rates and/or unfavourable debt terms (Kausar et al., 2008), Amin et al. (2014) documented an increase comprised between 3.3 and 5.7 percentage points in the cost of equity capital as a result of a negative event such as a GCO. The findings, as expressed by the authors, are limited to large publicly held corporations, bu they nonetheless provide further evidence concerning the informativeness and the importance that GCOs have for investors. Moreover, the results point to the fact that a rendered Going Concern paragraph brings about an overall increase in the cost of capital, as both creditors and equity investors seek for higher returns as a consequence of the increased risk.

Further, concerning the effects that GCOs have on the auditees, Knechel, Vanstraelen, and Zerni (2015) highlight the auditor's past behaviours, in terms of the degree of audit conservatism, as a statistically determinant factor in explaining the severity of the GCO will have on the auditee's already financially unstable position. As a matter of fact, they document that auditees whose auditors have a past of Type II errors (i.e., missed GCOs when they were actually needed) will have a higher likelihood of insolvency, their contracts with capital providers will have higher implicit interest rates, and their access to debt capital will be compromised (Knechel et al., 2015). On the other hand, investors will be more tolerant of GCOs provided by auditors that are more conservative, and whom have a recorded history of Type I errors. Amin and Harris (2015) document that also non-profit organizations suffer negative consequences in case of a reported GCO, as the bigger donors appear to react to the event more negatively, by cutting financial support altogether. These findings as well shed light on the importance that Going Concern reporting has on entities, and that the implications are of economic relevance in a material manner.

Further, Chy and Hope (2021) use cross-sectional analyses to document possible consequences that audit quality and, as a consequence, audit behaviour can have on the auditee's very operations, rather than impacting only their financial reporting practices. In fact, their findings seem to point to a too high degree of audit conservatism as being potentially harmful for those growth-interested shareholders. It seems that big auditors that have a past of being conservative (e.g., several modified opinions, Going Concern opinions) might have an implicit impact on management's behaviour, leading

them to seek short-term returns and overlook long-term opportunities just to satisfy the auditor's requirements which might in turn endanger the Going Concern feasibility if taken in a long-term perspective. Put it shortly, too much audit conservatism might restrain some companies and hamper their growth possibilities (Chy and Hope, 2017). These findings are especially interesting if paired with those of Kim (2016), concerning managerial overconfidence as being a factor in increasing the likelihood of auditor switching. In fact, it could be plausible that overconfident managers are not affected by knowing that the external auditor is conservative and might continue operating in a riskier manner.

In conclusion, as pointed out by Geiger, Gold, and Wallage (2021), it does not come as surprise that practitioners and academics have pondered over the years about the possibility that the event itself of being issued a GCO might decrease the financial viability of an already financially distressed entity, leading itself to higher chances of actual bankruptcy. The research findings point out to this assumption being sound at least in theory. However, as the subject of study is multi-layered and complex, it might still be hard for academics to derive a definite answer. In fact, Geiger et al. (2021) via Gerakos et al. (2016) remind it is important to analyse the issue taking also into consideration its magnitude. In fact, their findings point to an approximately 1 percentage point increase in bankruptcy likelihood following a GCO. Therefore, it also needs to be considered the possibility that despite the existence of a negative effect that GCOs have on the auditee's financial stability, this effect might not be material enough for serious concern. (Geiger et al., 2021).

2.4 Past Research on GCO misclassifications and the factors affecting their likelihood.

After having summarized the relevancy of Going Concern reporting, its accuracy, and the consequences GCOs have on various stakeholders, this paper will still follow the framework used in past literature (e.g., Carcello et al., 2013, Geiger et al., 2021) to discuss the factors affecting GCOs and, consequently, affecting the likelihood of audit misclassifications. Specifically, this section will provide an overview of the factors affecting GCOs that have been previously studied in past research, and it will do so by

distinguishing between auditor-related, auditee-related factors, and factors pertaining to the auditor-auditee relationship.

2.4.1 Some auditor-related factors affecting GCOs.

Auditor independence is deemed to be crucial determinant of audit quality. Following the corporate scandals of the early 2000s, legislators worldwide shifter their attention towards implementing measures (e.g., Sarbanes-Oxley Act) that would increase auditor independence, in an attempt to increase audit quality as well. Past research (e.g., Reynolds and Francis, 2000; Geiger and Rama, 2003; Li, 2009) has thoroughly studied this characteristic as being potentially significant in determining the level of audit quality. Reynolds and Francis (2000) argue that despite audit quality is widely considered to be assured by the auditor's potential reputation loss and legal fees to be paid in case of misconduct, the economic dependence the client generates on the auditor should not be disregarded. However, in their findings they show that, at least when taking bigger auditors into consideration, audit partners are inclined to report more conservatively when they see signs of financial distress in bigger clients. These results might corroborate the generally accepted notion that auditors will report conservatively as a result of the external risks they would face otherwise. However, the authors point out to the importance of studying the potential effects that non-audit service (NAS) fees might have on economic dependence. In this respect, Geiger and Rama (2003) studied the potential effects that NAS fees could have on the auditor economic dependence from the client and, consequently, how they could impact auditors' decisions with respect to Going Concern reporting. Overall, by using a sample of financially distressed firms, they document no statistically significant relationship between such fees and a more lenient attitude towards the client in terms of GCO, showing that NAS fees might not be a reason for concern.

Li (2009) expanded on the role economic dependence might play in determining audit quality, as proxied by audit conservatism against audit lenience. The study used again a sample of financially distressed firms and used the ratio of fees (audit, non-audit, and total) received from a specific client to total audit revenues received from the overall portfolio of clients, in order to determine the degree of economic dependence. The findings of the study are consistent with past research pointing to a non-significant

relationship between fees and auditor behaviour with respect to GCOs, with the addition that the post-SOX era seems to have an increased level of auditor conservatism when the client represents a bigger share of the auditor's portfolio, supporting the idea that reputation loss and litigation fees are per-se good countermeasures of mis-practices. On the other hand, Griffin and Lont (2009) document a negative impact that economic dependence, proxied by NAS fees in particular, has on audit quality. The findings highlight that the auditor's propensity to render a GCO to a financially distressed client is lower when this client is providing a material level of non-audit fee revenues to the auditor, thereby impairing audit quality. The authors recognize that their findings might be contextual as the issue analysed is complex. Further, their findings seem to also highlight the efficacy of the measures undertaken to increase audit quality via increased auditor independence (i.e., SOX), as the negative relationship between likelihood of GCO issued and NAS fees seems to get weaker in the post-SOX era, pointing to the fact that auditors started reporting in a more conservative manner, due to increased risks if they acted otherwise.

The auditor size is another factor that has been widely studied by past research and that is believed to be of statistical relevance in determining the likelihood of GCOs and their relative accuracy (i.e., audit misclassifications). In particular, Francis and Yu (2009) studied the relationship between auditor size, as proxied by the level of audit fees received, and the auditor propensity to issue GCOs and, consequently, audit misclassifications (e.g., Type II audit misclassifications). Despite the authors call for potential issues tied to the research framework, that cause the auditor characteristic in question (i.e., auditor size) to not be fully detangled from client-related factors, the results seem to point out to a positive association between auditor size and audit quality. In short, they document that bigger auditors are, in first place, more likely to be conservative via issuing a GCO and, in second place, they are more accurate, showing a lower occurrence of audit misclassifications. To corroborate these findings, DeFond and Lennox (2011) demonstrated that several smaller auditors (proxied by number of clients served) who exited the audit market in the post-SOX era were providing lower audit quality. In fact, the incoming auditors, which were all bigger in size as compared to the existing ones, seemed to show a higher propensity to issuing a GCO and the overall accuracy of their reporting was higher, pointing once again to the auditor size as being a statistically significant factor in determining higher audit quality.

Further, Hardies, Vandenhaute, and Breesch (2018) showed that contextual analysis is critical when studying factors affecting Going Concern reporting and audit quality. In fact, by changing the sample characteristics and using financially distressed firms selected from the Belgian private sector, they document no significant relationship between auditor size and increased audit quality, showing that, as long as their sample is involved, smaller auditors are just as able to deliver accurate Going Concern reports as their bigger competitors. Overall, the mixed results shown in past research concerning the role of auditor size on GCO reporting highlight the importance of not generalizing any result, as findings might always be subject to contextuality.

The research concerning the auditor-related characteristics that might influence the propensity to issue GCOs and the relative reporting accuracy has also investigated determinants that belong to the individual audit partner rather than the firm like the two previously mentioned (i.e., economic dependence, audit-firm size). As an example, Lehmann and Norman (2006) provide empirical evidence showing that the experience gained on the field might be of critical importance in auditing. They found that more experience auditors are more capable of predicting going concern anomalies via detecting non-textbook indicators. As opposed, novice auditors and intermediate auditors follow a more standardized approach that, despite being effective, might lead to unvoluntary mistakes. As another example of a study using a personal variable as explanatory variable of interest was undertaken by Kallunki, Niemi, and Nilsson (2019), who document the cognitive ability of audit partners as being a good predictor of audit quality. Moreover, Hardies, Breesch, and Branson (2014) collected empirical evidence showing that even the audit partner gender might play a role in determining the degree of audit quality. In fact, their results underline female auditors as being more prone to issue GCOs to financially unviable clients, showing their higher degree of risk-aversity. The results also show that female auditors deliver more accurate GCOs, as shown by their lower rate of audit misclassifications.

2.4.2 Some auditee-related factors affecting GCOs.

When it comes to studying what auditee's characteristics influence the auditor's propensity to issue an audit report modified for Going Concern, past research has broadly divided its attention into variables strictly tied to the financial statements (e.g.,

Altman and McGough, 1974; Mutchler, 1985), which determine the probability of bankruptcy, variables describing the financial reporting quality of the auditee (e.g., Francis and Krishnan, 1999), and variables tied to events which might either worsen or mitigate the auditee's financial position relative to the Going Concern assumption (e.g., Mutchler, 1985; Mutchler et al., 1997; Behn et al., 2001).

For what concerns the factors strictly tied to publicly available data, Altman and McGough (1974) tested the previously bankruptcy-predicting model developed by Altman (1968) to assess whether it could be a reliable tool in helping auditors in their Going Concern reporting decisions. Overall, they documented that the auditee's ability to meet its financial obligations, and its operating success are the leading factor in determining whether a GCO should be issued and, therefore, measures of liquidity, leverage, and profitability are good indicators of a firm's likelihood of bankruptcy. Mutchler (1985) used the same approach employed by Altman and McGough (1974) and confirmed that the use of such measures (i.e., liquidity, leverage, and profitability) is a reliable approach in determining the probability of bankruptcy and, thus, whether a GCO should be rendered. However, variables indicating whether information outside the financial statements could worsen or mitigate the financial condition of the auditee were added in order to see whether the audit report provides extra information that cannot be inferred by financial statement users via public information. The results show that the usefulness of GCOs is conditional to how many contrary and/or mitigating factors affect the auditee's position, showing that financial ratios alone are not the only determinant used by auditors to decide on Going Concern issues.

Francis and Krishnan (1999) shed light on the importance the quality of financial reporting has in determining the likelihood of the auditor issuing a GCO. In particular, they found that firms which have an earnings-recognition process that is heavily influenced by accruals are met with a more conservative behaviour by auditors. This is due to the fact that accruals sometimes involve a high degree of managerial discretion which, in turn, increases the risk profile of the audit engagement. Therefore, auditors tend to be more conservative and issue more GCOs when the earnings are heavily accrual-based, despite the relevancy and informativeness the latter have for financial statement users to depict a firm's performance. However, if on one side it seems that an accrual-based earnings management seems to increase the likelihood of

a firm being issued a GCO, on the other McKeown, Mutchler, and Hopwood (1991) found that the size of the auditee is negatively correlated to the likelihood of a Going Concern-modified report and that in some cases auditors use ambiguous thresholds to decide whether there is high likelihood of bankruptcy. They argued that the bigger the client size, the more the auditor's independence might be hampered by fears of losing the audit fees or losing reputation with an important client.

Mutchler, Hopwood, and McKeown (1997) confirmed previous research findings concerning the negative relationship between auditee size and GCO likelihood. They explained that auditors might be more concerned in issuing a Going Concern report to a large client also because of its larger exposure to media which could, in turn, increase the chances of a "self-fulfilling prophecy". They also argued that to adjust and compensate for risk, auditors might be asking premiums in audit fees from large client in order to account for the increased litigation risks that might arise in case of a less conservative and "patient" reporting behaviour adopted by the auditor to avoid heightening the situation of financial distress already faced by the auditee. Furthermore, they confirmed the findings in Mutchler (1985) concerning the statistical significance of contrary and mitigating factors with respect to the auditor's propensity to issue a GCO. In particular, they found that negative events (e.g., failure to meet scheduled obligation payment) considerably increase the likelihood of a GCO being issued. However, they found that positive items do not consistently decrease the likelihood of the auditor modifying the audit report, providing further evidence of audit conservatism. To extend this line of research, Behn, Kaplan, and Krumwiede (2001), provided evidence corroborating the importance that information external to financial statements has in increasing the informative power of Going Concern reporting. In particular, they found that auditors consider as relevant also management's plans with respect to how to face the situation of financial distress. Specifically, they point out that mitigating plans associated with the issuance of more equity or debt capital are negatively correlated with the issuance of a GCO, showing that auditors see them as effective measures in decreasing the likelihood of bankruptcy.

Further, Carcello and Neal (2000) investigated whether corporate governance characteristics also play a role in influencing external auditors and their Going Concern reporting decisions. Specifically, the authors documented that the independency of the

auditee committee, proxied by the ratio of the committee members that have material ties to the firm, is a statistically significant determinant in the GCO likelihood. In particular, they found that as the audit committee grows in dependence, the lower the likelihood of the external auditor issuing a Going Concern-modified audit report. (Carcello and Neal, 2000).

2.4.3 Some factors affecting GCOs concerning the auditor-auditee relationship.

Regulators' concerns over a risk of decreased auditor independence as a result of longer audit tenures has prompted research covering the phenomenon (e.g., Geiger and Raghunandan, 2002; Knechel and Vanstraelen, 2007). Despite theory suggests that a longer period under which an auditor is serving a specific client might increase the auditor's economic dependence and create other independence-reducing ties, Geiger and Raghunandan (2002) collected empirical evidence showing that this might not be the case. They documented that audit quality, expressed in terms of GCOs rendered to a firm subsequently filing for bankruptcy, actually seems to increase as the engagement tenure gets longer. In fact, the evidence shows that auditors are less inclined to issues GCOs in the early years of the engagement, resulting in a higher likelihood of audit misclassifications. As argued by the authors, this might be due to the auditor's tendency to be less conservative in the early years in order to "liked" by the client and increase its chances of client retention. Knechel and Vanstraelen (2007) expand the previous research conducted by Geiger and Raghunandan (2002) by testing whether audit tenure might be a possible detrimental factor to audit quality in the private sector. They argued that moving from publicly listed firms to private firms might change the underlying effects of the observed phenomenon. Contrary to the previous study, they found no positive association between tenure and the auditor's propensity to issue a Going Concern audit report. Most importantly, the fact that the evidence does not suggest a negative association between the variables supports the findings in Geiger and Raghunandan (2002), showing that auditor rotation might not be a useful measure to prevent decreases in independence as regulators previously thought.

Another side of research investigating the role of the auditor-auditee relationship in determining the likelihood of GCOs focused on auditor switching and the so-called

"opinion shopping", which is defined by past literature (e.g., Krishnan and Stephens, 1995) as the reason why auditees that received qualified audit reports engage in auditor switching. The end-goal of opinion shopping via auditor switching is that of receiving a more positive audit report that would improve the firm's image. Krishnan and Stephens (1995) investigated whether opinion shipping should be a real cause for concern among regulators by studying whether audit clients that changed their auditor after having received a GCO managed to "shop" for a better audit opinion issued by the new auditor. The empirical findings seemed to deny a positive relation between auditor switching and an improved audit report. Thus, it seems that auditors operate conservatively when they receive a client to which was already issued a GCO. However, Krishnan and Krishnan (1996) highlight that auditor switching should still be investigated as they found empirical evidence pointing to the fact that auditors evaluate the economic trade-offs related to Going Concern reporting when deciding on the matter, showing that audit quality might be hampered by high trade-offs faced by the auditors in case of GCO-induced auditor switching. Contrary to the findings of Krishnan and Stephens (1995), Lennox (2000) collected evidence from the UK showing that the success of opinion shopping is also contextual like many others GCO-related factors. In fact, the study showed that firms can successfully change the quality of the audit report by switching auditor.

2.5 The implications of the auditee industry on audit quality

The next section will provide some arguments and findings of prior research on the implications that the client industry might have on the audit process overall and, inherently, on audit quality. The research on the matter can be broadly classified into studies focusing on individual characteristics tied to specific industries and their degree of complexity (e.g., Maletta and Wright, 1996; Francis and Gunn, 2015; Butar-Butar and Indarto, 2018), and into studies following a more auditor-centric approach, which aims to establish whether industry specialization (often proxied by the share of an industry audited by the same auditor at a city level or national level) is associated with more conservative auditing and higher standards of audit quality, as proxied by lower occurrence of audit misclassifications (e.g., Cairney and Young, 2006; Rechelt and Wang, 2010; Meza, 2013).

Maletta and Wright (1996) provided robust empirical evidence showing that the incidence of material accounting errors varies as a function of the industry the firm of interest belongs to. The findings support their hypothesis that the likelihood of material misstatements in firms belonging to highly regulated industries will be lower as opposed to firms belonging to industries that have been given less attention from regulators. As expressed by the authors, examples of highly regulated industries are considered to be the banking/financial industry, and the healthcare industry. On the other hand, examples of less regulated industries are the manufacturing, the merchandising, and the natural resources industries. The authors also argued that firms belonging to highly regulated industries will also have better internal control systems overall, leading to a more straightforward audit process. Therefore, the risk profile of an audit engagement changes as a function of the degree of regulation tied to the industry the auditee belongs to and, thus, auditing clients in less regulated industries might result in higher risks faced by the auditors, which results in a greater need for tailor-made audit procedures. The results brought about by the study point out the importance of the industry as a determinant factor that could affect the financial reporting accuracy of the auditee and, as a result, they show how auditors might need to pay particular attention when auditing clients in these industries in order to keep the same level of audit quality, as they might need to account for the higher likelihood of routine and unique misstatements. (Maletta and Wright, 1996).

Other extant literature focused on whether industry specialization can be a determinant of improved audit quality. Cairney and Young (2006) collected empirical evidence suggesting that auditors tend to economize on audit procedures by developing a portfolio of clients belonging to the same industry and that present similar characteristics. As argued by the authors, this would allow the auditor to have a less steep learning curve and transfer core competencies learned with one client to the next client, and so on. The results of this study show that industry specialization is an actual practice, but they have not addressed whether it also impacts audit quality. For what concerns the effects of industry specialization and audit quality, Reichelt and Wang (2010) documented that auditors which can be regarded as industry experts, as proxied by a sufficiently high threshold of clients belonging to the same industry audited by the same auditor, are more likely to deliver more qualitative auditing, as shown by a higher propensity of industry specialists to issue GCOs, and as shown by the higher

earnings quality exhibited by the auditees. However, Meza (2013) found no significant relationship between industry specialization and improved audit quality when changing the share-based proxy used to screen for industry expertise. As argued by the author, using the share of industry audited as a proxy for specialization hampers the significance of past results, creating multicollinearity issues tied to the auditor size and, simultaneously, the client's size.

2.5.1 Industry complexity as a factor affecting audit quality.

Francis and Gunn (2015) explored the implications of industries on auditing taking a different approach as that found in Maletta and Wright (1996), as they divided industries between "complex" and "non-complex" industries, following the classification developed by Fama and French (1997). Examples of non-complex industries are pharmaceutical products, wholesale, and the retail industries, and they are deemed to be as such because of the relative ease of applying generally accepted accounting principles to the more standardized operations characterizing these industries. The higher predictability and timeliness of cash-flows also plays a key role in their classification as "non-complex". On the other hand, the authors point out the software/technology, banking/finance, construction, and the natural resources industries as being "complex" due to the considerably higher degree of discretion required by accountants when applying GAAP. In particular, "complex" industries are characterized by problems in the recognition and measurement of revenues, as the cash flows tied to their typical long-cycle operations are harder to match with revenues. The main findings of the study highlight the worse earnings quality related to firms belonging to "complex" industries, as proxied by a higher degree of abnormal accruals, and a higher variance between actual earnings and analysts' forecasts. (Francis and Gunn, 2015).

Francis and Gunn (2015) also documented the role that auditors' industry specialization plays in affecting audit quality. They documented that industry specialization is particularly relevant with respect to auditees belonging to "complex" industries, as auditors have the opportunity to develop specific skills that might improve audit quality. Overall, they found evidence of a positive relationship between industry specialization and audit quality, as proxied by lower abnormal accruals and

lower variance between reported and forecast earnings showed by the auditees. The results however do not apply to auditees belonging to “non-complex” industries, and they show that the industry is a key determinant to be taken into account during the audit planning phase, as specific level of expertise are required to audit certain industries. (Francis and Gunn, 2015).

Butar-Butar and Indarto (2018) followed the research conducted by Francis and Gunn (2015) and investigated whether auditor industry specialization truly matters in complex industries. The findings of this study are in contrast to those of Francis and Gunn (2015), as they documented that even auditors with considerable industry expertise are not able to deliver better audit quality, as proxied again by checking for improvements in abnormal accruals of firms belonging to industries deemed as complex. The argument is that complex and dynamic industries that have long operating cycles pose a too high level of complexity and unpredictability that not even specialized auditors can control. The authors bring the software/technology and the construction industries as examples. Both have long operating cycles that allow for a high level of discretion in the recognition of earnings that drastically increase the financial reporting complexity and its relative auditing. In particular, the software/technology industry poses even further challenges, as it is an industry characterized by extremely long post-sale services that add even more complexities to the auditing profile. The authors also argue that an interesting implication of the non-significance of auditor industry specialization when paired with complex industries is the relevance of this information with respect to investors’ decision-making, as according to the findings qualitative auditing might not reduce the level of risk tied to investing in such firms. The authors also recognize that the results might change according to what proxies of audit quality and/or industry specialization are used and, overall, the mixed results present a good venue for further researching the effect that the industry the auditee belongs to has on auditing and its outcomes. (Butar-Butar and Indarto, 2018).

Another industry-level characteristic that might play a role in influencing the likelihood of an audit client receiving a GCO, and in influencing the relative Going Concern reporting accuracy is the degree of industry competition as found by Xu, Yang, and Zhang (2022). According to the authors, a higher level of competition

within the industry, especially expressed in terms of technological competition, necessarily leads to more prominent business risks which, in turn, influence the risk profile of the audit engagement, leading to higher audit risk as an end outcome. They documented that a higher degree of industry competition will increase the unpredictability of the auditee's future financial viability and, thus, will make it harder for the auditor to establish whether the client can continue operating under the assumption of Going Concern. According to the findings, there is a positive association between the likelihood of a client being issued a GCO and the level of industry technological competition. Furthermore, the findings show that the increased audit risk caused by the higher level of industry competition is met with more audit conservatism, meaning that auditors in these circumstances are more likely to issue GCOs even when they are not strictly needed (i.e., higher likelihood of Type I misclassifications). (Xu, Yang, and Zhang, 2022).

3 HYPOTHESIS DEVELOPMENT

The aim of this study is that of contributing to the extant literature revolving around audit quality as proxied by occurrence of audit misclassifications. The study will contribute by collecting empirical evidence that might help in understanding whether the likelihood of audit misclassifications is influenced by the industry the auditee belongs to.

Following past research (e.g., Carson et al., 2013; Geiger et al., 2021) this thesis will focus on Type 2 audit misclassifications, due to the higher costs faced by auditors when failing to timely warn investors about the possible problems in the future financial viability of a firm. As previous research widely stated also, Type 2 misclassifications are also more relevant for investors and regulators and, therefore, understanding whether the complexity of certain industries significantly reduces the auditor's ability to predict the viability of the Going Concern assumption might prove to be an important piece of information for the decision-making process of interested parties.

Past literature that focused on the role that industry plays in influencing audit quality used abnormal accruals as a proxy for audit quality (e.g., Francis and Gunn, 2015; Butar-Butar and Indarto, 2018; Xu, Yang, and Zhang, 2022). However, this study will use the occurrence of Type 2 audit errors as a proxy for audit quality as seen in previous studies (e.g., Geiger et al., 2002; Hardies et al., 2018). Specifically, by conducting statistical analysis, the aim of the study is that of determining whether certain industries see a higher occurrence of Type 2 audit misclassifications.

The study will differentiate between firms belonging to "complex" and "non-complex" industries, and thus it will follow the classification developed by Fama and French (1997), as seen in Francis and Gunn (2015), and Butar-Butar and Indarto (2018). According to the aforementioned authors, certain industries prove to be a greater challenge for auditors due to their level of complexity and unpredictability (e.g., software development industry, Construction, Healthcare). This higher degree of complexity can lead to a less straightforward audit process that requires a higher level of expertise, and it can increase the audit risk associated to the engagements, as the

likelihood of making erroneous assessments is higher. Following this reasoning, one of the aims of the study is that of understanding whether "complex" industries see a higher occurrence of Type 2 audit misclassifications. The higher degree of complexity might lead auditors to be more conservative and thus issue more GCOs. However, as seen by the mixed results in past literature, this is not always the case and it might as well be that more complex industries increase the likelihood that an auditor will not be able to timely spot potential problems in the Going Concern assumption of the auditee. Therefore, one of the aims of the study is to determine whether the variable defining "complex industries" is statistically significant in explaining the occurrence of Type 2 audit misclassifications. It follows the first hypothesis of this thesis:

H1: "The likelihood of Type II audit misclassifications is higher when the auditee belongs to a complex industry".

Furthermore, past research (e.g., Maletta and Wright, 1996; Francis and Gunn, 2015; Butar-Butar and Indarto, 2018) seems to mention the software development/technology industry as being particularly challenging for auditors when it comes to determining the financial viability of a client belonging to said industry. This is due to the long operating cycles and the numerous post-sale services that characterize this industry. Both aspects make the application of GAAP much harder and, thus, more expertise and specific industry knowledge might be required to properly audit clients belonging to this industry. Furthermore, Xu, Yang, and Zhang (2022) documented that a high degree of within-industry technology competition can reduce audit quality by increasing the likelihood of audit misclassifications. Thus, focusing on companies belonging to a highly competitive and fast-paced industry such as the software development/technology industry will be another goal of this thesis. Specifically, alongside coding the observations between "complex" and "non-complex", another standalone variable will screen exclusively for all the observations falling into the software development/technology industry. The goal is that of determining whether the software development/technology industry alone can be regarded as a statistically significant factor in influence the occurrence of Type 2 audit misclassifications. In particular, considering the comments of past research, it is expected that the likelihood of Type 2 misclassifications will be higher for firms belonging to this industry, as it is characterized by a high degree of unpredictability,

high within-industry competition, complex and long operating cycles, and fast-paced level of change. Thus, it follows the second and last hypothesis of this study:

H2: “The likelihood of Type 2 audit misclassifications is higher when the auditee belongs to the software development/technology industry”.

4 RESEARCH METHOD

The following sections will provide an overview of the criteria used for selecting the observations that constitute the final sample, how the observations were coded, additional financial data useful to create control variables, and an overview of the regression model employed to analyse the data at hand.

4.1 Data processing and sample selection

As previous research has outlined (e.g., Geiger et al., 2002, Geiger et al., 2005, Carson et al., 2013, Hardies et al., 2016), when studying bankrupted companies that have not been issued a GCO prior to bankruptcy, it is pivotal to construct a sample of bankrupted firms that were already financially distressed before filings for bankruptcy. The rationale behind this sample criterium is that the accuracy of auditors' judgement and, therefore, their ability to understand when the going concern assumption needs to be evaluated against a common ground. A non-financially distressed company that ceases to exist after not having been issued a GCO has clearly failed due to reasons that might not be spotted easily by the auditors even when they performed all the necessary audit procedures with the due diligence required by their profession (e.g., a non-financially distressed company might fail due to scandals such as managerial fraud).

For what concerns the sample selection step, the database of Refinitiv Eikon was used to identify a sample of 534 bankrupted firms operating in the European Economic Area (EEA). The period of interest ranges from 2010 to 2022. The sample was subsequently adjusted for by eliminating all the unusable observations. Specifically, 314 observations were eliminated because of the unavailability of financial data, 99 observations were eliminated because they were not financially distressed, leaving the final sample with 121 usable observations. Some past research (e.g., Geiger et al., 2002, Hardies et al., 2016) would advocate also for the elimination of observations belonging to the financial services industry. However, since the scope of this study is that of determining whether the complexity of the industry overall plays a role in determining the likelihood of Type 2 audit misclassifications, the observations belonging to this industry (specifically 14 observations) will be kept for the sake of

this analysis. Coding the observations according to industry complexity was performed in line with the Fama and French (1997) classification of complex industries and with past studies analysing the role of industry complexity, such as Francis and Gunn (2015).

As already mentioned, one important criterium to screen for unusable observations was that of eliminating all those firms that could not be considered being financially distressed priori to bankruptcy. This criterium is used to evaluate the assessment capability of auditors against common grounds. In order to establish whether an observation was financially distressed or not, previous research (e.g., Geiger et al., 2002, Geiger et al., 2005, Carson et al., 2013, Hardies et al., 2016) was again followed. The criteria to establish whether the company could be considered to be financially distressed were (1) negative EBIT in any of the three years before the filing for bankruptcy occurred, (2) negative working capital in any of the three years before the filing for bankruptcy occurred, (3) Net Loss in any of the three years before the filing for bankruptcy occurred, or (4) negative retained earnings in any of the three years prior to bankruptcy. By using these criteria, the mentioned financial data was retrieved for each observation and every firm was manually checked to see whether at least one of the criterium was met. The useful financial data was retrieved by using the database of Refinitiv Eikon.

The following step was that of cross checking each observation with data concerning audit opinions modified for Going Concern. This was performed by using data available on Audit Analytics. Specifically, the data was used to check whether each bankrupted firm was rendered an audit report modified for Going Concern prior to the filing for bankruptcy. If no GCO was issued one reporting period prior to the firm's bankruptcy filing, the observation was coded as representing a Type II error. The process produced a total of 71 Type II audit misclassifications, which represent 58,68% of the total observations. Further, the industry SIC codes and descriptions were downloaded for each firm in order to create industry-related variables and subsequently differentiating between complex and non-complex industries.

The following tables illustrate a breakdown of the overall data set by the kind of industries present in the sample. The first table shows the number of observations

belonging to complex industries and the relative share in the sample. The complex industries classification is the same developed by Fama and French (1997) as found in Francis and Gunn (2015) and the observations belonging to the "service industry" where double-checked with NAICS codes, which more specifically described whether the observation belonged to the "software development", "business services", or "entertainment" industry, which were otherwise all broadly labelled as "service industry" if using only SIC descriptions. The second table shows instead the observations belonging to non-complex industries which, as far as this data set goes, belonged to the manufacturing, retail trade, or wholesale trade industries.

Table 1. Observations belonging to complex industries.

Complex Industries	**Firms in the sample**	**(%)**
Finance, insurance, and real estate	14	11,57
Transportation	11	9,09
Construction	15	12,40
Services (software development, IT services)	13	10,74
Services (business services)	7	5,79
Services (entertainment)	1	1
Precious metals (mining)	3	3,1
Total	64	52,89

Table 2. Observations belonging to non-complex industries.

Non-complex Industries	**Firms in the sample**	**(%)**
Manufacturing	35	28,93
Retail trade	10	8,26
Wholesale trade	12	9,92
Total	57	47,11

4.2 Methodology

For what concerns the estimation model, this study uses a logit regression model in order to follow previous research (Geiger et al., 2002, Hardies et al., 2018). The aim of the model is that of explaining the probability at which Type II misclassifications occur. The dependent variable of the model, again following previous research, would then be a dummy variable called Type II that would assume value 1 if the misclassification occurred (i.e., GCO was not issued prior to bankruptcy = a Type II error occurred) and value 0 otherwise (i.e., GCO was issued prior to bankruptcy).

The variables of interest in the model are also dummy variables that are used to test the two hypotheses developed. One dummy variable specifies whether the observation belongs to a complex industry (COMPLEX_IND) or not in order to test the first hypothesis, and another dummy variable specifies whether the observation belongs to the software development/technology industry (IT_IND) in order to test the second hypothesis. A bankruptcy probability score (P_B) calculated with the Altman's Z-score model was employed as continuous control variable, controlling for the degree of financial distress. The score is derived by using measures of liquidity, leverage, and profitability. The components of the Altman's Z-score model are the following, (1) Working Capital / Total Assets, (2) Retained Earnings / Total Assets, (3) EBIT / Total Assets, (4) Market Value of Equity / Book Value of Total Debt, and (5) Sales / Total Assets (Altman, 1968). These financial variables are used to calculate a bankruptcy probability score that is widely used in past research (e.g., Geiger et al., 2002; Geiger et al., 2005; Hardies et al., 2016) in order to create a control variable that enhances the explanatory power of the overall model. The model also includes a control dummy variable determining the auditor size (BIG4), and another continuous financial control variable controlling for client size, that is the natural logarithm of total assets (LN_TA). Past research (e.g., Mutchler et al., 1997) has shown the importance of always controlling for the auditee's size as auditors' decisions with respect to GCOs might be heavily influenced by this specific determinant. Auditors' propensity to issue GCOs might, as an example, be lower if the client is a big publicly listed firm. Auditors might deem the bigger client to be more suited to cope with a situation of financial distress thanks to easier access to further capital, or they might fear a self-fulfilling prophecy due to higher media coverage (Mutchler et al., 1997).

This study thus deploys the following binary logit regression model in order to test the first hypothesis:

$$TYPE\ II = \beta_0 + \beta_1 COMPLEX_{IND} + \beta_2 P_B + \beta_3 LN_{TA} + \beta_4 BIG4 \quad (1)$$

The following binary logit regression model is instead used to test the second hypothesis:

$$TYPE\ II = \beta_0 + \beta_1 IT\_IND + \beta_2 P\_B + \beta_3 LN\_TA + \beta_4 BIG4 \quad (2)$$

The following table provides definitions for all the variables used among all the regression models.

Table 3. Variable definitions.

Variable	Definition
TYPE_II	Dummy dependent variable assuming the value of 1 when the Type II audit error occurs, and the value of 0 otherwise.
COMPLEX_IND	Dummy explanatory variable that takes the value of 1 if the firm belongs to a complex industry, and the value of 0 otherwise.
IT_IND	Dummy explanatory variable that takes the value of 1 if the firm belongs to the software development/technology industry, and the value of 0 otherwise.
BIG4	Dummy control variable taking the value of 1 if the auditor in the engagement belonged to the BIG 4, and the value of 0 otherwise.
P_B	Continuous control variable indicating the bankruptcy probability scored, calculated by using the model developed by E. I. Altman.
LN_TA	Continuous variable used to control for the auditee's size. Calculated as the natural logarithm of total assets.

Following Altman (1968), the value for the variable capturing the probability of bankruptcy, P(B), is drawn from the following model:

$$\boldsymbol{P(B)} = .012X_1 + .014X_2 + .033X_3 + .006X_4 + .999X_5$$

The following table will provide with a detailed breakdown of the components of the formula.

Table 4. Variables of the Altman's Z-Score model.

Variable	Definition
X_1	Ratio of working capital to total assets.
X_2	Ratio of retained earnings to total assets.
X_3	Ratio of EBIT to total assets.
X_4	Ratio of market capitalization to total debt.
X_5	Ratio of sales to total assets.

Further, it is worth to point out that the higher the score, the lower the probability of bankruptcy. Specifically, a score below 1.80 is deemed to be the cutting point to determine whether a firm is in financial distress. More on this will be provided in the following section consisting of the empirical results.

5 EMPIRICAL RESULTS

5.1 Descriptive statistics

Table 5 provides descriptive statistics in the form of frequencies describing the binary variables used in the research. For the sake of simplicity and comparability, all the dichotomous variables are grouped in this table, including those that are used as additional control variables for the logistic regression models used for the sensitivity analysis.

Each variable is paired with the event of interest (i.e., Type II misclassification vs no misclassification) in order to provide a clear descriptive overview of the data included in the sample. As can be seen from the table, the final sample had a total of 71 Type II audit misclassifications and 50 instances where auditors did issue a GCO prior to bankruptcy and thus no misclassification occurred. For what concerns one of the variables of interest (*COMPLEX_IND),* it can be observed that the sample was quite balanced between firms belonging to non-complex industries and those belonging to complex industries (57 against 64), and observations belonging to complex industries paired with a Type II misclassification have a considerable higher frequency that those that were issued a GCO (specifically 39,67% vs 13,22%). For what concerns firms belonging to non-complex industries, it seems that auditor's opinions with respect to Going Concern are more accurate, as the frequency of no misclassification when the observation is non-complex is higher than its opposite (28,1% vs 19,01%). Therefore, as far as these preliminary descriptive statistics go, it does seem that Type II audit misclassifications are more likely in this sample when a firm belongs to a complex industry.

The other variable of interest (*IT_IND)* has a lower concentration overall in the sample (13 observations in total). However, observations belonging to the IT industry and not having received a GCO prior to bankruptcy represent 9,92% of the total observations in the sample against a mere 0,83% of IT industry-belonging firms that did receive a GCO prior to bankruptcy (specifically, out of the 13 firms in the IT industry, 12 of them were not "properly" audited as seen by the Type II misclassification, meanwhile only 1 saw no misclassification). Despite the concentration of these firms is small

when compared to the overall sample, the strength of the frequencies seems to be in favour of the second hypothesis, that is that the likelihood of Type II audit misclassifications is higher when the auditee belongs to the software development/technology industry.

For what concerns the other variables, it seems that many are quite evenly distributed among the four possible outcomes. However, the variable indicating the pre-existence of a Going Concern opinion (*PRIOR_GCO)* seems to have staggering frequencies, showing that this variable is a quite powerful discriminant of whether or not an auditor will issue or not a GCO to its client. In fact, when a GCO did exist prior to the period of interest (*PRIOR_GCO = 1)* no misclassification occurred with an overall frequency of 37,19%. On the other hand, only 3,31% of the total observations were positive with a Type II misclassification meanwhile there was the pre-existence of a GCO. Further, it is also interesting to note that 55,37% of the total sample consisted of Type II misclassifications with no prior GCO (*PRIOR_GCO = 0)* against only 4,13% opposite observations.

On a final note, the variables describing net losses prior to bankruptcy (*LOSS_1* for one year prior, and *LOSS_2* for two years prior) also seem to confer some meaning. In both cases, it can be observed that in case of no net loss (*LOSS_1/2 = 0*) there are higher concentrations of Type II misclassifications (6,61% vs 19,01%, and 12,40% vs 21,49%). This might shed light into the decision-making process of auditors, who might consider a positive bottom line as a sufficiently powerful reason not to issue a GCO and, thus, a higher risk of incurring in Type II misclassifications.

Table 6 shows instead some summary statistics for the continuous variables included in the study. The most interesting aspect to notice is the overall low mean for the bankruptcy probability scored, calculated using the Altman's Z-Score model. Specifically, the low mean (.87542) shows that, overall, the firms included in the sample were quite financially distressed, being a score of 1,8 the threshold below which a firm can be considered financially distressed according to Altman's model.

Table 5. Descriptive statistics – Frequencies of Type II misclassifications categorized by each binary independent variable.

Variables		No misclassification (n = 50)	Type II Misclassification (n = 71)
COMPLEX_IND	*COMPLEX_IND* = 0 (n = 57)	28,1%	19,01%
	COMPLEX_IND = 1 (n = 64)	13,22%	39,67%
IT_IND	*IT_IND* = 0 (n = 108)	40,50%	48,76%
	IT_IND = 1 (n = 13)	0,83%	9,92%
BIG4	*BIG4* = 0 (n = 62)	20,66%	30,58%
	BIG4 = 1 (n = 59)	20,66%	28,10%
PRIOR_GCO	*PRIOR_GCO* = 0 (n = 72)	4,13%	55,37%
	PRIOR_GCO = 1 (n = 49)	37,19%	3,31%
W_CAP	*W_CAP* = 0 (n = 53)	18,18%	25.62%
	W_CAP = 1 (n = 68)	23,14%	33,06%
LOSS_1	*LOSS_1* = 0 (n = 31)	6,61%	19,01%
	LOSS_1 = 1 (n = 90)	34,71%	39,67%
LOSS_2	*LOSS_2* = 0 (n = 41)	12,40%	21,49%
	LOSS_2 = 1 (n= 80)	28,93%	37,19%

Table 6. Overall descriptive statistics for all continuous variables.

Variable	N	Mean	Standard Deviation	Minimum	Maximum
P_B	114	0.8754248	0.6715765	-0.1491869	2.5715015
LN_TA	120	19.1394122	2.2566502	14.6989573	24.6881090
CA_RISK	121	0.3578423	0.2376097	0.000786306	0.9987853
LEV	110	0.7850379	0.3280102	0.0052792	1.6009870

Table 7 illustrates a similar approach to that of table 5, where different statistics can be seen according to the value assumed by the binary variables. In this case, the summary statistics for the continuous were provided for each outcome of all the relevant dichotomous variables.

As can be inferred from the table, the mean of *P_B* for the observations where no misclassification occurred (*TYPE_II = 0*) is lower than the mean of *P_B* for the observations where Type II misclassifications did occur (0.82024 vs 0.91141). This is consistent with past research (e.g., Altman and McGough, 1974) showing that the more financially distressed the auditee is, the higher the likelihood that the auditor will render a GCO. Following this reasoning, it comes naturally that the firms for which a Type II audit misclassification occurred were "less" financially distressed as shown by the higher mean value of *P_B*. This might also shed light into a possible bankruptcy likelihood threshold that might be used by practitioners, however this is just speculation. Further, it can be observed that the mean size of the firms that did not receive a Going Concern opinion (= Type II misclassification) is higher than those that were properly audited as shown by the higher value of *LN_TA* (19,44192 vs 18,715899). This is in line with past research (e.g., Mutchler et al., 1997) which showed that the client size seems to be negatively associated with the auditor's propensity to issue a GCO, which might be explained by a potential heightened fear on the auditor's part to trigger a self-fulfilling prophecy due to the client's higher media exposure, or by the belief that a bigger client has easier access to further capital to face the situation of financial distress. The higher mean value of *LN_TA* for firms that did not have a pre-existent GCO seems to also be in line with this theory.

In addition, the firms belonging to complex industries seem to be more financially distressed than those belonging to non-complex industries as shown by a lower mean value of *P_B* (0,74515 vs 1,01516). However, they are bigger as shown by the higher mean value of *LN_TA* (19,4937 vs 18,7477), which might shed further light on the negative association between client size and GCO issuances (some auditors might have deemed the firm size a sufficient counter to the level of financial distress characterizing the auditee).

On a final note, it seems that the firms belonging to the IT industry were all faring better than non-IT industry firms as shown by the higher mean value of *P_B* (1,15964 vs 0,8388426), which might explain there is a high concentration of Type II misclassifications among those firms (12 cases to 1). However, they do seem to be smaller as shown by the lower value of *LN_TA* (18,4647 vs 19,22139). Big 4 auditors also seemed to have bigger and more financially distressed clients, as can be inferred from the higher mean values of, respectively, *LN_TA* and *P_B* (19,4693 vs 18,8307, and 0,8676 vs 0,8821). However, the difference in the mean value of *P_B* for the clients audited by Big4 against non Big4 seems to be trivial. The other continuous variables, namely *CA_RISK* and *LEV,* seem to all have similar mean values across the board.

Table 7. Descriptive statistics of continuous variables categorized by relevant binary variables.

Variable		Variables	Mean	Standard deviation	Minimum	Maximum
TYPE_II	*TYPE_II = 0*	*P_B*	0.8202484	0.6243176	-0.1491869	2.3381173
		LN_TA	18.7158999	1.8833570	15.2243572	22.6357666
		CA_RISK	0.3560005	0.2435049	0.000786306	0.9972671
		LEV	0.8029233	0.3473870	0.1692595	1.6009870
	TYPE_II = 1	*P_B*	0.9114095	0.7028132	-0.0222364	2.5715015
		LN_TA	19.4419210	2.4578338	14.6989573	24.6881090
		CA_RISK	0.3591393	0.2351072	0.0315569	0.9987853
		LEV	0.7731144	0.3165872	0.0052792	1.4288682
COMPLEX_IND	*COMPLEX_IND = 0*	*P_B*	1.0151647	0.6755168	-0.0298112	2.5517935
		LN_TA	18.7477527	1.9178305	15.4410187	24.4065296
		CA_RISK	0.3701838	0.2253099	0.000786306	0.9972671
		LEV	0.8009600	0.3365844	0.1811434	1.6009870
	COMPLEX_IND = 1	*P_B*	0.7451588	0.6465834	-0.1491869	2.5715015
		LN_TA	19.4937708	2.4866653	14.6989573	24.6881090
		CA_RISK	0.3468507	0.2493094	0.0315569	0.9987853
		LEV	0.7712748	0.3226728	0.0052792	1.5635746
IT_IND	*IT_IND = 0*	*P_B*	0.8388426	0.6476582	-0.1491869	2.5517935
		LN_TA	19.2213913	2.3078602	14.6989573	24.6881090
		CA_RISK	0.3564109	0.2375832	0.000786306	0.9987853
		LEV	0.7908014	0.3331561	0.0052792	1.6009870
	IT_IND = 1	*P_B*	1.1596409	0.8079443	0.0081232	2.5715015
		LN_TA	18.4646609	1.7026185	16.9451616	22.0474188
		CA_RISK	0.3697336	0.2471921	0.0315569	0.7595994
		LEV	0.7420334	0.2950700	0.3623729	1.3518761
BIG4	*BIG4 = 0*	*P_B*	0.8821911	0.6986498	-0.1491869	2.3437115
		LN_TA	18.8307485	2.0008880	15.3266739	24.5336547
		CA_RISK	0.3825654	0.2599071	0.000786306	0.9987853
		LEV	0.7734019	0.3363210	0.0749706	1.6009870
	BIG4 = 1	*P_B*	0.8676373	0.6455766	0.0329648	2.5715015
		LN_TA	19.4693631	2.4764362	14.6989573	24.6881090
		CA_RISK	0.3318621	0.2107716	0.0041066	0.9675679
		LEV	0.7966740	0.3221587	0.0052792	1.5729828
PRIOR_GCO	*PRIOR_GCO = 0*	*P_B*	0.8799409	0.6985040	-0.1491869	2.5715015
		LN_TA	19.4785337	2.4993082	14.6989573	24.6881090
		CA_RISK	0.3546826	0.2221815	0.0315569	0.9987853
		LEV	0.7533079	0.3115499	0.0052792	1.4288682
	PRIOR_GCO = 1	*P_B*	0.8682402	0.6342061	-0.0298112	2.3381173
		LN_TA	18.6480320	1.7603830	15.2243572	22.6357666
		CA_RISK	0.3624851	0.2609414	0.000786306	0.9972671
		LEV	0.8344777	0.3501240	0.1692595	1.6009870

5.2 Pearson and Spearman correlations.

Tables 8 and 9 present, respectively, Pearson correlations and Spearman correlations between all the variables (including the dependent variable). Both types of correlations were included to check whether significant differences occurred. There are no high correlations between independent variables and, more importantly, no correlation among independent variables gets close to a value of 0,60 or -0,60 which shows the model should not be affected by multicollinearity problems. Specifically, the highest correlations among independent variables are the one between *PRIOC_GCO* and *COMPLEX_IND* (-0,368220 for both correlations), that between *LOSS_2* and *LOSS_1* (0,33982 for both correlations), and that between *CA_RISK* and *P_B* (0,30346 for Pearson and 0,39949 for Spearman). All the other correlations are below 0,30 for both types of correlations.

The correlations between the dependent variable and the independent variables can be seen as interesting preliminary results before moving on to analysing the regression results. In fact, the correlation between *TYPE_II* and *COMPLEX_IND* is positive (0,35124) and statistically significant (<0,0001), being thus in line with the first hypothesis. The second hypothesis seems to also have potential, as the correlation between *IT_IND* and *TYPE_II* is positive (0,23695) and statistically significant (0,0089). The correlation between *PRIOR_GCO* and *TYPE_II* is strongly negative (-0,84629) and statistically significant (0,0001), which is in line with past research (Geiger et al., 2002). The negative correlation (-0,18493) between *LOSS_1* and *TYPE_II* is statistically significant at the 5% level (-0,0423) and it seems to highlight the importance the auditors in this sample put on a net loss as a discriminant useful to decide whether or not to issue a GCO. However, the positive correlation between *P_B* and *TYPE_II* is weak (0,06664) but it is not statistically significant (0,4811). Finally, the positive correlation (0,15928) between *LN_TA* and *TYPE_II* is statistically significant at the 10% level (0,0823) and it is in line with past research (e.g., Mutchler et al., 1997), as the correlation shows that as client size increases, so does the likelihood of Type II misclassifications, as the propensity to issues GCOs decreases.

Table 8. Pearson correlations.

Variable	*TYPE_II*	*COMPLEX_IND*	*IT_IND*	*BIG4*	*PRIOR_GCO*	*W_CAP*	*LOSS_1*	*LOSS_2*	*P_B*	*LN_TA*	*CA_RISK*	*LEV*
TYPE_II	1											
COMPLEX_IND	0.35124 **<.0001**	1										
IT_IND	0.23695 **0.0089**	0.27396 **0.0024**	1									
BIG4	-0.02081 0.8207	-0.00684 0.9406	0.03530 0.7007	1								
PRIOR_GCO	-0.84629 **<.0001**	-0.36822 **<.0001**	-0.23185 **0.0105**	0.00362 0.9686	1							
W_CAP	0.00335 0.9709	-0.06564 0.4744	-0.01645 0.8579	-0.07188 0.4333	0.08357 0.3621	1						
LOSS_1	-0.18493 **0.0423**	-0.06081 0.5076	0.14248 0.1190	-0.07137 0.4366	0.21419 **0.0183**	0.16872 **0.0643**	1					
LOSS_2	-0.06887 0.4529	0.05897 0.5205	0.02283 0.8037	0.06958 0.4483	0.09260 0.3124	0.10703 0.2426	0.33982 **0.0001**	1				
P_B	0.06664 0.4811	-0.20179 **0.0313**	0.15250 0.1053	-0.01086 0.9087	-0.00852 0.9283	-0.10451 0.2685	0.14579 0.1217	-0.01796 0.8496	1			
LN_TA	0.15928 **0.0823**	0.16578 **0.0704**	-0.10466 0.2553	0.14201 0.1218	-0.18165 **0.0471**	0.12958 0.1584	-0.23561 **0.0096**	-0.14058 0.1257	-0.13046 0.1684	1		
CA_RISK	0.00653 0.9433	-0.04922 0.5919	0.01744 0.8495	-0.10711 0.2423	0.01619 0.8601	-0.13911 0.1281	-0.06230 0.4973	-0.16094 **0.0778**	0.30346 **0.0010**	-0.19543 **0.0324**	1	
LEV	-0.04472 0.6427	-0.04534 0.6381	-0.04822 0.6169	0.03564 0.7117	0.12130 0.2068	0.28585 **0.0025**	0.14647 0.1268	0.09597 0.3186	0.12989 0.1888	0.04774 0.6220	0.16245 **0.0900**	1

Table 9. Spearman correlations.

Variable	*TYPE_II*	*COMPLEX_IND*	*IT_IND*	*BIG4*	*PRIOR_GCO*	*W_CAP*	*LOSS_1*	*LOSS_2*	*P_B*	*LN_TA*	*CA_RISK*	*LEV*
TYPE_II	1											
COMPLEX_IND	0.35124 **<.0001**	1										
IT_IND	0.23695 **0.0089**	0.27396 **0.0024**	1									
BIG4	-0.02081 0.8207	-0.00684 0.9406	0.03530 0.7007	1								
PRIOR_GCO	-0.84629 **<.0001**	-0.36822 **<.0001**	-0.23185 **0.0105**	0.00362 0.9686	1							
W_CAP	0.00335 0.9709	-0.06564 0.4744	-0.01645 0.8579	-0.07188 0.4333	0.08357 0.3621	1						
LOSS_1	-0.18493 **0.0423**	-0.06081 0.5076	0.14248 0.1190	-0.07137 0.4366	0.21419 **0.0183**	0.16872 **0.0643**	1					
LOSS_2	-0.06887 0.4529	0.05897 0.5205	0.02283 0.8037	0.06958 0.4483	0.09260 0.3124	0.10703 0.2426	0.33982 **0.0001**	1				
P_B	0.04226 0.6552	-0.22165 **0.0178**	0.13125 0.1640	0.00080 0.9932	0.01150 0.9034	-0.12411 0.1883	0.12447 0.1870	-0.03083 0.7447	1			
LN_TA	0.12004 0.1916	0.15922 **0.0824**	-0.12036 0.1904	0.13720 0.1351	-0.14218 0.1214	0.08836 0.3372	-0.23834 **0.0088**	-0.17249 **0.0596**	-0.02709 0.7758	1		
CA_RISK	0.01009 0.9125	-0.08153 0.3740	0.02674 0.7709	-0.06580 0.4733	-0.00723 0.9373	-0.17073 **0.0612**	-0.04228 0.6452	-0.18546 **0.0417**	0.39949 **<.0001**	-0.13767 0.1338	1	
LEV	0.00993 0.9180	0.00373 0.9691	-0.06075 0.5284	0.05755 0.5504	0.08537 0.3752	0.30859 **0.0010**	0.12607 0.1894	0.09344 0.3316	0.16050 0.1036	0.13705 0.1553	0.19947 **0.0367**	1

5.3 Regression results.

The first results presented are those obtained using the main binary logistic regressions used to test the two hypotheses. Following past literature (e.g., Altman and McGough, 1974; Mutchler et al., 1997; Geiger et al., 2002) the models included variables controlling for the degree of financial distress (*P_B*), the client size (*LN_TA*), and the auditor size (*BIG4)*. The number of independent variables was kept low (specifically 4) in order to not overfit the model (due to a limited sample size of 121 observations) and get preliminary results as to whether the hypotheses are correct.

Following theory, *P_B* was expected to have a positive coefficient, as the higher the score (meaning a low level of financial distress) the lower is the auditor's propensity to issue a Going Concern opinion and, thus, the higher is the likelihood of a potential Type II audit misclassification arising, as examples, from the auditor's not having considered material issues compromising the Going Concern assumption, or from an erroneous bankruptcy-probability threshold used by the auditor. *LN_TA* was expected to have a positive coefficient as, generally speaking, the auditors' propensity to issue GCOs is negatively associated to the size of the client (e.g., Mutchler et al., 1997). *BIG4* was instead expected to be negatively associated with the dependent variable (i.e., *TYPE_II*) as past research, despite having mixed results, seems to point to bigger auditors being more accurate in their GCO-related decisions (e.g., Francis and Yu, 2009). Finally, *COMPLEX_IND* as well as *IT_IND* were expected to be positively associated with the dependent variable *TYPE_II.*

Table 10 presents the results of the binary logistic regression used to test H1 and, as it can be observed, the coefficients were consistent with the expectations. Specifically, the variable of interest *COMPLEX_IND* had a positive coefficient (1.6891), and it was statistically significant at the 1% confidence level (p-value = 0.0002). Thus, this regression seems to support H1, that is that the likelihood of Type II audit misclassifications is higher when the auditee belongs to a complex industry. As it can be observed, the bankruptcy probability score also has a positive coefficient (0.5782) and it is statistically significant at the 10% level (p-value = 0.0835). This is consistent with theory, as a lower bankruptcy probability (i.e., higher *P_B* score) is met with less likelihood of GCOs being issued by auditors. The other control variables had the same

coefficient signs as expected. *LN_TA* had positive coefficient (0.0926) and *BIG4* had a negative coefficient (-0.0198). However, neither were statistically significant.

Table 11 presents the results of the binary logit regression used to test H2. *IT_IND* had a positive coefficient as expected (2.3949) and it was statistically significant at the 5% level (p-value = 0.0254). The p-value for *IT_IND* is naturally lower than that for *COMPLEX_IND* due to the lower concentration of observations falling in that category. Contrary to the previous regression, this also had a statistically significant intercept at the 10% confidence level. Interestingly, *P_B* is no longer statistically significant and has a lower coefficient, meanwhile *LN_TA* is statistically significant at the 5% level, and it has a positive coefficient (0.1916). This finding is interesting when paired with theory (e.g., Francis and Gunn, 2015) as it shows a potentially more important discriminant for auditors when it comes to evaluating the appropriateness of the Going Concern assumption when auditing firms belonging to the software development/technology industry. In fact, auditors might take into account the fast-paced nature and the high degree of technological competition of said industry and consider bigger firms (as proxied by a higher value of *LN_TA*) as having more chances of operating in the foreseeable future. Thus, auditors might have a lower propensity to issue GCOs to big firms in this industry and also pay less attention to the degree of financial distress, as shown by the non-statistical significance of *P_B*, as they might consider lower margins and an overall more unstable situation as normal for firms belonging to such a competitive industry. Further, *BIG4* was again not statistically significant but it did have a lower negative coefficient (-0.2464) than the previous regression, showing that big auditors engaged with firms belonging to the IT industry are more likely to deliver qualitative auditing in terms of GCO issuances.

Table 10. Regression results. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the base binary logit regression model used to test H1.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-2.6601	0.1739
COMPLEX_IND = 1	+	1.6891	**0.0002**
P_B	+	0.5782	**0.0835**
LN_TA	+	0.0926	0.3613
BIG4 = 1	-	-0.0198	0.9632
-2 log likelihood		151.937	
N = 113			

Table 11. Regression results. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the base binary logit regression model used to test H2.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-3.5328	**0.0614**
IT_IND = 1	+	2.3949	**0.0254**
P_B	+	0.2259	0.4737
LN_TA	+	0.1916	**0.0462**
BIG4 = 1	-	-0.2464	0.5501
-2 log likelihood		151.937	
N = 113			

5.3.1 Robustness checks as additional analyses.

As sensitivity analyses two additional models including more control variables are tested to check how results are affected and, in particular, to see whether the variables of interest gain or lose statistical significance. Alongside the Altman's Z-score (P_B) the additional models follow previous research (e.g., Hardies et al., 2018, Geiger et al,

2002) by including also other financial continuous control variables such as a liquidity-related continuous variable indicating the current assets risk (CA_RISK), and another measure of leverage (LEV). In addition, three more financial dummy control variables of bottom-line performance are included, as they are discriminants that could be considered by auditors. Specifically, two variables check whether there was a net loss in the year prior to bankruptcy (LOSS_1), and whether there was a net loss in two years prior to bankruptcy (LOSS_2). Another variable controls for liquidity, by checking whether working capital was negative in the year prior to bankruptcy (W_CAP). Another important control variable is also added. That is, a dummy control variable checking whether there was the pre-existence of a Going Concern opinion prior to the period of interest (PRIOR_GCO). Previous research (e.g., Hardies et al., 2018) showed that this variable is a very powerful predictor of GCOs as auditors might be highly influenced in continuing to issue GCOs if that was the final assessment a year prior.

The more specified binary logit regression model testing the first hypothesis will thus be the following:

$$TYPE\ II = \beta_0 + \beta_1 COMPLEX\_IND + \beta_2 BIG4 + \beta_3 PRIOR\_GCO + \beta_4 W\_CAP + \beta_5 LOSS\_1 + \beta_6 LOSS\_2 + \beta_7 P\_B + \beta_8 LN\_TA + \beta_9 CA\_RISK + \beta_{10} LEV \quad (3)$$

The more specified binary logit regression model testing the second hypothesis is instead the following:

$$TYPE\_II = \beta_0 + \beta_1 IT\_IND + \beta_2 BIG4 + \beta_3 PRIOR\_GCO + \beta_4 W\_CAP + \beta_5 LOSS\_1 + \beta_6 LOSS\_2 + \beta_7 P\_B + \beta_8 LN\_TA + \beta_9 CA\_RISK + \beta_{10} LEV \quad (4)$$

Where *PRIOR_GCO* = Dummy control variable taking the value of 1 if the firm had already been issued a GCO prior to the relevant year (i.e., 2 years prior), and the value of 0 otherwise,

W_CAP = Dummy control variable taking the value of 1 if the firm had

negative working capital the year prior to bankruptcy, and the value of 0 otherwise,

LOSS_1 = Dummy control variable taking the value of 1 if the company had a bottom- line loss in the year prior to bankruptcy, and the value of 0 otherwise,

LOSS_2 = Dummy control variable taking the value of 1 if the company had a bottom-line loss 2 years prior to bankruptcy, and the value of 0 otherwise,

CA_RISK = Continuous variable used to control for the auditee's liquidity. Calculated as inventory and receivables over total assets.

LEV = Continuous variable used to control for the auditee's leverage. Calculated as interest bearing debt over equity.

Note: *P_B, BIG4,* and *LN_TA* are the same as found in table 3)

To check how the results would change, the additional control variables were added gradually. Specifically, *PRIOR_GCO*, *W_CAP*, and *LOSS_1* were the first dichotomous control variables added.

Tables 12 reports the results of the first additional regression used to test H1. As can be inferred, the variable of interest *COMPLEX_IND* is no longer statistically significant (p-value = 0.1266). However, the model has three statistically significant control variables. Specifically, *PRIOR_GCO* is statistically significant (p-value = 0.0001) and it has a negative coefficient - as it was expected - and its magnitude is the highest recorded thus far (-5.1950) meaning that the presence of a pre-existent GCO seems to be an extremely powerful determinant of a future absence of Type II audit misclassifications, which is consistent with previous research (Geiger et al., 2002). *W_CAP* (which takes the value of 1 if working capital was negative the year prior to bankruptcy) was expected to have a negative coefficient but it surprisingly has a positive coefficient (1.6748) and it is statistically significant (p-value = 0.0602), showing as the auditors in this sample underestimated the liquidity problems characterizing their respective clients, as a higher likelihood of Type II misclassifications can be observed when working capital is negative. *P_B* has a positive coefficient (1.0805) as expected and it is statistically significant (p-value = 0.0867). None of the other control variables were statistically significant but they did

have the same effects as those anticipated, with the exception of *LN_TA* which seemed to be negatively associated with *TYPE_II*, meanwhile a positive association was expected.

Table 13 reports the results of the first additional regression used to test H2. Also in this case, it can be observed that the variable of interest *IT_IND* loses its statistical significance (p-value = 0.3451). *PRIOR_GCO* remains statistically significant (p-value = 0.0001) and the coefficient (-5.2948) confirms how powerful of a determinant this variable seems to be. *W_CAP* was the only other to have a statistically significant coefficient (p-value = 0.0818) and, again, the sign was positive meanwhile a negative coefficient was expected. All the other variables were not statistically significant and had the expected effects, *LN_TA* aside which, again, was negatively associated with TYPE_*II* when a positive association was expected.

Tables 14 and 15 present the results of the regressions also including the remaining controls variables, that is *LOSS_2, CA_RISK,* and *LEV*. In this case, both regressions have again non statistically significant variables of interest (p-value = 0.1445 for *COMPLEX_IND* and p-value = 0.3067 for *IT_IND*). The only statistically significant variable is *PRIOR_GCO*, which for both regressions is statistically significant at the 1% level (p-value = 0.0001). The negative association between *PRIOR_GCO* and *TYPE_II* is still extremely strong as in both regression the relative coefficients are below -5. Most of the coefficients of the other variables were in line with expectations. However, *LOSS_2* did have a positive coefficient in both regressions when a negative one was expected. This might show that auditors might wait check for whether a net loss has occurred in multiple years before using it as a determinant of Going Concern issues. Further, *LN_TA* had again a negative coefficient in the additional regression used to test H1 meanwhile a positive coefficient was expected. However, *LN_TA* had a positive coefficient as expected in the additional regression used for H2. On the other hand, *CA_RISK* was expected to be negatively associated with the occurrence of Type II audit misclassifications, but the results showed a positive association for both regressions.

As *PRIOR_GCO* is clearly a too powerful determinant to be included in the models, additional regressions were conducted including all the other variables but

PRIOR_GCO. As tables 16 and 17 show, without *PRIOR_GCO* "overexplaining" the model, the variables of interest reacquire statistical significance (p-value = 0.0003 for *COMPLEX_IND* and p-value = 0.0167 for *IT_IND*). Further, as it occurred with the original regressions, the additional regression for H1 had *P_B* as statistically significant at the 5% level (p-value = 0.0444), meanwhile the additional regression for H2 had *LN_TA* as statistically significant at the 10% level (p-value = 0.0682), showing that the client size of firms in the IT industry is deemed as a good predictor of Going Concern appropriateness by the auditors in the sample. On the other hand, an overall bankruptcy probability score might be used otherwise in order to establish whether a client can continue operating under the assumption of Going Concern. In addition, *LOSS_1* is statistically significant in both regressions (respectively, p-value = 0.0285 and p-value = 0.0580), and the association with the dependent variable was negative, showing that a net loss was deemed as enough evidence to lead the auditors to issue audit reports modified for Going Concern.

Table 12. Additional analysis. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H1. *PRIOR_GCO, W_CAP,* and *LOSS_1* as additional control variable.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	2.4006	0.5245
COMPLEX_IND = 1	+	1.2354	0.1266
BIG4 = 1	-	-0.2791	0.7164
PRIOR_GCO = 1	-	-5.1950	**<.0001**
W_CAP = 1	-	1.6748	**0.0602**
LOSS_1 = 1	-	-0.7268	0.4321
P_B	+	1.0805	**0.0867**
LN_TA	+	-0.0741	0.6904
-2 log likelihood		151.937	
N = 113			

Table 13. Additional analysis. Effects of IT Industry on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H2. *PRIOR_GCO, W_CAP,* and *LOSS_1* as additional control variable.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	2.4006	0.5245
IT_IND = 1	+	1.2354	0.3451
BIG4 = 1	-	-0.3911	0.5991
PRIOR_GCO = 1	-	-5.2948	**<.0001**
W_CAP = 1	-	1.5460	**0.0818**
LOSS_1 = 1	-	-0.5946	0.5099
P_B	+	0.8057	0.1692
LN_TA	+	-0.00212	0.9905
-2 log likelihood		151.937	
N = 113			

Table 14. Additional analysis. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H1. *LOSS_2, CA_RISK,* and *LEV* were further added as control variables.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	1.4495	0.7339
COMPLEX_IND = 1	+	1.2104	0.1445
BIG4 = 1	-	-0.4761	0.5619
PRIOR_GCO = 1	-	-5.0651	**<.0001**
W_CAP = 1	-	1.5074	0.1176
LOSS_1 = 1	-	-0.8226	0.4502
LOSS_2 = 1	-	0.1452	0.8764
P_B	+	0.9762	0.1620
LN_TA	+	-0.0527	0.7949
CA_RISK	-	0.3231	0.8630
LEV	-	0.9189	0.5070
-2 log likelihood		137.609	
N = 103			

Table 15. Additional analysis. Effects of IT industry on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H2. *LOSS_2, CA_RISK,* and *LEV* were further added as control variables.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	1.4495	0.7339
IT_IND = 1	+	2.1383	0.3067
BIG4 = 1	-	-0.6079	0.4385
PRIOR_GCO = 1	-	-5.1380	**<.0001**
W_CAP = 1	-	1.3803	0.1508
LOSS_1 = 1	-	-0.6798	0.5393
LOSS_2 = 1	-	0.2917	0.7523
P_B	+	0.6719	0.2996
LN_TA	+	0.0324	0.8702
CA_RISK	-	0.6253	0.7333
LEV	-	0.9182	0.4960
-2 log likelihood		137.609	
N = 103			

Table 16. Additional analysis. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H1. Extended model as in table 14 with the exclusion of *PRIOR_GCO*.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-0.9290	0.7276
COMPLEX_IND = 1	+	1.9398	**0.0003**
BIG4 = 1	-	-0.00966	0.9840
W_CAP = 1	+	0.6414	0.2263
LOSS_1 = 1	-	-1.5662	**0.0285**
LOSS_2 = 1	-	0.2124	0.6969
P_B	+	0.8744	**0.0444**
LN_TA	+	0.0329	0.7955
CA_RISK	-	-0.2277	0.8524
LEV	-	-0.1648	0.8433
-2 log likelihood		137.609	
N = 103			

Table 17. Additional analysis. Effects of IT industry on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H2. Extended model as in table 14 with the exclusion of *PRIOR_GCO*.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-3.4742	0.1712
IT_IND = 1	+	2.6000	**0.0167**
BIG4 = 1	-	-0.4232	0.3562
W_CAP = 1	+	0.3057	0.5378
LOSS_1 = 1	-	-1.2540	**0.0580**
LOSS_2 = 1	-	0.3225	0.5334
P_B	+	0.3261	0.4009
LN_TA	+	0.2171	**0.0682**
CA_RISK	-	0.4117	0.7182
LEV	-	-0.1030	0.8953
-2 log likelihood		137.609	
N = 103			

As final robustness checks, the extended regressions with the exclusion of *PRIOR_GCO* were further tested on a sample from which the 14 observations belonging to the financial services industry were excluded, as previous studies (e.g., Hardies et al., 2016; Hardies et al., 2018) excluded them. In the previous models, such firms were kept regardless as they belong to the classification of "complex industries" as provided by Francis and Gunn (2016) following Fama and French (1997).

As tables 18 and 19 report, even by excluding the 14 observations belonging to the financial services industry, the variables of interest are statistically significant and positively associated with an increased chance of Type II audit misclassifications (p-value = 0.0021 for *COMPLEX_IND* and p-value = 0.0229 for *IT_IND*). Further, as occurred with the previous analyses, the model used to test H1 had *P_B* as statistically significant (p-value = 0.0471). However, this time the model used to test H2 lost statistical significance on *LN_TA* (p-value = 0.1380). Further, *LOSS_1* was statistically significant in both regressions (p-value = 0.0556 and p-value = 0.0657).

In conclusion, after having tested the models repeatedly using different robustness checks, it seems reasonable to state that both the first and second hypotheses are accepted. Thus, it seems that the likelihood of Type II audit misclassifications is higher when the auditee belongs to a complex industry as well as if it belongs to the IT industry. However, the results might be affected by determinants not explained by the model as the inclusion of *PRIOR_GCO* showed and, in general, the results might still not be generalizable as auditing is a complex phenomenon that can be tricky to explain quantitatively. Potential limitations affecting the results will be further discussed in the conclusions.

Table 18. Additional analysis. Effects of industry complexity on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H1. Extended model without *PRIOR_GCO* and the firms belonging to the financial services industry.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-0.3380	0.9039
COMPLEX_IND = 1	+	1.7269	**0.0021**
BIG4 = 1	-	-0.2225	0.6649
W_CAP = 1	+	0.4846	0.3785
LOSS_1 = 1	-	-1.4750	**0.0556**
LOSS_2 = 1	-	0.2781	0.6403
P_B	+	0.9437	**0.0471**
LN_TA	+	0.0145	0.9153
CA_RISK	-	-0.0149	0.9907
LEV	-	-0.3312	0.6957
-2 log likelihood		119.334	
N = 90			

Table 19. Additional analysis. Effects of IT industry on the likelihood of Type II audit misclassifications. Results from the binary logistic regression used to test H1. Extended model without *PRIOR_GCO* and the firms belonging to the financial services industry.

Variable	Predicted coefficient sign	Coefficient	Pr > Chi-square (p-value)
Intercept	?	-2.7526	0.3087
IT_IND = 1	+	2.4873	**0.0229**
BIG4 = 1	-	-0.6391	0.2036
W_CAP = 1	+	0.1174	0.8218
LOSS_1 = 1	-	-1.3582	**0.0657**
LOSS_2 = 1	-	0.4276	0.4564
P_B	+	0.4559	0.2841
LN_TA	+	0.1908	0.1380
CA_RISK	-	0.7716	0.5187
LEV	-	-0.3203	0.6903
-2 log likelihood		119.334	
N = 90			

6 CONCLUSIONS

This study contributes to the literature surrounding audit reports modified for Going Concern. Specifically, it focuses on Type II audit misclassifications, which are those occurring when a GCO is not rendered to a client that subsequently files for bankruptcy within a year from the publication of the audit report. The focus of this thesis is on this kind of misclassifications as they are widely considered to be more impactful than Type I misclassifications (i.e., excessive audit conservatism resulting in GCO-issuances followed by no future client bankruptcy). In fact, regulators have advocated for research on the matter as the accuracy of GCOs matters to investors and, thus, it promotes an efficient functioning of capital markets. Indeed, Type II audit misclassifications are generally deemed as "audit failures", as the auditors have not been able to warn investors about the existing issues in the appropriateness of the Going Concern assumption of their clients. Further, Type II misclassifications are generally more costly to auditors, as potential litigation fees and reputation loss might arise as a consequence of the same.

Numerous factors affecting GCO issuances and, thus, their misclassifications have been studied by past research. Previous studies on the matter generally focused on auditor-related factors (e.g., audit firm size, dependency over the client), auditee-related factors (e.g., client firm size, bankruptcy likelihood), and the auditor-auditee relationship (e.g., audit tenure). In this study, the role of the auditee industry was explored as a potential determinant affecting the likelihood of GCO issuances and their relative misclassifications. Specifically, by following a past line of research focusing on the role of industry complexity on audit quality (e.g., Francis and Gunn, 2015), the study tried to explore whether firms belonging to complex industries see a higher occurrence of Type II audit misclassifications. Therefore, following a classification used in past research (e.g., Francis and Gunn, 2015 via Fama and French, 1997), the observations were divided into "complex" industries (e.g., financial services, transportation, construction, IT services) and "non-complex" industries (e.g., manufacturing, retail trade, wholesale trade). The application of GAAP is deemed harder in complex industries as they are characterized by longer-than-average operating cycles and the revenue-recognition and measurement processes are heavily affected by accruals. As a result, these industries are regarded to be more volatile and

unpredictable and, thus, they are harder to account for and audit. Contrary to the previously mentioned line of research, which used abnormal accruals as proxy for audit quality, the proxy used in this study was the common proxy used in a great share of the audit research concerning Going Concern opinions, that is GCO issuances.

In this respect, two hypotheses were developed in this study. The first hypothesis refers to the likelihood of Type II audit misclassifications being higher when the auditee belongs to a complex industry. The second refers to the likelihood of Type II audit misclassifications being higher when the auditee belongs, specifically, to the IT industry. The IT services industry belongs to the classification of complex industries and past research (e.g., Francis and Gunn, 2015; Xu et al., 2022) mention it as being highly unpredictable and non-linear due to the numerous post-sale services, accruals, and the high degree of technological competition within the industry. To test the hypothesis a sample of 121 bankrupted firms was collected from Refinitiv Eikon and the relative audit opinions prior to bankruptcy were retrieved from Audit Analytics using the European module in order to check whether a Type II audit misclassification occurred (which includes EEA, Switzerland, and the UK which still follow the International Audit Standards, such as ISA 570). The models employed to test the hypotheses were binary logistic regressions having a binary dependent variable expressing whether a Type II misclassification occurred or not. Dummy variables were used in order to discriminate for industry complexity and IT services industry and the models included typical control variables found in previous research (e.g., bankruptcy probability, client size).

Both hypotheses seemed to be confirmed using the vanilla regression models, as the associations between industry complexity and IT services industry, and the likelihood of Type II audit misclassifications were positive, and they were both statistically significant. Thus, it seems that the likelihood of observing a Type II misclassification is higher when the auditee belongs to a complex industry or, specifically, if it belongs to the IT industry. As explained, this might be due to the higher degree of unpredictability and the overall higher degree of difficulty in applying GAAP in those industries, thereby making it harder for auditors to accurately assess the appropriateness of the Going Concern assumptions and thus increasing the likelihood of delivering accurate assessments as to whether Going Concern problems exist or not.

In order to check the strength of the results obtained using the vanilla binary logit regressions, different robustness checks were conducted. The additional analyses gradually included control variables and yielded the same results. However, the variables of interest lost statistical significance when the models also included a determinant of the pre-existence of a GCO, showing that this variable was overexplaining the model. As final robustness checks, the models were tested with a sample that did not contain the 14 observations of firms belonging to the financial services industry as previous research generally excluded such firms (e.g., Hardies et al., 2016; Hardies et al., 2018). Even by excluding these observations, alongside the exclusion of the variable describing the pre-existence of a GCO, the results kept true, showing a positive association between the variables of interest and the dependent variable.

Therefore, after having conducted different robustness checks, it seems reasonable to state that both hypotheses are accepted and, thus, it seems that the auditor's ability to reliably assess the appropriateness of the Going Concern assumptions in firms belonging to complex industries or, specifically, to the IT industry alone, might be impaired. The results of this study are interesting if analysed in relation to past research and they provide a further determinant to the plethora of factors studied in relation to GCO issuances. The results concerning the implications of industry complexity on audit quality are mixed in past research and, overall, it seems that they have not been broadly studied. Francis and Gunn (2015), as an example, found an increase in audit quality when the auditee belongs to a complex industry, when also controlling for the auditor's industry expertise. On the other hand, Butar-Butar and Indarto (2018) following the same methodology found no significant difference in the degree of audit quality between complex and non-complex industries. Both studies used differences in abnormal accruals as proxy for audit quality, meanwhile the proxy used in the thesis was the more common proxy used in past research, that is GCO-issuances. Thus, this thesis might serve as a pilot study to analyse the implications of industry complexity on GCO reporting accuracy. Further, the results are also interesting if analysed in relation to those of Xu et al. (2022), who found that a higher degree of technological competition within an industry leads auditors to regard the audit engagements with firm belonging to those industries as riskier, as the firms' Going Concern status can be more unpredictable and, thus, harder to assess. In their case, it seems that industry

unpredictability is met with higher auditor conservatism (thus higher occurrence of Type I errors). However, according to the results obtained in this thesis, it seems that a higher degree of unpredictability lowers the auditors' propensity to issue GCOs, thus increasing the likelihood of Type II audit misclassifications. Naturally, one homogeneous measure that captured the degree of industry complexity, technological competition, and overall unpredictability might be useful in the future to help harmonizing the results.

Naturally, the study might be affected by different limitations. Firstly, it is important to state that audit quality cannot be merely measured by the accuracy of GCOs issuances as past research specified (e.g., Carcello et al., 2013). It is an imperfect proxy and, thus, the results obtained in this line of research are generally not generalizable as many concurrent factors might influence GCO issuances and the context is key to interpreting the results. As an example, this study suffers from a limited data collection process that forced to have a small sample of 121 observations belonging to different countries. Despite statutory audits and regulations concerning GCOs have been harmonized across different European countries and thus made similar in terms of content and requirements (European Directive 2014/56 concerning statutory audits), national differences concerning specific audit regulations and cultural values might as well influence the results obtained. It needs to also be pointed out that all the countries included in the sample still follow the International Standards on Auditing developed by the IAASB, such as ISA 570 concerning GCOs. However, differences in practical matters concerning the application of ISA 570 could exist among different countries and thus GCO decisions might be affected by variables not accounted for by the models employed in this study. Overall, controlling for specific and minor national differences in the audit regulatory frameworks was out of the scope of this thesis due to a lack of background and expertise on the matter. As an example, the focus of the research could have been merely on observations belonging to one country. However, this was not possible as already by including different countries and using a time span of 10 years, the overall number of observations was quite small (121). Thus, using observations from just one country would have made for a too small sample size. Another limitation concerns the general small size of the sample which might, naturally, affect the generalizability of the results. Further, other unknown variables might affect the results.

It would be interesting if future research tested the issue further by focusing on a single country or by properly accounting for national differences, and also by increasing the sample size, which might help in increasing the generalizability of the results. Furthermore, the models used in this study did not explain auditor's industry expertise due to data collection limitations, thus it might be beneficial if future research explored the issue taking that factor into account as well, to see whether industry experts are better at assessing Going Concern appropriateness in complex industries. In addition, the results obtained in this study might also have practical implications. In fact, the higher occurrence of Type II audit misclassifications that was found in complex industries and the IT services industry might show that further audit procedures and/or audit requirements should be adopted in order to decrease the likelihood of what are often regarded as "audit failures". Further, the results might be of interest to investors who deem a clean audit report as a guarantee for a safe investment. In fact, such investors might need look at the audit report in relation to the industry the firm belongs to and account for that in their decision-making process, as a clean report given to a firm belonging to such industries might be erroneous with respect to the Going Concern status. Again, future research might increase the strength of these results by controlling for additional factors and increasing the scope of the study.

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