Consistency in audit reporting behaviour: evidence from going concern modifications

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CONSISTENCY IN AUDIT REPORTING BEHAVIOUR: EVIDENCE FROM GOING CONCERN MODIFICATIONS

THE UNIVERSITY OF NEW SOUTH WALES

SCHOOL OF ACCOUNTING

BY

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A thesis submitted in fulfilment of the requirements of the degree of Doctor of Philosophy of the University of New South Wales.

*"As the world's capital markets integrate, the logic of a single set of accounting standards is evident. A single set of international standards will enhance comparability of financial information and should make the allocation of capital across borders more efficient. The development and acceptance of international standards should also reduce compliance costs for corporations and improve **consistency in audit quality**."*

*<div align="right">**Sir David Tweedie**</div>*

<div align="right">(Washington DC, 14 June 2006)</div>

*"The IAASB's objective is to serve the public interest by setting high-quality auditing and assurance standards and by facilitating the **convergence** of international and national auditing and assurance standards, thereby enhancing the quality and **consistency of practice** throughout the world and strengthening public confidence in the global auditing and assurance profession."*

*<div align="right">**International Auditing and Assurance Standards Board**</div>*

<div align="right">(IFAC 2011a)</div>

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Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Per Christen Trønnes

Date: 15/11/2011

Abstract

Without consistency in auditors' reporting behaviour, it is very difficult for a user of audit reports to determine where differences come from; economic differences, differences in auditing methods, interpretation of standards or even due to the auditors' independence. This thesis examines the consistency in auditors' reporting behaviour with two empirical studies.

The first study investigates the cross-country consistency in the application of auditing standards over time and across different auditing firms in the United States, United Kingdom and Australia. With a sample of 19,157 financially distressed firms from 2001 to 2006, the study finds that there is a lack of consistency in audit reporting behaviour between these countries when it comes to the going concern modification. The lack of consistency is however moderated by international audit firm networks, and the trend is that the country differences have reduced over time.

The second study looks at the auditors' consistency by comparing their substantial doubt threshold when first issuing a going concern modification, with their substantial doubt threshold when they withdraw the going concern modification. With panel data from 386 US firms in the years 2000-2008, auditors are found to be inconsistent in their assessment of the substantial doubt criterion. The ceteris paribus probability of observing a going concern modification is 6.9% lower when the going concern modification was first issued, compared to when it was withdrawn. The study finds that this difference is primarily caused by the firms that change auditors between the issuance and the withdrawal of the going concern modification. This implies that given the same auditing standard, different audit firms arrive at inconsistent audit outcomes.

Understanding the role and relationship between the various impediments and facilitators to consistency both at a national and international level is of importance to consumers and providers of audit services, as well as those who regulate the audit market. By providing a systematic investigation into the consistency of the audit outcome, the findings of this thesis provides valuable input to the evaluation of the current auditing standards and may serve as a guide to future developments of these standards. The thesis also examines the audit firms' network structure and its ability to facilitate consistency across borders.

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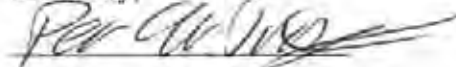
Dear Dr Carson and Dr Simnett

As you know, I am completing a doctoral dissertation at University of New South Wales entitled: "Consistency in Audit Reporting Behaviour: Evidence from Going Concern Modifications". You have supervised all research which forms the basis for the thesis, and you currently appear as co-authors on a current working paper that has been presented at various conferences and workshops that developed out of my PhD work. I would therefore like your explicit permission to reprint in my dissertation the following working paper with minor adjustments:

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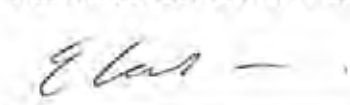
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CHAPTER 1

Introduction

FOREWORD: High quality auditing and ethics underpin the trust that investors place in financial and non-financial information and play an integral role in contributing to economic growth and financial stability at both domestic and international levels. The purpose of this thesis is to look at the effectiveness of auditing standards in ensuring consistent audit outcomes. This introduction provides a brief overview of the background to this study, and an outline of the importance of consistency.

1.1 Background

A sound financial reporting system contributes to economic development and is supported by strong governance, high quality standards, and strong regulatory frameworks. High quality auditing and ethics underpin the trust that investors place in financial and non-financial information and play an integral role in contributing to economic growth and financial stability at both domestic and international levels (Wong 2004). Standard setters issue standards as a means to that end. The premise behind auditing standards is that it will lead to more uniform audit processes and auditor judgments and thus lead to more consistent outcomes. This assertion also forms the basis for the recent push for international harmonisation of auditing standards: that auditing standards which are internationally uniform will lead to uniform application and towards consistent outcomes of those standards by auditors. Indeed, the stated objectives of the International Auditing and Assurance Standards Board (IAASB) include:

> *"...facilitating the convergence of national and international standards, thereby enhancing the quality and uniformity of practice throughout the world and strengthening public confidence in the global auditing and assurance profession"* (IAASB, 2010, p. 1).

To achieve uniformity of practice requires that audit firms develop methodologies consistent with national and international auditing standards (Carson 2006). The purpose of this thesis is to look at the effectiveness of auditing standards in ensuring consistent audit outcomes. Without empirical evidence, it is difficult to assess the success of auditing standards in ensuring uniformity of audit practice and consistent application of auditing standards. Any differences in interpretation and application of national or international auditing standards present future challenges for national and international regulators to prevent an unintended expectation gap: that is, stakeholders believe the application of auditing standards to be consistent when they are in fact not.

A major objective of this thesis is to investigate consistency as an important dimension of audit quality. In this thesis, consistency is distinguished from accuracy. Auditors are accurate when they issue an appropriate audit opinion, with the necessary modifications when it is warranted. From the perspective of a user of financial statements, consistency of auditing practice will be achieved when clients with similar circumstances are issued

with the same audit report for similar underlying factors regardless of factors such as the time period, auditor's firm or even country of origin. From a policy perspective, it follows that consistency is a necessary condition for accuracy, in that if auditors are inconsistent in their application of auditing standards, then some of the auditors must also be inaccurate. Consistency alone is not sufficient for accuracy, in that auditors may be consistently inaccurate. This does not diminish the importance of consistency. The absence of consistency is *prima facie* evidence of inaccuracy (Trotman 1996). Some even argue that consistency implies accuracy where auditors' decision making is involved (Ashton 1985; Davis et al. 2000). The importance of consistency in auditing has been well documented for many years. For example: "In the best of all possible worlds, every auditor, given the same set of facts, would select the same auditing procedures and apply them to the same extent" (Hicks 1974, p. 39); Mautz and Sharaf (1961) argues that inconsistencies between auditors have no place in auditing; "The standard of care which the auditor owes to the client is that degree of care which would ordinarily be exercised by other members of the profession in similar circumstances" (Willingham and Carmichael 1971, p. 19).

Examining auditors' consistency in the application of auditing standards both within countries and between countries will provide valuable knowledge. In particular, in times of increasing focus on international harmonisation, consistency at the international level is of great interest. Systematic lack of consistency in audit reporting behaviour is vital information for regulators, users of financial statements, and audit firms alike. Financial statement users, particularly in a global economy, have a fundamental interest in the extent of differences of audit reporting behaviour between nations. The thesis will aid standard setters in identifying where future challenges lie with ensuring consistency in audit reporting behaviour.

A central tenet of this thesis is that principles-based auditing standards alone do not provide a sufficient structure to ensure consistency, but that networks of audit firms provides this structure and facilitate consistency in audit practices across geographical locations and over time. This is because a key attribute of an audit firm network, its codified knowledge and expertise, can be transferred efficiently to offices that are located in different geographical areas. Idiosyncratic differences between networks allow for

potential inconsistency in audit practices between these networks. Although each audit firm network is different, the similarity in key characteristics among groups of audit firm networks, such as the ones that are global in nature, makes these networks an important force for ensuring consistency on a global basis. Consequently, audit firm networks are an important feature of the audit environment that shapes how audit standards are interpreted and how audit practices are developed and applied. Importantly, the audit firm network structure directly affects the consistency of audit practices. Over the past decade, there has been a few disruptions to the auditing environment, including the downfall of Enron and concurrently Arthur Andersen, the dot-com bubble, regulatory changes around the world, and the onset of the financial crises in early 2007. At the same time, there has been a fundamental progress in international harmonisation of accounting and auditing standards. As the audit is dictated by auditing standards, this progress will ultimately affect consistency in auditors' application of the auditing standards.

1.2   The Study

The primary contribution of this thesis is to empirically examine consistency in auditors' application of auditing standards, in particular the auditors' assessment of the going concern assumption and whether they modify the audit report. The focus on the outcome of the audit process, namely the audit report, is important because principles-based auditing standards allow auditors to exercise their judgment in the design of audit procedures. Yet, and irrespective of auditors' specific choices in audit procedures, the procedures should lead towards the same outcome, specifically the type of audit opinion, as per the principles laid down in auditing standards. Consequently, consistency in audit outcomes does not imply identical audit procedures. Furthermore, the setting of auditors' assessment of the going concern modification is chosen because it is an observable outcome of the audit process, and the related auditing standards are based on broad principles. The basis of any modifications to the audit report for reasons of going concern considerations should be disclosed in the financial statements. As such, the report issued on the basis of going concern considerations is capable of being modelled to a relatively high degree of explanatory power, and there is a significant academic literature to support such modelling. The form of the audit report, especially with regards going concern

considerations, is one of the most important decisions made by the auditor from the perspective of the financial statement user. This thesis presents two main studies.

In view of regulators' actions to harmonise auditing standards on an international level, the second study examines the consistency of issuance decisions in the going concern context across countries, time and types of audit firms. The harmonisation effort has been based on the premise that uniform standards will result in uniform application of these standards across firms and national boundaries. This study uses a sample of 19,157 financially distressed firms from the United States, the United Kingdom and Australia for the years 2001 to 2006. It is therefore possible to observe consistency in this setting. The similarities among these countries, and thus the reason for selecting them allow for factoring out certain complicating features that would otherwise be present (e.g. differences in the audit environment related to culture, legal systems, capital markets, language translation issues and the interaction between them). The end result is that if auditors from the United States, the United Kingdom, and Australia cannot be shown to be consistent, given similar standards, it is unlikely that auditors from other countries would also be consistent. Restricting the analysis to a few countries enhances the ability to discern the impact of country specific factors, but because each and every country represents a unique setting the ability to generalise the results will necessarily be limited.

In the first study, auditors' consistency is investigated by assessing auditors' substantial doubt threshold when first issuing a going concern modification relative to auditors' substantial doubt threshold for withdrawing the going concern modification. [1] The conjecture of this study is that auditors are consistent if, *ceteris paribus*, the thresholds are the same: after all, both the issuing and the withdrawing of the going concern modification are governed by the same standard. The study uses panel data from 386 US firms which had both a first-time going concern modification and a subsequent withdrawal in the period 2000-2008.[2]

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[1] "Withdrawal" in this thesis refers to when the client is issued a clean audit opinion in the year following a going concern modification. In this respect, it should not be interpreted as though the auditor issued a going concern modification in error, and then subsequently withdrew the going concern modification upon the discovery of this error.

[2] The motivation for setting this study in the US is primarily driven by the need for a large sample of public companies for which the observations associated with auditors' issuance of initial going concern modifications and observations associated with auditors' withdrawing the going concern modifications can be sourced.

The analyses are aided by the availability of high quality, large sample databases with extensive coverage for the countries under examination, supplemented with hand-collection of data where necessary. The thesis comprehensively examines auditors' consistency in the context of auditors' evaluation of the going concern assumption. The two studies examine key elements that may impact consistency: the size of the auditor, auditor-client switches, whether the auditor is a member of a global audit firm network, as well as whether there are changes in consistency over time. An archival empirical approach is used with both a large sample with pooled cross-sectional data (study 1) and a small sample with panel data (study 2) of listed companies.

The results from study 1 indicate that there is a lack of consistency in audit reporting behaviour across countries: United States auditors have the lowest threshold for issuing going concern modifications followed by Australian auditors and then United Kingdom auditors. This interesting observation has not been documented before and is important for users of audit reports to understand if they are to discern differences between countries. The lack of consistency is found to be moderated by international audit firm networks, demonstrating an advantage of these networks beyond the individual firm and that these networks are an important part of the global regulatory environment where standards are set globally but enforced only at national levels. The results also show that the country differences in audit reporting behaviour have reduced over time.

The results from study 2 suggest that auditors are inconsistent in their assessment of the substantial doubt criterion – the *ceteris paribus* probability of observing a going concern modification is six percent lower when the going concern modification was first issued compared to when it was withdrawn. This result, however, is primarily attributed to those clients that change auditors between the initial going concern and the subsequent withdrawal. Consequently, and given the same auditing standard, different audit firms practice different application of this standard leading to inconsistent audit outcomes.

1.3   Contributions and Significance of the Study

Whether auditors are consistent and accurate in their auditing practices is clearly of interest to regulators, as outlined below. But the findings are also of importance to auditors and academic researchers. Although many studies have focused on the issuance of going concern modifications, very little is known about those firms that have their going concern modification withdrawn and how the audit decision regard the modification threshold compares to when they received the initial going concern modification. Furthermore, little is known about whether the harmonisation of international auditing standards has led to more consistent audit reporting. This thesis contributes to knowledge in these areas by examining the consistency as an underlying and necessary condition for accuracy.

1.3.1 Contributions to Regulators and Standard Setters

Consistent interpretation and application of auditing standards by auditors is a core issue for regulators that develop policy and set auditing standards and for the regulators charged with enforcing these standards. Without consistency it would be difficult for a user to determine whether differences in audit reports were caused by economic differences or simply by differences in auditing methods, interpretation of standards, or even due to auditors' independence. This thesis provides direct empirical evidence on the consistency issue both at the national and international level. Furthermore, investigating the economics of the international audit environment is of value to those who develop policy and set auditing standards by providing a basis for understanding this environment and its changing structure. This knowledge is a fundamental input to evaluation of the current standards but may also serve as a guide to future developments of these standards. In the aftermath of the Enron bankruptcy in 2001, and the related collapse of Arthur Andersen in 2002, it has become fashionable to question the quality of audits being performed by audit firms, especially the largest audit firms. Understanding the role of audit firm networks in promoting consistency in the market for audit services – both within and between countries – is of importance to consumers and providers of audit services, as well as those who regulate the audit market. The failure of audit firm networks to maintain consistent quality control across the network has been implicated in recent corporate collapses, such as Parmalat and Ahold, and this has fuelled concerns by regulators as to the consistency of

quality of audit services provided in multiple locations by network audit firms (Carson 2006).

As independent audit regulators are moving beyond national confinement, not only sharing knowledge of the audit market environment and practical experience, but also actively promoting collaboration and consistency in regulatory activity (IFIAR 2011), this thesis assists regulators by providing information that contributes to a better understanding of the impact these network structures have on the consistency of audit practices, and provides knowledge essential to the design of future policies that may affect audit practices. The level of consistency conveys important information about the distribution of audit quality among auditors and may identify shortcomings in the auditing standards as well as auditors' performances. The thesis also contributes to a greater understanding of audit practice by examining how consistency is affected over time, by audit firm size and network structures, and when clients switch audit firms. By providing a better understanding of these market mechanisms, it helps to define the content of rules and principles, and the function of regulatory bodies in facilitating and strengthening the protective operation of the market.

1.3.2 Contributions to the Audit Profession

This study provides audit firms with a systematic evaluation of consistency in audit practices and where issues of concern are most pertinent. The issue of consistency in audit practices is essential for ensuring audit quality across the network. This is particularly relevant in the cases of large, multinational audit clients where there is a demand for maintaining audit quality across national borders. By providing a systematic investigation into the consistency of the audit outcome, this thesis evaluates the network structure's ability to achieve consistency across borders. Equally, the study examines the implications for the consistency of audit firms that operate domestically but are not members of an international network, and the challenges that this entails for international consistency. Consistency is also important with respect to litigation, where successful defence may entail demonstrating that others, usually expert witnesses, would make the same decisions (Trotman 1996). This thesis emphasises the paramount importance of maintaining consistency in reporting behaviour throughout the audit firm networks.

1.3.3 Contributions to the Academic Community

The purpose of this thesis is not simply to add to the knowledge about audit practices but also to understand, explain and predict these practices. This thesis develops a theoretical framework around audit accuracy and consistency, expectation gap and audit firm networks. Although auditing is generally thought of as a practical discipline, to discuss the usefulness of audit practices without devoting sufficient attention to the theoretical foundations of auditing can not only limit its perspectives, but may also prevent appropriate development of the field in relation to its changing environment. The need for theory in auditing is associated with the motivation of interested parties (regulators, managers, auditors, analysts and so on) to form a solid basis for making decisions. To acquire the necessary knowledge about the economics of the audit market – both on a national and international level – requires a thorough understanding of the economic variables and of the relationship between them. This thesis presents a rigorous test of these relationships with the use of a strong theoretical framework that provides sufficient explanation and reasoning of the variables, their association with each other, and the environment in which the economic action is taking place. The body of knowledge gained from the two studies will pave the way for future research seeking to expand the understanding of impediments to and facilitators of consistency in audit reporting, especially at the international level.

In addition to the theoretical contribution, the thesis makes a methodological contribution to the field of auditing research. The complexity in making statistical inferences and interpretation of the results regarding interaction effects in non-linear models has received much attention in the fields of economics and sociology. Drawing on "best practice" from these fields, considerable effort has been spent on presenting the results in a straightforward way, without compromising the accuracy of results, and in a manner that does justice to the complex nature of these models.

1.4 Structure of the Thesis

The thesis is both descriptive and analytical and consists of a theoretical framework, a literature review, two studies and some further material in three appendices. Although the chapters are written as stand-alone work, they are all an integral part of the overarching

theme of this thesis and there are clear links between chapters. The thesis will proceed as follows: Chapter 2 presents the theoretical framework of the thesis. Consistency as an important dimension of audit quality is expanded upon and the link between consistency and audit quality is further explored. The framework then identifies several potential impediments to consistency, including an in-depth discussion of litigation risk and differences in bankruptcy regulations, which may differ across different regulatory jurisdictions In turn, the audit firm as a network organisation, with sharing of ideas, knowledge, methodology and approaches across multiple geographical areas, is examined as a key facilitator of achieving consistency in audit practice. Chapter 3 gives an account of prior findings concerning auditors' evaluation of the going concern assumption. It shows that there is currently a knowledge gap with respect to international consistency and highlights the paucity of the current literature on the withdrawal of going concern modifications. Chapter 4 presents study 1, an international comparative study on US, UK and Australian auditors and investigates the extent of consistency between auditors in these countries, as well as the impact of the harmonisation effort over time and the effect of international audit firm networks upon consistency. Chapter 5 presents study 2, a study of US auditors' consistency in evaluating the substantial doubt criterion when faced with issuing a going concern modification for the first-time, compared to when the auditor is faced with withdrawing that going concern modification. In addition to Chapter 6, which presents the overall conclusion of the thesis, the thesis presents three appendices that contain further material – two of which constitute some further empirical research in relation to the issues raised in Chapters 4 and 5, and one that is concerned with research methodology issues and justification of the methodological choices made within this thesis.

CHAPTER 2

Theoretical Framework

FOREWORD: Auditing standards establish the principles for how auditors conduct an audit, and if auditors interpret and apply these principles differently this would affect not only consistency among auditors, but also have an impact on audit accuracy. The purpose of the framework presented is to show that consistency is an important dimension of audit quality. Further, the framework identifies various impediments to consistency and discusses the issue of litigation risk and compares bankruptcy rules across countries in-depth. A central tenet the framework presents is that the network structure of audit firms makes them a facilitator of consistency both on a national and an international level through the use of a shared and common approach to the audit. Consequently, it is argued that the audit firm network structure is imperative to realise the benefits of the international harmonisation efforts of auditing standards.

2.1 Introduction

The framework outlined in this chapter highlights consistency as an important dimension of audit quality. Consistency allows users of audit financial statements to infer that differences in the audit reports are due to differences in the underlying economic events of the company and not due to differences among auditors. One of the arguments in favour of auditing standards, and behind recent harmonisation of international auditing standards, hinges on the assumption that uniformity in standards leads to consistency in auditing. But for this assumption to hold true there must also be consistency in auditors' interpretation and application of these standards. Moreover, auditors' interpretation of their responsibilities to the auditing standards, and how they apply the auditing standards, is not independent of the audit environment in which they operate. This framework highlights several possible factors that can cause impediments to consistency in auditors' response to circumstances which lead to potential inconsistent audit reporting behaviour. The framework also emphasises the importance of the audit firm network as a structure of ensuring consistency across audit practices. The audit firm networks play a crucial role in ensuring consistency across time and geographical locations of audit engagements due to shared methodology, knowledge, and internal quality reviews.

The framework is summarised in Figure 2-1. Principle-based auditing standards are open to interpretation regarding the best audit procedures to achieve the objectives, and variation in key characteristics of the audit environment affects how auditors interpret and apply auditing standards in the going concern context. The interpretation and application of auditing standards is a function of auditor's competence and independence. However, the audit firm networks, both on a national and an international level, act as facilitators of consistency through the use of a shared and common approach to the audit. The common audit approach within an audit firm network necessitates that there is common interpretation of auditing standards which are influenced by the networks' collective competence in terms of shared knowledge and expertise. In turn, when auditors execute the audit, they rely on the network's common audit approach which provides a structure that limits the auditor's judgements and ensures that audits are executed consistently. The network puts in place quality control mechanisms, such as concurring partner reviews, to ensure consistent network-wide quality. The remainder of this chapter will develop the
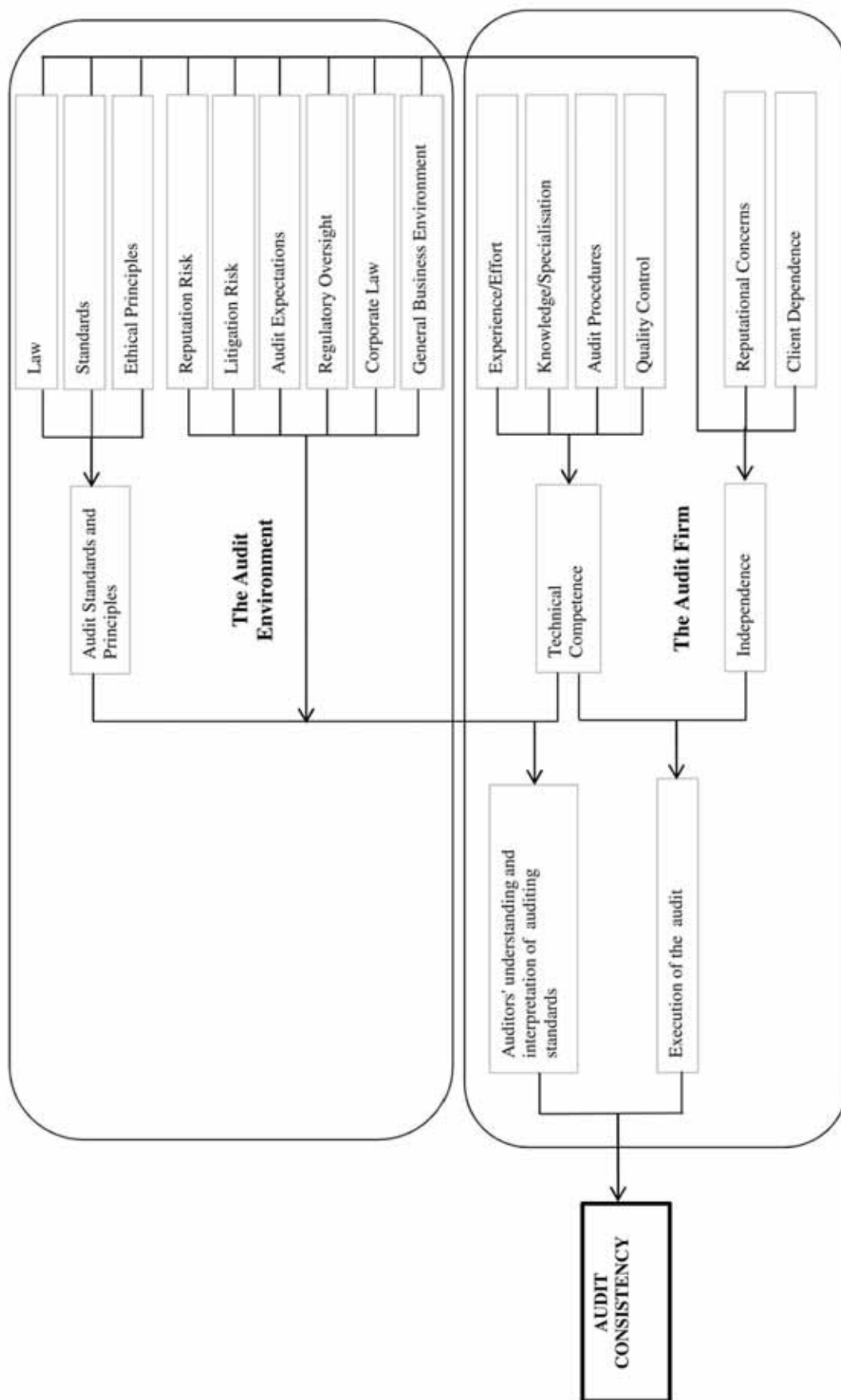
Figure 2-1: Factors Affecting Audit Consistency

The Audit Environment

- Law
- Standards
- Ethical Principles
- Reputation Risk
- Litigation Risk
- Audit Expectations
- Regulatory Oversight
- Corporate Law
- General Business Environment

Audit Standards and Principles

The Audit Firm

- Experience/Effort
- Knowledge/Specialisation
- Audit Procedures
- Quality Control
- Reputational Concerns
- Client Dependence

Technical Competence

Independence

Auditors' understanding and interpretation of auditing standards

Execution of the audit

AUDIT CONSISTENCY

key elements of this framework in detail, but it is acknowledged, as audit quality is a multifaceted concept and occurs in a complex social setting, that the topics that are covered and emphasised herein are necessarily selective for the purpose of this thesis. But the framework provided is flexible to expansion and accommodation of other factors. The structure of this chapter is as follows: Section 2.2 examines consistency as an important dimension of audit quality; Section 2.3 identifies several impediments to consistency, including a detailed discussion of litigation risk and comparison of bankruptcy laws; Section 2.4 considers the structure of the audit firm as a facilitator of consistency; and finally, Section 2.5 provides a coherent summary of the framework developed. In addition, Appendix 2-A presents an overview of the broad principles of auditing standards in the going concern context.

2.2 Consistency and Audit Quality

Auditing is the term used to describe the process of obtaining objective evidence regarding the reliability and integrity of financial information or statements (Elliott and Pallais 1997). A general definition of auditing is provided by Silvoso et al. (1972, p.18):

> Auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating the results to interested users.

There are a number of important parts in this definition that deserve attention: *systematic process* implies that auditors have a well-planned, structured and thorough approach to the audit that follows a logical sequence; in *objectively obtaining and evaluating evidence* there are two activities involved – the objective search for evidence and the evaluation of the relevance and validity of evidence; *degree of correspondence* and *established criteria* means an establishment of conformity of assertions with specified criteria found in the applicable standards, and necessitates a degree of interpretation by the auditor; to be useful, the results of an audit need to be communicated and the last important phrase, *communicating the results*, is concerned with the type of report the auditor provides to intended users (Gay and Simnett 2003; Eilifsen et al. 2006).

Given the definition above, audit quality[3] from a supply perspective is a multifaceted concept which many researchers have endeavoured to define. Audit quality at the *output level* is whether the auditor is accurate and has issued the correct audit opinion: a clean audit opinion when a clean audit opinion is warranted, or a qualified or modified audit opinion when it is warranted. This coincides with the legal view of auditing that provides a simple dichotomy of either an "audit failure" or "no audit failure", where "audit failure" refers to when the auditor issues an incorrect audit opinion, and "no audit failure" refers to when the auditor issues a correct audit opinion (Francis 2011). Auditing is, however, difficult to define at the output level because an audit exhibits characteristics of a credence good for users of the audited financial information and, an experience good for the members of the supervisory board or the audit committee (Lenz and James 2007, Causholli et al. 2010). Thus, defining audit accuracy at the output level involves defining the unobservable, for which the *ex ante* evaluation is, if not impossible, at least difficult.

Another way of defining audit quality is at the *input level*. Francis (2011) states that audits are of higher quality at the *input level* when the people implementing audit tests are competent and independent, and when the testing procedures used are capable of producing reliable and relevant evidence. What Francis (2011, p. 2) means by quality at the input level is best illustrated with the following quote:

> The quality of audit inputs flow through to the *audit process*, where audits are of higher quality when the engagement team personnel make good decisions regarding the specific tests to be implemented and appropriately evaluate the evidence from these tests in leading to the audit report. Audit quality is affected by the *accounting firm* in which auditors work. Firms develop the testing procedures used on audit engagements, and create incentives that affect the behavior of engagement team personnel. Lastly, the incentives of accounting firms and individual auditors to produce high-quality audits are affected by the *institutions* that regulate auditing and which punish auditors and accounting firms for misconduct and low quality audits.

Logically, there is a clear link between audit quality at the input level and the output level. A definition of audit quality at the input level, which is commonly used in archival

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[3] Duff (2004) argued that audit quality is not a unitary concept and that it should be divided into 1) the quality of the service (i.e. factors which affect the audit client's experience of the audit process) and 2) quality of opinion (i.e. factors which contribute to a process which is likely to reach the right answer). In this thesis, audit quality is defined as technical quality.

auditing research, is DeAngelo's (1981, p. 186) definition, which states that audit quality is "… the market-assessed joint probability that a given auditor both discovers (a) a breach in the client's accounting system and (b) report the breach." In this definition, "a breach in the client's accounting system" is related to the auditor's competence and "report the breach" is related to auditor's independence. These two dimensions are, however, not completely separate: for example, the auditor could decide not to make an effort to uncover problems (competence) which she or he has no desire to report on (independence). Furthermore, there is an implicit assumption in this particular definition of audit quality (and in the many studies that rely on it): that the auditing standards are uniformly interpreted and the auditor's responsibilities are explicitly defined and equally understood by all members of the profession (Samsanova 2009).

Nevertheless, it is well established that both independence and competence are important for audit quality. Auditor independence, however, is not a simple concept, being "difficult to prove and easy to challenge" (Mednick, 1990, p. 6). Auditor independence is not simply independence in appearance but also independence in fact – "the state of mind which is totally free of any consideration other than that of servicing in a proper manner the needs of the interested parties to whom they are professionally responsible" (Woolf 1997, p. 434). As concepts, the audit and the auditor's independence are inseparable. As Woolf (1997) eloquently points out, the auditor who has lost his independence has lost his *raison d'être*; he has become dependent, and a dependent auditor is a contradiction in terms.

Auditor competence may be conceptualised as a broad term that encompasses both the individual auditor's and the collective audit firm's knowledge in terms of expertise and experience in developing procedures, including quality controls, to gather and evaluate evidence to reach the appropriate conclusions, given the relevant auditing standards. Of course, in its broadest sense, auditor competence also impacts how auditors interpret these standards, and how auditors explicitly define their responsibilities. This, in turn, is not detached from the general audit environment where auditors are influenced by the expectations of users of audited financial information, the expectations of institutions that regulate auditing, as well as auditors' expectations of loss in case of misconduct and low quality audits. Thus, auditor competence is a complex concept that not only describes

auditors' ability to discover a breach in the client's accounting system but also how auditors' define exactly what constitutes a breach according to the standards.

Consistency is an important dimension of both accounting and audit quality. Schipper (2003, p. 62), asserts that consistency is the very reason to have accounting standards and argues that "[...] if similar things are accounted for the same way, either across firms or over time, it becomes possible to assess financial reports of different entities, or the same entity at different points in time, so as to discern the underlying economic events". Similarly, users anticipate that audits conducted under auditing standards will meet the same objective. Since much of the audit process is unobservable to the users of financial statements, and the audit report itself provides limited information about the audit process, the need for consistency is arguably prominent. It is only when it is recognised that consistency is desirable, and that there is a need for standards, that the discussion may move on to the particulars of the standards themselves. Thus there is a clear link from consistency to audit quality, in that the need for consistency underpins the existence of auditing standards. In turn, the auditing standards define the principles on which auditors base their audit procedures.

Auditing is not a pure science, and it has been argued that principle-based standards[4] will lead to inconsistent application even in identical cases and that those responsible for the enforcement of standards and regulation must simply accept this (Alexander and Jermakowicz 2006; Alexander 2006). Whilst it is likely that principles-based standards will not be consistently interpreted and applied in all situations, but "[...] as in the case of other ideals [...] the impossibility of achieving [...] consistency does not, from a normative perspective, imply that [...] consistent application is not to be desired [...] [n]or does it imply that on a comparative basis there cannot be more consistent and less consistent [...] norms"(Wustemann and Wustemann 2010, p. 8). Auditors communicate their results through the audit report, and this information is more useful if it can be compared with similar information from other companies, or with similar information from past periods. In one sense, consistency is a quality of the relationship between information, rather than the quality of the information itself. From the perspective of a user of financial statements,

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[4] Although some argue that comparability and consistency across firms and over time is virtually assured under rules-based standards (Maines et al. 2003) the information portrayed by rules-based standards would not necessarily be comparable and consistent as application of specific rules may require economically different situations to be accounted for identically.

consistency among auditors will be achieved when clients with similar circumstances are issued with the same audit report for similar underlying factors regardless of the period, or the auditor's firm or place of origin.

The importance of consistency in auditing has been well documented for many years. For example: "In the best of all possible worlds, every auditor, given the same set of facts, would select the same auditing procedures and apply them to the same extent" (Hicks 1974, p. 39); Mautz and Sharaf (1961) argue that inconsistencies between auditors have no place in auditing; "The standard of care which the auditor owes to the client is that degree of care which would ordinarily be exercised by other members of the profession in similar circumstances" (Willingham and Carmichael 1971, p. 19). From a policy perspective, it follows that consistency is a necessary condition for accuracy, in that if auditors are inconsistent in their application of auditing standards, then some of the auditors must also be inaccurate. Strictly speaking, consistency alone is not sufficient for accuracy, in that auditors may in fact be consistently inaccurate. This does not diminish the importance of consistency. The absence of consistency is *prima facie* evidence of inaccuracy (Trotman 1996). It is even argued that consistency implies accuracy with respect to auditors' decision making (Ashton 1985; Davis et al. 2000).

Beyond the clear link between consistency and audit accuracy, consistency serves a fundamental purpose in promoting confidence in financial information – a socially efficient outcome. Over and above the principal-agent relationship between owners and managers that explains demand for voluntary auditing[5], there exist more subtle relationships that extenuate the demand for rules and regulations to ensure consistency in audit practices. Regulatory reporting requirements play a crucial role in the operations of auditors and in maintaining confidence in markets. The extensiveness of the audit regulation arises from a desire to have consistency and comparability in audit practices.

Markets, especially financial markets, conduct transactions on the basis of information. As a general economic principle, the lower the confidence in market information, the fewer transactions and the higher their price (Aizenman and Marion 1993). At an extreme, if

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[5] External auditing is a monitoring device that reduces total agency costs between owners and managers (Jensen and Meckling, 1976). Watts and Zimmerman (1983) further suggests that monitoring of performance is important, if not crucial, to the formation of firms. In addition, managers have incentives to encourage such monitoring as a signal of their quality (Fama and Jensen 1983).

there is total uncertainty, no transactions will take place. If auditing of appropriate quality is rendered on a consistent basis, it lowers overall uncertainty, adds to the number of transactions and allows for a reduction in prices. Further, consistent auditing of adequate quality increases overall market confidence, a necessary condition for financial stability (European Commission 2010). Owners in any given company have an indirect interest in the overall confidence of the financial information in the market, because it has a direct bearing on the value of the company in which they have an interest. But because auditing is to a large degree unobservable (Causholli et al. 2010), current regulation in the auditing market governs admission and registration of auditors, ethics and independence rules, auditing standards, quality assurance and oversight of the profession. In the end, the audit profession is one of the most highly regulated professions, at least in the developed countries (Lentz and James 2007). Thus, consistency in auditing confers socially efficient outcomes.[6] Nevertheless, whether these benefits materialise ultimately depends on how auditors interpret the regulations and standards, and in turn, how they actually conduct the audit.

In a national setting, where auditors follow the same standards (i.e. there is *de jure* consistency) there is an implicit expectation that consistent audit reporting behaviour will follow (i.e. *de facto* consistency). Similarly, academics, practitioners, regulatory bodies, politicians, investors, as well as public and private sector, domestic and international firms have been increasingly advocating the benefits of a globally accepted financial reporting framework supported by globally accepted auditing standards. The argued benefits of a global financial reporting framework are numerous and include: greater comparability of financial information for investors; greater willingness on the part of investors to invest across borders; more efficient allocation of resources; lower cost of capital; easier to fulfil foreign listing requirements; easier consolidation and auditing of multinational companies; and, higher economic growth (Wong 2004; Nobes and Parker 2006). These benefits will only eventuate if consistency in international auditing standards leads to

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[6] Ensuring consistency in audit practice is, not the only reason auditing standards and regulations are important. Regulation and established auditing standards are also important because auditors themselves act as agents to principals (owners) when performing an audit. The close working relationship of auditors with the board of directors and management has led, owners to question the perceived and actual independence of auditors and to demand tougher regulatory controls and standards over auditors' independence to protect them (Audit Quality Forum 2005). In effect, regulators are there to act on behalf of principals and ensure that auditors conduct their audit appropriately. Audit regulation and auditing standards set a benchmark as to whether auditors have conformed to the responsibilities expected of them, and thus whether there has in fact been an audit failure.

consistency in the auditors' interpretation and application of these standards. If they are not interpreted and applied consistently, it will induce an expectation gap where financial statement users believe audit reporting behaviour to be consistent, when in reality it is not.

This mismatch between expecations of auditors and auditors' performance is referred to as the "audit expecations gap", a term first coined by Liggio (1974). The audit expectations gap has been defined as the difference between the levels of expected performance "as envisioned by the independent accountant and the user of financial statements (Liggio 1974, p. 27)". Monroe and Woodliff (1993) defined the audit expectations gap as the difference in beliefs between the auditors and the public about the duties and responsibilities assumed by auditors and the message conveyed by audit reports. Jennings et al. (1993) are of the opinion that the audit expectations gap is the difference between what the public expects from the auditing profession and what the profession actually provides. A more sophisticated definition of the audit expecations gap was developed by Porter (1993, p. 50) being: "the gap that exists between society's expectations of auditors and auditor's performance, as perceived by society. This gap is made up of two components:

1. The "reasonableness gap" – the gap between what society expects auditors to achieve and what auditors can reasonably be expected to accomplish.
2. The "performance gap" – the gap between what society can reasonably expect auditors to accomplish and what auditors are perceived to achieve. This dimension consist of two components:
   a. A "deficient standards gap" – the gap between responsibilities that can be reasonably expected of auditors, and auditors' existing responsibilities as defined by the law, regulations and professional guidelines.
   b. A "deficient performance gap" – the gap between the expected standard of performance of auditors' exisiting responsibilities and auditor's performance as expected by society.

In summary, an expectations gap can materialise due to any of the following three main factors: 1) society holds unreasonable expectations of auditors, 2) deficient auditing standards, and 3) sub-standard performance by auditors. Lack of consistency in auditors' interpretation and application of standards is primarily related to the two performance gaps – either there is not enough guidance in the current standards to ensure consistency, or not all auditors are adhering to the principles laid down in the auditing standards. But

whether, and to which extent, discrepancies in consistency should be considered reasonable is related to the reasonableness gap. Principles-based standards are subject to different application by auditors, even on identical issues, and thus do not ensure absolute consistency in the application of the auditing standards. That is because principles alone do not provide a sufficient structure to limit auditors' judgments in the application of the principles to specific scenarios. (See Appendix 2-A at the end of this chapter for a discussion of the broad principles governing the auditing standards on the auditor's assessment of the going concern assumption.)

2.3 Impediments to Consistency

Auditing does not occur in a vacuum and the environment in which the audit takes place is part of the context that shapes auditors' incentives and reasoning with regard to interpretation and application of auditing standards (Nobes and Parker 2006). Audit environments are not necessarily static, but are dynamic in nature with audit environments changing over time. There are major international differences in legal systems and in the nature of capital markets, culture and litigation risk as well as respective legal and taxation systems which affect agency relationships within firms, with consequences for how national accounting and auditing practices have been developed.

The differences between countries in terms of culture, legal system and litigation risk, as well as changes in the latter over time, have an impact on how auditing standards are interpreted and applied, as well as providing different levels of incentives and deterrence for weakened auditor independence (Krishnan and Krishnan 1997; Francis 2004; 2011). The factors at play in the audit environment, and the interactions between them, would influence both the general expectations about auditors' roles, as well as how auditors themselves interpret and define their audit requirements. Subsequently, both differences across and changes within audit environments can be impediments to consistency. Understanding these effects is imperative in a globalised world.

2.3.1 Culture

Social norms and culture impact the value judgments and attitudes of accountants and auditors, which in turn will impact both how accounting and auditing systems have developed, and how accounting and auditing is practiced within countries (Gray 1988).

To understand the association between culture and financial reporting, prior research has focused primarily on the association between culture and firm disclosure (see Jaggi and Low 2000, Wingate 1997, Salter and Niswander 1995, Hope 2003). The evidence, however, is mixed on whether culture – as operationalised by Hofstede (1980) and Schwartz (1994) - affects financial reporting decisions when legal origin is taken into account. Hope et al. (2008) argue that auditors differ in quality and finds that differences in culture have an impact on whether clients choose large auditing firms with better quality audits. The findings that national culture impact both financial reporting decisions as well as auditor choice suggest the possibility that auditors will differ in their reporting behaviour between different cultural contexts.

2.3.2 Legal System

Research also documents that *common law* countries have stronger investor protection laws and more developed financial markets than *civil law* countries (La Porta et al. 1998). Francis et al. (2003) show that countries with weaker legal environments generally demand lower quality audits and that this is reflected in a smaller Big N market share compared to countries with stronger legal environments. Choi and Wong (2007) show that external auditors generally play a more important governance function in countries where legal institutions are weak than in countries where legal institutions are strong. Francis and Wang (2008), test if Big 4 auditors' behaviour is systematically related to a country's legal system in terms of total and abnormal accruals. They find that accruals for Big 4 clients are smaller in countries with greater investor protection, which they argue is consistent with auditor conservatism being induced by differences in legal systems with respect to investor protection. As legal systems have a bearing on the governance roles of auditors both on the supply side and the demand side, it will likely impact audit reporting behaviour.

Although the bankruptcy codes of Australia, United Kingdom, and United States originate from the same common law legal system and therefore share related concepts and comparable characteristics regarding legal doctrine (LaPorta et al. 1998), there are differences in the specific rules and regulations with respect to corporate bankruptcy. The US has less onerous legal entry criteria for entering bankruptcy proceedings than the UK and Australia, where directors have further incentive to place a company in bankruptcy proceedings to avoid being personally liable for wrongful and insolvent trading. Because

of the relative limitations on the rights of creditors under US bankruptcy proceedings, there is a greater incentive for secured creditors in the US to seek private restructuring compared to entering into bankruptcy proceedings. There are also differences in operationalisation of the bankruptcy procedures entry criteria between the UK and Australia. These differences may affect auditors' assessment of the going concern assumption, but it is difficult to disentangle the effects (See Appendix 2B at the end of this Chapter for an overview).

2.3.3 Litigation Risk

Wallace (1987) and other studies (Chow et al. 1988; Schwartz and Menon 1985) have contended that audits provide investors with a form of insurance. If an investor purchases seasoned securities on the basis of audited financial statements and subsequently sustains losses, and if some form of audit failure with respect to the auditing standards can be demonstrated, the law provides recourse for the investor against the auditor. The auditor thus effectively functions as a potential (partial) indemnifier against investment losses, whereby the improvement in the credibility of the information is a by-product of auditors minimising their potential losses by performing high-quality work. Litigation against the audit firm typically occurs when capital providers of an audit client incur an out-of-pocket loss large enough to initiate a search for recovery (Pratt and Stice 1994). The search may give rise to litigation (actual or threatened) involving the audit firm, including the allegation of an audit failure and an attempt to assign responsibility for the loss to the audit firm. It has been argued that larger auditors have a comparative advantage as they are able to spread the risk of litigation over a larger number of clients (Schwartz and Menon 1985). Alternatively, it has been argued that plaintiffs use audit firms as insurance against any deficiencies on the part of the companies in their financial statements, and that larger audit firms have "deeper pockets" than smaller audit firms (Dye 1993). Nevertheless, litigation risk is an important feature of the audit environment and can impact how standards are interpreted and applied, as well as provide a disincentive for weakened auditor independence (Krishnan and Krishnan 1997; Francis 2004; 2011). Absent reputation concerns, without litigation risk the auditor would have little incentive to put in the necessary effort or to report truthfully (Melumad and Thoman 1990; Dye 1993). It has been suggested that it is litigation risk rather than brand name reputation protection drives perceived audit quality (Khurana and Raman 2004) but this "[...]

conclusion does not contradict the widely held view that large audit firms have reputations for higher quality audits. If investors know that large auditors have deeper pockets, they would know that large auditors have more incentive to issue accurate reports – in this sense, large auditors have better reputations" (Lennox 1999, p. 800). Irrespective of whether it is litigation risk or reputational concern that provide the strongest incentives, Francis (2004, p. 359) nevertheless states "[...] that auditor behaviour is directly affected by legal incentives".

Litigation risk affects audit behaviour, and auditors react to additional litigation risk by increasing resources invested in the audit (Pratt and Stice 1994). Tucker et al. (2003) suggest that if auditors face larger penalties this will make their interpretation and application of the relevant standards more conservative due to the asymmetrical effect of litigation risk on auditors' misreporting.[7] Furthermore, when the auditing criteria are laid down as broad principles without specific guidance, auditors would be exposed to a higher risk of litigation because enforcing agencies may allege violation even if the required professional judgement was exerted (Dickey and Scanlon 2006). Xu et al. (2011) argue that auditors are likely to actively manage their risk exposure, and one possible risk management strategy used by auditors is more conservative reporting in terms of a lower threshold for modifying or qualifying the audit report. Thus, differences and changes in litigation risk may bring about differences and changes in how auditors' interpret and/or apply the auditing standards that result in inconsistencies in audit outcomes.

Empirical research supports this view. Geiger and Raghunandan (2001) and Geiger et al. (2006) examine litigation risk and auditors' reporting behaviour by using the US Private Securities Litigation Reform Act of 1995, where the period prior to the Act signifies higher litigation risk and vice versa. They find that auditors were more conservative prior to this Act than after and argue that the reduction in expected litigation costs to auditors accounted for this shift in reporting decisions. In addition, Geiger et al. (2006) find that litigation reform had a significant effect on auditor decision-making, but more so for the then Big 6 firms than for non-Big 6 firms.

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[7] For example, expected litigation costs are higher when auditors fail to issue a going concern modification when this is appropriate, compared to when auditors do issue a going concern modification when this is inappropriate (Tucker et al. 2003).

The matter of litigation is not unique to the United States. Wingate's (1997) litigation index resulted from an international audit firm's effort to allocate insurance for its international operations among individual country partnerships. Scores on the litigation index range from 1 to 15, where a low score represents a low risk of doing business as an auditor and vice versa (Wingate 1997). Although all three countries in this thesis scored high on the index (the US scored 15, both Australia and the UK scored 10), subsequent global events, such as a wave of corporate scandals across the world (e.g. Enron and WorldCom in the US, as well as OneTel and HIH Insurance in Australia), the subsequent demise of Arthur Andersen; regulatory changes (e.g. Sarbanes-Oxley Act [SOX] in the United States, The Corporate Law Economic Reform Program [CLERP 9] in Australia and the Companies Act 2004 in the United Kingdom); and, in late 2007 the global financial crisis – have transformed the global legal environment that auditors operate in and show that the matter of litigation is affecting auditors in a number of countries. Further, these factors have potentially heightened auditors' perceptions of litigation risk arising from a failure to issue a going concern modification to companies that subsequently go bankrupt. Geiger et al. (2005) produce findings that auditors interpret and/or apply the standards more strictly in the United States following the enactment of SOX. However, they find that auditor reporting decisions did not change uniformly with regard to changes in litigation risk and that the more conservative judgements are solely attributable to non-Big N auditors. Using Australian data, Fargher and Jiang (2009) find that for similar audit clients auditors were relatively more lenient in 1999 compared to 2003 in their interpretation and/or application of the auditing standards, and Xu et al. (2011) find that auditors were relatively more lenient in the 2005-2006 period compared with the 2008-2009 period.

To the extent that these studies capture the relation between litigation risk and audit reporting behaviour, an association between country litigation risk and audit reporting behaviour in an international setting should also be expected. In particular, countries with varying litigation risk could lead to cross-country differences in how auditors interpret and apply the relevant standards. In a cross-national study, Khurana and Raman (2004) find that it is litigation risk, rather than reputation concerns that drive perceived audit quality. Lam and Menash (2006) investigate audit opinions of 148 firms in Hong Kong – which may be described as a low litigation environment – and find results similar to US based studies: Hong Kong auditors also tend to issue disclaimers under conditions characterised

by greater financial distress, and modified opinions with explanatory paragraphs when the financial conditions are less severe. They suggest that litigation risk, even if important in high litigation risk environments, may not be any more important than the professionalism and reputation of the auditor. LaSalle (2006), however, advocates that it is premature to discount the importance of litigation risk. He suggests that consistent empirical regularities across countries with different litigation risk may, in part, be driven by a highly concentrated market for auditing services dominated by a few firms, where collaboration among affiliates of networks would not be surprising. In today's environment, networks of audit firm affiliates are arguably more prevalent and integrated than ever, even if for legal reasons the network agreements typically affirm the legal independence of each member firm (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008).

2.4   Audit Firms as a Facilitator of Consistency

Audit firms differ in geographical reach: some audit firms constitute only one local office, whereas the largest audit firms have several hundred offices across the globe. Although in most countries, the right to practice as a certified audit firm is granted on a national basis, in which locally qualified professionals have majority ownership, the different local offices within a country are not homogeneous (Lenz and James 2007: Ferguson et al. 2003). Auditing is conducted through local offices, where an audit team is typically situated in the same city as their client's headquarters (Wallman 1996; Penno and Walther 1996: Francis et al. 1999; Reynolds and Francis 2000; Ferguson et al. 2003). Each individual office within the audit firm is a unique and relevant unit in its own right, and with significant local-office reputation effect on the perception and pricing of industry expertise (Ferguson et al. 2003). Beyond this, however, the audit firm achieves positive externalities by creating uniform firm-wide reputations for industry expertise. This firm-wide reputation effect has been observed on both a national level (e.g Craswell et al. 1995), and for audit firms that operate globally (Carson 2009).

The audit firms that have offices in more than one location may therefore be viewed as a network, where each of the local audit offices represents a separate node with one or more inter-firm relations and connections to other nodes within the network. The largest audit firm networks exhibit features of a core-periphery network where the networks revolve

around a set of central nodes that are well-connected with each other, and also with the periphery (Lenz and James 2007). Peripheral nodes, in contrast, are connected to the central nodes but seldom to each other. For global audit firm networks, the connections between some of its nodes span country boundaries, but the connections between nodes *within* a country can be viewed as a sub-network in its own right (Carson 2006).[8]

The relationships and connections among local audit offices in a network alter their relative competitiveness *vis-à-vis* other audit firms (Goyal 2007). Geographical coverage is a dimension of audit firm networks' competitive advantage, as audit clients with operations in multiple geographical locations can be better served. Lenz and James (2007) and Carson (2009) point out that the development of international relationships and connections within the global audit firm networks are a direct response to the emergence of multinational enterprises that demand consistent auditing throughout the world. Subsequently, there exist positive externalities to audit firm network members as the network become larger, but this benefit does not arise out of attributes of the network members *per se*, but directly because of the connections and relationships between them. As the network increases its geographical span, all members become better at attracting clients that operate in multiple geographical operations.

Moreover, being part of the network also has its effects on each member's individual attributes. In this respect, the reputation and the brand name of the audit firm network is bestowed upon all of its members at the local office level. Brand name and network relationships are an important professional advantage in retaining current audit clients and in attracting new clients, retaining and recruiting employees, supporting entry into new geographical markets, as well as into new markets for other forms of assurance services (Elliott 1998). Furthermore, audit firm brand names carry an audit fee premium (Causholli et al. 2011). In particular, the audit fee premium charged by the largest audit firm networks over other auditors has proven to be robust both across countries and over time (Francis 2004; 2011). This fee premium has also been equated with better audit quality (Francis 2004).

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[8] The largest audit firm networks have international headquarters (e.g. KPMG's international headquarters are located in Amstelveen Netherlands, PWC's in London UK, Deloitte's in New York). At the same time, there are national headquarters (e.g. PWC's national headquarters for US are located in New York). Ferguson et al. (2003) refers to the Big N audit firms within a country as networks of local offices. Carson (2009) refers to the large global audit firms as global networks between domestic audit firms.

An important feature of audit firm networks is the sharing and collaboration of audit knowledge and technology with a view of a common and shared audit approach across network members (Bamber and Bylinski 1982; Dirsmith and McAllister 1982; Cushing and Loebbecke 1986; Carson 2009). The audit approach concerns the "[…] logical sequence of procedures, decisions, and documentation steps, and by a comprehensive and integrated set of audit policies and tools designed to assist the auditor in conducting the audit" (Cushing and Loebbecke 1986, p. 321). There are positive externalities to members of an audit network in sharing a common audit approach. Sharing a common audit approach creates economies of scale by allowing different network members to exploit the same effort in developing a high quality audit approach. By pooling the knowledge, expertise and skills of all the members in the audit firm network, the ability of the audit firm network to develop an audit approach that enhances the effectiveness and efficiency of the audit increases, which in turn benefits all members of the network. This reduces the costs of production of high quality audit services for all members. Moreover, using a common audit approach for the entire audit engagement, even if it spans geographical locations, reduces the coordination costs among network members. At the same time, the network members' local knowledge for compliance with specific regulations that exists in that geographical location is retained.[9] A common audit approach also facilitates the transfer and mobility of auditors within a network. Consequently, the audit firm network is a structure that combines its members' collective knowledge without sacrificing the local knowledge of each audit office. The network structure confers several advantages to its members in the form of sharing of technology and expertise, as well as reputation and the ability to attract clients.

Nevertheless, the network structure gives rise to the possibility of free-riding, and moral hazard among a network's members. Within the network, members exert individual effort which is privately costly. The individual effort, however, is shared among all members through the effect on reputation and so the reward to individual members is less than the collective reward to the network. Similarly, the lack of effort and the cost in terms of potential loss of reputation is also shared among all members of the network so the individual members' costs are less than the collective costs to the network. This may

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[9] Clearly this is applicable across countries where specific audit regulations may vary but it is also applicable within a country where there are many jurisdictions and these jurisdictions have different rules for auditing, accounting and/or tax.

create incentives for under-provision of audit effort by individual members. These incentive problems are addressed to some extent by the contractual agreements among network firms: a common audit approach and internal quality reviews help reduce free-riding and moral hazard among an audit firm network's various offices and protects the reputation of the audit firm (Lenz and James 2007; Thomadakis 2008). In an international setting, the risk of free-riding and moral hazard is possibly greater where litigation risk is lower, but the relationships that exist among the members of the audit firm network are long-term relationships. Thus a powerful incentive for minimising free-riding and moral hazard is still found in reputational concerns and in the threat of loss of future business (Besanko et al. 2004; DeSalle 2006).[10]

The network structure of audit firms does not only create externalities to its members – there are also significant spill-over effects to society as a whole. Within an audit firm network, coordination and sharing of technology creates a "race to the top" in terms of the quality of the audit approach, which in turn creates consistency in audit practice within the network. The usefulness to the members of the audit firm network of adopting a network's particular audit approach partly depends on the quality of the audit approach itself, but clearly also depends on whether others with whom they communicate and coordinate adopt a similar technology. The audit approach of different affiliates may vary across geographical locations but to be consistent they must all satisfy the minimum expectations of a common audit approach. Hence, affiliates with the highest expectations to the audit approach become the affiliates that set the benchmark of audit quality for the common audit approach. In addition, the association among network members creates incentives for producing high audit quality. The social norms within a network are related to its reputation for producing high audit quality, and the incentive for an individual network member to produce high quality audits is clearly sensitive to whether or not other members produce high audit quality. Subsequently, the network structure creates

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[10] In recent corporate scandals, wrongdoings by individual audit firm affiliates have had a large impact on the global network as a whole. For example, Arthur Andersen was found guilty of obstruction of justice for shredding documents related to the audit in the 2001 Enron scandal in the United States. The resulting conviction, since overturned, still effectively meant the end for Arthur Andersen on an international level due to a tarnished brand name. In 2009, Satyam Computer Services in India falsely reported more than one billion US dollars in profits. The United States Securities and Exchange Commission and the Public Company Accounting Oversight Board responded by fining the Indian PWC affiliate 7.5 million US dollars. The PWC global network have since taken steps to verify that professional standards are being met throughout the network and have also instituted an enhanced assurance quality review process for all network member firms (Norris 2011).

consistency by instilling a "race to the top" in terms of audit quality which in turn has spill-over effects to the society as a whole. Naturally, the effect would be greatest for those locations where there are initially weak requirements to audit quality. This is in agreement with the findings of Choi and Wong (2007) that external auditors generally play a more important governance function in countries where legal institutions are weak. In such countries, a local member of an international audit firm network would raise the quality of audits by virtue of using the same audit approach as a member situated in a country with high quality audit requirements.

A common audit approach is necessarily based on a common interpretation of the standards and dictates to some degree how the auditing standards are being applied. Pooling and codifying expertise and knowledge from the members of the network not only ensures a high quality common audit approach (Carson 2009), but together with quality review processes stipulated within the networks and imposed through membership of the Forum of Firms ensures there is a structure for consistency in both interpretation and application of standards across network members' offices.[11] Thus, the reputation concerns and the use of a common audit approach should mitigate some of the effects of the cross-national variance in the audit environment and its effect on auditors' application of the auditing standards.

There are differences among audit firm networks in terms of structure and service offerings, client demographics and size of practice. A common distinction is that between the largest audit firm networks – namely the Big N auditors – and those audit firms that are smaller networks or just operate from one office. The justifications for making this distinction in the literature relates to a well-documented dual structure of the auditing industry (Francis 2004; 2011). DeAngelo (1981, p. 183) states that "[...] audit quality is not independent of audit firm size, even when auditors initially possess identical technological capabilities. In particular, when incumbent auditors earn client specific quasi-rents, auditors with a greater number of clients have 'more to lose' by failing to report a discovered breach in a particular client's records." Moreover, Sirois and Simunic (2010) argue that Big N auditors are fundamentally different with respect to their

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[11] Systems of quality control in compliance with International Standard on Quality Control (ISQC) 1 are required to be established by 15 December 2009 for all auditors. Since the Forum of Firms was established, a condition of membership is that the audit firms maintain appropriate quality control standards.

investment strategies in audit technology compared to other auditors. Carson (2009) makes the distinction between those audit networks that are global versus those auditors that are not global. She defines global audit firm networks as the "founder members" under the Constitution of the Forum of Firms which operates as the Transnational Auditors Committee of International Federation of Accountants (IFAC).[12]

Categorising audit firm networks on key characteristics such as size and geographical reach captures key aspects on which the audit firm networks are similar within, but different between, each category. Yet, there are proprietary differences between each audit firm's design of the audit approach and how they differentiate their services (Bowrin 1998; Carson and Dowling 2010). The difference in audit firm networks' audit approaches may have a negative effect on consistency *between* audit firm networks, both at the national and international levels. In fact, there have been widespread concerns that companies switch auditors to avoid receiving unfavourable audit reports (Lennox 2000): also known as opinion shopping. Obviously, if opinion shopping is successful, then this would also imply inconsistency between audit firms' audit approaches. A major argument of this thesis is that the common audit approach among the members of the audit firm network achieves consistency in how the auditors of that network interpret and apply auditing standards – the implication being that inconsistencies in audit practices are mostly an issue between audit firm networks. Nevertheless, inconsistency issues are likely to be larger between categories of audit firms than within firms of a similar category. In particular, among the group of audit firm networks that are global in nature there are conditions that facilitate consistency *between* the individual networks. These factors encompass that global audit networks that are members of the Forum of Firms, are committed to the use of International Standards on Auditing (ISAs), the IFAC Code of Ethics for Professional Accountants for transnational audits and the IAASB's International Standard on Quality Control (Carson 2009). By comparison, smaller domestically located audit firms and networks do not enjoy the inputs from a global audit firm network when "best practice" is located outside the client country, nor do they engage in audits of large multinational corporations and are not subject to the stringent conditions imposed by Forum of Firms. Furthermore, those firms that fall into this

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[12] The Big N auditors are a subset of Carson's (2009) category of global audit firm networks. Global audit firm networks include BDO and Grant Thornton in addition to the Big N audit firms.

category probably exhibit greater variation within this category on other key characteristics, than the global audit firm networks do as a group. [13] Thus, as a group, global audit firm networks are associated with characteristics that promote consistency in auditors' conduct of an audit across national borders.

2.5 Summary of the Framework

The existence of auditing standards means there is a demand for consistent audit reporting, and a lack of consistency may lead to an expectation gap where users believe audit reports to be consistent when they are in fact not. Variation in key characteristics of the audit environment impacts how auditors interpret and apply auditing standards in the going concern context. Inconsistency in audit reporting behaviour would make it difficult to discern whether differences in the audit report were truly caused by different underlying economic events or simply due to differences in auditors' interpretation and application of standards. However, the audit firm networks, both on a national and an international level, act as facilitators of consistency through the use of a shared and common approach to the audit. The common audit approach necessitates that there is common interpretation of auditing standards which are influenced by the networks' collective competence in terms of shared knowledge and expertise. In turn, when auditors execute the audit, they rely on the common audit approach and this helps establish a structure for audits to be executed consistently. Internal quality reviews are put in place to avoid independence issues and to enforce the common audit approach in order to protect the network-wide brand name and reputation. It is important to note that each audit firm is idiosyncratic and that there are important differences between them. But it is argued that due to the similarities within the group of global audit firm networks, this group is an important force for ensuring consistency in audit practice, especially across national borders.

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[13] Being a member of a large network affects the individual offices' ability to attract clients. The reputation of the network and the efficient cooperation between network members is part of an individual audit office's competitive advantage and make them relatively more competitive *vis-à-vis* other audit firms, which in turn affects both market share and profitability (Lenz and James 2007). On the other hand, being part of an audit firm network involves committing resources to satisfy the network-wide standards of quality. But a key issue is that the relationship between audit offices in a network alters the incentives of competing audit offices to be members of competing networks. Thus, there is an important two-way flow of influence between audit markets and audit networks: the nature of competition in the audit market shapes the incentives for creating networks. However, the relationships among individual audit offices in a network determine the cost structure for undertaking an audit and this in turn shapes the nature of competition.

It should be noted that due to the focus on Australia, the UK and the US, which are similar with regard to legal systems and capital markets as well as social norms and culture, the focus of this thesis is not on variations in culture and differences in legal system impediments to consistency. This is, of course, solely a matter of the scope of this thesis, and it is by no means implied that any differences in culture and legal system are less important impediments to consistency than the other factors mentioned in this theoretical framework.

Appendix 2A:

Auditing Standards and the Going Concern Context

The going concern context has received much attention in the archival literature concerned with audit quality. There are a number of reasons why the going concern context has received this attention. First, the going concern modification matters. The auditor's report plays a critical role in warning market participants of a firm's ability to continue as a going concern (DeFond et al. 2002; Geiger et al. 2006). Indeed, allegations of audit failures are often only uttered in the aftermath of clients going bankrupt without the auditor actually issuing a going concern modification. Second, such types of modification should not be a matter for negotiation between the auditor and the company (as distinct to mere disagreements with management, which can be negotiated). Third, the focus on the outcome of the audit process, namely the audit report, is important because principles-based auditing standards allow auditors to exercise their judgment in the design of audit procedures. Irrespective of the different procedures utilised by auditors, the audit should arrive at the same audit opinion, given the principles laid down in the auditing standards. Consequently, consistency in audit outcomes does not necessarily imply that identical audit procedures have been used. The issuance of a going concern modification is a subjective judgment by the auditor that the evidence is so negative that it warrants the inclusion of a going concern modification in the audit report. A modification for reasons of going concern is the most frequent alternative to a clean, unmodified audit report (Francis 2004), and thus represents the only viable option for research regarding the outcome of the audit process. This is also an excellent setting for investigating consistency, because concern about consistency is more important if it is believed that costly errors are caused by highly idiosyncratic decisions (Trotman 1996).

Professional audit guidance across the world is currently dominated by two sets of standards (US and international), but with respect to evaluation and reporting on going concern modifications the two sets of standards are relatively homogeneous and based on broad principles. In the United States the evaluation and reporting of going concern

uncertainties is governed by Statement of Auditing Standards No. 58 (SAS No. 58) and Statement of Auditing Standards No. 59 (SAS No. 59), and in more than one hundred countries that currently employ or are in the processes of implementing ISAs, the relevant standards are International Standards on Auditing No. 570 (ISA 570), and International Standards on Auditing No. 700 (ISA 700). Both sets of standards are similar in that the auditor is required to take an active approach in evaluating the going concern assumption. In addition, both sets of standards rely on principles to guide the auditor's interpretation of what constitutes a going concern problem and when this warrants the inclusion of a going concern modification in the audit opinion.

Both standards state that the continuation of an entity as a going concern is assumed in financial reporting and that general purpose financial statements are therefore prepared on a going concern basis unless there is contrary information. SAS No. 59 (s. 1) explicitly states that such contrary information is information pertaining to "[…] the entity's inability to continue to meet its obligations as they become due without substantial disposition of assets outside the ordinary course of business, restructuring of debt, externally forced revisions of its operations, or similar actions". Similarly, ISA 570 (s. 2) states that the going concern assumption is inappropriate if "[…] management either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so". Consequently, under both standards the going concern assumption is inappropriate if the entity cannot pay its debts as and when they fall due.

Fundamentally, the auditor is faced with two judgments: first, assessing the probability that the client goes bankrupt[14] at a future date; and second, whether this probability is higher or lower than what the auditor considers to be substantial/significant doubt. The guidance for both these judgements is imprecise under the current standards.

In assessing the probability that the client goes bankrupt at a future date, the auditing standards do give some guidance to which conditions and events should be given consideration in aggregate. SAS No. 59 (s. 6) lists four categories: negative trends, other indications of possible financial difficulties, internal matters, and external matters that have occurred. ISA 570 (s. A4) lists examples of events or conditions that may cast

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[14] Differences in bankruptcy regulation across the three countries of interest is covered in Appendix 2-B.

significant doubt about the going concern assumption into the following three categories: financial, operating, and other. However, besides listing these categories, the auditing standards are unclear as to how the auditor is to interpret and assess these events or conditions. Thus, auditors are left to rely on their own judgment as how to best assess a firm's probability of future bankruptcy.

With regard to the criteria for evaluating the going concern assumption, the standard refers to, in the case of ISA 570 (s. 9), "whether a material uncertainty exists related to events or conditions that may cast *significant doubt* on the entity's ability to continue as a going concern", and in the case of SAS No. 59 (s. 2), "whether there is *substantial doubt* about the entity's ability to continue as a going concern". The meaning of the two words is comparable: *significant* means sufficiently great or important to be worthy of attention and *substantial* means of considerable importance (Oxford Dictionaries 2010). So although the adjectives "significant" and "substantial" are different words, they are both generic terms that denote the same meaning in this particular context: that doubt is not just any doubt, but doubt of some noteworthiness.[15] Nonetheless, auditors are still left with the difficult task of interpreting how much doubt is enough doubt to constitute substantial/significant doubt. The Financial Accounting Standards Board (FASB) has noted that "[…] quantitative differences in interpretation of *substantial doubt* exists in practice" (FASB 2009). This would necessarily also be true for the analogous term *significant doubt*. Although, standard setters recognise that there could be an element of clarity in providing a definition that will potentially also result in a more consistent application of the term and help reduce inconsistencies (FASB 2009), neither FASB nor IAASB has yet provided a definition of what is meant by these terms.

It should, however, be noted that the period of assessment in the two standards differ and may be longer under the international standard compared to its US counterpart. ISA 570 requires the auditor to consider the same period as that used by management in making its assessment, a period at least, but not limited to 12 months from the balance sheet date. SAS No. 59 requires the auditor to evaluate whether there is "substantial doubt" for a reasonable period of time, not to exceed one year beyond the date of the financial

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[15] That "substantial doubt" and "significant doubt" are to a large degree interchangeable terms is evidenced in FASB Board meeting handout on June 3 2009 detailing the proposed FASB Statement on Going Concern. Two of the four alternatives to address constituent concerns regarding defining substantial doubt involved changing it to significant doubt so as to be consistent with international standards.

statements being audited. Consequently, there is an overlap in time periods, but where ISA 570 specifies a minimum time period of assessment, SAS No. 59 specifies a maximum time period of assessment. In conclusion, the judgment required by auditors in assessing the going concern assumption and whether to modify the audit report under SAS 58/59 and ISA 570/700 are comparable.

Appendix 2B:

Comparison of Bankruptcy Codes

This Appendix describes the bankruptcy codes[16] of Australia, United Kingdom, and United States. Although the three countries originate from the same common law legal system and therefore share related concepts and comparable characteristics regarding legal doctrine (LaPorta et al. 1998), there are differences in the specific rules and regulations with respect to corporate bankruptcy. As the auditor's assessment of whether there is substantial/significant doubt regarding the going concern assumption in practical terms involves consideration of the client's probability of entering bankruptcy, the auditors assessment is made in the context of the legal framework under which bankruptcy is declared. The economic incentives to enter bankruptcy proceedings, as well as the legal entry criteria, differ to some extent between these three countries. These are briefly described below.

2B.1 US Bankruptcy Code

Corporations file for liquidation under Chapter 7 or for reorganisation under Chapter 11. Although creditors may initiate an involuntary filing under Chapter 7, management is often successful in converting the case to Chapter 11, allowing an attempt to reorganise (Hotchkiss et al. 2008). Because management can challenge an involuntary petition, bankruptcy filings are more frequently initiated by management. For firms filing under Chapter 7, the court appoints a trustee that organises a sale of the firm's assets. Proceeds are distributed to claimholders according to the absolute priority rule – that is, junior claims do not receive any payment until senior claims are paid in full (Hotchkiss et al. 2008). Filings under Chapter 11 are corporate reorganisations, and the bankrupt firm is expected to continue as a going concern after leaving bankruptcy (Wood 2007). During the proceedings, the directors are still in charge of managing the company's affairs. In the

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[16] In the United States, insolvency by a corporation is described as bankruptcy, but in Australia and the UK bankruptcy, in a strict legal sense, relates only to individuals and not corporations. Corporations in the UK and in the Australia enter into insolvency proceedings. Although this technicality is noted, the word bankruptcy is used in this Appendix to describe insolvency of corporations across all three countries.

US, the Bankruptcy Code does not establish insolvency as a prerequisite to filing for Chapter 11 (or any form of bankruptcy relief), but rather an implicit requirement that the filing is in good-faith (Wood 2007). The basic thrust of the good-faith requirement has traditionally been whether the debtor needs Chapter 11 relief. Although insolvency is relevant, it is the totality of circumstances that determines whether the debtor is of good or bad faith in any given case.

2B.2 UK Bankruptcy Code

The dominant bankruptcy procedure in the UK is receivership, where a secured creditor appoints a receiver representing their interests. The receiver realises the security and, after deducting their expenses and paying any higher priority claims, uses the proceeds to pay off the appointing creditor (Hotchkiss et al. 2008). If the claim is secured by floating charge collateral, an administrative receiver gets full control over the firm and can reorganise the firm or sell assets without permission from other creditors or the court. The UK also provides court-administered reorganisation procedures, Administration and Company Voluntary Arrangements that are usually initiated by directors and which give the firm temporary relief from its creditors. However, a secured creditor can veto these procedures and instead appoint a receiver (Hotchkiss et al. 2008). Thus, in practice, the court can appoint an administrator that represents all creditors only in the absence of secured creditors initiating receivership.

Schedule B1 in the Insolvency Act 1986 states that relevant criteria for entering bankruptcy is insolvency; in particular, "[...] if the company is unable or likely to become unable to pay its debts". Section 123 of the Insolvency Act 1986 incorporates two tests: the balance sheet test (whether liabilities exceed assets) and a cash-flow insolvency test (whether debts can be paid as they fall due). Which of the two tests is relied upon depends on the context in which the question of insolvency is raised, and the information available to the party seeking to establish insolvency. The failure to pay a debt in circumstances where there is no genuine dispute regarding the debt establishes a company's inability to pay its debts. Under Section 214 of the Insolvency Act 1986, UK directors can be held personally liable if the directors continued trading the company beyond a point in time when they knew, or ought to have known, that insolvent liquidation was inevitable (known as wrongful trading).

2B.3 Australian Bankruptcy Code

The dominant bankruptcy procedure in Australia is voluntary administration and it is usually initiated by directors, but may also be initiated by a liquidator or a provisional liquidator or a secured creditor with a charge over substantially all of the company's property. The administrator takes full control of the company to try to work out a way to save either the company or the company's business. If it isn't possible to save the company or its business, the aim is to administer the company in a way that results in a better return to creditors than they would have received if the company had gone straight into liquidation. A company may also go into receivership if a receiver is appointed by a secured creditor who holds security over some or all of the company's assets. The receiver's primary role is to collect and sell sufficient of the company's charged assets to repay the debt owed to the secured creditor. It is not unusual that voluntary administration and receivership occur contemporaneously (with the company in administration and receivership at the same time), where the receiver takes control of an asset with a fixed charge while the remaining assets are in voluntary administration.

Section 436A of the Corporations Act 2001 states that the criteria for entering bankruptcy proceedings are if the corporation "[...] is insolvent or likely to be insolvent". Section 95A of the Corporations Act 2001 incorporates only a cash-flow insolvency test (whether debts can be paid as they fall due). Under Section 588 of the Corporations Act 2001, directors in Australia can be held personally liable if the directors continued trading the company beyond a point in time when they knew, or ought to have known, that the company was unable to meet its debts (known as insolvent trading).

2B.4 Summary

From the descriptions above, there are a few propositions that could be stated. First, the US has less onerous legal entry criteria than the UK and Australia, as the US Bankruptcy Code does not have an explicit insolvency requirement. Second, there is also some difference in operationalisation of the insolvency criteria between the UK and Australia, with the UK having both cash flow and balance sheet insolvency tests whereas Australia only has a cash flow insolvency test. Third, UK and Australian directors have, compared to the US, further incentive to place a company in bankruptcy proceedings to avoid being personally liable for wrongful and insolvent trading. Fourth, because of the relative

limitations on the rights of creditors under US bankruptcy proceedings, the US bankruptcy code may be classified as debtor in possession with directors in control of the company during the bankruptcy proceedings. In contrast, the bankruptcy codes of the UK and Australia may be classified as creditors in possession with an administrator and/or a receiver in control of the company during the bankruptcy proceedings. There is a greater incentive for secured creditors in the US to seek private restructuring compared to entering into bankruptcy proceedings, relative to UK and Australian creditors (Hotchkiss et al. 2008). These differences may also affect auditors' assessment of the going concern assumption, but it is difficult to disentangle the effects and thus also difficult to make any *a priori* predictions.

CHAPTER 3

Literature Review

FOREWORD: This literature review assesses the empirical research regarding audit reporting behaviour with respect to going concern modification. The evidence indicates that publicly available information is a useful predictor of auditors' decisions to issue going concern modifications. It is also noted that little is currently known about the auditor's decision to withdraw the going concern modification, and specifically how this compares with when the auditor first issues a going concern modification. Although the research is mainly US based, the findings generalise to other countries, as those studies based on non-US data provide similar inferences. There is also evidence that audit reporting behaviour is associated with auditor litigation exposure, although it is unclear whether this extends to differential litigation risk across countries. Finally, and irrespective of litigation risk, a case can be made that the international audit firm networks are potentially a primary driver of consistent application of international audit standards. However, it is not known whether harmonisation of auditing standards will also result in convergence of auditor behaviour with respect to the evaluation of and reporting on the going concern assumption, as no empirical research yet identified has considered audit reporting behaviour in a comparative international setting.

3.1 Introduction

Audit reporting behaviour covers a broad domain, but few activities are as integral to the audit process as the evaluation of the going concern assumption and the decision to include a going concern modification in the audit report.[17] This chapter reviews audit reporting research primarily in the going concern context over the past four decades, with a particular focus on audits of public companies, with much of this work undertaken in the United States. The review is not meant to be comprehensive and encyclopaedic but is instead a more selective survey, the purpose of which is to identify and assess a wide range of evidence on auditors' reporting behaviour from academic research that is relevant to this thesis.

The review finds that publicly available information is a useful predictor of auditors' decisions to issue going concern modifications across a number of countries. There is also evidence that audit reporting behaviour is associated with auditor litigation exposure, which suggests that litigation risk is a potential source of inconsistency in auditor reporting behaviour. From the literature, a case can be made that the global audit firm networks are potentially a driver of international consistency in application of audit standards.

Very little research has been conducted on the resolution and withdrawal of the going concern modification, and no identified research considers the relative thresholds for issuing versus the threshold for withdrawing a going concern modification. The impact of global audit firm networks on cross border consistency in reporting behaviour has also not been investigated in the literature.

The remainder of the chapter is organised as follows. Section 3.2 discusses international standards for auditing and their potential implications on audit reporting behaviour in relation to going concern modifications. Section 3.3 reviews the association of going concern modification with client characteristics of distress. While Section 3.4 assesses going concern modifications associated with litigation risk. Section 3.5 examines the

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[17] Auditors play a critical role in warning market participants of a firm's ability to continue as a going concern (Mutchler 1984; Wood 1996; DeFond et al. 2002). It is however difficult to develop a research design that can tease out the informativeness of audit reports because of the concurrent release of the financial statement. Nevertheless, going concern modifications have been shown to have information content in a number of countries and to have predictive ability (Francis 2004; 2011).

association between auditor type and going concern modifications and the potential impact global audit firm networks have on going concern modification, and in Section 3.6, a summary of the main points is presented.

3.2 International Standards on Auditing

The International Federation of Accountants (IFAC) and the International Auditing and Assurance Standards Board (IAASB)[18] have become increasingly active and important in the context of increasing globalisation of business in general, and the audit market in particular. The first International Auditing Guidelines were issued in 1979. In 1991 the guidelines were renamed International Standards on Auditing (ISA) and in 1994 a complete codified core set of ISAs were issued. ISAs have rapidly gained acceptance from national regulatory bodies; there are now over a hundred countries either using ISAs, or in the process of implementing them into their national auditing standards (IFAC 2011a).

The benefits of international harmonised auditing standards presuppose the existence of interdependencies or externalities related to auditing standards and practices, and that these are significant enough to sacrifice some of the independence of national standard setters (Bebbington and Song 2004; Ball 2005; DiPiazza et al 2006). The most cited benefit advocated by promoters of harmonised auditing standards is the elimination of costs (negative externalities) arising from a lack of comparability. There are other benefits, for example that internationally uniform standards only need to be created once and are therefore a type of 'public good' in the sense that the marginal cost of additional users adopting them is zero. In addition, if all auditors are required to apply the same standards, the ability of managers to 'shop' around for audit opinions is reduced (Ball 2005). Given the benefits, harmonisation efforts are supported and promoted by many international institutions throughout the world: United Nations (UN), the World Bank, The Organisation for Economic Co-operation and Development (OECD), the World Trade Organisation (WTO), the European Union (EU), and the International Organisation of Securities Commissions (IOSCO), among others (Bebbington and Song 2004).

While harmonisation of auditing standards is expected to provide significant national and international benefits through the reduction of information asymmetry across countries,

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[18] Before 2002 IAASB was named the International Auditing Practicing Committee (IAPC).

this will only be so if the application of the standards is consistent. The expectation from national and international policies of harmonisation is that users of audited financial statements can expect similar quality audits under national and international auditing standards. However, what is not known is whether harmonisation of auditing standards will also result in convergence in auditor behaviour, especially, with respect to evaluation of the going concern assumption and audit reporting.

From the perspective of comparative financial reporting, international accounting standards are somewhat meaningless without consistent international auditing standards. In turn, international auditing standards are will be of little value unless there is uniform and consistent application of those international audit standards between countries, audit firms and auditors. Professional audit guidance across the world is currently dominated by two sets of standards, but with respect to evaluation and reporting on going concern modifications the two sets of standards are relatively homogeneous. In the United States the evaluation and reporting of going concern uncertainties is governed by Statement of Auditing Standards No. 58 (SAS No. 58) and Statement of Auditing Standards No. 59 (SAS No. 59), and in more than hundred countries that currently employ or are in the processes of implementing ISAs, the relevant standards are International Standards on Auditing No. 570 (ISA 570), and International Standards on Auditing No. 700 (ISA 700). Both sets of standards are similar in that the auditor is required to take an active approach in evaluating the going concern assumption. In addition, both sets of standards rely on principles to guide auditor's interpretation of what constitutes a going concern problem and when this warrants the inclusion of a going concern modification in the audit opinion. Inherent to this evaluation under both standards is the subjective judgement on the auditor's part in evaluating and deciding the threshold at which the evidence on the client's financial distress becomes so negative as to warrant the inclusion of a going concern modification in the audit report (Levitan and Knoblett 1985). Further, the nature of the going concern assumption and the auditor's evaluation thereof make this a relatively non-negotiable matter between the auditor and the company; as distinct from an auditor's disagreement with management which is to a certain extent negotiable.

One of the biggest issues facing auditors has been addressing the exceptional risks to going concern and liquidity which were faced by companies at the height of the credit crunch resulting from the global financial crisis of late 2007. Although credit markets

have stabilised, these issues have ongoing potency and the developments have sparked a series of high-level inquiries into the role and effectiveness of audit across a number of countries (e.g. European Commission 2010). Without some empirical indication or measurement of the degree to which audit behaviour has become uniform given the same requirements in auditing standards, it becomes inherently difficult for policy makers objectively to evaluate the success of their desire to achieve consistency, or to identify where their efforts should be concentrated in the future. From the perspective of a user of financial statements, harmonisation of auditing practice will be achieved when clients with similar circumstances are issued the same audit report regardless of the period, the audit firm or the country of domicile. The expectation from international policies of harmonisation is that users of audited financial statements can expect consistent reporting behaviour under ISAs. However, it is currently not known whether consistent auditing standards (*de jure* harmonisation) will also result in consistent audit reporting behaviour (*de facto* harmonisation). If such consistency is not achieved, this will induce an expectation gap wherein financial statement users believe audit reporting behaviour to be consistent, when in reality it is not. If this happens it will have the potential to undermine the claimed benefits of international harmonisation of auditing.

3.3 Client Distress Characteristics

An auditor's decision with regard to going concern modifications can be conceptualised as a two-stage process, where the auditor first recognises that a company has a problem and subsequently decides whether or not to issue a going concern modification, based on factors specific to the company such as the relative degree of financial distress (Mutchler 1985; 1986).[19] Prior research shows that auditor's decisions about audit opinion modifications appear to be systematically related to publicly available information – therefore they can be statistically modelled. In fact, a number of early studies suggests that auditors' judgement is inferior to statistical models (Altman and McGough 1974; Altman 1982; Levitan and Knoblett 1985).[20] This notion, however, is shown to be largely

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[19] The auditor's decision process and assessment procedures for company's ability to continue as a going concern are therefore not necessarily the same for financially distressed and non-stressed firms (Argenti (1976); Menon and Schwartz (1987); McKeown et al. (1991); Reynolds and Francis (2000); Defond et al. (2002)).

[20] As noted by Mutchler et al. (1997) although other researchers compare auditors' decisions with the performance of a model, there is a conceptual difference between those that model going concern modifications and those that model the event of bankruptcy.

unfounded if factors more reflective of the auditors' real-world decision environment are taken into account (Hopwood et al. 2004). Nevertheless, in the context of the auditor's report on financial statements, the literature identify two types of misclassifications in relation to going concern matters: companies that receive going concern modifications but remain viable; and companies that did not receive going concern modifications prior to failure. The first is a Type I misclassification and the second is a Type II misclassification. The empirical evidence about the frequency of Type I and Type II misclassifications suggests that auditors only issue going concern modifications prior to bankruptcy in 40 to 50 percent of the cases (Mutchler 1984; Hopwood et al. 1989; McKeown et al. 1991; Mutchler et al. 1997; Geiger and Raghunandan 2002; Geiger et al. 2005), and that between 80 and 90 percent of companies that received a going concern modification did not subsequently fail (Altman 1982; Mutchler and Williams 1990; Citron and Taffler 1992; Geiger et al. 1998). The reporting standards, however, do not charge auditors with predicting the future and thus, strictly speaking, these are not misclassifications. Equally the issuance of a clean audit opinion does not necessarily guarantee that a firm will continue as a going concern, and a going concern modification is not a certification of certain bankruptcy.

Nogler (1995) and Zhao (2009) specifically focused on those firms that were issued with a going concern modification and the resolution of the going concern modification. Apart from these studies, the resolution of the going concern modifications in the form of "liquidation, dissolution, bankruptcy filing, or successful continuation" has received little attention in the literature. This is somewhat puzzling considering the large proportion of companies that do not fail subsequent to receiving a going concern modification. Nogler (1995) found, after tracking 377 US firms that received a going concern modification between 1983-1991, that about two thirds of the companies eventually file for bankruptcy, dissolve, liquidate or merge, and about one third survive and have their going concern modification withdrawn. For companies that had their going concern modification withdrawn, Nogler (1995) finds that the financial condition improved significantly. He also notes that auditors rely much more on external confirmation from banks, debt or equity markets to make a professional judgment about whether to remove a going concern modification once it has been given. Zhao (2009) replicates Nogler's (1995) study for the US in 2003-2006 (324 going concern firms with 107 withdrawals and 217 other resolutions) and also extend it to Australia in 2003-2006 (133 going concern firms with 81

withdrawals and 51 other resolutions). Zhao's (2009) results suggest that the proportion of withdrawals to other resolutions is the same as Nogler's (1995) study, although the composition within other resolutions has changed since that time. The results also suggest that there are differences in composition of resolutions between the US and Australia.[21]

In addition, Argenti (1976) argues that there are three 'types' of bankruptcies: 1) fledging companies that fail before they are established, 2) companies whose failure is precipitated by a 'slide' into insolvency that is forewarned by signs of financial distress in the financial statement ratios, and 3) companies that fail suddenly and without forewarning. In addition, those non-stressed companies that subsequently become bankrupt may possibly have experienced management fraud, and have issued misstated financial statements. If financial statements are misstated, then the ratios will be meaningless, as will be any results from a statistical going concern model that incorporates financial ratios as explanatory variables. Branding auditors as 'misclassifying' those companies that fail without forewarning is, at the least, awkward. In essence, auditors face two fundamentally different situations: one in which financial distress is evident, and one in which financial distress is not evident (McKeown et al. 1991; Hopwood et al. 1994). Still, and despite a lack of one-to-one correspondence between going concern modifications and subsequent bankruptcy, or even between going concern modifications and firms in financial distress, the events are, however, clearly related (Altman and McGough 1974). Subsequently, the indicators of bankruptcy are also indicators, to some degree, of the auditor's decision to include a going concern modification.[22]

Notwithstanding some variations, explanatory models of the auditor's decision process have generally been based on a combination of publicly available information such as prior audit opinions, stock market variables, financial ratios and relevant indicators that capture the 'mitigating' and 'contrary' information as identified by the relevant auditing standards.[23] The assessment of the degree to which publicly available information explains going concern modifications gives insight into the auditors' decision process and

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[21] Zhao (2009) notes that modelling the resolution of going concern modifications in the Australian setting proved very difficult.

[22] Discussion on differences in the regulations associated with bankruptcy in the three countries of interest is provided in Appendix 2-B (at the end of Chapter 2).

[23] Mutchler et al. (1997) points out that adverse financial ratios and indicators may be considered 'contrary' information that suggest than a going concern modification is appropriate, whereas positive financial ratios and indicators may be considered 'mitigating' factors that mitigate the circumstances that suggest a going concern opinion.

assessment procedure. This assessment has, naturally, been the focus of much research, although any modelling of the auditors' decision process is necessarily a simplification of the issue at hand.[24]

The association between going concern modifications and financial ratios was first investigated by Altman and McGough (1974). They used a discriminant bankruptcy prediction model, the Altman (1968) Z-score model which is based on five ratios: working capital to total assets, retained earnings to total assets, earnings before interest and tax to total assets, market value of equity to book value of total debt, and sales to total assets. Using a small sample of 34 firms, they found that the model to be an effective aid to the auditor in forming his going concern opinion because the model signalled going concern problems for companies that actually entered bankruptcy in 82 percent of the cases. Similarly, Mutchler (1985) investigated the relationship between going concern modification and publicly available information by means of a discriminant prediction model, using a matched pair sample of distressed firms. She found that the prior year's audit report and financial ratios – cash flow to total debt, current assets to current liabilities, net worth to total debt, total long-term debt to total assets, and net income to net sales – had an accuracy rate of approximately 83 percent in predicting going concern modifications. Levitan and Knoblett (1985) also used a matched sample to examine if financial statement variables were useful in predicting going concern modifications. They separated financial variables into four categories – adverse key financial ratios, negative cash flow from operations, working capital deficiencies, as well as recurring operating losses – and subsequently examined their impact using discriminant analysis. The model correctly classified auditors' going concern modifications approximately 90 percent of the time.

Mutchler (1986) considered four factors as explanatory variables of the auditors' decision process with respect to issuing a going concern modification in the presence of characteristics that make a company a potential recipient of a going concern modification. She found that all companies that received a going concern modification exhibited at least

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[24] Studies that examine factors that are specifically associated with going concern modifications – such as Altman and McGough (1974), Mutchler (1984, 1985, 1986), Levitan and Knoblett (1985), Muchler et al. (1997) – are conceptually a subset of those studies that research audit opinion modifications in general and seek to explain those – such as Dopuch et al. (1987), Monroe and Teh (1993).

one element of financial distress. Menon and Schwartz (1987) also investigated going concern modifications, but used instead a logit regression model including only financial variables on a sample consisting of bankrupt firms. They found that change in current ratio and recurring operating losses were significant. Similarly, Peel (1989) used a logit regression model derived from financial statement data to demonstrate that public UK companies which were issued with going concern modifications prior to bankruptcy were significantly more distressed than the firms that were not issued with a going concern modification.

Dopuch et al. (1987), Bell and Tabor (1991) and Monroe and Teh (1993) used stock market variables as well as financial statement variables to predict a number of first-time audit opinion modifications. They argue that market variables capture information that is not included in the financial statements. Market variables may be correlated with the auditor's information set or the auditor may use market indicators to infer information incorporated in market prices. In addition, market variables, such as variability in share price, may reflect relative litigation risk as lawsuits against auditors usually take place after the value of the equity has fallen substantially (Dopuch et al. 1987). Dopuch et al. (1987) used a choice based procedure and subsequently a weighted exogenous sample maximum likelihood (WESML) probit model to correct for oversampling in the analysis. They found that market variables such as time listed, change in beta, change in residual standard deviation of returns as well as common stock returns (including dividends) less equally weighted industry returns provided incremental explanatory power in predicting audit opinions in addition to financial variables such as change in total assets to total liabilities, change in receivables to total assets, change in inventory to total assets, the book value of total assets and current year loss. Monroe and Teh (1993) provide similar evidence for Australian firms. Bell and Tabor (1991), however, did not find that firm-specific stock returns provide any incremental explanatory power in addition to financial factors such as net income to net worth, net worth to sales, total debt to total capital, receivables to inventory, current assets to current liabilities, cash to fund expenditures. Besides financial ratios and stock market variables, there are also other indicators that capture 'mitigating' and 'contrary' factors that may be included in a model.

Chen and Church (1992) investigated the addition of a loan default-status variable to a model containing only financial variables. They find, for their matched sample of 127

firms with going concern modifications and 127 firms without, that the explanatory power increases from 38% to 93% when a default status variable is included. Mutchler et al. (1997) find some evidence that 'contrary' and 'mitigating' events, such as securities offerings, corporate restructuring, CFO/CEO resignations, and new business prospects influence audit opinion decisions with regard to going concern modifications on 208 firms that subsequently went bankrupt. Behn et al. (2001) find that auditors' going concern reporting decisions are strongly linked to publicly available information related to management plans by using a matched sample design with 148 distressed firms that receive going concern modifications and 148 distressed firms that did not. Both Mutchler et al. (1997) and Behn et al. (2001) support the findings of Chen and Church (1992).

The evidence generated from research described above suggests that publicly available information is a useful predictor of auditors' decisions to issue going concern modifications. Although the research is mainly based on US data, the results from studies such as Monroe and Teh (1993) using Australian data and from Peel (1987) using UK data suggest publicly available information has explanatory power in relation to the auditors' decision to issue going concern modifications in other non-US domiciles.

A number of researchers note that the statistical models of bankruptcy and auditors' decision to issue a going concern modification are useful *ex ante* and *ex post* in a number of ways: the models may serve as a decision aid for auditors when predicting what opinion other auditors would issue in similar circumstances, when evaluating potential clients, in determining the scope of an audit for existing clients, in peer reviews, to control quality within firms and as evidence in lawsuits (Dopuch et al. 1987; Monroe and Teh 1993). Further, researchers can, and have used, these models to assess the extent to which a going concern modification could be expected based on publicly available data (See Appendix 3-A for a more detailed discussion of research designs and the specification of going concern models). The suitability of using going concern modifications to measure audit reporting behaviour *ex post* can be considered through the notion of audit reporting behaviour as an unobserved or a latent variable.[25] The going concern modifications can

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[25] Accounting researchers, however, have generally refrained from explicitly invoking a latent variable to motivate the use of binary logit and probit models in researching going concern modifications, although some assert that propensity to issue going concern modifications is an alternative proxy to audit quality and auditor independence (e.g. DeFond et al. 2002; Carey and Simnett 2006). Nevertheless, the motivation for

only be observed in two states: an auditor has issued a going concern modification, or the auditor has not. Yet, the observed going concern modifications are not issued under identical circumstances. While audit reporting behaviour cannot be directly observed, at some point a change in audit reporting behaviour will result in a change in what is observed: namely, going concern modifications. For example, as the relative magnitude of an indicator of financial distress increases, it is reasonable that an auditor's propensity to issue a going concern modification also increases. At some point, that propensity would cross a 'threshold' that would result in the auditor issuing a going concern modification. A number of researchers have turned their attention to investigate whether such a 'threshold' differs with respect to other factors not directly associated with client distress. Some of these investigate the association between litigation and going concern modifications.

3.4 Litigation Risk

Prior studies suggest that audit quality and reporting is linked to litigation damages and that in the absence of litigation risk, the auditor would have little incentive to put in the necessary effort or to report truthfully absent reputation concerns (Melumad and Thoman 1990; Dye 1993; Khurana and Raman 2004). Litigation risk is related to client accruals and client-specific factors, such as total assets (Carcello and Palmrose 1994; Lys and Watts 1994), as well as financial distress and bankruptcy (Stice 1991). This is not unexpected, as Palmrose (1987) and Pierre and Anderson (1984) observe a relationship between company bankruptcies and lawsuits against auditors. Tucker et al. (2003) suggest that if auditors face larger penalties for Type II errors, this will make their reporting behaviour with respect to going concern modifications more conservative: conservative in the sense of a *ceteris paribus* higher propensity to issue a going concern modification.

Geiger and Raghunandan (2001) and Geiger et al. (2006) examine litigation risk and auditors' likelihood of issuing a going concern modification by using the US Private Securities Litigation Reform Act of 1995, where the period prior to the act signifies higher litigation risk and vice versa. Geiger and Raghunandan (2001) provide evidence that auditors were less likely to modify an audit report for going concern issues subsequent to the Private Securities Litigation Reform Act of 1995. They argue that the reduction in

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using a binary logit and probit model in researching going concern modifications can also be derived without appealing to an underlying latent variable (Long 1997).

expected litigation costs to auditors accounted for this shift in reporting decisions. Geiger et al. (2006) analyse 694 financially stressed US firms that entered into bankruptcy during the period 1991 to 2001. They find that the likelihood of a going concern modified opinion decreased significantly after the Private Securities Litigation Reform Act, and the change was particularly pronounced for the Big 6 audit firms. Consequently, litigation reform had a significant effect on auditor decision-making, but more so for Big 6 firms than for non-Big 6 firms.

Global events – such as a wave of corporate scandals across the world (e.g. Enron and WorldCom in the US, as well as One.Tel and HIH Insurance in Australia), the subsequent demise of Arthur Andersen; regulatory changes (e.g. SOX in the United States, CLERP 9 in Australia and the Companies Act 2004 in the United Kingdom); and, in late 2007 the sub-prime crisis – have transformed the global legal environment that auditors operate in and show that the matter of litigation is not unique to the United States. Further, these factors have potentially heightened auditors' perceptions of litigation risk arising from a failure to issue a going concern modification to companies that subsequently go bankrupt. Geiger et al. (2005) produce findings of increased auditor propensity in issuing going concern modifications in the United States following the enactment of SOX (2002). Based upon an analysis of 226 financially distressed companies that subsequently entered bankruptcy from 2000 to 2003, this study finds that US auditors are more likely to have issued a going concern opinion to an impending bankrupt firm after the end of 2001 than prior to that date. Myers et al. (2008) extend this research to a broader sample of financially distressed clients. Myers et al. (2008) find that auditors seem to have become more conservative in their going concern modification judgments post-2001. Specifically, they find that the likelihood that auditors commit a Type I misclassification has increased while the likelihood of Type II misclassifications has decreased post-2001. However, they find that auditor reporting decisions did not change uniformly. The increase in Type I misclassification is solely attributable to small non-Big N auditors. Big N auditors issue less Type I misclassifications both prior to and after 2001. Consequently, this suggests that non-Big N auditors became overly conservative while Big N auditors improved their precision with respect to going concern modifications. Fargher and Jiang (2009), using Australian data, find that for an audit client with the same potential to receive a going concern opinion, auditors were more likely to issue a going concern opinion in 2003 than in 1999. The going concern modification rate increased between 1999 and 2003 by

49.1%. This increase in going concern modifications in 2003 resulted in a return to 1999 levels of Type II audit misclassification, but at the cost of an increase in Type I misclassification, with many modifications issued to companies that did not go bankrupt. Xu et al. (2011) argue that in an environment where clients are experiencing financial distress, auditors may assess an increase in audit risk due to greater regulatory scrutiny in an attempt to increase perceived market transparency, reputational effect through greater risk of audit failure and greater litigation risk. Using Australian data, they find that during the GFC period (2007-2009) auditors increase their propensity to issue going concern opinions and charge higher fees relative to the pre-GFC period (2005-2006). They also find that the increase in the propensity of going concern opinion issuance in response to the GFC is more pronounced for Big N auditors than non-Big N auditors.

To the extent that these studies capture the relationship between litigation risk and audit reporting behaviour, an association between country litigation risk and audit reporting behaviour in an international setting should also be expected. In particular, countries with higher litigation risk should have *ceteris paribus*, a higher rate of going concern modified audit opinions. In a cross-national study, Khurana and Raman (2004) examine a sample of 19,517 firms from four Anglo Saxon countries – US, UK, Australia, and Canada - and whether the association between size of auditors and perceived audit quality (operationalised as *ex ante* cost of capital) is modified by national litigation risk. They find that it is litigation risk, rather than reputation concerns that drives perceived audit quality. Lam and Mensah (2006) investigate audit opinions of 148 firms in Hong Kong – which may be described as a low litigation environment – related to going concern uncertainties. Similar to US studies, they find evidence that Hong Kong auditors also tend to issue disclaimers under conditions characterised by greater financial distress, and modified opinions with explanatory paragraphs when the financial conditions are less severe. They suggest that litigation risk, even if important in high litigation risk environments, may not be any more important than the professionalism and reputation of the auditor. LaSalle (2006), however, advocates that it is premature to discount the importance of litigation risk. He suggests that consistent empirical regularities across countries with different litigation risk may, in part, be driven by a highly concentrated market for auditing services dominated by a few firms, where collaboration among affiliates of networks would not be surprising. In today's environment, networks of audit firm affiliates are arguably more prevalent and integrated than ever, even if for legal

reasons the network agreements typically affirm the legal independence of each member firm (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008).

3.5   Big N and Global Audit Firm Networks

Larger audit firms have less incentive to behave opportunistically, and investors perceive them as providing higher audit quality than small audit firms (DeAngelo 1981). The larger audit firms' product differentiation is reflected in the credibility associated with the audit firms' brand name (Dopuch and Simunic 1980). Larger audit firms, however, have been associated with a higher materiality threshold compared to smaller audit firms, and thus should be less likely to issue a going concern modification (Messier 1983: Ryo and Roh 2007). Muchler (1997) included a control variable for Big 6 auditors versus non-Big 6 auditors, but found no significant differences between the auditor type and their propensity to issue a going concern modification. Based on the argument that lower reporting error rates from going concern modifications are a good indicator of high audit quality, Geiger and Rama (2006) investigated both Type I and Type II of errors Big 4 and non-Big 4. They found that both error rates are lower for Big 4 auditors. Similarly, Ryo and Roh (2007) investigated auditors' materiality judgments concerning the issuance of going concern modifications and found that the materiality thresholds differ between Big 6/5 and non-Big 6/5 auditors – specifically, non-Big 6/5 are more likely to issue going concern modifications.

The initial creation of networks of audit firm affiliates occurred in the early twentieth century and was a response to a number of factors: the emergence of multinational companies, different accounting and auditing standards and cultural environments, but among them, also differing legal regulations, (Lenz and James 2007). It is only in recent times, however, that global expansion of audit and accounting services and integration of these networks have occurred on a large scale. Events of the 1980s and 1990s such as national deregulation, privatisation, integration of regional economies, liberalisation of world trade as well as decrease in cost and increase in availability of technology and telecommunications have been among the primary drivers for this trend. The leading international audit networks have in previous research been operationalised to consist of the current six largest audit firms: that is, the current Big 4 firms as well as BDO and Grant Thornton (Carson 2009). Although prior research has customarily focused on Big N

audit firm networks, there are compelling arguments to include BDO and Grant Thornton. First, these are the largest global audit firm networks outside the Big N and have a large international network of offices. Second, BDO and Grant Thornton were founder members of the Forum of Firms of IFAC, and hence required to comply with the same international quality control and monitoring requirements as the Big N audit firm networks. Third, the audit profession itself – through the Global Public Policy Symposium – has defined the leading international audit networks to consist of the current six largest audit firms (DiPiazza et al. 2006).

The international audit firm network may be defined as "[…] a contractual cooperation between legally and economically autonomous national audit firms, which are organised based on partnership principles under strategic leadership of one or more member firms for the joint fulfilment of international client needs" (Lenz and James 2007, p. 376). Thus, each autonomous audit firm accepts contracts independently and collects its own revenue which allows the network, as a whole, to diversify the risk associated with penalty payments and litigation. Yet each autonomous audit firm's activities are, to various degrees, coordinated. Given the coordinated nature of these firms, the networks are in effect a mechanism by which the audit firm affiliates manage the efficient dispersal of existing knowledge and enable new knowledge to be captured within the firm (Carson 2009). In addition, in order to reduce moral hazard, the affiliates of international audit firm networks are subject to quality assurance and internal quality reviews and share common methodology and practice rules, because if network members do not adhere to the agreed quality standards, the reputation of the whole network is at stake (Lenz and James 2007; Thomadakis 2008). Although risk of moral hazard is possibly greater where litigation risk is lower, reputation concerns may still provide a significant deterrent (Raman and Wilson 1994). For the large international networks, the brand name and the reputation the particular network carries is an important professional asset in retaining current audit clients and in attracting new clients, as well as retaining and recruiting employees. From an international perspective, reputation is an important asset that may provide entrance into new geographical markets as well as into new markets for other assurance services (Elliot 1998). Membership of the Forum of Firms also requires consistent quality control over audit practices within the network irrespective of national borders (IFAC 2011b). Thus, reputation concerns of the international audit firm networks may possibly mitigate the effects of the cross national variance in litigation risk.

In addition, significant economies of scale are to be gained by international audit firm networks by the efficiencies resulting from common audit processes on transnational audit appointments and staff transfers between network affiliates (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008; Thomadakis 2008). Furthermore, conditions that facilitate consistency between international audit firm networks have emerged as the members of the Forum of Firms are also committed to the use of International Standards on Auditing (ISAs), and the IFAC Code of Ethics for Professional Accountants for transnational audits in addition to the use of the IAASB's International Standard on Quality Control. Many of the world's major capital markets have come to accept and expect the use of ISAs for foreign companies. By contrast, smaller domestically located audit firms do not enjoy the inputs from an international audit firm network, nor do they engage in audits of large multinational corporations and are not under the quality control requirements imposed by the Forum of Firms.[26] Thus, as a consequence of the highly concentrated market for auditing services, similarities in auditor reporting behaviour across countries may be caused by similarities within the international audit firm networks, despite potential differences between national audit environments (LaSalle 2006). Empirical evidence shows that audit firms that are affiliates of international networks have global similarities with regard to industry specialisation (Carson 2009). Yet little is known about the role of international audit firm networks and audit reporting behaviour in an international context.

3.6 Summary

Although the primary outcome of an audit is the audit opinion, to date, no empirical research has examined the audit reporting behaviour in terms of going concern modifications in an international context. Within a national context, there is a large body of research that have investigated audit reports and going concern modifications. But considering how few of the firms that receive a going concern modification actually enter bankruptcy in the following year, very little research is conducted on the withdrawal of

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[26] The Forum of Firms requires its members to maintain appropriate quality control standards in accordance with International Standards on Quality Control (ISQC), issued by the International Auditing and Assurance Standards Board, in addition to relevant national quality control standards and conduct, to the extent not prohibited by national regulation (IFAC 2011b).The ISQC deals with an audit firm's responsibilities for its system of quality control for audits and reviews of financial statements, and other assurance and related services engagements. As of 15 December 2009, all audit firms must establish a system of quality control in compliance with this ISQC.

the going concern modification. Considering the costs involved in issuing an incorrect audit opinion based on the appropriateness of going concern assumption raises some interesting issues. Do auditors assess doubt about the going concern assumption consistently, and is the threshold for issuing versus the threshold for withdrawing a going concern modification the same or are they different? Are there differences between small and large auditors in this regard? Does the magnitude in differences in thresholds for issuing and withdrawing going concern modification, if any, depend on whether the client changed audiors? Empirical evidence indicates that publicly available information is a useful predictor of auditors' decisions to issue going concern modifications across a number of countries. Yet, auditors are not always accurate in their reporting choices with regard to going concern modifications. There is also evidence that audit reporting behaviour is associated with auditor litigation exposure. This may possibly extend to differential litigation risk across countries. Finally, and irrespective of litigation risk, a case can be made that the international audit firm networks are potentially a driver of international consistency in application of audit standards. While the prior research is informative in a national setting, there are some fundamental and important things that are not currently known about audit reporting behaviour in an international setting. Specifically, are there country differences in audit reporting behaviour with respect to going concern modifications? If so, are these smaller for international audit firm networks, or have audit reporting differences decreased over time in light of the current push for international harmonisation? In a world where globalisation erodes national barriers to both business and audit practices, inconsistencies in audit reporting behaviour may induce an expectation gap where the financial statement users believe audit reporting behaviour to be consistent, when in reality it is not.

Appendix 3A:

Going Concern Models and Research Design

3A.1 Introduction

Prior studies have investigated factors associated with going concern modifications. The primary findings of these studies are dealt with in the literature review above. This appendix, however, provide a brief outline of the studies' sampling techniques, methodologies and the specific quantifiable and non-quantifiable variables included in the going concern models.

3A.2 Going Concern as a Proxy for Audit Quality

There are two main approaches to investigate audit quality within a going concern context (Francis 2011). The first is a binary approach where audit quality is based on the relationship between a going concern audit report and client business failure in order to measure the auditor's accuracy: did or did not auditors of companies that went bankrupt issue a going concern modification (e.g. Mutchler, 1984; Hopwood et al. 1989; McKeown et al. 1991; Mutchler et al. 1997; Geiger and Raghunandan 2001; Geiger et al. 2005) and did or did not companies where the auditor issued a going concern modification go bankrupt (e.g. Altman, 1982; Mutchler and Williams 1990; Citron and Taffler 1992; Geiger et al. 1998). The other approach uses the going concern report as a continuum measure, where the probability of issuing a going concern modification, conditional on the client's financial situation, is of interest. This is commonly used as a measure of independence (e.g. Reynolds and Francis 2000; DeFond et al. 2002; Carey and Simnett 2006; Ye et al. 2011), where the premise is that a less independent auditor is less likely to issue a negative report, all things being equal, in order to avoid losing clients.

Although both these approaches are informative, they are not perfect. In judging audit accuracy with regard to auditors' assessment of the going concern assumptions, it is

important keep in mind the actual criteria in the auditing standards. First, in judging auditors' accuracy based on the relation between the audit report and whether the client went bankrupt or not, one must also recall that auditors, as per the auditing standards, are not charged with predicting the future. Both the international auditing standard and the corresponding US standard are explicit on this issue.[27] Therefore, and besides the imprecision in the auditing standards, auditors' assessment of doubt about the appropriateness of the going concern assumption involves assessing the probability of future bankruptcy based on present information, not the prediction of actual bankruptcies.[28] It should therefore be clear that when auditors are judged against a criterion of predicting actual bankruptcies there will always be a certain number of misclassifications – even if the auditors were correct in assessing the probability of bankruptcy.

The approach that uses the probability of issuing a going concern modification, conditional on the client's financial situation, as a measure of independence is also not without its problems. First, this assumes that auditors interpret the substantial/significant doubt criteria to be the same, and that the auditor is both accurate and consistent with respect to assessing the probability of future bankruptcies. Given the imprecision in how to apply the broad principles of the auditing standards, this might be an unrealistic assumption. Second, there is an allusion that a *ceteris paribus* lower threshold for issuing a going concern modification is "better" in that this indicates more independence and thus better audit quality. But an incorrect audit opinion is costly either way. For a potential investor it is perhaps more costly if s/he is not informed of the probability of impending bankruptcy, but by contrast, for someone intending to short sell the company's stocks it is perhaps more costly if s/he is not actually informed that the firm is likely to stay a going

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[27] "The auditor cannot predict such future events or conditions. Accordingly, the absence of any reference to going concern uncertainty in an auditor's report cannot be viewed as a guarantee as to the entity's ability to continue as a going concern" (ISA 570, s.7). "The auditor is not responsible for predicting future conditions or events. The fact that the entity may cease to exist as a going concern subsequent to receiving a report from the auditor that does not refer to substantial doubt, even within one year following the date of the financial statements, does not, in itself, indicate inadequate performance by the auditor." (SAS 59, s.4).

[28] The importance of this distinction is perhaps best illustrated by way of example: if "substantial/significant doubt" about the going concern assumption at the reporting date refers to, say, a threshold of 70% chance of future bankruptcy, then a firm with an 80% chance of future bankruptcy which are issued with a going concern modified opinion, still has a 20% chance of not becoming bankrupt. Similarly, for a firm with a 60% chance of future bankruptcy which is issued a clean audit opinion, still has a 60% chance of becoming bankrupt.

concern in the near future. Furthermore, for a company with a going concern modification, it is more difficult to obtain financing, which is necessarily a cost that is borne by the current owners (Elliott and Jacobson 1987a; Louwers et al. 1999). Clearly, if the auditor has a very low threshold for issuing a going concern modification, this cost is sometimes unnecessary. If the argument is taken to the extreme, if an auditor has an extremely low (high) threshold that would result in the auditor always (never) issuing a going concern modification, it would certainly not mean that it is better quality because such an audit report would impart no real information to stakeholders.

Nevertheless, investigating differences in thresholds for issuing going concern modifications, provides information as to how consistent auditors are in assessing the going concern assumption, whether that is due to independence issues or others, such as the ability to assess the probability of future bankruptcy, or even due to different interpretations of the substantial/significant doubt criteria.[29]

3A.3 Overview of Selected Studies and Methodology

Table 3A-1 provides an overview of selected studies that use going concern models to investigate auditors' going concern judgements. Of the company observations included in studies on the auditor's assessment of the going concern assumption, a distinction is usually made between those companies that receive a going concern modification and those that did not receive a going concern modification. But other distinctions, such as those between healthy firms and those firms that show distress, as well as the distinction between firms that subsequently went bankrupt or did not go bankrupt after receiving either a going concern modification or a clean audit opinion are important in understanding the sampling techniques and the research design of the studies (Martens et al. 2008). Note also that Dopuch et al. (1987), Monroe and Teh (1993), and Krishnan and

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[29] In terms of auditors' ability to assess the probability of future bankruptcy, one may view the underlying variable – doubt about the going concern assumptions – as a continuous variable that ranges from high doubt (100% chance of bankruptcy) to low doubt (0% chance of bankruptcy). For instance, a company may objectively have a 70% chance of bankruptcy but if ten different auditors have different probability estimates, then these auditors are neither consistent nor accurate. If all auditors consider the probability of bankruptcy to be 50%, then they are consistent but not accurate. If all the auditors consider the doubt to be 70%, then their conclusions are both consistent and accurate. In terms of interpretation of substantial/significant doubt criteria, if two auditors both have considered a given firm's probability of going bankrupt to be 40%, but one of the auditors has a threshold of 30% chance of going bankrupt, but the other before issuing a going concern modification has a threshold of 50%, the two auditors will issue different audit reports. In this respect, consistency does impart some information about the accuracy of auditors' assessment of the going concern assumption.

Table 3A-1: Overview of Selected Going Concern Models

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
Altman and McGough (1974) JA	Bankrupt: 34 Going concern: 15 Non-going concern: 19	MDA	Other	**Financial Characteristics** (working capital to total assets, retained earnings to total assets, earnings before interest and tax to total assets, sales to total assets); **Market Variables** (market value of equity to book value of total debt).
Mutchler (1985) JAR	Distressed: 238 Going concern: 119 Non-going concern: 119	MDA	Matched	**Financial Characteristics** (working capital from operations to total liabilities, current assets to current liabilities, net worth to total liabilities, total long-term liabilities to total assets, total liabilities to total assets, net income before tax to net sales, change in net income to ending assets); **Other** ('good' and 'bad' news, prior year going concern modification).
Levitan and Knoblett (1985) TAR	Going concern: 32 Non-going concern: 32	MDA	Matched	**Financial Characteristics** (current year's operating income to current equity, prior three years' operating income to current year equity, number of negative operating income in past three years, current assets to current liabilities, prior three years' current assets to current liabilities, number of current ratios less than one in the prior three years, current year's cash flow to total debt, prior three years' cash flow to total debt, number of negative cash flows in the past three years, total debt to total assets, current assets to total assets, quick assets to total assets, quick assets to total liabilities, current assets to net sales, working capital to net sales, retained earnings to total assets, earnings before interest and tax to total assets, net sales to total assets, common equity to total debt).
Menon and Schwartz (1987) CAR	Bankrupt: 89 Going concern: 37 Non-going concern: 52	Logit	Other	**Financial Characteristics** (current assets to current liabilities, change in current assets to current liabilities, retained earnings to total assets, debt to total assets, income to total assets, recurring losses, cash flow from operations to total liabilities).
Dopuch et al. (1987) TAR	Qualified: 275 Non-qualified: 411	Probit	Other	**Financial Characteristics** (change in total liabilities to total assets, change in receivables to total assets, change in inventory to total assets, total assets, current year loss); **Market Variables** (change in Beta, change in residual standard deviation from market model regressions, industry adjusted returns over the year); **Other** (firm age since listing).
Mutchler and Williams (1990) AUDITING	Going concern: 87 Distressed: 612 Healthy: 1,171	Logit	Other	**Financial Characteristics** (composite discriminant score [cash flow to total liabilities, current assets to current liabilities, net worth to total liabilities, total long-term liabilities to total assets, total liabilities to total assets, net income before tax to net sales, change in current assets to current liabilities, sales]); **Market Variables** (total return variance of a firm's stock over the prior 24 months); **Other** (individual Big N audit firms, audit firms' structure class, audit technology score).

Table 3A-1: Overview of Selected Going Concern Models (continued)

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
McKeown et al. (1991) AUDITING	Bankrupt: 134 Going concern: 54 Non-going concern: 80 Non-bankrupt:160 Going concern: 4 Non-going concern: 156	Logit	Other	**Financial Characteristics** (net income to total assets, current assets to current liabilities, current assets to sales, current assets to total assets, cash to total assets, long-term debt to total assets, sales); **Other** (fraud reported after audit report date).
Bell and Tabor (1991) JAR	Qualified: 131 Non-qualified: 1,217	Logit	Other	**Financial Characteristics** (net income to net worth, net worth to sales, total debt to total capital, receivables to inventory, current assets to current liabilities, cash to fund expenditures, net sales); **Market Variables** (variance of client's daily stock returns).
Chen and Church (1992) AUDITING	Going concern: 127 Distressed: 127	Logit	Matched	**Financial Characteristics** (cash flow from operations to total liabilities, current assets to current liabilities, long-term debt to total assets, net income before taxes to sales, change in current assets to current liabilities, total assets); **Other** (default on debt).
Monroe and Teh (1993) AF	Qualified: 120 Non-qualified: 1,728	Logit	Other	**Financial Characteristics** (recurring losses, total assets, receivables to total assets, inventory to total assets, total liabilities to total assets), **Market Variables** (common stock return less weighted industry index, Beta, residual standard deviation returns); **Other** (listing age, auditor size indicators, prior year qualifications, industry).
Hopwood et al. (1994) CAR	Distressed: 198 Bankrupt: 118 Non-bankrupt: 80 Non-distressed: 96 Bankrupt: 16 Non-bankrupt: 80	Logit	Other	**Financial Characteristics** (net income to total assets, current assets to total assets, current assets to sales, current assets to current liabilities, current assets to total assets, cash to total assets, long-term debt to total assets, sales).
Carcello et al. (1995) AUDITING	Bankrupt: 446 Going concern: 231 Non-going concern: 215	Logit	Other	**Financial Characteristics** (Zmijewski (1984) bankruptcy score, revenues); **Other** (number of days between financial statement date and audit reporting date, default on debt, time period).

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Table 3A-1: Overview of Selected Going Concern Models (continued)

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
Raghunandan and Rama (1995) AUDITING	Bankrupt: 175 Going concern: 90 Non-going concern: 85 Non-bankrupt: 362 Going concern: 105 Non-going concern: 257	Logit	Other	**Financial Characteristics** (current assets to current liabilities, change in current assets to current liabilities, recurring losses, cash flow from operations to total liabilities, total liabilities to total assets, sales); **Other** (time period).
Krishnan and Krishnan (1996) JAAF	Qualified: 167 Non-qualified: 1,674	2 Stage Probit	Other	**Stage 1: Financial Characteristics** (receivables to total assets, inventories to total assets, liabilities to total assets, assets, current year loss); **Market Variables** (Beta, residual standard deviation of returns from market model, common stock returns minus equally weighted market return); **Other** (probability of litigation); **Stage 2: Financial Characteristics** (public debt to total debt, growth in assets); **Other** (proportion of shares owned by 'outsiders', clients' deciles position in the auditor's distribution of client assets, Big N auditor, time listed, industry).
Mutchler et al. (1997) JAR	Bankrupt: 208 Going concern: 107 Non-going concern: 101	Logit	Other	**Financial Characteristics** (probability of bankruptcy [based on the following variables: net income to total assets, current assets to total assets, current assets to current liabilities, cash to total assets, current assets to sales, long-term debt to total assets, mild negative and positive news categories before reporting date, extreme negative news categories before reporting date, payment default at financial statement date, covenant default at financial statement date, debt default at financial statement date], sales, mild negative and positive news categories before reporting date, extreme negative news categories before reporting date, mild negative and positive news categories after reporting date, extreme negative news categories after reporting date, extreme negative news categories after reporting date that were also reported as default in debt in footnotes, payment default at financial statement date, covenant default at financial statement date, debt default at financial statement date); **Other** (Big N auditor, audit report lag from balance date, number of days between audit report and bankruptcy filing date).
Carcello et al. (2000) AUDITING	Distressed: 316 Going concern: 52 Non-going concern: 264	Logit	Other	**Financial Characteristics** (current assets to current liabilities, change in current assets to current liabilities, recurring loss, cash flow from operations to total liabilities, total liabilities to total assets, revenues); **Other** (default on debt, audit structure values, time period, audit firms' partner compensation plan type, interaction between the audit firm's partner compensation plan and client revenue, high litigation risk industries, industry specialist audit firms, auditor change).

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Table 3A-1: Overview of Selected Going Concern Models (continued)

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
Carcello and Neal (2000) TAR	Distressed: 223 Going concern: 83 Non-going concern: 140	Logit	Other	**Financial Characteristics** (Zmijeweski (1984) bankruptcy score, sales); **Other** (default on debt, prior year going concern modification, development stage entity, audit committee members classified as affiliated directors, type of stock exchange, audit committee size, Big N auditors, audit firm industry specialisation, audit firm tenure, interaction between default status and affiliated directors).
Reynolds and Francis (2000) JAE	Distressed: 2,439 Going concern: 224 Non-going concern: 2,215	Logit	Other	**Financial Characteristics** (Altman (1968) Z-score, current or prior year loss, change in total debt to total assets, sales); **Other** (prior year going concern modification, assets sales, debt issued, equity issued, client sales relative to auditor's office level total clientele sales).
Geiger and Raghunandan (2001) AUDITING	Bankrupt: 365 Going concern: 198 Non-going concern: 167	Logit	Other	**Financial Characteristics** (sales, probability of bankruptcy calculated by Hopwood et al. (1994) model); **Other** (time from audit report date to bankruptcy date, time from fiscal year end to audit report date, default of debt, time period).
Behn et al. (2002) AUDITING	Going concern: 148 Distressed: 148	Logit	Matched	**Financial Characteristics** (cash flow from operations to total liabilities, current assets to current liabilities, net income before taxes to net sales, long-term debt to total assets, sales, prior years' losses, change in current assets to current liabilities); **Other** (default on loan covenants, Big N auditor, type of stock exchange, plans to issue equity, plans to borrow money, plans to reduce spending).

Table 3A-1: Overview of Selected Going Concern Models (continued)

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
Geiger and Raghunandan (2002) AUDITING	Bankrupt: 115 Going concern: 59 Non-going concern: 56	Logit	Other	**Financial Characteristics** (sales, probability of bankruptcy calculated by Hopwood et al. (1994) model); **Other** (default on debt, time from audit report date to bankruptcy date, audit firm tenure).
DeFond et al. (2002) JAR	Distressed: 1,158 Going concern: 96 Non-going concern: 1,062	Logit	Other	**Financial Characteristics** (Zmijeweski (1984) bankruptcy score, total assets, total liabilities to total assets, change in total assets, prior year loss, investments to total assets, subsequent issues of debt or equity, operating cash flow); **Market Variables** (Beta, annual stock return, annual variance of the residual from the market model); **Other** (Big N auditor, time from balance date to audit report date, listing age, audit fees, non-audit fees, total audit fees, audit fees to non-audit fees).
Geiger and Rama (2003) AUDITING	Going concern: 66 Distressed: 66	Logit	Matched	**Financial Characteristics** (total assets, probability of bankruptcy calculated by Hopwood et al. (1994) model); **Other** (default on debt, new debt issued, new equity issued, cost reduction program, significant asset sales, 'strong' audit committee, time from the end of the year to the audit report date, Big N auditor, audit fees, non-audit fees).
Geiger et al. (2005) AUDITING	Bankrupt: 226 Going concern: 121 Non-going concern: 105	Logit	Other	**Financial Characteristics** (sales, probability of bankruptcy calculated by Hopwood (1994) model); **Other** (default on debt, time from audit opinion date to bankruptcy date, time from balance date to audit report date, Big N auditor, time period).
Carey and Simnett (2006) TAR	Distressed: 559 Going concern: 66 Non-going concern: 493	Logit	Other	**Financial Characteristics** (Zmijeweski (1984) bankruptcy score, total assets, total liabilities to total assets, change in total liabilities to total assets, prior year loss, investments to total assets, operating cash flow to total assets); **Market Variables** (market adjusted return over the year); **Other** (listing age, Big N auditor, non-audit fees to total fees, mining industry, audit partner tenure).

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Table 3A-1: Overview of Selected Going Concern Models (continued)

Author(s)[1]	Sample[2]	Method[3]	Sampling[4]	Independent variables
Fargher and Jiang (2009) AUDITING	Qualified: 321 Non-qualified: 1,676	2 Stage Probit	Other	**Stage 1: Financial Characteristics** (Altman (1968) Z-score, current assets to current liabilities, long-term debt to total assets, prior years' losses, cash assets to total assets, inventories to total assets, receivables to total assets, total assets); **Market Variables** (Beta, industry adjusted market return); **Other** (Big N auditor, listing age, mining industry, technology industry, time period). **Stage 2: Financial characteristics** (total assets, Altman (1968) Z-score); **Market Variables** (market value of equity to book value of net worth, dividend); **Other** (Big N auditor, default on debt, prior year going concern modification, audit and non-audit fees to audit firm's total fee income, non-audit service fees, change of auditor, time period).
Xu et al. (2011) Working paper	Going concern: 838 Non-going concern: 4,653	2 Stage Probit	Other	**Stage 1: Financial Characteristics** (Altman (1968) Z-score, current assets to current liabilities, long-term debt to total assets, prior years' losses, cash assets to total assets, inventories to total assets, receivable to total assets, total assets); **Market Variables** (industry adjusted market return); **Other** (Big 4 auditor, listing age, mining industry, technology industry, time period). **Stage 2: Financial characteristics** (total assets, Altman (1968) Z-score); **Market Variables** (market value of equity to book value of net worth, dividend); **Other** (Big 4 auditor, default on debt, prior year going concern modification, audit and non-audit fees to audit firm's total fee income, non-audit service fees, change of auditor, time period, new issue, new borrowings, whether the client switched auditor, time variables).

1. Abbreviations of Journals: **AF**: Accounting and Finance; **AUDITING**: Auditing: A Journal of Practice & Theory; **CAR**: Contemporary Accounting Research; **JA**: Journal of Accountancy; **JAAF**: Journal of Accounting, Auditing and Finance; **JAE**: Journal of Accounting and Economics; **JAR**: Journal of Accounting Research; **TAR**: The Accounting Review.

2. **Distressed**: Companies that exhibits signs of distress (e.g. any or a combination of current and/or multiperiod distress indicators such as negative net income, negative working capital, negative cash flows, negative net assets, and negative retained earnings); **Going Concern**: Companies that received a going concern modification in the audit report; **Non-Going Concern**: Companies that did not receive a going concern modification in the audit report; **Bankrupt**: companies that are bankrupt; **Non-Bankrupt**: firms that are not bankrupt; **Non-Qualified**: companies that did not receive a qualification in the audit report; **Qualified**: companies that received a qualification in the audit report; **Healthy**: Companies that are not financially distressed.

3. **MDA**: Multivariate Discriminant Analysis: The discriminant score is the value resulting from applying a discriminant function formula to the data representing going concern modifications. If the discriminant score of the function is less than or equal to the cutoff, the case is classed as non-going concern modification, or if above it is classed as going concern modification. A hold-out sample is often used for validation. MDA usually involves more violations of underlying data assumptions than the binary response models; **Logit**: Logit Regressions: A special case of general linear models (GLM) where the probability of observing a going concern modifications is determined as a non-linear link function of the independent variables followed by a non-linear link function which make sure the probability is between 0 and 1. The logit is the canonical link function for the binomial distribution and assumes that the errors are logistically distributed; **Probit**: Probit regression: A special case of general linear models (GLM) where the probability of observing a going concern modifications is determined as a linear function of the independent variables followed by a non-linear link function which make sure the probability is between 0 and 1. The probit is the canonical link function for the standard normal distribution and assumes that the errors are normally distributed.

4. **Matched**: Choice-based sampling where number of going concern modification observations equals non-going concern modification observations, and non-going concern modifications are selected from a set of distressed companies that are as similar as possible to the companies that receive a going concern modification; **Other**: includes sampling techniques such as (1) selecting only bankrupt companies and examining why some receive going concern modifications and others do not; and (2) all available companies are included in the sample, or all available companies are included in the sample subject to some form of exogenous sample stratification.

Krishnan (1996) make a distinction between companies that received a clean audit opinion and a qualified opinion (of which going concern modifications are only a sub-sample).

In conjunction with the analytical methods in empirical studies concerned with going concern modifications, the research design plays an integral part of the analysis in order to draw inferences in a *ceteris paribus* manner. Some studies utilize a matched sample where the number of observations with a going concern modification equals the number of observations without a going concern modification (e.g. Mutchler 1985, Chen and Church 1992; Behn et al. 2001; Geiger and Rama 2003). The observations with no going concern modification are usually taken from a set of firms that show financial distress and are matched on industry, year and size as closely as possible. Such choice-based sampling (i.e. endogenous sample stratification) reduces data collection costs, and because the going concern modification rate is relatively low in the overall population of firms a random sample would produce relatively imprecise parameter estimates. It is, however, important that the necessary adjustments are made to the analysis to accommodate the over-sampling of one type of audit opinion (Hopwood et al. 1994; Cram et al. 2009).Other techniques to achieve a suitable sized 'control group' involves selecting non-going concern modification observations randomly from all available firms, but usually with regard to same audit opinion year (e.g. Dopuch et al. 1987).

Although the importance of distinguishing between financially distressed firms and healthy firms was noted early (for example, Mutchler 1985; Menon and Schwartz 1987), it was not until Hopwood et al.'s (1994) research that demonstrated empirically that auditor's decision problem with respect to going concern modifications is inherently different for financially distressed and financially healthy firms, that most subsequent research has focused and limited samples to distressed firms.[30] Most of the studies identify financially distressed firms on the basis of one or more characteristics (e.g. current year loss and/or current year negative cash flow from operations), however, some studies employ a two stage model (e.g. Krishnan and Krishnan 1996; Fargher and Jiang 2009; Xu et al. 2011): the probability that the audit client should received a going concern modification, and given this, the probability that the auditor will issue a going concern

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[30] However, if the purpose of the research is to investigate qualifications in general that may affect the auditor's report (e.g. Dopuch et al. 1987; Bell and Tabor 1996; Monroe and Teh 1993), there may not be a need to take into account the relative level of financial distress.

modification. To the extent that both methods identify potential recipients of going concern modifications, the inferences should be invariant under both methods, as the sample stratification is exogenous. By limiting the sample of interest to all available financially distressed firms, the going concern modification rate in comparison to the overall population is effectively increased (e.g. Raghunandand and Rama 1995; Muchler et al. 1997; DeFond et al. 2002; Geiger and Rama 2003; Carey and Simnett 2006). Some studies, by contrast, focus on bankrupt firms only, with the aim to describe why certain bankrupt companies were issued with going concern modifications and some were not (Menon and Schwartz 1987; Carcello et al. 1995; Raghunandan and Rama 1995; Mutchler et al. 1997; Geiger and Raghunandan 2001; Geiger et al. 2005). Obviously, the appropriate type of sampling technique is logically linked to the research question(s) of the study, but the key point is that interpretation of the analytical results is not invariant to sample selection criteria.

Multiple discriminant analysis (MDA) was the first analytical technique used to investigate auditors' going concern judgments (e.g. Altman and McGough 1974; Mutchler 1985; Levitan and Knoblett 1985). MDA was an earlier alternative to binary logit and probit regressions. But MDA has subsequently been replaced as logit and probit models usually involve fewer violations of the underlying data assumptions (independent variables do not need to be normally distributed, linearly related, or have equal within-group variances), are robust, and handle categorical as well as continuous variables. Both probit and logit regression models have been used in the literature, but logit appears to be the conventional choice.[31]

At the core of the going concern models are the quantifiable and non-quantifiable variables that capture the firms' financial characteristics. Although there are some variations as to how these are operationalised, variables in the form of ratios and indicator variables that capture concepts such as the firms' activity, performance, liquidity, leverage, solvency and size, are present, to varying degrees, in all models. In addition, a number of the studies, following Dopuch et al. (1987), incorporate market variables into the models (e.g. Mutchler and Williams 1990; Bell and Tabor 1991; Monroe and Teh

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[31] Both the probit and the logit are similar, except for assumptions about the variance of the error term. Thus, and although the scaling of the coefficients are different ($\beta_{Logit} \approx 1.6\beta_{Probit}$), the sign of the coefficients, the significance of the coefficients and the probabilities are nearly identical (Long 1997).

1993; DeFond et al. 2002; Carey and Simnett 2006; Fargher and Jiang 2009; Xu et al. 2011). Similarly, following Chen and Church (1992), a number of studies incorporate a debt default status indicator variable (e.g. Carcello et al. 1995; Mutchler et al. 1997; Carcello et al. 2000; Carcello and Neal 2000; Geiger and Raghunandan 2001; Behn et al. 2002; Geiger et al. 2005). Other variables, such as listing age, Big N audit firm, report lag, and industry indicators to name a few have also become more prevalent in the models as the field has developed. The selective inclusion of such variables, however, appears to be influenced and dictated by the focus and the research questions of a given paper. The fact that auditors are privy to information not in the public domain and thus have a richer information set upon to make their judgment about an entity's ability to continue as a going concern, makes any modelling of auditors' going concern judgment necessarily a simplified one. Despite this and while the models only incorporate publicly available information, the models have proven to have reasonable explanatory power and have provided valuable insight into auditor's going concern judgment issues.

3A.4 Sample Size

A cautionary note should also be made on the sample size used in going concern models that employ logit and probit regressions. The sample sizes have ranged from quite small (Menon and Schwartz 1987 with 89 observations) to relatively large (Reynolds and Francis (2000) with over 2,000 observations); most studies have used samples sizes that are between 100 and 500 observations. While maximum likelihood (ML) estimators are not necessarily bad estimators in small samples, the small sample behaviour of ML estimators for the logit and probit model is for the most part unknown (Long 1997).[32] It is also unknown as to what constitutes a sample size large enough, but one should be cautious in assuming that ML estimation works well with any sample size, and thus results obtained from relatively small samples must be viewed with a healthy level of skepticism.[33] Similarly, care must be taken when interpreting interaction effects in the form of a product term in a non-linear logit or probit model. A number of studies have incorporated product terms into the logit regression to investigate interaction effects –

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[32] The ML estimation properties of consistency, normality, and efficiency are asymptotic and prove to hold as sample size approaches infinity.

[33] The adequate sample size further depends on the characteristics of the model and data (Long 1997): the more parameters in the model, the more the observations are needed; high levels of collinearity between independent variables require more observations; little variation in the dependent variable (for example, very few observations with going concern modifications) also requires a larger number of observations.

whether the effect of one independent variable on auditors' propensity to issue going concern modifications depends on the magnitude of another independent variable (e.g. Carcello et al. 2000, Carcello and Neal 2000). Although interpreting product terms in linear models is straightforward, the intuition from linear models do unfortunately not extend to non-linear models such as the logit and probit models (an in-depth discussion on methodological issues, and in particular on the methodological choices made herein, are contained in Appendix C at the end of the thesis). Nevertheless, logit and probit models developed in the literature are powerful tools to facilitate an understanding of audit reporting behaviour with respect to going concern modifications.

CHAPTER 4

International Consistency in Audit Reporting Behaviour: Evidence from Going Concern Modifications

ABSTRACT: Regulators have taken action to harmonise accounting and auditing standards. These actions have been based on the premise that uniform standards will result in uniform application of these standards across national boundaries and firms, and, unless there is any evidence to the contrary, this would be the expectation of both regulators and financial statement users. The study uses a sample of 19,157 financially distressed firms from the United States, the United Kingdom and Australia for the years 2001 to 2006. By evaluating the auditors' reporting behaviour with respect to going concern modifications, the results indicate that there is a lack of consistency in audit reporting behaviour across countries. This lack of consistency is found to be moderated by international audit firm networks, demonstrating an advantage of these networks beyond the individual firm. The study also shows that the country differences in audit reporting behaviour have reduced over time. The implications of these findings for financial statement users, audit firms and regulators are considered.

NOTICE: This chapter is based on a current UNSW working paper co-authored with Elizabeth Carson and Roger Simnett.

4.1. Introduction

A sound financial reporting system contributes to economic development and is supported by strong governance, high quality standards, and strong regulatory frameworks. High quality auditing and ethics underpin the trust that investors place in financial and non-financial information and play an integral role in contributing to economic growth and financial stability at both domestic and international levels (Wong 2004). The forces of globalisation have prompted more countries to open their doors to foreign investments and as the businesses themselves expand across borders[34], maintaining a narrow national view of financial reporting and auditing is considered no longer sustainable (Ball 2005; Nobes and Parker 2006; Camfferman and Zeff 2007). Academics, practitioners, regulatory bodies, politicians, investors as well as public and private sector, domestic and international firms are increasingly advocating the benefits of having a widely accepted and commonly understood global financial reporting framework[35] supported by strong globally accepted auditing standards. In this context, the International Federation of Accountants (IFAC) and the International Auditing and Assurance Standards Board (IAASB) have played an important role in the promotion of a high quality global audit profession through the development of International Standards on Auditing (ISAs). Over a hundred countries now either claim to be using ISAs, or are in the process of implementing them into their national auditing standards (IFAC 2011a). Yet, there are still potential impediments to the adoption and implementation of globally consistent auditing standards (Hegarty et al. 2004).[36]

While auditing standards are harmonised in over 100 countries (that is, *de jure* harmonisation), there are issues to be considered regarding harmonisation of audit practices of audit firms within a given auditing framework (namely, *de facto*

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[34] As evidenced by an increase in number of foreign listings on the world's largest stock exchanges as well as an increasing number of companies observed to provide their annual report in more than one language (Megginson and Sutter 2005; Nobes and Parker 2006).

[35] The argued benefits of a global financial reporting framework include: greater comparability of financial information for investors; greater willingness on the part of investors to invest across borders; more efficient allocation of resources; lower cost of capital; easier to fulfil foreign listing requirement; easier consolidation and auditing of multinational companies; and, higher economic growth (Wong 2004; Nobes and Parker 2006).

[36] The World Bank's "Reports on the Observance of Standards and Codes" (ROSC) program highlights issues which include inconsistencies between international standards and the domestic legal framework, the lack of appropriate linkages between general purpose financial reporting and regulatory reporting, inappropriate scope of the use of international standards, and the non-observability of preparer or auditor compliance with standards (Hegarty et al. 2004).

harmonisation). But despite numerous studies on audit reporting behaviour, audit quality and on harmonisation of accounting practices (see Francis 2004; Baker and Barbu 2007), no identified empirical research has been conducted which examines whether international auditing standards are consistently or inconsistently applied and/or interpreted. [37]

From the point of comparative financial reporting, international accounting standards lose much of their deemed benefit without consistent application of international auditing standards. In turn, international auditing standards are ineffective if there is not uniform and consistent application of those international audit standards between countries, audit firms and auditors. Without some empirical indication or measurement of the degree to which audit behaviour has become uniform given the same requirements in auditing standards, it becomes inherently difficult for policy makers to objectively evaluate the success, or otherwise, of their desire to achieve consistency, and to identify where their efforts should be concentrated in the future (Pierce and Weetman 2000). From the perspective of a user of financial statements, harmonisation of auditing practice will be achieved when clients with similar circumstances are issued with the same audit report regardless of the period, or the auditor's firm or country of domicile. The expectation from international policies of harmonisation is that users of audited financial statements can expect consistent reporting behaviour under ISAs. However, it is currently not known whether consistent auditing standards (*de jure* harmonisation) will also result in consistent audit reporting behaviour (*de facto* harmonisation). If it does not, this will induce an expectation gap in that the financial statement users believe audit reporting behaviour to be consistent, when in reality it is not. Clearly, this will have the potential to undermine the benefits of international harmonisation of auditing.

It is possible that systematic differences in audit reporting behaviour may differ due to various reporting incentives occurring at the firm or country level. For example, factors related to audit quality have been shown to vary between countries with different level of

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[37] Although the literature in relation to financial reporting standards refer to "comparability" as consistency of the reporting as applied to between firms, and "consistency" to denote consistency in reporting over time, for purposes of brevity the word "consistency" is used throughout this thesis in relation to both concepts. Both consistency and comparability denote the same thing in the sense that the rationale for comparability is the same as the rationale for consistency. Furthermore, as the focus of this thesis is how inconsistent interpretation and application of the auditing standards may affect the consistency in audit outcomes, consistency is the key concept used in the thesis, but it is acknowledged that comparability of the audit outcome is clearly related to this issue.

litigation risk, as it has been argued that absent reputational concerns, litigation risk provides incentives for both audit effort and truthful reporting (Melumad and Thoman 1990; Dye 1993; Schwartz 1997). In this sense, systematic differences between countries may be a severe impediment to *de facto* harmonisation of auditing. On the other hand, the effects of country differences on audit reporting behaviour may be moderated by international audit firm networks. The major international audit firms have played a role in promoting the concept of consistent audit reporting behaviour around the world (Thomadakis 2008). Further, potential benefits arise from consistent audit reporting to international audit firm networks. First, it reduces moral hazard (Lenz and James 2007) by subjecting affiliates of the international audit firm networks to quality assurance that promotes consistent reporting behaviour and protecting the reputation of the network. Second, economies of scale can be gained by the efficiencies that consistency in the application of auditing standards brings when engaged in transnational audit appointments and transfers of staff between network members occur.

Using a sample of 19,157 observations over the period 2001 to 2006 from the United States, the United Kingdom and Australia, this study investigates the consistency of audit reporting behaviour across countries, between audit firms and over time. These countries have been chosen because they have very similar culture and legal systems, and therefore represent a worst-case scenario for examining consistency in the application of ISAs in that inconsistencies will not be because of these factors, but despite these factors. The study defines consistency as the uniformity of the auditor's decision to modify an audit report for reasons of going concern. The study shows that there are significant differences in auditor reporting behaviour between countries, but that these are not so prominent for auditors that are members of international networks, and that country differences have diminished over the time period examined. The findings are of importance to regulators, financial statement users and audit firms alike. The systematic lack of consistency in audit reporting behaviour across national boundaries is vital information for regulators, financial users, and the audit firms to act upon. Financial statement users, particularly in a global economy, have a fundamental interest in the extent of national differences of audit reporting behaviour. The results document recent advances in the harmonisation of audit reporting behaviour but that there are still future challenges in ensuring international

consistency in audit reporting behaviour, especially for audit firms that are not members of international audit networks.

The remainder of the paper is organised as follows. In Section 4.2, testable hypotheses are derived; in Section 4.3, the design and methodology are described; in Section 4.4, the results of the study are detailed; Section 4.5 details a series of robustness and sensitivity analysis; and in Section 4.6, the conclusions from the study are presented.

4.2. Hypotheses Development

This study investigates consistency of audit reporting behaviour across the United States, United Kingdom and Australia. These countries have been selected because they are highly consistent in language, culture and legal systems. These three countries are all English speaking and issue their respective auditing standards in English, all have a common law legal system, and all three have developed economies with well established capital markets and an entrenched auditing profession that plays a similar economic role. These countries, for all practical purposes, have identical audit requirements with respect to the auditor's going concern evaluation and subsequent reporting decision (See Table 4-1 and Appendix 2A at end of Chapter 2), and the annual financial statements are prepared on the premise that organisations will continue operations as a going concern.

However, these countries differ marginally with respect to litigation risk[38] and the requirements of their respective bankruptcy codes which may affect auditors' assessment of the going concern assumption. With regard to litigation risk, the United States has been shown to have a higher litigation risk than both the United Kingdom and Australia which are also assessed as having high litigation risk. Within countries, changes in audit reporting behaviour have been shown to be related to changes in litigation risk over time (LaSalle and Anandarajan 1996; Geiger and Raghunandan 2001; 2002; 2005; Barns 2004; Blay 2005; Geiger et al. 2006; Myers et al. 2008). But there are no identified research findings on the relationship between country litigation risk and audit reporting behaviour. With regards to these countries' bankruptcy codes, they differ in their requirements and

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[38] Wingate (1997) reports an insurer assessed litigation index for the United States of 15, and for both the United Kingdom and Australia of 10. These are the countries with the three highest scores. Scores range from 1 to 15, with 15 meaning maximum assessed litigation risk.

offer different incentives for entering bankruptcy proceedings (See Appendix 2B at end of Chapter 2). Although the differences in the countries' bankruptcy codes or litigation risk may affect auditors' assessment of the going concern assumption, the similarities between these countries are such that it is hypothesised in the null:

H1: There is no difference in the propensity to modify the audit opinion for going concern considerations between the United States, United Kingdom and Australia.

The audit profession itself, through the Global Public Policy Symposium, has defined the leading international audit networks to consist of the current six largest audit firms

(DiPiazza et al. 2006); that is, the Big 4 firms as well as BDO and Grant Thornton. LaSalle (2006) suggests that the highly concentrated market for auditing services could result in consistent auditor reporting behaviour across countries caused by similarities within the international audit firm networks, despite differences in litigation risk. Empirical evidence shows that audit firms that are affiliates of international networks have global similarities with regard to audit specialisation (Carson 2009). Further, in order to reduce moral hazard, the affiliates of international audit firm networks[39] are subject to quality assurance and internal quality reviews, share common methodology and practice rules because if network members do not adhere to the agreed quality standards, the reputation of the whole network is at risk (Lenz and James 2007; Thomadakis 2008). Their membership of the Forum of Firms also requires the consistent quality control over audit practices within the network irrespective of national borders (IFAC 2011b).

In addition, significant economies of scale are to be gained by international audit firm networks by the efficiencies resulting from common audit processes on transnational audit appointments and staff transfers between network affiliates (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008; Thomadakis 2008). Further, conditions that facilitate consistency *between* international audit firm networks have

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[39] The initial creation of these networks in the early twentieth century was a response to the emergence of multi-national companies, different accounting and auditing standards and cultural environment, but among them, also differing legal regulations, (Klaassen and Buisman 2000; Lenz and James 2007). In today's environment, these audit firm networks of affiliates are highly integrated, even if for legal reasons the network agreements typically affirm the legal independence of each member firm (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008).

emerged as the members of the Forum of Firms are also committed to the use of International Standards on Auditing (ISAs), the IFAC Code of Ethics for Professional Accountants for transnational audits and the IAASB's International Standard on Quality Control. By way of contrast, smaller domestically located audit firms do not enjoy the inputs from an international audit firm network, nor do they engage in audits of large multinational corporations and are not under the stringent conditions imposed by Forum of Firms. Consequently and stated in the alternative:

H2: Any identified country differences in the propensity to modify the audit opinion for going concern considerations are moderated by membership of global audit firm networks.

Several studies report that auditors in the United States have changed their audit reporting behaviour and become more likely to issue going concern opinions after 2001 (Geiger et al. 2006; Myers et al. 2008). Similarly, Fargher and Jiang (2009) show that auditors in Australia were more likely to issue going concern modifications in 2003 than in 1999. It is currently not known if this applies to other countries, but recent global events – such as a wave of corporate scandals across the world (e.g. Enron and WorldCom in the US, as well as OneTel and HIH Insurance in Australia), the subsequent demise of Arthur Andersen; regulatory changes (e.g. SOX in the United States, CLERP 9 in Australia and the Companies Act 2004 in the United Kingdom); and, in late 2007 the subprime crisis – have transformed the global legal environment that auditors operate in and show that the matter of litigation is not unique to the United States.

Progress has been made in harmonisation of accounting standards across countries. Further, recent commitments to harmonisation have ensured that currently more than 100 countries use or are in the process of adopting ISAs as issued by the IAASB. In addition, many of the world's major capital markets have come to accept the use of ISAs for foreign issuers, the international audit firm networks have become more prevalent and integrated (Lenz and James 2007; Advisory Committee on the Auditing Profession 2008), and the Forum of Firms (created 2002) has become more established with its members committed to the promotion of ISAs (IFAC 2011a). Consequently, country differences in

auditor reporting behaviour are likely to have diminished over time, and this is tested by the following hypothesis:

H3: Any identified country differences in propensity to modify the audit opinion for going concern considerations will decrease over the period 2001-2006.

Overall, the expectations are that the propensity to modify the audit report is not associated with country specific factors. However, it is expected that any cross-country variations are moderated by type of audit firm and that they have decreased over time.

4.3 Methodology

The auditor's report plays a critical role in warning market participants of a firm's ability to continue as a going concern and may take on added importance for international investors who potentially have limited access to information about foreign entities and thus rely heavily on published statements (Wood 1996; DeFond et al. 2002). Inherent to the issuance of a going concern modification is the subjective judgment on the auditor's part in evaluating and deciding the threshold at which the evidence becomes so negative as to warrant the inclusion of a going concern modification in the audit report (Levitan and Knoblett 1985). At the same time, such opinions should not be a matter for negotiation between the auditor and the company (as distinct to mere disagreements with management, which can be negotiated). In this respect, the issuance of going concern modifications is an appropriate frame to investigate consistency in audit reporting behaviour.

Hopwood et al. (1994) suggest that investigations of auditor reporting behaviour with respect to going concern opinion decisions should be conducted on samples that have been partitioned into stressed and non-stressed categories because auditors' decision processes are different for stressed and non-stressed companies. Consistent with this, and in line with prior research (e.g. Behn et al. 2001; DeFond et al. 2002; Geiger and Rama 2003; Carey and Simnett 2006), the sample is restricted to potentially financially

distressed firms. Potentially financially distressed firms are, in this study, defined as firms with a current year loss.[40]

The sample is limited to three countries: Australia, the United Kingdom and the United States. These countries, for all practical purposes, have identical audit requirements with respect to the auditor's going concern evaluation and subsequent reporting decision as shown in Table 4-1 and the annual financial statements are prepared on the premise that organisations will continue operations as a going concern. However, these countries are not identical. In particular, the United States has been shown to have a higher litigation risk than the United Kingdom and Australia (Wingate 1997; Baginski et al. 2002; Seetharaman et al. 2002; Khurana and Raman 2004). But there are also other cross-country differences, such as legal differences in these countries' bankruptcy code, so country differences cannot be attributed to litigation risk alone.

Nevertheless, the similarities in the institutional environments of these three countries strengthen the internal validity of the analysis.[41] Six years of data were obtained for the time period 2001 to 2006. A total of 19,909 firm-year observations fit the criteria of reporting a current year loss and having sufficient financial statement and audit reporting data available to run the model specified below. Of these, 752 were financial firm-year observations and were excluded.[42] The final sample consists of 19,157 observations[43] and

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[40] The identification of financially distressed firms varies in prior literature. For example, some papers (e.g. DeFond et al. 2002; Carey and Simnett 2006) use one or two characteristics – e.g. loss and/or negative cash flow – other papers (e.g. Krishnan and Krishnan 1996; Fargher and Jiang 2009) use a distress or bankruptcy prediction model in order to identify the sample of distressed firms. To the extent that both methods identify distressed firms, the sample selection criteria should be invariant to the inferences drawn from the paper as the sample stratification is exogenous.

[41] These three countries are all English speaking and issue their respective auditing standards in English, all have a common law legal system, and all three have developed economies with well-established capital markets and an entrenched auditing profession that plays a similar economic role. Consequently, any findings related to country differences across these three countries is not because of different languages, legal systems, varying importance of the audit profession and capital markets, but despite these factors. In other words, it reduces the impact of any omitted variable bias that results from structural differences between these three countries on the statistical inference and consequently strengthens the internal validity of the study.

[42] Financial firms have a relatively small portion of their assets in tangible assets and also have short term obligations often in excess of shareholders' funds. These firms are also subject to various forms of regulation and supervision to specifically guard against unsound practices. For these reasons, financial firms (GICS Sector Code 40) were excluded.

[43] The 19,157 observations represent 6,873 unique firms: 4,851 from the United States, 823 from the United Kingdom and 1,199 from Australia.

Table 4-1: Relevant Auditing Standards on Going Concern

Panel A: Auditors' Evaluation of the Going Concern Assumption

Country	Standard	In Effect	Evaluation Required	Evaluation Period
US	SAS 59	1988-current	Specifically form an opinion on the going concern assumption from the results of **usual** audit procedures.	Reasonable period of time, not to exceed one year beyond the date of the financial statements being audited.
UK	SAS 130	1995-2004	Plan and perform procedures **specifically** designed to identify going concern uncertainties (s.21)	Not specifically defined or elaborated (s.9), but likely to be the period that management has considered in assessing going concern (s.21(ii))
UK	ISA 570	2004-current	Auditor should consider the **appropriateness** of the going concern assumption when planning and performing audit procedures and in evaluating their results (s.2, s.11, s.12, s.17)	At least one year from balance date (s.18, s.19)
Australia	AUS 708	1996-2006	Auditor must obtain evidence that the going concern assumption is appropriate (s.10). Must **specifically** assess going concern problems as part of the audit planning process (s.17).	Approximately one year from the date of the current auditor's report (s.4)
Australia	ASA 570	2006-current	Auditor should consider the **appropriateness** of the going concern assumption when planning and performing audit procedures and in evaluating their results (s.2, s.11, s.12, s.17)	Approximately one year from the date of the current auditor's report (s.53)
ISA (IFAC)	ISA 570	1994-current	Auditor should consider the **appropriateness** of the going concern assumption when planning and performing audit procedures and in evaluating their results (s.2, s.11, s.12, s.17)	At least one year from balance date (s.18. s.19)

Table 4-1: Relevant Auditing Standards on Going Concern (continued)

Panel B: Auditors' Report in Relation to a Going Concern Modification

Country	Standard	In Effect	"Emphasis of Matter"
US	SAS 58	1988-current	Certain circumstances, while not affecting the auditor's unqualified opinion, may require that the auditor add an **explanatory paragraph** (or other explanatory language) to the standard report. These circumstances include…. a substantial doubt about the entity's **ability to continue as a going concern**...
UK	SAS 600	1993-2004	**Inherent uncertainties** are regarded as fundamental when they involve a significant level of concern about the **validity of the going concern basis**... (s.64). Where resolution of an inherent uncertainty could affect the view given by the financial statements to the degree that the auditors conclude that it is to be regarded as fundamental, they include an explanatory paragraph...(s.61)
UK	ISA 700	2004-current	In certain circumstances, an auditor's report may be modified by adding an **emphasis of matter** paragraph to highlight a matter affecting the financial statements…. The addition of such an emphasis of matter paragraph does not affect the auditor's opinion (s.30). The auditor should modify the auditor's report by adding a paragraph to highlight a material matter regarding a **going concern problem** (s.31)
AUS	AUS 702	1997-2006	In certain limited circumstances it will be appropriate for the auditor to draw attention to or **emphasise a matter** that is relevant to the user of the audit report but is not of such a nature that it affects the audit opinion (s.31)... for example, regarding the continued **appropriateness of the going concern assumption** (s.61)
AUS	ASA 701	2006-current	In certain circumstances, an auditor's report is modified by adding an **emphasis of matter** paragraph ….The addition of such an emphasis of matter paragraph does not affect the auditor's opinion (s.8). The auditor shall modify the auditor's report by adding a paragraph to highlight a significant **uncertainty regarding a going concern problem** (s.9)
ISA (IFAC)	ISA 700	1994-current	In certain circumstances, an auditor's report may be modified by adding an **emphasis of matter** paragraph to highlight a matter affecting the financial statements…. The addition of such an emphasis of matter paragraph does not affect the auditor's opinion (s.30). The auditor should modify the auditor's report by adding a paragraph to highlight a material matter regarding a **going concern problem** (s.31)

of these 1,482 (7.7%) contain going concern modifications to the audit report for the first time and 3,338 (17.4%) have recurring going concern modifications. There are 3,297 (17.2%) observations from Australia, 2,181 (11.4%) observations from the United Kingdom and the United States is represented with 13,679 (71.4%) observations.[44]

Following prior literature (e.g. Menon and Schwartz 1987; Mutchler and Williams 1990; Bell and Tabor 1991; Chen and Church 1992; Hopwood et al. 1994; Carcello et al. 1995; Mutchler et al. 1997; Carcello et al. 2000; Carcello and Neal 2000; Behn et al 2001; Geiger and Raghunandan 2002; DeFond et al. 2002; Carey and Simnett 2006) this study will use the following logit model to test the hypotheses proposed and the probability to observe a going concern modification is taken to be a function of the following variables:

$$\Pr(Y=\text{OPINION}_{ijt} \mid \mathbf{x}) = F(\beta_0 + \beta_1 \text{PBANK}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \Delta \text{LEV}_{it} + \beta_5 \text{CURRENT}_{it} + \beta_6 \text{WC}_{it} + \beta_7 \text{QUICK}_{it} + \beta_8 \text{ROA}_{it} + \beta_9 \text{MATERIALS}_{it} + \beta_{10} \text{INFOTECH}_{it} + \beta_{11} \text{LLOSS}_{it} + \beta_{12} \text{NEGEQ}_{it} + \beta_{13} \text{LOPINION}_{it} + \boldsymbol{\beta_{14} \text{COUNTRY}_{jt}} + \boldsymbol{\beta_{15} \text{AUDITFIRM}_{jt}} + \boldsymbol{\beta_{16} \text{TIME}_t})$$ (1)

Where:
$F(x) = 1/(1 + \exp(-x))$

and:
$\text{OPINION}_{ijt} = 1$ if a firm receives a GC modified opinion, 0 otherwise.
$\text{PBANK}_{it} = $ the Zmijewski (1984) score measuring the probability of bankruptcy.
$\text{SIZE}_{it} = $ the natural logarithm of end of year total assets in USD millions (where necessary using end of year exchange rates).
$\text{LEV}_{it} = $ end of year total liabilities divided by end of year total assets.
$\Delta \text{LEV}_{it} = $ end of year leverage divided by beginning of year leverage minus 1.
$\text{CURRENT}_{it} = $ end of year current assets divided by end of year current liabilities.
$\text{WC}_{it} = $ end of year working capital to end of year total assets.
$\text{QUICK}_{it} = $ end of year cash and short term investments divided by end of year current liabilities.
$\text{ROA}_{it} = $ end of year loss divided by end of year total assets.
$\text{MATERIALS}_{it} = 1$ if the firm belongs in the GICS materials sector, 0 otherwise.
$\text{INFOTECH}_{it} = 1$ if the firm belongs in the GICS information technology sector, 0 otherwise.
$\text{LLOSS}_{it} = $ prior year loss; 1 if the firm reported a loss in the prior financial year, 0 otherwise.
$\text{NEGEQ}_{it} = 1$ if the firm's end of year total liabilities is greater than its end of year total assets, 0 otherwise.
$\text{LOPINION}_{it} = $ prior year audit opinion; 1 if the firm received a going concern modified opinion in the prior financial year, 0 otherwise.

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[44] Australian financial data is drawn from Aspect Financial and audit data from the UNSW Audit Fee Database, the United Kingdom financial data from Compustat Global and audit data obtained from annual reports through MergentOnline and various company websites; the United States financial data was collected from Compustat NA and audit data from Audit Analytics.

Variables of Interest
COUNTRY$_{jt}$
UK= 1 if the firm is incorporated in the United Kingdom, 0 otherwise.
AUS=1 if the firm is incorporated in Australia, 0 otherwise.
US=1 if the firm is incorporated in the United States, 0 otherwise (included in intercept).

AUDIT FIRM$_{jt}$
NTW=1 if the firm is audited by an auditor that is a member of an international network, 0 otherwise.
NONTW= 1 if the firm is not audited by an audit firm that is a member of an international network, 0 otherwise (included in intercept).

TIME$_t$
P2001-2003=1 if the firm's financial year end was either 2001, 2002 or 2003, 0 otherwise (included in intercept).
P2004-2006= 1 if the firm's financial year end was either 2004, 2005 or 2006, 0 otherwise.

The choice of control variables is based on consideration of the prior literature and a deliberation of which factors may be correlated with the variables of interest and the auditor's decision to issue a going concern modification or not. The explanatory variables have also been used in prior research (see Dopuch et al. 1987; Mutchler et al. 1997; Reynolds and Francis 2000; DeFond et al. 2002; Carey and Simnett 2006).

The degree of financial distress is an important factor mentioned in the relevant auditing standards. The magnitude of financial distress is related to the probability of bankruptcy (Hopwood et al. 1994). PBANK explicitly measures the probability of bankruptcy using the Zmijewski (1984) score, where high values indicate a higher probability for bankruptcy and vice versa.[45] The Zmijewski (1984) score incorporates ratios measuring profitability, solvency and liquidity. LEV and ΔLEV are included in the model because debt covenant violations are positively associated with the probability of issuing a going concern opinion (Mutchler et al. 1997; DeFond et al. 2002). Specifically, LEV is included to capture the proximity to covenant violation as firms with high leverage is likely to be close to violations (Beneish and Press 1993). ΔLEV is included because an increase in leverage is likely to move firms closer to violation of debt covenants (Reynolds and Francis 2000; DeFond et al. 2002). LLOSS is included because firms that have prior year losses will prompt auditor's concern about a firm's future viability, and thus, such firms are more likely to receive a going concern opinion (Menon and Schwartz 1987; Reynolds

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[45] The coefficients are based on the model in Panel B, Table 3 (with a 40:800 ratio of bankrupt and non-bankrupt companies) of Zmijewski (1984 p. 69). The Zmijewski score measurement of the probability of bankruptcy is calculated as: b = -4.803 - 3.599(return on assets) + 5.406(leverage) -0.100(current ratio).

and Francis 2000: DeFond et al. 2002). Current year loss as an indicator variable is not included in the model because the sample-selection criterion is based on the firm incurring a loss in the current year. However, ROA is included because the more severe the current year loss, the more likely the firm is to receive a going concern modification. NEGEQ is included because firms with negative shareholders' equity are more likely to be in financial distress and therefore also more likely to receive a going concern opinion (Ohlson 1980).

The models also include several factors that are likely to mitigate the probability of receiving a going concern opinion. SIZE (log of total assets in US millions) is included because larger firms have more negotiating power when they are in financial difficulty and are therefore more likely to avoid bankruptcy and consequently less likely to receive a going concern opinion (Campbell 1996; Reynolds and Francis 2000; DeFond et al 2002). CURRENT, WC and QUICK are included in the model as liquidity measures that capture the availability of funds and the ability to quickly raise funds in relation to the firm's short term obligations (DeFond et al. 2002). High liquidity suggests that firms are more likely to avoid bankruptcy and therefore less likely to receive a going concern opinion.

The models also include the indicator variables MATERIALS and INFOTECH to control for where the firm's operation is within the respective GICS sectors of materials and information technology. It has been suggested that high-technology firms may be more likely to receive a going concern opinion because the auditor perceives that there is a higher risk associated with audits of such companies (Cook et al. 1992; Chenok 1994; Raghunandan and Rama 1999). Materials firms are controlled for in the model because of the large number of such companies listed in Australia and their riskier financial profile (Butterworth and Houghton 1995; Carey and Simnett 2006). The model also includes the indicator variable LOPINION to control for the firm receiving a going concern opinion in the prior year (Mutchler and Williams 1990; Reynolds and Francis 2000); using a lagged dependent variable in a cross-sectional equation also account for historical factors that cause current differences in the dependent variable that are difficult to account for in other ways (Wooldridge 2006). Prior models based on similar variables prove to have acceptable explanatory power (see Menon and Schwartz 1987; DeFond et al. 2002; Carey and Simnett 2006).

4.4. Results

4.4.1 Descriptive Statistics

Table 4-2, Panel A, presents descriptive statistics on the full sample for the variables used in the going concern base model. Panel B, presents the descriptive statistics for each of the countries separately. All continuous variables have been winsorised at the 95th percentile and at the 5th percentile because financial ratios tend to be skewed (Horrigan 1965; Deakin 1976; Frecka and Hopwood 1983) and this inherent characteristic of financial ratios becomes even more prominent when applied to "abnormal" firms – such as financially distressed firms.

Table 4-2, Panel A, shows that 25.2% of the observations in the sample received a going concern modification and that 21.4% of the observations in the sample received a going concern modification in the preceding year. The mean and median firm size, measured in total assets, is US$211.2 million and US$26.3 million, indicating a skewed distribution and therefore justifying the use of log assets in the multivariate analysis. The mean and median values for LEV are 0.742 and 0.506, respectively, and the mean and median values for ΔLEV are 0.389 and 0.111. The three liquidity measures – CURRENT, WC and QUICK – display mean values of 3.068, 0.048 and 2.089, and median values of 1.640, 0.157, and 0.527 respectively. Given that these are all loss making firms, net income to total assets (ROA) exhibits a mean of -0.618 and a median of -0.219. Further, Panel A shows that 78.7% of the firms had a loss in the preceding year (LLOSS) and that 18.9% of the firms have negative equity (NEGEQ). Table 4-2, Panel A, also shows that 12.1% of the firms in the sample belong to the materials sectors (MATERIALS), and that 27.4% of the firms are in the information technology sector (INFOTECH).

Table 4-2, Panel B, shows that there are some notable differences in the sample characteristics between the countries. The US firms are on average larger and are more leveraged than UK and Australian firms, and UK firms are in turn larger and more leveraged than Australian firms. Australian firms have more liquidity than US and UK firms as manifested through higher average values on the three liquidity measures – CURRENT, WC and QUICK. The differences in firm characteristics between the countries highlight the importance of controlling for these factors when comparing auditors' going concern decisions across countries.

Table 4-2: Descriptive Statistics for Base Model

Panel A: Descriptive Statistic Overall Sample (n=19,157)

Dependent Variable	Mean	Median	Min	Max	Std. Dev.	Skewness
OPINION	0.252	0	0	1	------	------

Independent Variables	Mean	Median	Min	Max	Std. Dev.	Skewness
PBANK	-11.741	-7.651	-54.899	13.306	15.504	-1.24
ASSETS (US$ Mil.)	211.187	26.263	0.49	1821.635	447.903	2.765
SIZE	3.342	3.291	-0.713	7.508	2.249	0.053
LEV	0.742	0.506	0.045	3.457	0.823	2.160
ΔLEV	0.389	0.111	-0.649	3.241	0.912	1.887
CURRENT	3.068	1.64	0.11	14.188	3.624	1.914
WC	0.048	0.157	-2.148	0.799	0.667	-1.992
QUICK	2.089	0.527	0.004	12.451	3.332	2.042
ROA	-0.618	-0.219	-3.925	-0.01	0.982	2.383
MATERIALS	0.121	0	0	1	------	------
INFOTECH	0.274	0	0	1	------	------
LLOSS	0.787	1	0	1	------	------
NEGEQ	0.189	0	0	1	------	------
LOPINION	0.214	0	0	1	------	------

Panel B: Mean Values by Country

Dependent Variable	US (n= 13,679)	UK (n=2,181)	AUS (n=3,297)	p-value[3]
OPINION	0.278	0.121	0.229	.001

Independent Variables	US (n= 13,679)	UK (n=2,181)	AUS (n=3,297)	p-value[3]
PBANK	-9.869	-11.672	-19.555	.001
ASSETS (US$ Mil.)	260.078	140.094	55.370	.001
SIZE	3.617	3.660	1.991	.001
LEV	0.863	0.548	0.370	.001
ΔLEV	0.363	0.277	0.570	.001
CURRENT	2.726	2.750	4.696	.001
WC	-0.001	0.157	0.176	.001
QUICK	1.760	1.680	3.724	.001
ROA	-0.685	-0.330	-0.527	.001
MATERIALS	0.058	0.091	0.404	.001
INFOTECH	0.308	0.269	0.134	.001
LLOSS	0.790	0.662	0.856	.001
NEGEQ	0.238	0.082	0.055	.001
LOPINION	0.241	0.092	0.186	.001

Table 4-2: Descriptive Statistics for Base Model (Continued)

Notes to Table 4-2:

1. Variable Definitions:

OPINION = 1 if a firm receives a GC modified opinion, 0 otherwise.

PBANK = the Zmijewski (1984) score measuring the probability of bankruptcy.

SIZE = the natural logarithm of end of year total assets in USD millions (using end of year exchange rates).

LEV = end of year total liabilities divided by end of year total assets.

ΔLEV = end of year leverage divided by beginning of year leverage minus 1.

CURRENT = end of year current assets divided by end of year current liabilities.

WC= end of year working capital divided by end of year total assets.

QUICK = end of year cash and short term investments divided by end of year current liabilities.

ROA = end of year loss divided by end of year total assets.

MATERIALS = 1 if the firm belongs in the GICS materials sector, 0 otherwise.

INFOTECH = 1 if the firm belongs in the GICS information technology, 0 otherwise.

LLOSS= Prior year loss; 1 if the firm reported a loss in prior financial year, 0 otherwise.

NEGEQ= 1 if a firm's end of year total liabilities is greater than its end of year total assets, 0 otherwise.

LOPINION = Prior year audit opinion; 1 if a firm received a going concern modification in the prior year, 0 otherwise.

2. Winsorised variables at the 5th and 95th percentile of the overall sample.

3. p-values obtained from multiple-comparison tests using one-way analysis of variance (ANOVA).

Table 4-3 describes the variables of interest and Table 4-4 gives a more thorough description of the dependent variable. Table 4-3, Panel A, shows that the majority (71.4%) of the firms in the sample are US firms, and that Australian and UK firms represent 17.2% and 11.4% of the sample, respectively. Table 4-3, Panel B, shows that 42% of the firms were audited by non-network audit firms and 58% by network audit firms. The United Kingdom subsample has a higher frequency of NTW audits (76.9%) than the United States and the Australian subsample (54.4% and 60.3%, respectively). Table 4-3, Panel C, shows that of the observations in the sample, 0.5% were audited by Arthur Andersen, 8.8% by Deloitte, 14.8% by Ernst & Young, 10.9% by KPMG, and 11.8% by PWC. Besides the individual Big N firms, 5.6% were audited by BDO, 5.7% were audited by Grant Thornton – in total, 58% were audited by members of global networks and 42% were audited by a large number of smaller auditors. The low number of Arthur Andersen audits is due to the collapse of the firm in 2002. Table 4-3, Panel D, shows that the sample has a slightly higher frequency of observations in the earlier years. The difference in frequency of observations over time may be explained by limiting the sample to observations that show

Table 4-3: Descriptive Statistics for Variables of Interest

Panel A: By Country

Country	# observations	Percent
AUS	3,297	17.21%
UK	2,181	11.39%
US	13,679	71.40%
Total	19,157	

Panel B: By Audit Firm and Country

Audit Firm	All Firms		US		UK		AUS	
	#obs	%	#obs	%	#obs	%	#obs	%
NONTW	8,046	42.00%	6,234	45.57%	504	23.11%	1,308	39.67%
NTW	11,111	58.00%	7,445	54.43%	1,677	76.89%	1,989	60.33%
Total	19,157		13,679		2,181		3,297	

Panel C: By Audit Firm and Country

Audit Firm	All Firms		US		UK		AUS	
	#obs	%	#obs	%	#obs	%	#obs	%
AA	94	0.49%	10	0.07%	57	2.61%	27	0.82%
DT	1,688	8.81%	1,150	8.41%	287	13.16%	251	7.61%
EY	2,830	14.77%	2,060	15.06%	229	10.50%	541	16.41%
KPMG	2,086	10.89%	1,315	9.61%	360	16.51%	411	12.47%
PWC	2,252	11.76%	1,452	10.61%	414	18.98%	386	11.71%
BDO	1073	5.60%	712	5.21%	142	6.51%	219	6.64%
GT	1088	5.68%	746	5.45%	188	8.62%	154	4.67%
OTHER[1]	8,046	42.00%	6,234	45.57%	504	23.11%	1,308	39.67%
Total	19,157		13,679		2,181		3,297	

Panel D: By Country and Year

Year	All Firms		US		UK		AUS	
	#obs	%	#obs	%	#obs	%	#obs	%
2001	3,833	20.01%	2890	21.13%	446	20.45%	497	15.07%
2002	3,738	19.51%	2726	19.93%	437	20.04%	575	17.44%
2003	3,145	16.42%	2271	16.60%	398	18.25%	476	14.44%
2004	2,894	15.11%	2008	14.68%	347	15.91%	539	16.35%
2005	2,882	15.04%	1,958	14.31%	311	14.26%	613	18.59%
2006	2,665	13.91%	1,826	13.35%	242	11.09%	597	18.11%
Total	19,157		13,679		2,181		3,297	

Notes to Table 4-3:

1. Representing 550 other audit firms, none with more than 200 firm-year observations.

Table 4-4: Descriptive Statistics for Dependent Variable

Panel A: Type of Audit Opinion by Country

Audit Opinion	All Countries #obs	All Countries %	US #obs	US %	UK #obs	UK %	AUS #obs	AUS %
FT GC	1,482	7.74%	1,032	7.54%	110	5.04%	340	10.31%
REC. GC	3,338	17.42%	2,771	20.26%	153	7.02%	414	12.56%
FT CLEAN	771	4.03%	525	3.84%	48	2.20%	198	6.01%
REC. CLEAN	13,566	70.81%	9,351	68.36%	1,870	85.74%	2,345	71.12%
Total	19,157		13,679		2,181		3,297	

Panel B: Audit Opinion by Type of Audit Firms

Audit Opinion	NONTW #obs	NONTW %	NTW #obs	NTW %
FT GC	794	9.87%	688	6.19%
REC. GC	2,664	33.11%	674	6.07%
FT CLEAN	427	5.31%	344	3.10%
REC. CLEAN	4,161	51.71%	9,405	84.64%
Total	8,046		11,111	

Panel C: Audit Opinion by Country and Time Period 2001-2003

Audit Opinion	All Countries #obs	All Countries %	US #obs	US %	UK #obs	UK %	AUS #obs	AUS %
FT GC	918	8.57%	686	8.70%	58	4.52%	174	11.24%
REC. GC	1,682	15.69%	1,451	18.40%	62	4.84%	169	10.92%
FT CLEAN	378	3.53%	277	3.51%	16	1.25%	85	5.49%
REC. CLEAN	7,739	72.21%	5,473	69.39%	1,146	89.39%	1,120	72.35%
Total	10,717		7,887		1,282		1,548	

Panel D: Audit Opinion by Country and Time Period 2004-2006

Audit Opinion	All Countries #obs	All Countries %	US #obs	US %	UK #obs	UK %	AUS #obs	AUS %
FT GC	564	6.68%	346	5.97%	52	5.79%	166	9.49%
REC. GC	1,656	19.62%	1,320	22.79%	91	10.12%	245	14.01%
FT CLEAN	393	4.66%	248	4.28%	32	3.56%	113	6.46%
REC. CLEAN	5,827	69.04%	3,878	66.96%	724	80.53%	1,225	70.04%
Total	8,440		5,792		899		1,749	

Notes to Table 4-4:

1. Audit Opinion:

FT GC = First-time going concern modifications (i.e. observations with a going concern modification preceded by a clean audit opinion in the prior year).

REC. GC = Recurring going concern modifications (i.e. observations with a going concern modification preceded by a going concern modification in the prior year).

FT CLEAN = First-time clean opinion (i.e. observations with a clean audit opinion preceded by a going concern modification in the prior year).

REC. CLEAN = Recurring going concern modifications (i.e. observations with a going concern modification preceded by a going concern modification in the prior year).

a current year loss and that there was a higher number of loss making firms in 2001 and 2002. The requirement for company matching current and prior year audit data and current and prior year financial data also manifests in fluctuations in the number of observations over time.

Table 4-4, Panel A, shows that within the sample there is a total of 4,820 (25.2%) observations that received a going concern opinion of which 1,482 (7.7%) were first-time going concern opinions and 3,338 (17.4%) were recurring going concern opinions. The sample has 14,377 (74.8%) observations with clean audit opinions (of which 770 (4%) had a going concern opinion in the preceding year). The United States has the largest frequency of going concern opinions in the sample (27.8%), followed by Australia (22.9%) and then the United Kingdom (12%). Table 4-4, Panel B, shows audit opinion by audit firm type. The non-networked (NONTW) audit firms in the sample issue a higher proportion of going concern opinions (43%) than the audit firm networks (NTW) (12.3%). Table 4-4, Panels C and D, shows type of audit opinion issued in the time periods 2001-2003 and 2004-2006, respectively. There is a higher frequency of recurring going concern opinions in the later time period (19.6%) than in the earlier period (15.7%), but a smaller percentage of first-time going concern opinions during 2004-2006 (6.7%) compared to 2001-2003 (8.6%).

Following DeFond et al. (2002), Table 4-5 classifies the variables in Table 4-2 by opinion type (going concern opinion and clean audit opinion), along with the p-values from t-tests and median tests of differences across the two groups. It is not surprising that PBANK has significantly higher mean and median values in the sample that received going concern modifications compared to the sample that received clean audit opinions. Further, the values of ASSETS show that the observations in the going concern modifications group (mean $69.229 million; median $4.282 million) are significantly smaller than the observations in the sample that received clean audit opinions (mean $258.912 million; median $47.950 million). LEV and ΔLEV display significant higher mean and median values for the going concern modification firms compared to the firms that received clean audit opinions. CURRENT, WC, QUICK and ROA exhibit significantly lower mean and

Table 4-5: Descriptive Statistics for GC and Clean Opinion Samples

	Mean			Median		
	GC Opinion	Clean Opinion	t-test *p-value*	GC Opinion	Clean Opinion	χ2-test *p-value*
PBANK	-1.432	-15.207	.001	-1.670	-9.659	.001
ASSETS (US$ Mil.)	69.229	258.912	.001	4.282	47.950	.001
SIZE	1.634	3.916	.001	1.405	3.900	.001
LEV	1.443	0.507	.001	0.983	0.417	.001
ΔLEV	0.712	0.280	.001	0.303	0.079	.001
CURRENT	1.276	3.670	.001	0.567	2.070	.001
WC	-0.574	0.257	.001	-0.229	0.236	.001
QUICK	0.733	2.545	.001	0.101	0.844	.001
ROA	-1.485	-0.326	.001	-0.889	-0.147	.001
MATERIALS	0.118	0.122	.460	0.000	0.000	.460
INFOTECH	0.266	0.276	.171	0.000	0.000	.171
LLOSS	0.911	0.745	.001	1.000	1.000	.001
NEGEQ	0.490	0.087	.001	0.000	0.000	.001
LOPINION	0.693	0.054	.001	1.000	0.000	.001
SAMPLE SIZE	4,820	14,337		4,820	14,337	

Notes to Table 4-5:
1. All p-values are two-tailed.
2. See Table 4-2 for variable descriptions.

median values for the going concern sample than the clean audit opinion sample. In addition, LLOSS and NEGEQ indicate that the observations in the going concern sample have significantly higher frequency of prior year losses and negative equity in comparison with the clean audit opinion sample. The median and mean values of MATERIALS and INFOTECH reveal that the relative frequency of observations in the materials sector and information technology sector are not significantly different across the two groups. Overall, the mean and median values and their differences between the going concern opinion sample and the clean audit sample are in accordance with expectations.

The pairwise correlation coefficients show a high degree of correlation among some of the variables included in the model (not tabulated). The variable PBANK shows high correlation with LEV (.874), WC (-.901) and CURRENT (-.964) and NEGEQ (.619). In addition WC is highly correlated with LEV (-.684) and CURRENT (.934). CURRENT is also highly correlated with QUICK (.848). The high correlation between these variables is

expected because some of the control variables measure the same underlying construct –
for example WC, CURRENT, and QUICK are all measures of liquidity. High correlation
between PBANK and the other variables such as LEV and CURRENT is also expected
because the PBANK includes these components as part of its calculation.[46] In this sense, a
lack of correlation would be of greater concern. However, none of the control variables
are perfectly correlated, and as such, convey some unique information.

Fortunately, the consequence of high multicollinearity only applies to variables that are
highly collinear, and none of the control variables exhibit correlation coefficients greater
than .600 with the variables of interest; the only correlation coefficient above .500 is
between NTW audit firms and SIZE (.565). None of the pairwise correlation coefficients
between the variables of interest that are not mutually exclusive are higher than .500.
Thus, the statistical inferences of the variables of interest should not be affected by
extreme levels of multicollinearity.

The descriptive statistics presented above are consistent with the distressed nature of the
total sample and with the going concern sample being even more financially distressed.
The relative differences in the frequency of going concern opinions across country and
audit firms provides descriptive support for the notion that there is a lack of consistency in
audit reporting behaviour. This does not, however, control for the numerous client- and
industry-specific factors affecting the auditor's decision to issue going concern opinions.
Indeed, Tables 4-2 and 4-5 show that these factors are different between the countries
included in the sample and for firms that receive a going concern opinion and those firms
that do not. Consequently, multivariate tests are used to formally test the hypotheses
outlined above.

4.4.2 Multivariate Results
The hypotheses outlined earlier are tested by adding the variables of interest to the model
in various combinations in the full sample and across various subsamples. The tables
presented directly test H1. Due to the non-linearity of the model, however, conclusions

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[46] The high correlation between the control variables makes it problematic to obtain good estimates of their
distinct effects on the dependent variable, because this may make their standard errors inflated, although it
does not bias the coefficients (Wooldridge 2006). Thus control variables that appear to have weak effects
individually, may actually have quite strong effects as a group with respect to the auditor reporting
behaviour on going concern opinions. Variance Inflation Factors are examined for the variables of interest.

regarding H2 and H3 are formally based on the Wald test of the equality of the logit coefficients across subsamples, and also inferred from comparisons of significance levels and the magnitude of the effect[47] (Ai and Norton 2003; Liao 2004).[48]

Table 4-6 presents the results of estimating the logit model where Model 1 presents a baseline case of the going concern model without including any of the variables of interest. Model 2 introduces the variables UK and AUS to test H1. Model 3 is a replication of Model 2 but also controls for differences due to time periods and between types of audit firms.

The results indicate that Model 1 does a good job of explaining the auditor's going concern decision. The adjusted pseudo R^2 is 49% and the overall model is significant.[49] The variables PBANK, SIZE, LEV, WC, QUICK, ROA, LLOSS, NEGEQ and LOPINION are all significant (p<.01, two-tailed) and the direction in line with prior research. INFOTECH is significant (p<.01, two-tailed) and is negatively associated with going concern opinions. The variables ΔLEV and MATERIALS are not significant variables in the baseline model.[50] The variable CURRENT is significant but not in the expected direction. Model 2 introduces the following variables of interest: UK and AUS, with US included in the constant in order to test H1 and identify if any country differences exist in the propensity to issue going concern modifications. The country variables UK and AUS have negative coefficients. UK is significant (p<.01, two-tailed) and AUS is

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[47] The term "effect" in this paper refers to a change in the probability of observing a going concern opinion, as an independent variable goes from its minimum value to its maximum value, holding all other variables at constant at their mean values as per Table 4-2 (note that the independent variables are winsorised at the 95th and the 5th percentile.). This is a discrete change as the change in the independent variables are finite, and thus differs from the marginal change, which is the instantaneous rate of change. The nonlinearity of the model makes the marginal effect inaccurate as an indication of economic significance especially with regard to binary independent variables, and the discrete change is therefore more preferable (Long 1997). The changes in probability of observing a going concern modification is reported in Tables 4-6 to 4-8.

[48] The intuition from linear models does not extend to nonlinear models, and a significant product term in a nonlinear model does not necessarily infer interaction effects. As such, separate models will be estimated for sub-samples and coefficients will be compared across the sub-samples to infer interaction effects (The formal test for equality of single pairs of coefficients across two logit models is discussed by Liao 2004). Further, by estimating the models for each sub-sample separately, allowance for any structural differences in regression functions across the sub-samples is made. Homogeneity of residual variation is assumed (see Appendix C, section C.5, at the end of this thesis for a discussion).

[49] Pseudo R^2 and adjusted pseudo R^2 refers to the MacFadden R^2 and MacFadden's adjusted R^2 respectively.

[50] One must, however, bear in mind that there are significant levels of collinearity between some of these variables, which may inflate their standard errors.

Table 4-6: Multivariate Result to Test H1

VARIABLES	ALL FIRMS Model 1			ALL FIRMS Model 2			ALL FIRMS Model 3		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CONSTANT	-0.465	.146		-0.268	.419		-0.304	.345	
PBANK	0.210	.001	.975	0.219	.001	.980	0.214	.001	.978
SIZE	-0.190	.001	-.223	-0.197	.001	-.232	-0.159	.001	-.186
LEV	-1.568	.001	-.379	-1.644	.001	-.392	-1.600	.001	-.383
ΔLEV	0.050	.108	.029	0.058	.066	.033	0.056	.076	.032
CURRENT	0.694	.002	.972	0.725	.001	.975	0.707	.001	.973
WC	-0.941	.001	-.528	-0.964	.001	-.541	-0.929	.001	-.519
QUICK	-0.110	.001	-.145	-0.110	.001	-.145	-0.105	.001	-.139
ROA	-0.547	.001	-.429	-0.532	.001	-.416	-0.542	.001	-.423
MATERIALS	-0.010	.900	-.001	0.023	.783	.003	0.022	.787	.003
INFOTECH	-0.298	.001	-.041	-0.306	.001	-.042	-0.304	.001	-.041
LLOSS	0.352	.001	.047	0.329	.001	.044	0.334	.001	.044
NEGEQ	0.807	.001	.134	0.789	.001	.131	0.795	.001	.131
LOPINION	2.767	.001	.543	2.749	.001	.539	2.736	.001	.536
P2004-2006							-0.027	.604	-.004
AUS				-0.138	.068	-.019	-0.039	.619	-.006
UK				-0.473	.001	-.060	-0.394	.001	-.050
NTW							-0.273	.001	-.039
N	19,157			19,157			19,157		
Pseudo R²	.494			.496			.496		
Adj. Pseudo R²	.493			.494			.495		
Log likelihood	-5466.56			-5450.99			-5442.13		
Prob>chi2	.001			.001			.001		
Pr(y=1 | x)	.172			.172			.170		

Notes to Table 4-6:

1. p-values are two-tailed. See Table 4-2 for variable descriptions.

2. None of the variables of interest show Variance Inflation Factors above 2.

3. ΔPr is the change in Pr(y=1 | x) when the variable goes from their minimum value to maximum value holding all other variables at their mean value per Table 4-2.

4. Pr(y=1 | x) is the probability of observing a going concern modification when all variables are at their mean as per Table 4-2.

marginally significant (p<.10, two-tailed) and the effect suggest that in comparison to auditors in the United States, auditors in the United Kingdom and Australia are 6 and 1.9 percentage points less likely to issue a going concern modification.[51]

Consequently, Model 2 provides some evidence to suggest that H1 should be rejected. However, the results from Model 2 are not fully confirmed in Model 3 after controlling for time period and type of audit firm (p<.01, two-tailed, for UK, but AUS is insignificant). In sum, the results from Table 4-6 give some evidence to reject H1 and conclude that the propensity to issue a going concern modification is different between these three countries.

Table 4-7 presents the result of investigating H2; whether any country differences in the propensity to modify the audit opinion for going concern are moderated by audit firms which are members of international networks. Models 1 and 2 present the results for the subsamples of firms that are not audited by an audit firm that is a member of an international audit firm network, and by the firms that are audited by an audit firm that is a member of an international audit firm network, respectively.[52]

In Table 4-7, Model 1, the variables AUS and UK are negative and significant (p<.01, two-tailed). In contrast, only the variable AUS is significant (p<.05, two-tailed) in Model 2, but is positive in comparison to USA (that is included in the constant). The coefficients on UK and AUS from estimating Models 1 and 2 suggest that country differences in the propensity to issue going concern varies depending on whether the audit firm is a member of an international audit firm network. In particular, for audit firms that are not part of international audit firm networks, there are significant differences in the propensity to issue going concern opinion between the United States and Australia, and between the United States and the United Kingdom. In contrast, for audit firms that are members of

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[51] Holding all variables at the median values per Table 4-2, the discrete change in predicted probability for UK is -4.2 pp and -1.4 pp for AUS.

[52] There is a discrepancy in MacFadden's pseudo R^2 between the two models. In contrast, a larger number of the individual variables are significant in Model 2. Other measures of the goodness of fit (i.e. Akaike Information Criterion) suggest that the Model fits the audit firm network observations better. Nevertheless, fit measures in non-linear models are somewhat problematic and only provides a rough index of whether a model is adequate (Long 1997). A pseudo R^2 of 37.0% is still comparable to the overall fit of models in prior literature, and the estimates of country differences are nevertheless consistent within each of the sub-samples

Table 4-7: Multivariate Results to Test H2

VARIABLES	NO NETWORKS Model 1			INT'L NETWORKS Model 2		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CONSTANT	0.270	.649		-1.420	.001	
PBANK	0.305	.009	.998	0.112	.068	.768
SIZE	-0.137	.001	-.178	-0.182	.001	-.212
LEV	-2.108	.001	-.517	-0.684	.074	-.216
ΔLEV	0.080	.043	.051	-0.013	.813	-.007
CURRENT	1.012	.016	.988	0.430	.055	.906
WC	-0.799	.001	-.469	-1.579	.001	-.809
QUICK	-0.081	.033	-.130	-0.150	.001	-.177
ROA	-0.476	.001	-.388	-0.749	.001	-.593
MATERIALS	0.033	.791	.005	0.022	.847	.003
INFOTECH	-0.185	.019	-.029	-0.486	.001	-.064
LLOSS	0.295	.005	.045	0.349	.001	.046
NEGEQ	0.544	.001	.095	0.740	.001	.120
LOPINION	2.742	.001	.560	2.644	.001	.516
P2004-2006	-0.007	.920	-.001	-0.011	.887	-.002
AUS	-0.405	.001	-.059	0.251	.033	.037
UK	-0.770	.001	-.101	-0.182	.113	-.024
N	8,046			11,111		
Pseudo R^2	.495			.372		
Adj. Pseudo R^2	.492			.368		
Log likelihood	-2776.63			-2595.75		
Prob>chi2	.001			.001		
Pr(y=1|x)	.198			.169		

Wald Test of Equality of Country Coefficients Across Models

Statistic	H0:	H1:	Coef. Ratio	Wald	df	p-value
βAUS	M1=M2	M1≠M2	-0.619	16.653	1	.001
βUK	M1=M2	M1≠M2	0.236	9.075	1	.003

Notes to Table 4-7:
1. p-values are two-tailed. See Table 4-2 for variable descriptions.
2. None of the variables of interest show Variance Inflation Factors above 2.
3. ΔPr is the discrete change in Pr(y=1│x) when the variable goes from their minimum value to maximum value holding all other variables at their mean value per Table 4-2.
4. Pr(y=1│x) is the probability of observing a going concern modification when all variables are at their mean as per Table 4-2.

international audit firm networks, there are significant differences in the propensity to issue going concern opinions only between the United States and Australia.

Further, in Model 1, the effects suggest that auditors from the United Kingdom and Australia are 10.1 and 5.9 percentage points less likely to issue going concern opinions than their counterparts in the United States.[53] The differences in probability have decreased to 3.9 percentage points more likely for Australia and only 2.4 percentage points less for United Kingdom in Model 2.[54] Consequently, the inequality in estimated probability to issue a going concern opinion among the three countries for firms that are not members of international networks is 10.1 percentage points, whereas the inequality in estimated probability among the three countries for firms that are members of international networks is 6.1 percentage points.

As a formal test of difference, the Wald statistic confirms this, and shows that the coefficients on AUS and UK are significantly (p<.01) different across the two Models and thus indicate a negative interaction effect between country variables and firms that are members of international networks. The evidence presented in Table 4-7 supports H2 and the claim that country differences in propensity to issue going concern modifications are decreased for audit firms that are part of an international network than for those audit firms that are not.

Table 4-8 presents the results of examining H3 – namely, that country differences in propensity to modify the audit opinion for going concern considerations will decrease over the period 2001-2006. Models 1 and 2 present the results for the sub-samples of firms that are audited by an audit firm in the period 2001 to 2003 and the period 2004 to 2006 respectively.

In Model 1, the country variables for UK and AUS are negative and significant (p<.01 and p<.05, two-tailed, for UK and AUS, respectively). In Model 2, by comparison, both country variables are insignificant. The estimated magnitude of the country differences in

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[53] Holding all variables at the median values per Table 4-2, the discrete change in predicted probability for UK is -7.8 pp and -4.7 pp for AUS.

[54] Holding all variables at the median values per Table 4-2, the discrete change in predicted probability for UK is -1.4 pp and 2.3 pp for AUS.

Table 4-8: Multivariate Results to Test H3

VARIABLES	PERIOD 2001-2003 Model 1			PERIOD 2004-2006 Model 2		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CONSTANT	0.557	.357		-0.805	.024	
PBANK	0.376	.002	1.000	0.126	.038	.819
SIZE	-0.123	.001	-.142	-0.222	.001	-.253
LEV	-2.557	.001	-.547	-1.027	.006	-.273
ΔLEV	0.126	.004	.074	-0.017	.719	-.009
CURRENT	1.267	.003	.995	0.416	.060	.898
WC	-1.205	.001	-.665	-0.570	.001	-.293
QUICK	-0.101	.015	-.134	-0.133	.002	-.158
ROA	-0.447	.001	-.338	-0.648	.001	-.509
MATERIALS	0.124	.267	.018	-0.102	.409	-.014
INFOTECH	-0.286	.001	-.039	-0.328	.001	-.043
LLOSS	0.348	.001	.046	0.271	.023	.035
NEQUITY	0.744	.001	.121	0.880	.001	.143
LOPINION	2.640	.001	.515	2.840	.001	.549
AUS	-0.215	.048	-.029	0.152	.187	.021
UK	-0.666	.001	-.079	-0.071	.596	-.010
NTW	-0.307	.001	-.044	-0.201	.032	-.028
N	10,717			8,440		
Pseudo R^2	.481			.522		
Adj. Pseudo R^2	.478			.519		
Log likelihood	-3083.29			-2321.32		
Prob>chi2	.001			.001		
Pr(y=1|x)	.169			.163		

Wald Test of Equality of Country Coefficients Across Models

Statistic	H0:	H1:	Coef. Ratio	Wald	df	p-value
βAUS	M1=M2	M1≠M2	-0.704	5.373	1	.020
βUK	M1=M2	M1≠M2	0.106	10.660	1	.001

Notes to Table 4-8:
1. p-values are two-tailed. See Table 4-2 for variable descriptions.
2. None of the variables of interest show Variance Inflation Factors above 2.
3. ΔPr is the discrete change in Pr(y=1│x) when the variable goes from their minimum value to maximum value. holding all other variables at their mean value per Table 4-2.

4. Pr(y=1│x) is the probability of observing a going concern opinion when all variables are at their mean value as per Table 4-2.

the probability to issue a going concern opinion has become lower in the 2004-2006 period relative to 2001-2003. In terms of the effects, in Model 1, auditors from the United Kingdom and Australia are 7.9 and 2.9 percentage points less likely to issue going concern opinions than their counterparts in the United States.[55] The differences in probability in Model 2 have decreased to 1.0 percentage points less for the UK and 2.1 percentage points more for Australia.[56] That is, the inequality in estimated probability to issue a going concern opinion among the three countries in the earlier time period is 7.9 percentage points, whereas the inequality in estimated probability among the three countries in the latter period is 3.1 percentage points. The Wald statistic shows that the UK and AUS coefficients are significantly ($p<.01$ and $p<.05$ for UK and AUS, respectively) different across the two Models and indicate a negative interaction effect between country variables and the 2004-2006 period. Together the results provide support for H3 and the claim that the country differences and the magnitude of those differences are decreased over the time period examined.

The analyses in Tables 4-6 to 4-8 are re-estimated with AUS in the intercept to examine any country differences in audit reporting behaviour between United Kingdom and Australia (not tabulated). Table 4-6, Models 2 and 3, show that the variable UK is negative and significant ($p<.01$, two-tailed), suggesting that there is a difference in audit reporting behaviour between Australia and the United Kingdom. In Table 4-7, the UK variable is negative and significant ($p<.01$, two-tailed) in both Models. The Wald statistic, however, is not significant. In Table 4-8, Model 1, the variable UK is negative and significant ($p<.01$, two-tailed), but in Model 2, it is insignificant. The Wald statistic is, however, insignificant. Overall, this suggests that country differences in propensity to issue going concern modifications exist between these two countries and that H1 can be rejected. There is, however, not any strong evidence in favour of H2 and H3 between the United Kingdom and Australia.

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[55] Holding all variables at the median values per Table 4-2, the discrete change in predicted probability for UK is -6.8 pp and -2.6 pp for AUS.
[56] Holding all variables at the median values per Table 4-2, the discrete change in predicted probability for UK is -0.7 pp and 1.6 pp for AUS.

4.5 Robustness and Sensitivity Analysis

4.5.1 Sample Selection

To test the robustness of the results with regard to the imposed sample restrictions, Tables 4-6 to 4-8 are replicated using various selection criteria (not tabulated). When the sample is restricted to the analysis of first-time going concern modifications (15,048 observations)[57], the variable AUS is insignificant in Table 4-6, Model 2, but positive and significant in Model 3. The sign and significance of the variable UK remains the same in Table 4-6. The results for Tables 4-7 and 4-8 show that international audit networks and the latter time-period have a significant positive moderating effect on both the variables UK and AUS. Limiting the sample to observations that have both a current year loss and negative cash flow from operations (12,746 observations) does not change the results. When the results are replicated for a reduced sample with only the observations that yield a positive PBANK score (2,479 observations), the variable UK is no longer significant in the overall sample (Table 4-6). In Table 4-7, international audit networks have only a significant and positive moderating effect on the variable UK, and Table 4-8 shows no significant moderating effects. Thus, the results exhibited in Tables 4-6 to 4-8 are somewhat sensitive with respect to the imposed sample restriction.

The results are also replicated by excluding all materials and information technology firms because of their different characteristics. When firms in these industries are excluded (leaving 11,588 observations), there is no significant country difference between Australia and the United States in the overall sample. Table 4-7 and Table 4-8 still show a significant and positive moderating effect on the country difference between Australia and the United States. The results with respect to country difference between the United Kingdom and the United States remain unchanged. Consequently, the results are sensitive to the exclusion of materials and technology firms. The results are the same after excluding all Arthur Andersen observations (leaving 19,063 observations in the sample) and replicating the analysis.

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[57] Restricting the sample to first-time going concern modifications means that companies with recurring going concern modifications are excluded (3,338 observations), as well as the companies that had their prior year going concern modifications withdrawn and were issued a clean opinion in the current year (771 observations).

4.5.2 Standard Errors, Variable Transformations and Interactions

Further, all of the regressions in Tables 4-6 to 4-8 are replicated with robust standard errors that are correct in the presence of violations of the assumptions of the model.[58] As the 19,157 observations represent 6,873 unique firms, the Tables 4-6 to 4-8 are also replicated with corrected standard errors that are clustered on firms. In both cases, the results are unchanged. In addition, all models are re-estimated by using rank transformations of continuous variables as these are less sensitive to outliers and eliminate common transitory distress characteristics of broad economic and industry forces (Kane et al. 1998). The results are qualitatively the same, except for the variable AUS in Model 2, Table 4-6, which is no longer significant.

Outliers in the distribution of financial ratios for the financial distressed firms contained in the sample are dealt with through winsorising continue variables at the 5th and 95th percentile. The hypotheses are re-tested using continuous variables winsorised at 2.5^{th} and 97.5^{th} percentiles, as well as continuous variables winsorised at 7.5^{th} and 92.5^{th} percentiles. The results are qualitatively the same, but the magnitude of country differences between network and non-network auditors in Tables 4-7 becomes larger the less severe the winsorizing. The hypotheses are also tested when variables are winsorized at 95th percentile of absolute values, as well as with a sample that is truncated at the 95th percentile of PBANK. The results remain unchanged. Lastly, H2 and H3 are tested by using conventional product terms in both a linear probability model with heteroskedasticity robust standard errors, and in a logit model.[59] The results in Tables 4-7 and 4-8 are confirmed, as all interactions terms show positive coefficients and all are significant (p<.05, two-tailed).

4.5.3 Audit Firms and Time Period

When a Big N variable representing Big N audit firms only is used instead of the NTW variable (which includes Big N firms as well as BDO and Grant Thornton), the results remain unchanged, although the results with respect to H2 show that Big N audit firms

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[58] Misspecification can cause parameter estimators to be inconsistent for particular parameters of interest, as well as invalidating standard techniques of inference (see White 1982).

[59] Testing H2 and H3 by using conventional product terms in the logit model provides similar results (not reported), although it is acknowledged that inferences on these alone should be viewed with both caution and scepticism (Ai and Norton 2003). Nevertheless, when the corrected interaction effect of these product terms in the logit model was estimated one at a time by the method proposed by Ai and Norton (2003), the inferences with respect to H2 and H3 still remain unchanged.

have an even stronger moderating effect on country differences in propensity to issue going concern modifications.

With respect to H3, when the sub-samples are estimated using different "cut-off points" for the two periods – the early period consists of 7,571 observations from 2001 to 2002 only, and the latter period consist of 11,586 observations from 2003 to 2006, as well as when the early period consist of 13,610 observations from 2001 to 2004, and the latter periods consist of 5,547 observations from 2005 to 2006 only – the latter period country variables still exhibit smaller coefficients than in the earlier period. However, the differences in coefficients across the two periods are most prominent when 2001 to 2002 observations represent the early period and the 2003 to 2006 observations represent the latter period.

As the meaning of financial ratios are not independent of macroeconomic conditions, the regressions are replicated with an additional variable that captures the output gap in percent of potential gross domestic product[60] to control for the differences between countries and over time with respect general market conditions (not tabulated). The inferences drawn with regard to the hypotheses are unchanged.

4.5.4 Matched Samples

By using a matching procedure, it is possible to restrict and reorganise the sample to exhibit better balance and overlap in confounding variables across countries (See Appendix C at the end of this thesis). The matched sample will necessarily be smaller, as there are more observations from the US than from the UK and Australia. Further, due to poor overlap in covariates between countries, there can be unmatched observations from all three countries.

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[60] Due to difficulties in finding comparable bankruptcy statistics for publicly listed firms as well as commercial papers and treasury bills of similar maturity across both time and countries, the output gap in percent of potential GDP is used as a proxy. The calculation for the output gap is actual GDP less potential output GDP over potential output GDP. If this calculation yields a positive number it is called an inflationary gap and indicates the growth of aggregate demand is outpacing the growth of aggregate supply; if the calculation yields a negative number it is called a recessionary gap. Thus the measure captures where the current macro-economic condition is in relation to cyclical trends, and importantly, it is comparable across time and countries. The data is obtained from the International Monetary Fund. (For a discussion of approaches to calculating potential output, see Masi (1997)).

The results are replicated using two different procedures, both based on exogenous variables, to match country observations within the sample.[61] The first uses two matching criteria: financial year, and the Zmijewski (1984) bankruptcy score. The second uses three matching criteria: financial year, industry (GICS Sector) and size (Total Assets in US dollars). The remaining variables, in addition to the matching variables, are controlled for in the model. In a sense, these two samples may be thought of as subsamples of the larger sample, but with an improved degree of balance and overlap in the matched variables.

The samples are depicted in Table 4-9. The first sample consists of 4,281 observations with 1,427 observations from each of the countries: US, UK and Australia. The second sample consists of 2,868 observations with 956 observations from each of the countries: US, UK and Australia.

In the first sample, there is some variation in the number of observations with going concern modifications across the three countries: Australia has 359 (25.2%), UK 161 (11.3%) and US 262 (18.4%). There is less variation in the number of observations that use a network auditor: Australia 910 (63.8%), UK 1,098 (76.9%), and US 851 (59.6%). Across the two time periods 2001 to 2003 and 2004 to 2006, the countries each have 805 (56.4%) observations in the earlier time period, and 622 (43.6%) observations in the latter time period.

The second sample also exhibits some variation in number of going concern modifications across the three countries: Australia has 201 (21%), UK 149 (15.6%) and US 330 (34.5%). The number of observations using a network auditor: Australia 647 (67.7%), UK 662 (69.2%) and US 357 (37.3%). Across the two time periods 2001 to 2003 and 2004 to 2006, the countries each have 524 (54.8%) observations in the former time period, and 432 (45.2%) observations in the latter time period.

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[61] When matching on categorical variables, a "perfect" match is obtained, but for continuous exogenous variables the match is based on the "nearest neighbour" principle wherever a perfect match is not feasible.

Table 4-9: Overview of Matched Samples

Sample 1: Matched on Financial Year and Zmijewski Bankruptcy Score across Countries

| | Australia | | | | United Kingdom | | | | United States | | | | Total |
| | No-Ntw | | Ntw | | No-Ntw | | Ntw | | No-Ntw | | Ntw | | |
	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	
GC	71	75	114	99	13	32	55	61	105	94	42	21	782
Clean	198	173	422	275	140	144	597	385	207	170	451	337	3,499
Total	269	248	536	374	153	176	652	446	312	264	493	358	4,281

Sample 2: Matched on Industry, Financial Year and Size across Countries

| | Australia | | | | United Kingdom | | | | United States | | | | Total |
| | No-Ntw | | Ntw | | No-Ntw | | Ntw | | No-Ntw | | Ntw | | |
	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	P0103	P0406	
GC	34	46	66	55	17	42	45	45	136	137	37	20	680
Clean	109	120	315	211	113	122	350	222	163	163	188	112	2,188
Total	143	166	381	266	130	164	395	267	299	300	225	132	2,868

The model used is the same as discussed in Section 4.3, but for purposes of brevity, the discussion of results is confined to the variables of interest. Figures 4-1 and 4-2 depict the range of country differences in probability of observing a going concern opinion holding the other confounding variables constant. Consequently, they point to the level of consistency between countries with smaller values indicating more consistency and vice versa. The results for sample 1 and 2 are summarised in Figure 4-1 and Figure 4-2, respectively.
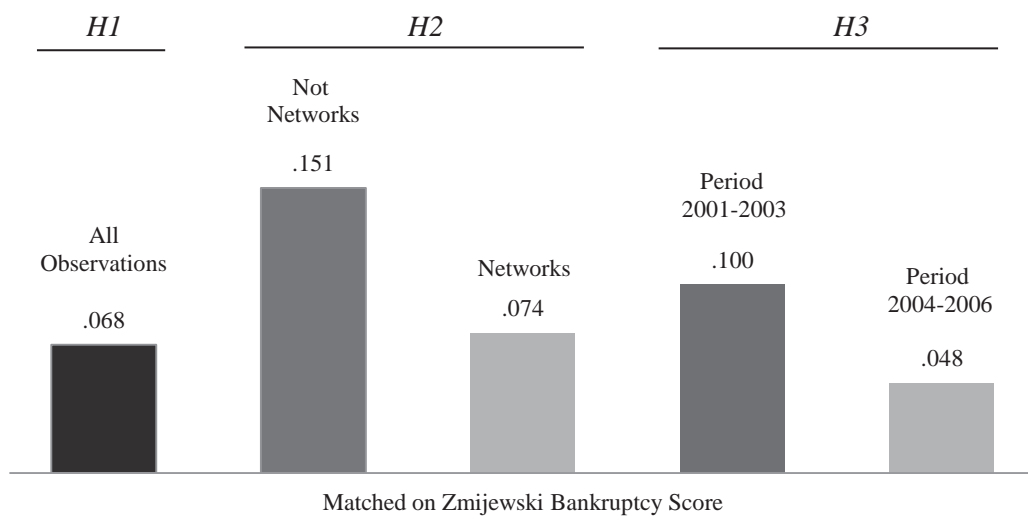
Figure 4-1: Range of Differences in Probabilities Sample 1

Figure 4-1 shows that the matched sample 1 results confirm the conclusion reached in the main analysis concerning H1: that in terms of *ceteris paribus* probability of observing a going concern modification there are some differences between the countries in the sample. The range of differences in probabilities is 6.8 percentage points.[62] The results also confirm H2: that in terms of *ceteris paribus* probability of observing a going concern modification, the differences between the countries in the samples are larger for auditors that are not members of global networks compared to those auditors that are members of global audit networks. The difference in probability of observing a going concern modification is 15.1 percentage points for auditors who are not members of an international network. By contrast, this difference is only 7.4 percentage points for

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[62] Although, the UK variable is statistically significant (p<.05, two-tailed), the AUS variable is neither significant nor marginally significant.

auditors that are members of international networks.[63] In relation to H3, Figure 4-1 shows that in terms of *ceteris paribus* probability of observing a going concern modification, the differences between the countries in the samples are larger in the earlier time period compared to the later time period. The difference in probability of observing a going concern modification is 10 percentage points in the 2001-2003 period, but this difference decreases to 4.8 percentage points in the 2004-2006 period.[64]
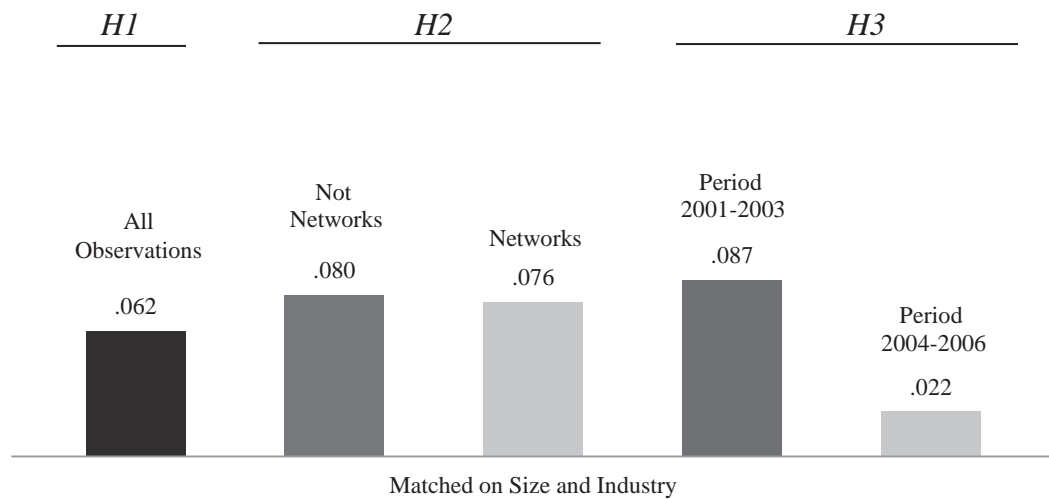
Figure 4-2: Range of Differences in Probabilities Sample 2

Figure 4-2 shows that the matched sample 2 results confirm the conclusion reached in the main analysis concerning H1. The range of differences in probabilities is 6.2 percentage points.[65] In relation to H2, the difference in country differences between auditors that are members of global audit firm networks and those who are not is not very strong.[66] The results in relation to H3 shows that in terms of *ceteris paribus* probability of observing a going concern modification, the differences between the countries in the samples are larger for the earlier time period compared to the later time period. The difference in probability of observing a going concern modification is 8.7 percentage points in the

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[63] The Wald statistic shows that the coefficients on AUS and UK are significantly different (p<.05) across the two subsamples.

[64] The Wald statistic shows that the coefficient on UK is significantly different (p<.05) across the two subsamples. However, the Wald statistic for the AUS variable is insignificant.

[65] The country variables UK and AUS both have negative coefficients, but only the UK variable is significant (p<.05, two-tailed).

[66] The Wald statistic is marginally significant for the AUS variable (p<.10) but the UK variable is not statistically different between the two subsamples.

period 2001-2003, but this difference has decreased to 2.2 percentage points in the period 2004-2006.[67]

Matching on exogenous variables does not change the main implications from the main analysis. While the results are less statistically strong, the previously drawn conclusions are robust to the use of a matched sample design. The result of a careful matched sample analysis does not refute or contradict the main findings.

4.6 Summary and Conclusion

Regulators have taken action to harmonise accounting and auditing standards. These actions have been based on the premise that uniform standards will be consistently applied and that consistent auditor reporting behaviour will result. This study empirically investigates international consistency of audit reporting behaviour in terms of going concern modifications using a sample of 19,157 observations from three countries: the United States, the United Kingdom and Australia. Consistency across countries and between types of audit firms and over time is also examined. In particular, whether country differences in audit reporting behaviour are moderated by international audit firm networks because of benefits of economies of scale and the deterrents of moral hazard; and if country differences in auditor reporting behaviour have diminished over time due to the international harmonisation effort.

The results indicate that there is a lack of consistency in audit reporting behaviour across countries. Further, it is documented that the lack of consistency across countries is more prominent for audit firms that are not members of international audit firm networks and that the country differences have diminished over the examined time period. A number of implications can be drawn from these findings. First, there are country differences in audit reporting behaviour irrespective of auditing standards. It may appear that litigation exposure drives audit reporting behaviour as US auditors' have a lower threshold for issuing going concern modifications, however, bear in mind that this is not the only difference between these countries. For example, the bankruptcy codes of these countries are different. Attributing the country differences solely to one causal effect may therefore

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[67]The Wald statistic shows, however, that only the coefficients of the UK variable is marginally significantly (p<.10) different across the subsamples.

be erroneous. Second, country differences in audit reporting behaviour have diminished over time, suggesting progress in light of the current harmonisation efforts of the audit profession. Third, and despite widespread concerns about market concentration of the large international audit firms, it appears that they have been instrumental in harmonising audit reporting behaviour. Lastly, the country differences between the firms that are not members of international networks presents future challenges for national and international regulators in order to prevent an unintended expectation gap arising from the implementation of International Standards on Auditing (ISAs).

A caveat to the conclusion of this study, however, is that only observations with complete data are used to estimate the logit model and incomplete data observations may occur non-randomly, a potential limitation of this study is sample selection bias and data availability. In particular, the use of multiple data sources and restricting the sample to financially distressed firms may elevate this concern. This does not necessarily influence any statistical inferences (Zmijewski 1984) but the possibility that the results may be influenced by selection bias cannot be ruled out. The findings are also somewhat sensitive to imposed sample selection criteria and the exclusion of certain industries. Furthermore, the model is a necessary simplification of the auditors' decision making and consideration must be given to the fact that not all possible factors that auditors consider in the going concern judgment are necessarily included nor fully captured by the existing variables in the model. Although, the model include controls such as leverage and change in leverage, the model does not differentiate between specific firm obligations such as borrowings and pension liabilities nor does the model capture any off-balance sheet financing.

The findings presented and the limitations of scope of this study provide avenues for future research. Although the many similarities between the institutional environments of this study strengthen the internal validity of the analysis, it is nevertheless limited in its ability to generalise the findings to other countries. In particular, differences in legal systems and the relative importance of capital markets are not investigated and it is conceivable that audit reporting behaviour in terms of going concern modification may be responsive to such factors, although in which manner is not known. Further, the findings indicate that future research of a theoretical as well as an empirical nature on the consistency of audit reporting behaviour as a desirable characteristic of audit quality is warranted across a broad range of countries.

CHAPTER 5

Consistency in Auditors' Substantial Doubt Thresholds: Evidence from First-Time Going Concern Modifications and their Subsequent Withdrawal

ABSTRACT: A fundamental premise behind auditing standards is that auditors will be consistent in applying these standards, which in turn will ensure consistent audit reporting behaviour. This study empirically investigates auditors' assessment of the going concern assumption and whether the auditors' substantial doubt threshold for when to issue and when to withdraw a modification is the same. The study uses panel data from 386 US audit clients over the time period 2000-2008 that had both a first-time going concern modification and a subsequent withdrawal of that modification. Auditors are found to be inconsistent in their assessment of the substantial doubt criterion. The *ceteris paribus* threshold for issuing an initial going concern modification is lower than the threshold to withdraw the going concern modification. The results, however, indicate no substantial differences in the results between Big N and non-Big N auditors. However, an evidence of inconsistency is identified in the first-time issuing and withdrawals thresholds when clients change auditors. There is evidence that different audit firms apply this standard in a manner that leads to inconsistent audit outcomes.

5.1 Introduction

Issuance of going concern modifications for the first time and the withdrawal of going concern modifications are critical to the auditor. It is at these junctures that the auditor decides whether the financial situation has worsened or improved enough to cross the threshold of substantial doubt as described in the auditing standard. The withdrawal of the going concern modification is not a rare event. Empirical research suggests that there is a high proportion – 80 to 90 percent – of the firms that are issued with a going concern modification do not fail in the subsequent year (Altman 1982; Mutchler and Williams 1990; Citron and Taffler 1992; Geiger et al. 1998; Carey et al. 2011), and about one third of the firms that receive a going concern modification have their going concern modification withdrawn (Nogler 1995). Similarly, Table 4-4 in Chapter 4, shows that while 7.24 percent of the sample were firm-year observations with an initial going concern modification, 3.84 percent were firm-year observations that had their going concern modifications withdrawn. A firm that has its going concern modification withdrawn must also, at some point, have received an initial going concern modification. This creates a natural setting for further investigations of consistency in audit reporting behaviour.

That "perfect" consistency among auditors might be difficult to achieve across all situations does not, from a normative perspective, imply that consistency is not to be desired, nor does it imply that on a comparative basis there cannot be more consistency and less consistency (Wustemann and Wustemann 2010). Consistency is an important dimension of both accounting and audit quality. Schipper (2003, p. 62), asserts that consistency is the very reason to have accounting standards and argues that "[...] if similar things are accounted for the same way, either across firms or over time, it becomes possible to assess financial reports of different entities, or the same entity at different points in time, so as to discern the underlying economic events". Similarly, users anticipate that audits conducted under auditing standards will meet the same objective.

Although, consistency alone is not sufficient for accuracy, in that auditors may be consistently inaccurate, this does not diminish the importance of consistency. The absence of consistency is *prima facie* evidence of inaccuracy (Trotman 1996). Some even argue that consistency implies accuracy where auditors' decision making is involved (Ashton

1985; Davis et al. 2000). The importance of consistency in auditing has been well documented. For example: "In the best of all possible worlds, every auditor, given the same set of facts, would select the same auditing procedures and apply them to the same extent" (Hicks 1974, p. 39); Mautz and Sharaf (1961) argue that inconsistencies between auditors have no place in auditing; "The standard of care which the auditor owes to the client is that degree of care which would ordinarily be exercised by other members of the profession in similar circumstances" (Willingham and Carmichael 1971, p. 19).

Furthermore, inconsistency in auditors' interpretation and application of auditing standards is a cause of concern for regulators. The Statement on Quality Control Standards No. 7 (SQCS 7), "A Firm's System of Quality Control" issued by the Auditing Standards Board (ASB) notes that the purpose of a system of quality control is to provide the firm with reasonable assurance that the firm and its personnel, among other things, comply with professional standards and applicable regulatory and legal requirements. The Public Company Accounting Oversight Board (PCAOB) is also charged with monitoring the quality of the work performed by firms auditing public companies and bringing appropriate action against those firms if substandard work is identifed. In this regard, the auditing standards provide the criteria of "substantial doubt" regarding the correctness of the going concern assumption as the benchmark for whether a going concern modification should be issued.

Going concern modifications can only be observed in two states: an auditor has issued a going concern modification, or the auditor has not. Yet, observed going concern modifications are not issued under identical circumstances. One firm may be very close to not having a going concern modification, while another firm may be so distressed that there is practically no likelihood of being issued with a clean audit opinion. But in either case, both firms' are issued with a going concern modification. Although the processes leading up to audit reporting behaviour cannot be directly observed, at some point a change in audit reporting behaviour will result in a change in what is observed: namely, whether an audit opinion contains a going concern modification. For example, as the relative magnitude of an indicator of financial distress increases, it is reasonable that an auditor's propensity to issue a going concern modification also increases. At some point, that propensity would cross a 'threshold' that would result in the auditor issuing a going concern modification instead of a clean opinion. And vice versa if the audit client received

a going concern modification last year and financial distress decreases. In the US, the auditor's 'threshold' for issuing or withdrawing a going concern modification should occur at the point when doubt about the correctness of the going concern assumption changes from "not substantial" to "substantial" (SAS No. 59).

Figure 5-1 depicts the observations associated with the initial issuance and withdrawal of going concern modifications. In the case of an initial going concern modification the firm was issued with a clean opinion in the last year, but a going concern opinion in the current year (point A and point B, respectively). In the case of the going concern modification withdrawal, the auditor issued a going concern modification in the prior year, but a clean opinion in the current year (point C and point D, respectively). In both cases, the threshold for what constitutes substantial doubt is crossed (illustrated by the horizontal line).
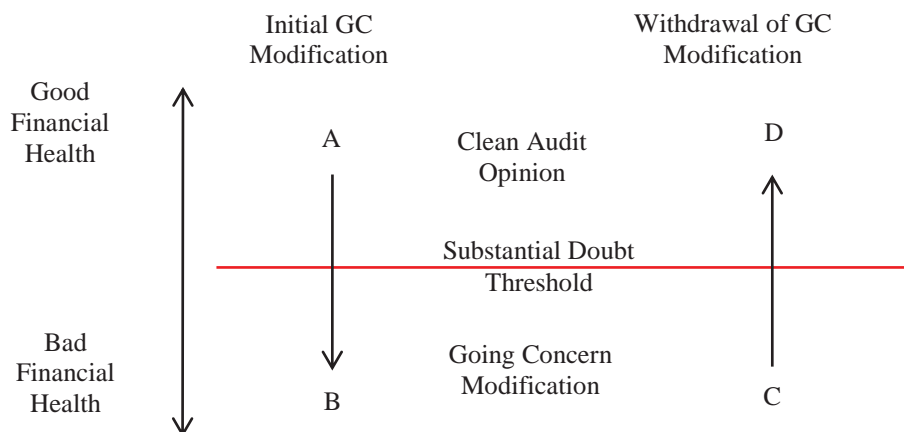
Figure 5-1: Substantial Doubt Threshold for Issuing and Withdrawing Going Concern Modifications

If such a 'threshold' differs between the initial issuance of the going concern modification and the subsequent withdrawal with respect to other factors not directly associated with clients' financial distress, this would suggest that auditors are inconsistent. Granted that a going concern modification withdrawal is simply a first-time issuance of a going concern modification in reverse – after all, in the US both scenarios are covered by the same standard: SAS No. 59 – then by comparing the thresholds of the two scenarios in terms of the probability of observing a going concern modification over a clean audit opinion, consistency with regard to the substantial doubt criterion can be examined. Specifically, if

the, *ceteris paribus*, probability for observing the first-time going concern modification (point B) is different from the probability of observing the going concern modification prior to withdrawal (point C), auditors would be inconsistent in their assessment of the substantial doubt criterion.[68]

The sample covers the period 2000-2008 and consists of 386 US audit clients that were issued with a first-time going concern modification, but did not become bankrupt and subsequently had their going concern modification withdrawn. Using this sample, this study first investigates the firms' characteristics of financial distress at the four points contained in Figure 5-1, the differences in distress between these four points, as well as the likelihood of bankruptcy at each of these points using the score from Zmijewski (1984). To provide further evidence and to utilise further advantages in the data collected, a conditional (fixed-effects) logit model is then used to investigate if the auditors' threshold were *relatively* different when the firm went from a prior year clean opinion to a going concern modification (i.e. a first-time issuance of going concern modifications) compared to when the firm went from a prior year going concern modification and was issued with a clean opinion (i.e. a withdrawal of the going concern modification).

The matched sample design in conjunction with using fixed effects analysis compensates for firm specific factors that do not usually change over time (e.g. industry, foreign operations and number of subsidiaries etc.). This study is conducted only in the US setting (as distinct from the international study in Chapter 4) due to constraints around identifying a sufficiently large sample from other countries. This choice of a single country also has the advantage of limiting the influence of cross-sectional variation in the general audit environment.

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[68] That is the same as saying that if the, *ceteris paribus*, probability for observing a clean opinion at withdrawal (point D) is different from the probability of observing a clean observation in the year prior to issuing the initial going concern modification (point A), auditors would be inconsistent in their assessment of the substantial doubt criterion. As with DeFond et al. (2002), the statement "probability of observing a going concern modification" simply means the probability of observing a going concern modification over a clean opinion. The reason why probability of a going concern modification is used rather than the probability of a clean audit opinion is a matter of convention in the literature and data coding. Consequently, the probability of observing a clean opinion over a going concern modification is simply one minus the probability of observing a going concern modification over a clean opinion.

The results indicate occurrences of inconsistency in auditors' assessment of the substantial doubt criterion, which may be explained by the economic costs of issuing different types of reports. The inconsistency is driven mainly by the new auditors for those clients that switched auditors. The result indicates that the new auditors are more conservative – that is, they have a higher threshold for withdrawing a going concern modification compared to the previous auditor's threshold for issuing the initial going concern modification. This is not a trivial issue. From a policy perspective, if auditors are inconsistent in their application of the "substantial doubt" criterion, they cannot all be accurate in this assessment either, as the former is a necessary condition of the latter.[69] Inconsistencies would lead to incorrect occurrence or omission of a going concern modification which is costly to various stakeholders. As the results suggest that inconsistency in substantial doubt thresholds are larger when clients change audit firms compared to when clients retain the same audit firm, the results further highlight the audit firms as an important structure for ensuring consistency, and might indicate that consistency is mainly an issue arising *between* audit firms.

5.2 Literature Review and Background

The going concern assumption in financial reporting presumes that an entity will generally continue largely in its present form for an indefinite future (Altman 1982; AICPA 1988; Subramanyam and Wild 1996). In this context, and based on relatively privileged information, the external audit firm's ability to modify their audit report for what they perceive as a heightened threat to the going concern assumption enables auditors to communicate what is often the first substantial non-financial public statement about a stressed company's ability to continue in business (Kida 1980; Mutchler 1985; Ellingsen et al. 1989: Blay 2011). Kida (1980) notes that the external auditors' going concern opinion is often the first public notification of extreme financial distress. Thus, the communication of a first-time going concern modified audit opinion from the external

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[69] Doubt about the going concern assumptions may be viewed as a continuous variable that ranges from high doubt (100% chance of bankruptcy) to low doubt (0% chance of bankruptcy). For example, if auditors should objectively assess the doubt of the correctness of the going concern assumption for a certain firm at 70%, but ten different auditors would assess doubt to be 50%,70%,80% and 40% etc, the auditors are not consistent in assessing the correctness of the going concern assumption. Equally, if the ten auditors consistently consider the doubt to be 50%, then they are consistent in their conclusions, but the conclusions are not accurate. If all the auditors' consider the doubt to be "70%", then their conclusions are both consistent and accurate. This is what is meant by the statement, "Consistency is necessary but not sufficient for accuracy".

auditor reflects the auditor's current assessment of the increased risk of business failure on the part of their client.[70] Similarly, the communication of the withdrawal of the going concern modification reflects that the auditor has assessed that there has been a decreased risk of business failure on the part of the client.

Under the broad principles of SAS No. 59, the auditor is fundamentally faced with two judgments: first, assessing the probability that the client goes bankrupt at a future date; and second, whether this probability is higher or lower than what the auditor considers to be substantial doubt. The guidance for both these judgements is imprecise under the current US standards (see Appendix 2-A at the end of Chapter 2 for an overview). Ponemon and Raghunandan (1994) investigated whether perceptual differences existed concerning the meaning of the "substantial doubt" expression. Their results reveal statistically significant differences in how auditors, commercial bank loan officers, financial analysts, judges, and legislative staff interpret the substantial doubt expression in terms of a numerical probability threshold: auditors, commercial bank loan officers and financial analysts attached a high probability threshold to substantial doubt, judges and legislative staff attached a low probability threshold. The responses within the auditor group varied with a range of 65 percentage points around a mean value of 56.58 percent chance of bankruptcy within one year for the substantial doubt threshold. Ponemon and Raghunandan (1994) found, however, that auditors consistently consider the substantial doubt threshold to fall somewhere between a possible risk and a probable risk of bankruptcy within one year.

Studies that investigate first-time going concern modifications report that variables associated with extreme financial distress are more pronounced for firms with a modification than for firms without a modification (e.g. DeFond et al. 2002; Li 2009; Griffin and Lont 2009; Ettredge et al. 2011). Similarly, Nogler (1995) finds that for audit clients that in prior years were issued with going concern modifications, the auditor's

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[70] Blay et al. 2011 argue that while financial statements and disclosures contain other information that provides evidence regarding financial distress and the probability of continued viability, the communication of a going-concern modified report from the company's external auditor provides considerable additional credible evidence that, in the auditor's professional judgment, there exists a substantial amount of doubt about the future viability of the company. Prior research has also examined the information content of a going-concern modified audit report and has, in general, concluded that it is *unexpected* audit opinions and going-concern modification, as measured by event study abnormal returns, that result in a negative market reaction for the recipient company (Dopuch et al. 1986; Fleak and Wilson 1992; Chen and Church 1996; Blay and Geiger 2001; Menon and Williams 2010).

decision to withdraw the going concern modification is dependent on significant improvements in financial and operating activities. Furthermore, Nogler (2004) found that firms still provide value to shareholders after the going concern opinion is resolved. Prior studies, however, have also argued that auditors' decision regarding substantial doubt about the going concern assumption and whether to issue a modified opinion or not, are also influenced by other factors beyond the financial distress of the client.

These other factors may be related to the auditors' loss function and not directly to the clients' level of financial distress (Louwers 1998). In particular, issuing an opinion that fails to mention going concern uncertainties to a client that subsequently became bankrupt is often followed by costly litigation (St. Pierre and Anderson 1984; Palmrose 1987; 1988; Carcello and Palmrose 1994; and Lys and Watts 1994; Krishnan and Krishnan 1996) and possible costly damage to the audit firm reputation (Reynolds and Francis 2000). Conversely, issuing a going concern opinion to a surviving client increases the risk of auditor switching (Chow and Rice 1982; Schwartz and Menon 1985; Krishnan and Krishnan 1996; Carcello and Neal 2000; 2003) and this too may also damage the audit firm's reputation (Louwers 1998).

Potentially, auditors may be able to reduce their exposure to litigation when auditing a financially stressed client by issuing a going concern report (Geiger and Raghunandan 2001; Geiger et al. 2006). In this regard, Carcello and Palmrose (1994, 2) state, "…it is assumed that modified reports prior to bankruptcy protect auditors from litigation." Geiger and Raghunandan (2001) and Geiger et al. (2006) examine litigation risk and auditors' likelihood of issuing a going concern modification by investigating the US Private Securities Litigation Reform Act of 1995, where the period prior to the act signifies higher litigation risk and vice versa. Geiger and Raghunandan (2001) provide evidence that auditors were less likely to modify an audit report for going concern issues subsequent to the Private Securities Litigation Reform Act of 1995. However, Louwers (1998) finds no evidence that litigation risk or audit fees has an impact on auditors decision to issue a first-time going concern modification. Similarly, DeFond et al. (2002) find no relationship between unexpected non audit service fees charged by auditors and the propensity to issue first-time going concern modifications. However, Carey et al. (2008) do find that auditors issuing first-time going concern modified audit opinions lose proportionately more fees by losing clients (through subsequent switching or company

failure) than firms not issuing a going concern-modified opinion to financially stressed clients.

In this regard, Muchler and Williams (1990) note that auditors' decisions regarding first-time going concern modifications are different where the client has received a going concern modification in a previous year. In particular, they argue that auditors' risk preferences are different for these companies where a prior going concern modification exists because the auditor may no longer have to consider the risk of losing the client if a going concern opinion is issued. A similar argument could be extended to the auditor's decision to withdraw the going concern modification. In this situation, the auditor may face higher litigation risk if the client is to fail after issuing the clean audit opinion compared to a similar situation in which the auditor had not drawn attention to going concern issues in the prior year(s). Consequently, this setting, where there are possibly different and competing incentives, provides an interesting opportunity to investigate auditors' consistency in interpretation and application of the auditing standards in relation to issuance and withdrawal of going concern modified audit opinions.

5.3 Hypotheses Development

Within the context of auditors' going concern evaluation, the auditor is faced with litigation risk, reputation risk and threats to independence, such as the risk of dismissal (Chow and Rice 1982; Geiger et al. 1998; Blay 2005). Any changes in the assessment of these risks may have a bearing on the auditors' assessment of the going concern assumption. This will affect the consistency of the issuance and withdrawal of modified audit reports both between and within audit firms. Costs related to independence threats, litigation risk as well as reputation are most discernible when the financial distress of the company becomes so negative that the auditor must contemplate whether there is substantial doubt about the going concern assumption, and subsequently whether to modify the audit report for the first time.[71] Similarly, such costs may also be discerned when a company has already been issued with a modified going concern opinion, but the financial outlook of the company has improved. The auditor must then assess if

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[71] As noted by DeFond et al. (2002), the term audit failure refers to cases where auditors fail to issue going concern modifications to clients who subsequently fail. They also argue that auditors with impaired independence are less likely to issue going concern modifications when such opinions are warranted, although they fail to provide evidence of this assertion in their study.

substantial doubt about the going concern assumption is no longer warranted and if so, subsequently withdraw the going concern modification and issue a clean opinion. If auditors are consistent, the assessment of what constitutes the "substantial doubt" threshold – whatever that may be – should be the same when auditors issue companies with going concern modifications for the first time and when the auditors choose to withdraw going concern modifications. After all, both events are governed by the same auditing standard, namely SAS No. 59. Consequently, holding everything else constant, it would be unlikely that users of audited financial statements would infer a difference. Yet, to the extent that there are differences in auditors' perceptions regarding independence threats, litigation risk and reputational costs for first-time issuance and withdrawals of going concern modifications, auditors' assessment of the substantial doubt at each of the points in Figure 5-1 may be inconsistent.

Auditors have economic bonds to their clients, and future economic rents are contingent on auditors' retention by their clients. Auditors thus have an incentive to be sensitive to client preferences (DeAngelo 1981). Indeed, prior research suggests that in certain circumstances auditors tend to reach client-preferred decisions (Hackenbrack and Nelson 1996; Blay 2005). An audit report carries more information when it is different from the prior year (Kausar et al. 2009). Since it is highly likely that the audit client would prefer a clean audit opinion, the dismissal risk and the pressure to issue a clean opinion is, arguably, less if the client already had a going concern modification in the prior year. Conversely, if the company already had a going concern modification in the prior year, to provide a clean audit opinion might carry additional litigation risk and reputational risk if it turns out that the company is still faced with going concern issues. The influence attributed to the costs of litigation risk, dismissal risk and reputation risk may lead to inconsistency of auditors' substantial doubt thresholds at the issuance of the first-time going concern modification and the subsequent withdrawal.

Prior research in psychology also shows that people are usually biased towards confirmation (see for example Mynatt et al. 1977; Darley and Gross 1983; Klayman and Ha 1987; Davidsson and Wahlund 1992). Some studies have provided evidence that particular features of the audit environment cause auditors to focus more on negative evidence (Ashton and Ashton 1988; Trotman and Sng 1989; Church 1991; McMillan and White 1993). To the extent that a prior year going concern modification may be negative

evidence, this may also lead to auditor inconsistencies in assessing the going concern assumption. If auditors are inconsistent, the *ceteris paribus* threshold for issuing a going concern modification for the first time would be different compared to the threshold for withdrawing the going concern modification. Thus, stated in the null:

H1: *Ceteris paribus*, the probability of observing a going concern modification for the first time is the same as the probability of observing a going concern modification in the year prior to withdrawal.

The influence attributed to the costs of litigation risk, dismissal risk and reputation risk may vary depending on the size of the auditor. Dopuch and Simunic (1980) note that Big N auditors have more credibility than non-Big N auditors. DeAngelo (1981) also found that a positive relationship exists between auditor size and audit quality. Larger audit firms have been associated with a higher materiality threshold compared to smaller audit firms (Messier 1983), and Ryo and Roh (2007) finds that higher materiality thresholds are associated with a lower likelihood of issuing a going concern modification. Big N auditors have also been known to have comparatively lower going concern modifications error rates with respect to whether the client went bankrupt or not (Geiger and Rama 2006). Thus, differences in credibility, audit quality, and materiality thresholds between Big N and non-Big N auditors could translate into differences in the degree of inconsistency of the substantial doubt thresholds at the issuance of the first-time going concern modification and the subsequent withdrawal. If the degree of consistency is related to auditor size, then any *ceteris paribus* differences in the thresholds for issuing and withdrawing going concern modifications would not be the same across auditors of different size. Thus, stated in the null:

H2: *Ceteris paribus*, any difference identified between the probability of observing a going concern modification for the first time and the probability of observing a going concern modification in the year prior to withdrawal, is the same for both Big N auditors and non-Big N auditors.

There have been widespread concerns that companies use auditor switching to avoid receiving unfavourable audit reports (Lennox 2000), also known as opinion shopping. If opinion shopping is successful, then this would also imply inconsistency between audit firms. Furthermore, audit firms differ in terms of audit technology and methodology and

this may be an impediment to consistency. Consequently, variation in the strictness and/or leniency in interpreting mitigating or contrary factors when the auditor considers withdrawing the going concern modification may depend on whether it was the same or a different audit firm that issued the initial going concern modification. Prior research has shown that auditors are more likely to qualify the reports of clients that choose to switch auditors, and that such clients receive qualified reports at least as frequently after they switched (Chow and Rice 1982; Smith 1986; Krishnan 1994; Krishnan and Stephens 1995; Carey et al. 2011). That is, post-switch opinions are not more favourable than pre-switch opinions. Rather than comparing observed pre- and post-switch audit reports, Lennox (2000) tests for opinion-shopping by predicting the opinions companies would have received had they made opposite switch decisions. He concludes that companies do engage in successful opinion shopping as his results indicate that companies would have received unfavourable reports more often under different switch decisions. Accordingly, auditor switching may cause inconsistency in the auditors' assessment of the substantial doubt threshold.

Consequently, one would expect that the substantial doubt thresholds for issuing and withdrawing a going concern modification would be less consistent if the client switched auditors between these two events. If the degree of consistency is related to whether it is the same or different auditors that issued and withdrew the initial going concern modification, then any *ceteris paribus* differences in the thresholds for issuing and withdrawing going concern modifications would depend on whether the client changed auditors or not. Thus, stated in the null:

H3: *Ceteris paribus*, any difference identified between the probability of observing a first-time going concern modification and the probability of observing a going concern modification in the year prior to withdrawal is the same for clients that switched or did not switch auditors.

Accordingly, if the null hypotheses set forth are rejected, this will show that auditors' economic costs are different at the initial issuance and the withdrawal of going concern modifications and that these differences are conditional upon the size of the auditor, and whether the client retained or changed auditors.

5.4 Methodology

The sample is a matched within-subject design, consisting of observations from audit clients that received both an initial going concern modification and also had the modification subsequently withdrawn (that is, clients with observations at each point A, B, C, D as detailed in Figure 5-1). Although these clients did not go bankrupt, the setting is most appropriate to investigate inconsistencies in auditors' threshold for issuing going concern modifications. For each audit client in the sample the auditor has at some point decided that the financial health has deteriorated so much that it warrants substantial doubt about the going concern assumption and issued a modification. But at a later point the auditor also decided that the financial health has improved to such a degree that it no longer warranted substantial doubt about the going concern assumption and issued a clean opinion. The design allows for fixed effects models to be used, and as such limits some of the possible effects of other confounding – but non-observable – variables in the auditors' reporting behaviour, as each individual firm is used as its own control. By adopting a fixed effects approach, the analysis "...actually *controls* for all stable, unobserved variables, just as if these variables had been measured and included in the regression models (Allison 2009, p. ix)". Discarding the *between* firm variation effectively controls for such stable factors as the firm's industry or the firm's propensity to choose a specific auditor.

The sample was assembled by first identifying a group of clients that received a clean audit opinion following a prior year going concern modification (i.e. a withdrawal of the going concern modification) in the period 2000-2008; and then, for that group of firms, locating the preceding initial going concern modification within the same period.[72]

Two forms of complementary analysis are then undertaken. Using this sample, at all the four points as shown in Figure 5-1, as well as differences between them, the firms' probabilities of bankruptcy are examined. The probability of bankruptcy score measurement is taken from Zmijewski's (1984, p. 69) Table 3, Panel B, with higher values indicating a higher probability of bankruptcy:

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[72] The restriction in time period is practical. Audit Analytics, the source of the data, does not cover periods prior to 2000.

$$\text{PBANK} = - 4.803 - 3.599(\text{ROA}) + 5.406(\text{LEV}) - 0.100(\text{CURRENT}) \qquad (2)$$

Where:
CURRENT = current assets for the fiscal year over current liabilities for the fiscal year.
LEV = total liabilities over total assets at the end of the fiscal year.
ROA = net income (loss) divided by total assets at the end of the fiscal year.

The advantage of examining differences in mean and median values of PBANK score is that it provides parsimonious tests of the hypotheses and avoids any potential problems with overfitting a more complex going concern prediction model.[73] Furthermore, investigating univariate and multivariate differences in distress characteristics between the four points as shown in Figure 5-1 provide insight into differences in individual financial distress characteristics of the clients between the time they received going concern modifications and the time they received clean opinions before and after the initial issuance and withdrawal of the going concern modification.

The second analysis involves using a conditional (fixed effects) logit model[74] to formally test the hypotheses proposed. The advantages of the conditional logit model approach is that it allows fitting of the nominal alternatives (i.e. whether the audit report contains a going concern modification or not) are affected by characteristics of the alternatives (i.e. independent variables) that vary across cases (i.e. audit clients). In the conditional logit model, the predicted probability of observing outcome m is:

$$\Pr(y = m \mid \mathbf{z}) = \frac{\exp(\mathbf{z}_m \boldsymbol{\gamma})}{\sum_{j=1}^{J} \exp(\mathbf{z}_j \boldsymbol{\gamma})} \text{ for m} = 1 \text{ to } J \qquad (3)$$

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[73] The model used in Chapter 4 is a cross-sectional equation model that includes a lagged dependent variable (prior year's audit opinion) to account for historical factors that cause current differences in the dependent variable that are difficult to account for in other ways. However, because the research design uses a matched within-subject sample that focuses on changes in audit opinions, prediction of such a model is not appropriate to use in this study. The Zmijewksi (1984) bankruptcy model is well established in the literature, but predicted probabilities for observing a going concern modification based on the conditional (fixed effects) model in this study is detailed in Figure 5-2.

[74] As pointed out by Cram et al. (2009) the use of unconditional analysis for a fully matched within-subject sample is incorrect and a direct threat to internal validity and may lead to both Type I and Type II errors regarding the inferences drawn. In this case, where a fully matched within-subject sample is used, the conditional (fixed effects) logit is the appropriate choice (Cram et al. 2009). In this sample, a clean audit opinion are always observed before a first-time going concern modifications and a going concern modification is always observed before the clean opinion on withdrawal. However, what is being modelled is the *probability* of observing a going concern modification in the prior year over a clean opinion on withdrawal and the *probability* of observing a first-time going concern modification over the prior year clean opinion, holding financial distress constant

where z_m contains values of the independent variables for alternative m for each case. In this case, there are two alternatives for each firm: a going concern modification and a clean audit opinion. For a single independent variable, z_m , that is, say, the liquidity a firm would have at each of the two different alternatives. Then γ is a parameter indicating the effect of liquidity on the probability of observing one alternative over the other. Thus, the probability of observing a going concern modification for any given audit client is therefore modelled as a function of the following variables:

$$\Pr(y=GC_{ijt} \mid z) = f(\beta_1 CURRENT_{it} + \beta_2 CATA_{it} + \beta_3 WC_{it} + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 CFO_{it} + \beta_8 QUICK_{it} + \beta_9 SIZE_{it} + \beta_{10} BIGN_{jt} + \beta_{11} PERIOD*_{ijt} + \beta_{12}\mathbf{WITHDRAWAL}_t) \quad (4)$$

Where:

Dependent Variable
GC_{ijt} = 1 if a going concern modification is observed, 0 for a clean opinion.

Independent Control Variables
$CURRENT_{it}$ = current assets for the fiscal year over current liabilities for the fiscal year.
$CATA_{it}$ = end of year current assets divided by end of year total assets.
WC_{it} = end of year current assets less end of year current liabilities divided by end of year total assets.
LEV_{it} = end of year total liabilities over end of year total assets.
ROA_{it} = net income (loss) divided by end of year total assets.
CFO_{it} = operating cash flows divided end of year current liabilities.
$QUICK_{it}$ = short term investments securities (including cash and cash equivalents) divided by end of year total assets.
$SIZE_{it}$ = the natural logarithm of total assets at end of year measured in millions of dollars.
$BIGN_{jt}$ = an indicator variable equal to 1 if the auditor is a member of the Big N, 0 otherwise.
$PERIOD*_{ijt}$ = Indicator variables for the periods 2003-2005 and 2006-2008.

Variable of Interest
$WITHDRAWAL_t$ = an indicator variable equal to 1 for those observations associated with the withdrawal, 0 for those observations associated with the first-time issuance of the going concern modification.

The variable of interest is WITHDRAWAL. Using an indicator variable approach is useful because a single regression equation may be used to represent the two groupings of observations – initial issuance (points A and B in Figure 5-1) and the withdrawal (points C and D in Figure 5-1) – and allows the hypotheses to be tested on a single variable while holding the other financial distress factors constant. WITHDRAWAL is an indicator variable for those observations where the auditor withdrew the going concern modification and issued a clean opinion (point D), and for the going concern modification observations in the year prior to withdrawal (point C). The comparison group are the observations with a first-time going concern modification (point B) and the clean audit

observations in the year prior to that (Point A). As the model captures the probability of observing a going concern modification relative to a clean opinion, a positive (negative) coefficient on WITHDRAWAL would indicate a higher (lower) probability of observing a going concern modification in the year prior to the withdrawal than the probability of observing a going concern modification for the first time.[75] Or stated alternatively, a positive (negative) coefficient on WITHDRAWAL would indicate a lower (higher) probability of observing a clean audit report on withdrawal than the probability of observing a clean audit report in the year prior to the initial going concern modification. Because the model controls for financial distress characteristics, WITHDRAWAL compares the auditors' substantial doubt thresholds of the initial issuance and withdrawal in terms of auditors' relative probability of issuing a going concern modification over a clean audit opinion. Specifically, WITHDRAWAL indicates if there are any relative differences in the probability of observing the first-time going concern modification (point B) compared to the probability of observing the going concern modification prior to withdrawal (point C), holding variation in financial distress constant. The variable therefore points to whether there is a shift in the auditors' evaluation of 'mitigating' and 'contrary' factors as the variable indicates whether it is, on average and holding financial distress constant, relatively more or less likely to observe a going concern modification as the firm changes from a going concern modification to a clean opinion (withdrawal) compared to when the firm changes from a clean opinion to a going concern modification (first-time going concern modification).

In order to draw *ceteris paribus* inferences it is necessary to control for the firm's financial distress. The control variables used are guided by prior research. The magnitude of financial distress is related to the probability of bankruptcy (Hopwood et al. 1994). Some research includes an explicit measure of the probability of bankruptcy using the Zmijewski (1984) score (e.g. DeFond et al. 2002), but to allow for individual differences associated with the variables that underscore the composite measure, the three variables are included in the model separately.

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[75] The effect of a single variable in a conditional logit model is conditional on the magnitude of all the other independent variables for each of the outcome categories. Thus, the term "effect" in this study refers to a *discrete* change in the probability of observing a going concern modification over a clean opinion, as an independent variable within the going concern category goes from 0 value to 1, holding the remaining variables in the clean audit opinion category constant, as well as all the other independent variables within the going concern category, at the overall sample mean values as per Table 5-2 (note that the independent variables are winsorised at the 95th percentile of absolute value) (see Long and Freese 2006, p. 301-304).

CURRENT, WC and QUICK are included in the model as liquidity measures which capture the availability of funds and the ability to quickly raise funds in relation to the firm's short term obligations (Ohlson 1980; DeFond et al. 2002). High liquidity suggests that audit clients are more likely to avoid bankruptcy and therefore less likely to receive a going concern opinion. LEV and CATA are included in the model as measures of the firms' financial structure. The LEV measure is included because debt covenant violations are positively associated with the probability of issuing a going concern opinion (Mutchler et al. 1997; DeFond et al. 2002). Specifically, LEV is included to capture the proximity to covenant violation as clients with high leverage are likely to be close to violations (Beneish and Press 1993). CATA measures the relationship between current assets and the total assets on the balance sheet. ROA and CFO are included as measures of performance. ROA is included because the higher the earnings, the less likely the firm is to receive a going concern modification, and vice versa (Ohlson 1980). CFO captures the change in funds in relation to firms' short term obligations and is also included because poor operating cash flows are often associated with bankruptcy (DeFond et al. 2002). SIZE (log of total assets in millions of dollars) is included because larger clients have more negotiating power when they are in financial difficulty and are therefore more likely to avoid bankruptcy and consequently less likely to receive going concern opinions, everything else held equal (Campbell 1996; Reynolds and Francis 2000; DeFond et al. 2002).

BIGN is included because prior research find that auditor size is related to the propensity to issue going concern modifications (Messier 1983; Mutchler et al. 1997; Ryo and Roh 2007). In addition, indicator variables for time periods are included in the model despite no change in the relevant auditing standard during the time period being investigated. However, several studies have reported that US auditors have changed their audit reporting behaviour time in relation to changes in the audit environment, such as the enactment of the Sarbanes Oxley Act (Geiger et al. 2006; Myers et al. 2008). This suggests that auditors' interpretation of the "substantial doubt" threshold is time-dependent and that there is some inconsistency on the part of the auditor. Nevertheless, by including these variables, any significant results on the variable of interest suggest inconsistency beyond that explained by time factors. Another important reason for including variables that control for time is that the variables would also control for any shifts in the general economic environment across these time periods. This is important, as

the interpretation of financial ratios that signify financial distress does not occur in a vacuum, but with reference to the context of the general economic environment. Similar models in prior research prove to have acceptable explanatory power in differentiating between firms that receive going concern modifications and those that do not (See Menon and Schwartz 1987; Nogler 1995; DeFond et al. 2002; Carey and Simnett 2006).

5.5 Results

5.5.1 Descriptive Statistics

The sample was constructed by first identifying companies with a going concern modification withdrawal using data obtained from Audit Analytics, during the period 2000-2008. Second, the preceding first-time going concern modification event was traced back to see if it occurred in the period 2000-2008. If it was, this company was then in the sample. Third, current and prior year financial data was obtained from Compustat North America. Fourth, companies from the financial sector (GICS 40 or SIC codes 6000-6999), or with total assets less than $100,000, or companies that prepared their financial statements on a liquidation basis for any of the years, were excluded.[76] Companies with missing financial or audit data were excluded, but where possible, missing data items were supplemented from reviewing 10-Ks and proxy filings obtained from the EDGAR database. The final sample consists of 1544 observations – 386 audit clients which each have four observations: a clean opinion followed by a going concern modification, and a going concern modification followed by a withdrawal during the period 2000 to 2008.

Table 5-1, Panel C, shows that most of the firms in the sample belong to the Information Technology Sector (24.35%), and that the sample consists of relatively few firms from the Utilities Sector (3.37%). Other sectors that are relatively well represented in the sample are Health Care (24.09%), Industrial (16.58%) and Consumer Discretionary (12.44%). Table 5-1, Panel D, shows that 253 audit clients had the same auditor when the initial going concern modification was issued and when the audit opinion was withdrawn. Of these, 139 firms had Big N auditors and 114 had non-Big N auditors. There were 133 audit clients that switched auditors between the initial going concern modification and the

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[76] The sample excludes financial services firms as these are structurally different and have a different bankruptcy environment.

Table 5-1: Sample Composition

Panel A: Sample Composition by Year

Year	First-Time GC		Withdrawn GC		Total
	Clean (A)	GC (B)	GC (C)	Clean (D)	
2000	78	0	0	0	78
2001	125	78	27	0	230
2002	61	125	104	27	317
2003	36	61	79	104	280
2004	52	36	54	79	221
2005	23	52	53	54	182
2006	11	23	43	53	130
2007	0	11	26	43	80
2008	0	0	0	26	26
Total	386	386	386	386	1,544

Panel B: Years Between Initial Issuance and Withdrawal

Years	#Firms
1	232
2	90
3	36
4	13
5	9
6	4
7	2
Average	1.7
Median	1
Min	1
Max	7

Panel C: Sample Composition by Sector

GICS Sector	# Firms	%
Energy	23	5.96%
Materials	22	5.70%
Industrial	64	16.58%
Consumer Discretionary	48	12.44%
Consumer Staples	14	3.63%
Health Care	93	24.09%
Information Technology	94	24.35%
Tele – Communication	15	3.88%
Utilities	13	3.37%
Total	386	

Panel D: Auditor Switching

Auditor Changes	# Firms	%
Same Auditor	253	65.54%
Same Big N Auditor	139	36.01%
Same non-Big N Auditor	114	29.53%
Switching Auditor	133	34.46%
Switch from Big N to Big N	15	3.89%
Switch from Big N to non-Big N	67	17.36%
Switch from non Big N to Big N	2	0.52%
Switch from non Big N to non-Big N	49	12.69%
Total	386	

Table 5-2: Descriptive Statistics (n=1,544)

Variable	Mean	Median	Min	Max	1st Quart.	3rd Quart.	Std. Dev	Skewness
OPINION	0.500	0.500	0	1	0	1	-----	-----
CURRENT	1.879	1.269	0.004	6.743	0.740	2.238	1.737	1.582
CATA	0.518	0.499	0.004	0.957	0.283	0.765	0.278	0.070
WC	0.087	0.081	-0.879	0.879	-0.109	0.339	0.394	-0.392
LEV	0.721	0.683	0.000	1.783	0.380	0.949	0.441	0.770
ROA	-0.505	-0.254	-2.394	2.394	-0.797	-0.046	0.716	-0.897
CFO	-0.979	-0.228	-5.680	5.680	-1.593	0.088	1.757	-1.322
QUICK	0.234	0.109	0.000	0.861	0.030	0.355	0.270	1.212
ASSETS (US$ Mil.)	270.438	26.039	0.124	2400.953	7.923	144.737	598.184	2.756
SIZE	3.602	3.260	-2.087	7.784	2.070	4.973	2.056	0.364
BIGN	0.524	1	0	1	0	1	-----	-----
P0002	0.405	0	0	1	0	1	-----	-----
P0305	0.345	0	0	1	0	1	-----	-----
P0608	0.153	0	0	1	0	0	-----	-----
WITHDRAWAL	0.500	0.500	0	1	0	1	-----	-----

Notes to Table 5-2:

1. Variable Definitions:

OPINION = 1 if a firm receives a GC modified opinion, 0 otherwise.

CURRENT = end of year current assets divided by end of year current liabilities.

CATA = end of year current assets divided by end of year total assets.

WC = end of year current assets less end of year current liabilities divided by end of year total assets.

LEV = end of year total liabilities over end of year total assets.

ROA = net income (loss) divided by end of year total assets.

CFO = operating cash flows divided end of year current liabilities.

QUICK = short-term investments securities (including cash and cash equivalents) deflated by total assets at end of year.

ASSETS (millions) = total assets at end of year measured in millions of dollars.

SIZE = the natural logarithm of total assets at end of year measured in millions of dollars.

BIGN = an indicator variable equal to 1 if the auditor is a member of the Big N, 0 otherwise

P0002; P0305; P0608 = indicator variables equal to 1 if the fiscal year is in the period 2000-2002, 2003-2005, and 2006-2008, respectively.

WITHDRAWAL= an indicator variable equal to 1 if the observation is associated with the withdrawal of the going concern modifications, 0 otherwise.

2. All continuous variables are winsorised at the 95th percentile of absolute values.

subsequent withdrawal. Of these, 15 switched from a Big N auditor to another Big N auditor; 67 switched from a Big N auditor to a non-Big N auditor; 49 switched from a non-Big N auditor to another non-Big N auditor; and only two clients switched from a non-Big N auditor to a Big N auditor.

Table 5-2 presents descriptive statistics on the 1,544 observations for the variables used in the going concern model. All continuous variables have been winsorised at the 95th percentile of absolute values because financial ratios tend to be skewed (Horrigan 1965; Deakin 1976; Frecka and Hopwood 1983) and this inherent characteristic of financial ratios becomes even more prominent when applied to "abnormal" firms – such as the financially distressed firms in this sample. Panel 2 shows that the mean and median firm size, measured in total assets, is US$270.438 million and US$26.039 million, indicating a skewed distribution. Consequently, log of assets is used in the multivariate analysis. The mean and median values for LEV are 0.721 and 0.683, respectively, and for CATA 0.518 and 0.499. The mean and median values for CURRENT, WC and QUICK are 1.879 and 1.269, 0.087 and 0.081, and 0.234 and 0.109, respectively. ROA exhibits a mean of -0.505 and a median of -0.254. Similarly CFO exhibits a mean of -0.979 and a median of -0.228. The results are consistent with the financially distressed nature of the firms in the sample, showing relatively low liquidity and high levels of leverage coupled with poor returns, both in terms of earnings and cash flows from operations. The BIGN variable indicates that 52.4% of the 1544 observations were audited by a Big N auditor.

Akin to DeFond et al. (2002), Table 5-3 classifies the variables in Table 5-2 by opinion type – clean or going concern modified opinion – and by whether the opinions are associated with the issuance of a first-time going concern modification or with the withdrawal of the going concern modification. The p-values from matched pair t-tests and median tests of differences are reported. Panel A displays the mean and median values and the result from the univariate tests of differences between the first-time going concern opinion observations and the preceding year's clean opinion observations (point A and B in Figure 5-1). Similarly, Panel B displays the mean and median values and the univariate tests of differences between clean opinion observations when the auditors withdrew the going concern modification and the preceding year's going concern opinion observations before the withdrawal (point C and D in Figure 5-1). In Panel A and B, the univariate tests

Table 5-3: Univariate Test of Financial Distress

Panel A: First-Time GC – Difference between GC Mod. and the Prior Year Clean Opinion

Variables	Mean First-Time		t-test	Median First-Time		χ^2 Median test
	Clean	GC	*p*-value	Clean	GC	*p*-value
CURRENT	2.281	1.512	.001	1.504	1.046	.001
CATA	0.510	0.494	.045	0.492	0.482	.161
WC	0.179	0.001	.001	0.146	0.025	.001
LEV	0.630	0.759	.001	0.601	0.703	.001
ROA	-0.466	-0.643	.001	-0.227	-0.378	.001
CFO	-1.118	-1.110	.908	-0.292	-0.328	.606
QUICK	0.246	0.204	.001	0.098	0.095	.001
ASSETS (Mil.)	292.461	270.403	.001	29.400	24.454	.001
SIZE	3.727	3.555	.001	3.381	3.197	.001
BIGN	0.622	0.573	.001	1	1	.001
SAMPLE SIZE	386	386		386	386	

Panel B: Withdrawn GC – Difference between Clean Opinion and the Prior Year GC Mod.

Variables	Mean Withdrawal		t-test	Median Withdrawal		χ^2 Median Test
	GC	Clean	*p*-value	GC	Clean	*p*-value
CURRENT	1.535	2.186	.001	1.011	1.517	.001
CATA	0.511	0.556	.001	0.495	0.549	.001
WC	-0.011	0.179	.001	0.001	0.147	.001
LEV	0.809	0.686	.001	0.731	0.656	.001
ROA	-0.597	-0.312	.001	-0.317	-0.135	.001
CFO	-0.930	-0.757	.014	-0.198	-0.128	.001
QUICK	0.216	0.268	.001	0.108	0.144	.001
ASSETS (Mil.)	258.072	260.817	.509	22.008	28.403	.348
SIZE	3.474	3.653	.001	3.091	3.346	.015
BIGN	0.497	0.404	.001	0	0	.001
SAMPLE SIZE	386	386		386	386	

Table 5-3: Univariate Test of Financial Distress (Continued)

Panel C: Differences between First-Time GC and GC in the Year Prior to Withdrawal

| | Mean | | | Median | | χ^2 Median |
| | Going Concern | | t-test | Going Concern | | test |
Variables	First-Time	With-drawal	p-value	First-Time	With-drawal	p-value
CURRENT	1.512	1.535	.647	1.046	1.011	.638
CATA	0.494	0.511	.013	0.482	0.495	.001
WC	0.001	-0.011	.422	0.025	0.001	.663
LEV	0.759	0.809	.001	0.703	0.731	.001
ROA	-0.643	-0.597	.121	-0.378	-0.317	.008
CFO	-1.110	-0.930	.001	-0.328	-0.198	.001
QUICK	0.204	0.216	.039	0.095	0.108	.093
ASSETS (Mil.)	270.403	258.072	.003	24.454	22.008	.001
SIZE	3.555	3.474	.003	3.197	3.091	.001
BIGN	0.573	0.497	.001	1	0	.001
SAMPLE SIZE	386	386		386	386	

Panel D: Clean Audit Opinions at Withdrawal and before First-Time Going Concern

| | Mean | | | Median | | χ^2 Median |
| | Clean Opinion | | t-test | Clean Opinion | | test |
Variables	First-Time	With-drawal	p-value	First-Time	With-drawal	p-value
CURRENT	2.281	2.186	.347	1.504	1.517	.913
CATA	0.510	0.556	.001	0.492	0.549	.001
WC	0.179	0.179	.969	0.146	0.147	.306
LEV	0.630	0.686	.018	0.601	0.656	.005
ROA	-0.466	-0.312	.001	-0.227	-0.135	.001
CFO	-1.118	-0.757	.001	-0.292	-0.128	.001
QUICK	0.246	0.268	.071	0.098	0.144	.001
ASSETS (Mil.)	292.461	260.817	.001	29.400	28.403	.001
SIZE	3.727	3.653	.153	3.381	3.346	.003
BIGN	0.622	0.404	.001	1	0	.001
SAMPLE SIZE	386	386		386	386	

Notes to Table 5-3

1. p-values for differences in mean values are based on t-test for paired two-sample mean comparison and p-values for differences in median values are based on the Wilcoxon matched-pairs signed-ranks test. All p-values are two-tailed.
2. See Table 5-2 for variable definitions.

of mean and median values shows that all the variables are significantly different (p<.05, two-tailed), with the exceptions of CFO where mean and median values are insignificant, and CATA where the median value is insignificant. Overall, the mean and median values and their differences are in accordance with the expectation of prior literature that suggest audit clients with going concern modifications exhibit different financial characteristics from audit clients with clean audit opinions. From the results in Panel A, it appears that firms which receive going concern modifications for the first time have had a significant increase in their leverage – on average by 12.9 percentage points – but at the same time have diminished liquid funds to meet their short-term obligations as evidenced by decreases in the ratios CURRENT and QUICK. In contrast, the results in Panel B suggest that when firms had their going concern modifications withdrawn the trend observed in Panel A is reversed. These firms have reduced their leverage and improved their liquidity.

Panel C displays the mean and median values and the result from the univariate tests of differences between the first-time going concern modification observations and the going concern modification observations preceding the withdrawal (point B and C in Figure 5-1). Similarly, Panel D displays the values and the univariate tests of differences between the going concern withdrawal observations and the clean opinion prior to the first-time going concern modification (point D and A in Figure 5-1). In Panel C, all variables are significant (p<.05, two-tailed), except for mean values of ROA and mean and median values of WC and CURRENT. In Panel D, all variables are significant except CURRENT and WC which are insignificant for mean and median values and QUICK and SIZE which are insignificant for mean values. The results indicate that there is some variation in financial characteristics between the clean audit opinions prior to the initial going concern modifications and the clean audit opinions issued upon withdrawal of the modification. Similarly, there is some variation in financial characteristics between the initial going concern modification observations and the going concern modification observations in the year prior to withdrawal. Thus, the results from Panels C and D provide initial evidence to suggest that there is some inconsistency in auditors' evaluation of the going concern assumptions with respect to the substantial doubt criterion.

Table 5-4 tabulates the mean and median values of the probability of bankruptcy based on the Zmijewski (1984) bankruptcy score for all the clients (Panels A and B), for clients with large and small auditors (Panels C and D), and for clients that had the same auditor

and clients that switched auditors separately (Panels E and F). Unsurprisingly, the probability of bankruptcy is significantly different ($p<.01$, two-tailed) between the clean audit opinions and the going concern modifications in all panels for both mean and median values. Audit clients do not seem to exhibit any differences in probability of bankruptcy across the initial going concern modification and the going concern modification prior to the withdrawal. The probability of bankruptcy score is not significantly different for the observations when the clients were issued with a clean opinion on withdrawal and when the clients received the clean opinion in the year prior to the first going concern modification. Consequently, the probability of bankruptcy is comparable across clean opinions irrespective if these are observed before a first-time going concern or on the withdrawal. Similarly, the probability of bankruptcy is comparable across going concern opinions irrespective if these are observed at a first-time going concern or before the withdrawal. It is interesting to note that the average probability of bankruptcy for clean audit opinions is around .400, whereas the average probability of bankruptcy at the going concern modifications is around .600, suggesting that the auditors' substantial doubt threshold lay somewhere between these two probabilities. Further, the differences between the cells for audit clients with Big N and non-Big N, as well as the differences between the cells for audit clients that did switch auditors and the cells for audit clients that did not switch auditors, are not significant at neither the mean nor median values.

The descriptive statistics in Tables 5-2 to 5-4 are consistent with the sample's financially distressed nature. The differences in financial characteristics between first-time issuance and withdrawal in Table 5-3 support the notion of inconsistent audit reporting behaviour. Table 5-4, however, fails to show any differences in the Zmijewski (1984) bankruptcy score between the clean opinion on withdrawal and before the first going concern modification and also show no differences between the Zmijewski (1984) bankruptcy score at the first going concern modification and at the going concern modification in the year prior to withdrawal.

Pairwise correlation coefficients show a high degree of correlation between some of the financial distress variables (not tabulated), although none of the correlation coefficients

Table 5-4: Differences in Probability of Bankruptcy Scores
(The cells in the 2 by 2 matrices below correspond to the four points (A,B,C,D) in Figure 5-1)

Panel A: Mean Tests

All Firms

	First-Time	Withdrawal	p-value
Clean	.401	.383	.490
GC Mod.	.601	.599	.887
p-value	.001	.001	

Panel B: Median Tests

All Firms

	First-Time	Withdrawal	p-value
Clean	.244	.195	.735
GC Mod.	.757	.754	.949
p-value	.001	.001	

Panel C: Mean Tests - Auditor Size

Clients with Big N Auditor

	First-Time	Withdrawal	p-value
Clean	.423	.367	.156
GC Mod.	.603	.595	.592
p-value	.001	.001	

Panel D: Median Tests - Auditor Size

Clients with Big N Auditor

	First-Time	Withdrawal	p-value
Clean	.326	.147	.132
GC Mod.	.747	.739	.167
p-value	.001	.001	

Clients with non-Big N Auditor

	First-Time	Withdrawal	p-value
Clean	.424	.386	.353
GC Mod.	.610	.618	.726
p-value	.001	.001	

Clients with non-Big N Auditor

	First-Time	Withdrawal	p-value
Clean	.231	.264	.524
GC Mod.	.796	.779	.202
p-value	.001	.001	

When comparing corresponding cells across auditor type, all the cells show no significant differences between Big N and non-Big N auditors at both mean and median values.

Panel E: Mean Tests - Auditor Switch

Clients with the Same Auditor

	First-Time	Withdrawal	p-value
Clean	.428	.390	.240
GC Mod.	.600	.605	.670
p-value	.001	.001	

Panel F: Median Tests - Auditor Switch

Clients with the Same Auditor

	First-Time	Withdrawal	p-value
Clean	.288	.200	.220
GC Mod.	.752	.759	.777
p-value	.001	.001	

Clients that Switched Auditors

	First-Time	Withdrawal	p-value
Clean	.348	.371	.561
GC Mod.	.603	.587	.581
p-value	.001	.001	

Clients that Switched Auditors

	First-Time	Withdrawal	p-value
Clean	.115	.177	.146
GC Mod.	.817	.744	.641
p-value	.001	.001	

When comparing corresponding cells across clients that switched and did not switch auditors, all the cells shows no significant difference at both mean and median values.

Notes to Table 5-4

1. Within the 2 by 2 matrices, p-values for differences mean values are based on t-test for paired two-sample mean comparison and p-values for differences in median values are based on the Wilcoxon matched-pairs signed-ranks test. Between matrices (not tabulated), p-values for tests are based on unpaired t-test for mean values and nonparametric K-sample test on the equality of median values for unmatched data. All p-values are two-tailed.

are above .800. The variable CURRENT is highly correlated with WC (.800), LEV (-.542) and CFO (-.570) and QUICK (-.652). WC is highly correlated with CATA (.553), LEV (-.639) and QUICK (.587), and CATA is highly correlated with QUICK (.651). In addition, CFO is highly correlated with ROA (.550) and QUICK (-.608). None of the other pairwise correlation coefficients are above .500. The high correlation between variables is to some extent expected as they convey information about financial distress. In this sense, a lack of correlation would be of greater concern. However, none of the control variables are perfectly correlated and, as such, individually convey some unique information. Fortunately, the consequence of high multicollinearity only applies to the specific variables that are highly collinear, and none of the control variables exhibit correlation coefficients greater than .500 with the variable of interest; WITHDRAWAL.

Thus, the statistical inferences from the variable of interest should not be affected by extreme levels of multicollinearity, although significance levels on the variables signifying financial distress might be affected.[77] A problem with drawing conclusions from univariate tests, however, is that they fail to simultaneously control for contrary and mitigating factors associated with the auditor's decision to issue a going concern opinion and, as seen, a number of the ratios investigated exhibit a relatively high degree of correlation. Consequently, multivariate tests are first used to investigate the unique differences in individual distress characteristics, and then also relied upon to formally test the hypotheses.

Table 5-5 shows the unique differences in the individual financial characteristics between the firm observations, holding other financial characteristics constant. Model 1 corresponds to Panel A in Table 5-3 (and points A and B in Figure 5-1), and shows coefficients of being associated with a first-time going concern modification over a clean opinion issued in the preceding year. Model 2 corresponds to Panel B in Table 5-3 (and points C and D in Figure 5-1), and shows coefficients of being associated with a going

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[77] The high correlation between the control variables makes it problematic to obtain precise estimates of their distinct effects on the dependent variable, because this may inflate their standard errors, and thus the coefficients would span a greater confidence interval. However, it does not bias the coefficients (Wooldridge 2006). Multicollinearity works against finding individual variables significant, and in the case of non-significance the precision of the coefficient must be interpreted with care. However, multicollinearity is not a concern with respect to the predictive abilities of the model as a whole. Thus control variables that appear to have weak effects individually, may actually have quite strong effects as a group with respect to the auditor reporting behaviour on going concern opinions. In the regression analysis, Variance Inflation Factors are examined for the variables of interest.

concern modification preceding the withdrawal over a clean opinion issued on withdrawal. Both models are significant (p<.01), and the adjusted pseudo R^2 are 17.9% and 18.0% for Model 1 and 2, respectively. The coefficients of WC and CFO are significantly different (p<.05, two-tailed) in both models. The coefficients of LEV, ROA, QUICK and SIZE are not different in either of the two models. The coefficients of CURRENT and CATA are significantly different (p<.01, two-tailed) only in relation to first-time issuance of going concern modifications. Predictably, and in line with prior research, it can be concluded that there are differences in financial characteristics of the firm observations that contain a going concern modification and those that contain a clean opinion.

Model 3 corresponds to Panel C in Table 5-3 (and points B and C in Figure 5-1), and shows the coefficients of association with a going concern modification prior to withdrawal over an initial going concern modification. Model 4 corresponds to Panel D in Table 5-4 (and points A and D in Figure 5-1), and shows the coefficients of association with a clean opinion on withdrawal over a clean opinion issued prior to the initial going concern modification. Both models are significant (p<.01), and the adjusted pseudo R^2 are 7.8% and 7.1% respectively for Model 3 and 4. As expected, and in line with the results from Table 5-4, the adjusted pseudo R^2 is lower than for Models 1 and 2. Still, a significant Model 3 implies that firms' financial distress characteristics are different between the first-time going concern modification and the going concern modification issued in the year preceding the withdrawal. In particular, the coefficients of ROA and CATA are significantly different (p<.05, two-tailed) and the coefficient of LEV is significantly different at the marginal level (p<.10, two-tailed). Similarly, the result from Model 4 implies that firms' financial characteristics are different between the clean audit opinion preceding the initial going concern modification and the clean audit opinion issued on withdrawal. The coefficients of LEV, CFO, QUICK and SIZE are significantly different (p<.05, two-tailed) and the coefficients of WC is significantly different at the marginal level (p<.10, two-tailed). The positive coefficient on LEV and QUICK indicate that clients obtain long term financing to meet its short term obligations in order to overcome going concern problems.

Table 5-5: Differences in Financial Characteristics Holding other Financial Characteristics Constant

VARIABLES	First-Time (A vs. B)[3] Model 1		Withdrawal (C vs. D)[3] Model 2		Going Concern (B vs. C)[3] Model 3		Clean Opinion (A vs. D)[3] Model 4	
	coef.	P>|z|	coef.	P>|z|	coef.	P>|z|	coef.	P>|z|
CURRENT	-0.409	.005	-0.231	.104	-0.150	.159	0.281	.169
CATA	3.799	.003	-0.167	.888	1.834	.038	-2.234	.171
WC	-1.932	.001	-2.437	.000	0.450	.424	1.575	.091
LEV	0.185	.730	-0.212	.659	0.740	.063	2.061	.041
ROA	0.144	.540	-0.319	.135	0.753	.001	0.333	.281
CFO	-0.284	.017	-0.441	.000	0.091	.291	0.994	.000
QUICK	-1.620	.166	0.289	.786	0.615	.445	3.485	.039
SIZE	-0.149	.534	0.156	.512	-0.187	.160	-1.312	.002
N	772		772		772		772	
Pseudo R²	.209		.210		.108		.101	
Adj. Pseudo R²	.179		.180		.078		.071	
Log likelihood	-211.73		-211.50		-238.79		-240.51	
Prob>chi2	.001		.001		.001		.001	

Notes to Table 5-5
1. Coefficients are estimated using conditional (fixed effects) logit models.
2. All p-values are two-tailed.
3. See Table 5-2 for variable definitions.
4. The letters A, B, C and D correspond to the audit opinions at the four points (A,B,C,D) in Figure 5-1, where A is a clean opinion prior to the initial going concern modification, B is the initial going concern modification, C is the going concern modification prior to withdrawal, and D is the clean opinion issued when the going concern modification was withdrawn. The letter that appears first in the parenthesis is coded as 1, and the letter that appears last is coded as zero.

The results from Tables 5-3 to 5-5 show that some the individual financial distress indicators are different – both with and without controlling for variation in the other financial distress characteristics – across the clean audit opinions and the going concern modifications associated the initial issuance of the going concern modification and the subsequent withdrawal. Nevertheless, financial distress is not determined by one factor alone, but rather the results of a combination of a number of distress factors. It is therefore important to control for all the financial distress factors when investigating the hypotheses set forth in relation to auditors' threshold for issuing and withdrawing going concern modifications.

5.5.2 Multivariate Tests

In Tables 5-6 to 5-8 the hypotheses are tested formally. The hypotheses are tested in the full sample and across various subsamples using a conditional (fixed effects) logistic regression model. The variable of interest is WITHDRAWAL. This variable captures the differences in two groupings of observations: the difference between the withdrawal (points C and D in Figure 5-1) in comparison to first-time going concern modifications (points A and B in Figure 5-1). Because the model controls for financial distress characteristics, WITHDRAWAL captures differences in the auditors' substantial doubt threshold between the initial issuance and the withdrawal of the going concern modification.

Table 5-6 presents the results of estimating the model on the full sample (i.e. on all four observations from each firm). This provides a test of hypothesis one: that the threshold for issuing a going concern modification is the same as the threshold for withdrawing the going concern modification. In Model 1, the variables CURRENT, CATA, WC, CFO and P0608 are significant (p<.05, two-tailed), ROA and BIGN are marginally significant (p<.10, two-tailed), and LEV, QUICK and SIZE are insignificant. The overall model is significant (p<.01), with an adjusted pseudo R^2 of 14.7%.

In Model 2, the variable of interest, WITHDRAWAL, is introduced. The sign, magnitude and significance of the coefficients of the control variables are comparable to the results in Model 1, except for BIGN which has become significant. WITHDRAWAL is significant (p<.05, two-tailed), and consequently, H1 can be rejected in favour of the alternative:

Table 5-6: Multivariate Result to Test H1

VARIABLES	All Observations Model 1			All Observations Model 2		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CURRENT	-0.305	.001	-.073	-0.308	.001	-.073
CATA	1.557	.034	.371	1.539	.037	.367
WC	-2.119	.000	-.420	-2.148	.001	-.423
LEV	-0.140	.669	-.035	-0.180	.583	-.045
ROA	-0.244	.079	-.060	-0.264	.057	-.065
CFO	-0.303	.000	-.072	-0.317	.001	-.075
QUICK	-0.535	.458	-.132	-0.564	.435	-.139
SIZE	0.036	.795	.009	0.060	.663	.015
BIGN	0.452	.062	.112	0.576	.020	.143
P0305	0.023	.875	.006	-0.069	.655	-.017
P0608	-0.424	.044	-.105	-0.623	.006	-.153
WITHDRAWAL	-----	-----	-----	0.275	.019	.069
N	1544			1544		
Pseudo R^2	.163			.167		
Adj. Pseudo R^2	.147			.150		
Log likelihood	-578.94			-576.16		
Prob>chi2	.001			.001		

Notes to Table 5-6

1. All p-values are two-tailed.

2. See Table 5-2 for variable definitions.

ceteris paribus, the probability of observing a going concern modification for the first time is different than the probability of observing a going concern modification before the withdrawal. The coefficient is positive, indicating that the threshold for withdrawing the going concern modification is higher than the threshold for issuing a first-time going concern modification.

The estimated effect suggests that, on average and given the same level of financial distress, there is a 6.9% higher probability of observing going concern modification prior to the withdrawal compared to the probability of observing first-time going concern modification.[78] In other words, the "substantial doubt" threshold for withdrawing a going concern modification is higher than the "substantial doubt" threshold for issuing a first-time going concern modification.

This is illustrated in Figure 5-2 which shows the number of observations over the range of predicted probabilities of observing a going concern modification for each of the four points in Figure 5-1. The predicted probabilities of observing a going concern modification are obtained from fitting the actual values of the observations to the estimated model parameters of Model 2 in Table 5-6.

As expected, the actual going concern modification observations are associated with higher predicted probabilities than the clean opinion observations. The sample observations with a clean opinion before a first-time going concern modification and the withdrawal observations have almost the same profile of predicted probabilities. By contrast, the profile for the going concern modification observations before the withdrawal shows higher predicted probabilities when compared to the first-time going concern modifications. Consistent with the results in Table 5-6, Figure 5-2 shows that the probability threshold where the proportion of going concern observations relative to clean observations becomes greater, is lower for those observations associated with the initial issuance compared to those observations associated with the withdrawal.

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[78] This is the same as saying that there is a 6.9% lower probability of observing a going concern withdrawal compared to the probability of observing a clean audit opinion prior to the first-time issuance of the going concern modification.
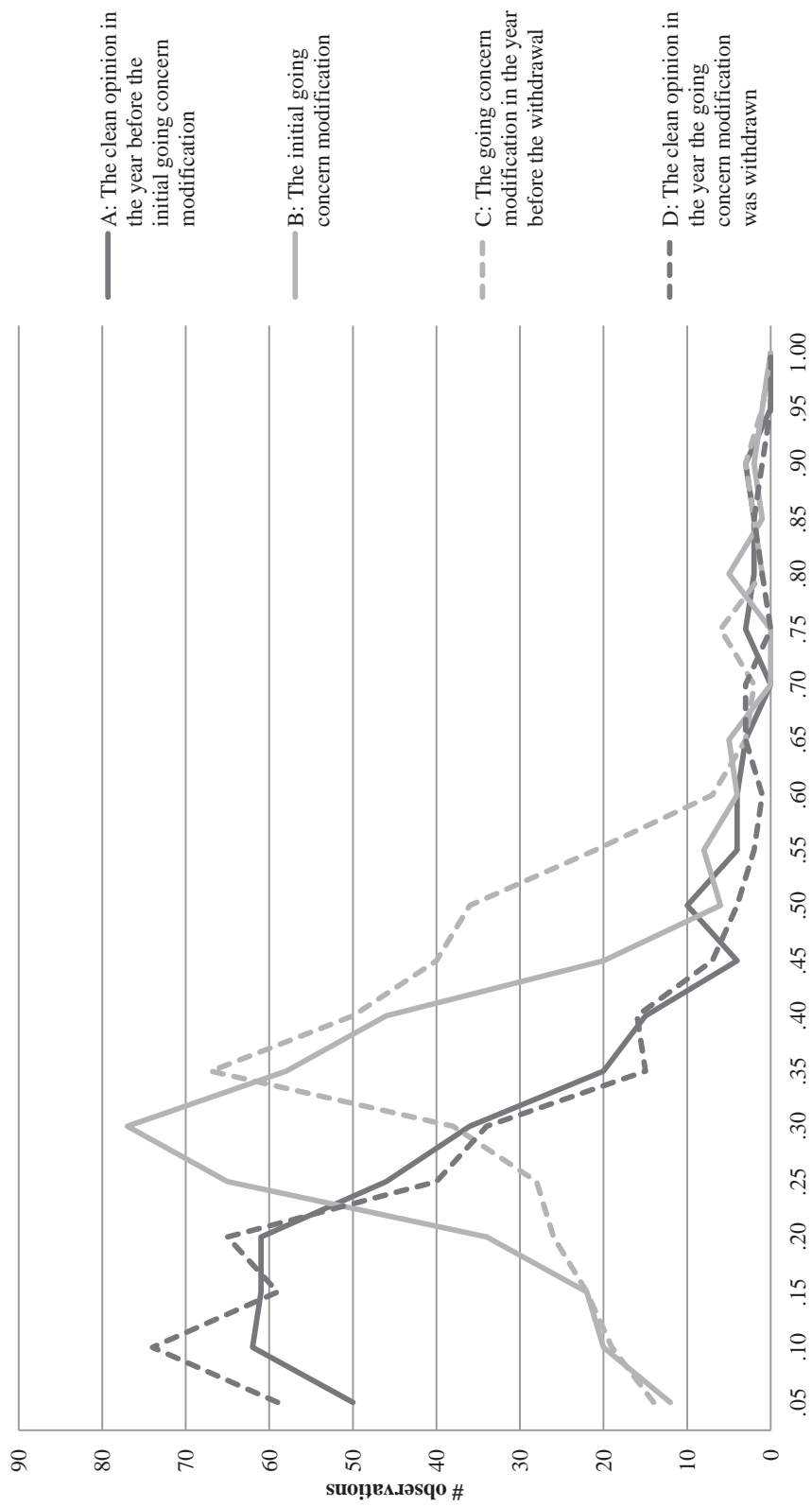
Figure 5-2: Predicted Probabilities of Observing a Going Concern Modification

A: The clean opinion in the year before the initial going concern modification

B: The initial going concern modification

C: The going concern modification in the year before the withdrawal

D: The clean opinion in the year the going concern modification was withdrawn

Table 5-7 presents the results of estimating the model on two subsamples: one for clients that had Big N auditors at both the initial going concern modification and the subsequent withdrawal one for those clients with non-Big N auditors. This provides the test of hypothesis two: that the degree of consistency is the same for Big N auditors and non-Big N auditors. The model is significant for both the Big N auditor sub-sample and the non-Big N auditor sub-sample, and show adjusted pseudo R^2 of 12.6% and 13.3%, respectively. So the explanatory power of the models is comparatively similar.

In the Big N sub-sample, three variables – CURRENT, WC, and CFO – are significant ($p<.05$, two-tailed), and LEV is marginally significant ($p<.10$, two-tailed). In the non-Big N sub-sample, five variables – CURRENT, CATA, WC, LEV and ROA are significant ($p<.05$, two-tailed). The variations in significant variables suggest that there are some differences in the regression functions for Big N and non-Big N auditors. The Chow Test Analogue for logistic regressions (see DeMaris 2004, pp. 283-284), however, shows that the overall differences in the regression functions are only marginally significant ($p<.10$, two-tailed).[79] Interestingly, the variable of interest, WITHDRAWAL, is not significant for either of the two sub-samples, indicating that H1 – that auditors are consistent for first-time going concern modification and withdrawal of the going concern modification – cannot be rejected for either of the subsamples of Big N and non-Big N auditors.

Moreover, the Wald test, as proposed by Liao (2004) for testing equality of individual regression coefficients, shows that the WITHDRAWAL coefficient is not significantly different between the Big N and non-Big N subsamples. Consequently, H2 – that the degree of consistency is the same for Big N auditors and non-Big N auditors – cannot be rejected.

Table 5-8 presents the results of estimating the model on two subsamples: one for clients with the same auditor at both the first-time going concern modification and the subsequent withdrawal of that modification; and one for clients that switched auditors between the first-time going concern modification and the subsequent withdrawal of that modification, and tests hypothesis 3: that the degree of consistency is the same for those that switched

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[79] The Chow Test assumes equal unobserved variance across regressions.

Table 5-7: Multivariate Result to Test H2

VARIABLES	BIGN Model 1			NON-BIGN Model 2		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CURRENT	-0.365	.022	-.086	-0.277	.024	-.067
CATA	1.099	.519	.268	2.171	.035	.495
WC	-1.789	.004	-.375	-2.757	.001	-.485
LEV	1.046	.058	.253	-1.125	.023	-.270
ROA	0.384	.174	.092	-0.480	.013	-.113
CFO	-0.500	.001	-.109	-0.126	.243	-.031
QUICK	0.071	.967	.018	-0.633	.508	-.156
SIZE	-0.278	.397	-.058	0.128	.476	.031
P0305	-0.372	.153	-.093	0.138	.544	.034
P0608	-0.701	.067	-.171	-0.464	.171	-.115
WITHDRAWAL	0.213	.240	.053	0.133	.447	.033
N	614			654		
Pseudo R^2	.166			.170		
Adj. Pseudo R^2	.126			.133		
Log likelihood	-229.23			-242.87		
Prob>chi2	.001			.001		

Wald Test of Equality of WITHDRAWAL Coefficients

Statistic	H0:	H1:	Coef. Ratio	Wald	df	p-value
βWITHDRAWAL	M1=M2	M1≠M2	1.22	0.102	1	.749

Chow Test of Equality of Regression Specifications

Statistic	H0:	H1:	Test Statistic	df	p-value
Chow Test	M1=M2	M1≠M2	19.069	11	.060

Notes to Table 5-7
1. All p-values are two-tailed.
2. See Table 5-2 for variable definitions.
3. The logit regression Chow test analogue as per DeMaris (2004) involves estimating the model for the combined sample and for each sample separately. The test statistic is calculated as: $\chi^2 = -2lnL_c - [-2lnL_1 + (-2lnL_2)]$, where lnL_c is the fitted log likelihood for the combined sample, lnL_1 the fitted log-likelihood for group one, and lnL_2 is the fitted log likelihood for group two. Above, the calculation of the test statistic is $\chi^2 = -2*481.635-[-2*229.232+(-2*242.868)] = 19.069$. Under the null hypothesis that regressor effects are the same across groups, χ2 has a chi-squared distribution with degrees of freedom equal to the difference in number of parameters estimated in the combined versus the separate sample approaches. Here the degrees of freedom are calculated as 11= (11+11)-11.
4. The Wald test statistic for comparing single coefficients across groups as per Liao (2004) is calculated as: $(\beta_1-\beta_2)^2/$ $(std.err._1{}^2+std.err._2{}^2)$, with one degree of freedom. Here the Wald test statistic for the variable withdrawal is calculated as $0.102 = (0.213-0.133)^2/ (0.181^2+0.175^2)$.

auditors after a first-time going concern modification and for those that had the same auditor.

The models are significant in both sub-samples, with adjusted pseudo R^2 of 14.5% and 20.5%, respectively. In the same auditor sub-sample (Model 1), there are six significant variables (p<.05, two-tailed): CURRENT, CATA, WC, CFO, BIGN and P0608. In the switch auditor sub-sample, there are three significant (p<.05, two-tailed) variables: CURRENT, ROA, and BIGN. In addition, there are two marginally significant (p<.10, two-tailed) variables: WC and CFO. The Chow test statistic analogue for logistic regressions (see DeMaris 2004, pp. 283-284) shows that the regression functions are significantly (p<.01, two-tailed) different for the two subsamples. Interestingly, the variable of interest, WITHDRAWAL, is only significant (p<.01, two-tailed) in the sub-samples for clients that switched auditors. In relation to the results outlined in Table 5-6, this indicates that H1 cannot be rejected for the subsample of clients with the same auditor, but for the subsample of clients that switched auditors, it can be rejected in favour of the alternative. For those clients that switched auditors, the estimated effect suggests that, on average and holding financial distress constant, there is a 17.6% higher probability of observing a going concern modification prior to the withdrawal compared to the probability of observing first-time going concern modification.[80] To the extent that the change in auditor was an attempt at opinion shopping, it may be described as unsuccessful. Moreover, the Wald test shows that the WITHDRAWAL coefficients are marginally significantly different (p<.10, two-tailed) between the two subsamples. Consequently, there is evidence to reject H3 in favour of the alternative: that the degree of consistency is different for those that switched auditors after a first-time going concern modification compared to those that retained the same auditor.

Looking further into these results, some additional tests are performed regarding auditor switching (not tabulated).[81] First, a client of a Big N auditor switching to another Big N

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[80] This is the same as saying that there is a 17.6% lower probability of observing a going concern withdrawal compared to the probability of observing a clean audit opinion prior to the first-time issuance of the going concern modification.

[81] The Big N variable is dropped from the Model in these additional tests of auditor switching. This is because for Big N changes only and for non-Big N changes only, such a variable would be a constant. Also, for Big N to non-Big N switch, such a variable would be extremely negatively correlated with the variable of interest – withdrawal. Furthermore, it is acknowledged that the sample sizes in these additional analyses are small. Not only must larger effects be present to be statistically significant but asymptotic properties of the logit model in small finite samples are not well known (see discussion in Appendix C to this thesis).

Table 5-8: Multivariate Result to Test H3

VARIABLES	SAME AUDITOR Model 1			SWITCHING AUDITORS Model 2		
	coef.	P>|z|	ΔPr	coef.	P>|z|	ΔPr
CURRENT	-0.278	.016	-.067	-0.467	.007	-.105
CATA	2.249	.030	.510	-0.087	.940	-.022
WC	-2.531	.001	-.465	-1.199	.077	-.275
LEV	-0.269	.509	-.067	0.151	.798	.038
ROA	-0.166	.318	-.041	-0.581	.039	-.133
CFO	-0.356	.001	-.083	-0.246	.081	-.059
QUICK	-1.041	.289	-.250	0.210	.856	.052
SIZE	0.218	.243	.049	-0.230	.324	-.051
BIGN	-3.446	.002	-.696	1.626	.001	.385
P0305	-0.214	.278	-.054	0.266	.316	.066
P0608	-0.758	.010	-.184	-0.488	.210	-.120
WITHDRAWAL	0.176	.200	.044	0.712	.004	.176
N	1012			532		
Pseudo R^2	.172			.255		
Adj. Pseudo R^2	.145			.205		
Log likelihood	-375.55			-177.45		
Prob>chi2	.001			.001		

Wald Test of Equality of WITHDRAWAL Coefficients

Statistic	H0:	H1:	Coef. Ratio	Test Statistic	df	p-value
βWITHDRAWAL	M1=M2	M1≠M2	0.715	3.635	1	.057

Chow Test of Equality of Regression Specifications

Statistic	H0:	H1:		Test Statistic	df	p-value
Chow Test	M1=M2	M1≠M2		46.31	12	.001

Notes to Table 5-8
1. All p-values are two-tailed.
2. See Table 5-2 for variable definitions.
3. The logit regression Chow test analogue as per DeMaris (2004) involves estimating the model for the combined sample and for each sample separately. The test statistic is calculated as: $\chi^2 = -2\ln L_c - [-2\ln L_1 + (-2\ln L_2)]$, where $\ln L_c$ is the fitted log likelihood for the combined sample, $\ln L_1$ the fitted log-likelihood for group one, and $\ln L_2$ is the fitted log likelihood for group two. Above, the calculation of the test statistic is $\chi^2 = -2*576.158 - [-2*375.553 + (-2*177.450)] = 46.31$. Under the null hypothesis that regressor effects are the same across groups, $\chi 2$ has a chi-squared distribution with degrees of freedom equal to the difference in number of parameters estimated in the combined versus the separate sample approaches. Here the degrees of freedom are calculated as $12 = (12+12)-12$.
4. The Wald test statistic for comparing single coefficients across groups as per Liao (2004) is calculated as: $(\beta_1-\beta_2)^2/ (std.err._1^2+std.err._2^2)$, with one degree of freedom. Here the Wald test statistic for the variable withdrawal is calculated as $3.635 = (0.176-0.712)^2/ (0.137^2+0.246^2)$.

auditor was investigated (15 firms: 60 firm observations). The estimated effect suggests that, on average and holding financial distress constant, there is 0.5% lower chance of observing a going concern modification prior to the withdrawal compared to the chance of observing a first-time going concern modification. But this estimate is also not significantly different from zero at conventional levels of significance. Then, a client of a Big N auditor switching to a non-Big N auditor was investigated (67 firms: 268 firm observations). The estimated effect suggests that, on average and holding financial distress constant, there is a 6.3% higher chance of observing going concern modification prior to the withdrawal compared to the first-time going concern modification. Again, this estimate is also not significantly different from zero. Lastly, a client of a non-Big N auditor switching to another non-Big N auditor was investigated (49 firms: 196 firm observations). The estimated effect suggests that, on average and holding financial distress constant, there is a 1.1% higher chance of observing going concern modification prior to the withdrawal compared to the first-time going concern modification. Again, this estimate is also not significantly different from zero. Thus, the results in Table 5-8 on auditor switching cannot be said to be robust in various subsamples of different auditor switching combinations. But the lack of significant results in the subsamples may be due to the small sample size in each of these regressions (see Appendix C to this thesis for a discussion).

5.6 Limitations and Sensitivity Analysis

Although the matched sample design in conjunction with using fixed effects analysis compensates for firm-specific factors that do not change and provides a robust method for investigating consistency it also has one serious drawback. It cannot draw inferences regarding a single observation – only about observations relative to other observations. Thus, the study is restricted to such statements that the auditors are, on average, inconsistent in assessing substantial doubt when auditors choose to issue a going concern modification compared to when the auditors choose to withdraw the going concern modification. To some degree, this is an ambiguous statement because it ignores the obvious question: what exactly is substantial doubt, and what probability of bankruptcy constitutes substantial doubt? Unfortunately, this study cannot completely answer this specific yet very important question. Furthermore, the use of the panel data limits the scope of inferences in at least one respect. It is possible the fixed effects may have a

decisive effect on whether auditors are consistent or not. While the matched data mitigates to a great extent the disruptive influence of the client's heterogeneity, it also virtually eliminates investigations into the effect of these idiosyncratic firm factors may play in auditors' consistency. To be sure, as is the case in any multivariate analysis, a model must be specified, so there is always room for misspecification of the basic probability model. This is especially a concern when modelling auditors' decisions regarding going concern modifications because auditors are privy to information not publically available and therefore not included in the model. Consequently, the model is a necessary simplification of the auditors' decision making and consideration must be given to the fact that not all possible factors that auditors consider in the going concern judgment are necessarily included nor fully captured by the existing variables in the model. In this regard, mitigating factors such as refinancing might not be fully captured by the variables included in the model. Furthermore, if the firms' choice of auditor is not a fixed effect, and also not a function of the existing control variables, there are potentially omitted variables that may affect the statistical results. If, however, the model is misspecified, the estimators can be interpreted as minimum ignorance estimators, because the estimators provide the best possible approximation with the current variables to the true probability function; however, the usual standard errors would be incorrect (see Long and Freeze 2006, p. 86). Consequently, the regressions in Tables 5-6 to 5-8 are replicated with robust standard errors and the results (not tabulated) are unchanged. Since there is overlap with regard to the going concern modification observations in Tables 5-6 to 5-8, the results are replicated with cluster-corrected standard errors. First, the observations are clustered on firms; second, the observations are clustered on the duplicated going concern modifications. In both cases, the inferences drawn are unchanged and compared to the main analysis, the evidence regarding H1 is stronger, there is still no evidence to reject H2, and the evidence regarding H3 is stronger.

Table 5-6 shows that Model 2 has a comparatively lower adjusted pseudo R^2 than both of Model 1 and 2 in Table 5-5. The low adjusted pseudo R^2 is also persistent in Model 2, even after including an indicator variable for observations that are associated with the withdrawal of the going concern modification. This may indicate that there is not only a shift in the intercept between Model 1 and 2 in Table 5-5 but also that there are significant differences in the slope of the other variables as well. Consequently, all regressions are

replicated with interaction terms between the WITHDRAWAL variable and the financial distress control variables (not tabulated).[82] Interestingly, the pseudo R^2 does not increase very much for any of the regression models (between 0 percentage points and 1.1 percentage points) and the adjusted pseudo R^2 in some cases decreases by as much as 2.7 percentage points. Consequently, adding slope intercepts on the financial distress variables does not increase the explanatory power of the model, nor does it explain the decrease in adjusted pseudo R^2 from Models 1 and 2 in Table 5-5 to Models 1 and 2 in Table 5-6.

The regressions are replicated without the time period indicator variables (not tabulated). The R^2 and adjusted R^2 for Models 1 and 2 in Table 5-6 and the remaining models in Tables 5-7 and 5-8 are comparable to when time period indicator variables were included. The WITHDRAWAL variable is now only marginally significant in Model 2, Table 5-6, but the variable is still significant with regard to those clients that switched auditors in Model 2, Table 5-8. Consequently, the overall conclusions hold. The regression specifications in Tables 5-6 to 5-8 are replicated with a normal logit model with robust standard errors and a variable that indicates how many years there were between the firm receiving the initial going concern modification and the withdrawal (not tabulated).[83] However, controlling for number of prior going concern modifications does not affect the inference with regard to H1, H2 and H3. First, this new variable is not significant in any of the other models in Tables 5-6 to 5-8. Second, the sign and statistical significance of the coefficient on the WITHDRAWAL variable is the same as in the main analysis across all models. Although when such a regression is run for Model 2 in Table 5-5, this variable is positive and marginally significant ($p<.10$, two-tailed). Consequently, there is some evidence to suggest that if there are a higher number of prior going concern modifications, the auditor has a *ceteris paribus* lower propensity to withdraw the audit opinion.

It is also important to bear in mind that the study only focuses on US audit clients with both an initial going concern modification and a subsequent withdrawal in the period 2001-2008. Firstly, it is a limitation of this study that the sample only includes firms with

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[82] Because of the difficulties in interpreting interaction effects in non-linear models, no attempt to interpret or present a commentary on the marginal effects of the individual interaction term in this model is provided (see discussion in Appendix C at the end of the thesis)

[83] See Table 5-1, Panel B, for an overview of the years between the initial going concern modification and the subsequent withdrawal.

both events, and this may introduce some sample selection bias if the within-firm variations over the firm observations are inherently different from other firms not selected. Secondly, this is a period that saw the dot-com bubble, the downfall of Arthur Andersen, and the onset of the Global Financial Crisis in 2007. Since the going concern judgments of auditors do not occur in a vacuum, the regressions are also replicated with a variable to control for the general market outlook. This variable captures the interest rate spread between 90-day AA financial commercial paper interest rates and the market yield on 3-month U.S. Treasury Securities at the time the auditor signed the audit report (not tabulated).[84] This will control for changes in macro-economic conditions that directly influence auditors' going concern judgment over what is captured in the time-period variables. Interestingly, the results show a higher degree of inconsistency between auditors' threshold for issuing first-time going concern modifications and their subsequent withdrawal. In Model 2, Table 5-6, the estimated effect on the withdrawal variable is 9.8%. In both Models 1 and 2, Table 5-7, the WITHDRAWAL is positive and marginally significant (p<.10, two-tailed) with an estimated effect of 8.4% and 8.3%, respectively. The variable, however, is not significantly different between the Big N auditor and non-Big N auditor subsamples. In both Models 1 and 2, Table 5-8, WITHDRAWAL is positive and significant (p<.05, two-tailed) with an estimated effect of 7.7% and 21%, respectively. The variable is significantly different between the same auditor and switch auditor subsamples at the marginal level (p<.10). Overall, and compared to the main analysis, the evidence in regarding H1 is stronger, there is still no evidence to reject H2, and the evidence concerning H3 is somewhat weaker.

5.7   Summary and Conclusion

A fundamental premise behind auditing standards is consistency in application, which in turn will ensure consistent audit reporting behaviour. However, standards that rely solely on broad principles with a lack of specific authoritative guidance are prone to be interpreted and applied inconsistently by auditors. That is because principles alone do not provide a sufficient structure to limit auditors' judgments in the application of the

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[84] As Bernanke (1990, p. 53) states: "Suppose that, for whatever reason, investors expect the economy to turn down in the near future; because this will increase the riskiness of privately issued debt, the current spread between private and safe public debt will be bid up. The commercial paper--Treasury Bill spread forecasts the future, according to this explanation, because it embodies whatever information the market may have about the likelihood of a recession." The data used to construct this variable is based on monthly data from the Federal Reserve.

principles to specific scenarios. Under the broad principles of SAS No. 59, the auditor is fundamentally faced with two decisions: first, assessing the probability that the client goes bankrupt at a future date; and second, whether this probability is higher or lower than what the auditor considers to be substantial doubt.

Whenever there is a possibility of interpreting information in different ways, inconsistencies will thrive. The imprecision in these principles may cause a lack of consistency in the auditors' thresholds for what constitutes substantial doubt and, consequently, a lack of consistency in whether to include a going concern modification in the audit report. This also has implications for how users of financial statements interpret audit reports.

This study empirically investigates auditors' assessment of the going concern modification and the "substantial doubt" threshold for when to issue and when to withdraw a modification. The sample consists of 1,544 observations from 386 US audit clients in the time period 2000-2008. The results indicate that both Big N auditors and non-Big N auditors are fairly consistent in their assessment of the substantial doubt criterion. The issue of inconsistency is most salient when a firm changes auditors. The results are disappointing, but unsurprising and a number of implications may be drawn from these findings. First, it appears that auditor switching leads to inconsistency – in other words, for a given client, different auditors assess substantial doubt differently and have different thresholds with regard to issuing and withdrawing going concern modifications. This suggests that even given the same auditing standard, different auditors apply the standard in a manner which leads to inconsistent audit outcomes. This is not a trivial issue. Inconsistencies would lead to incorrect occurrence or omission of a going concern modification which is costly to various stakeholders. The results further highlight the audit firms as an important structure for ensuring consistency, and that consistency is mainly an issue *between* audit firms.

Nevertheless, because of the sample selection and time period, there are some generalisations that might be too broad.[85] Future studies may wish to investigate other

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[85] It should also be noted that although the sample is end-conditioned on those firms that was issued with a going concern modification but did not go bankrupt and subsequently had their going concern modification withdrawn, focusing on firms that survived does not introduce survivorship bias per se with regard to the

periods or countries. Second, this study only focuses on *consistency* in auditors' assessment of substantial doubt but does not comment on the *accuracy* of their assessment. Since accuracy is key to audit quality, this may be a fruitful area for future research, bearing in mind that the auditors are not charged with predicting actual bankruptcy. Lastly, using panel data to control for audit client heterogeneity that is not observable provides a very robust methodology to avoid omitted variable bias, but the low number of observations provides some limitations on the validity of the additional analysis that was performed, and limits the potential to perform some analysis that would be interesting in its own right and for purpose of robustness. Thus research questions such as how consistency was impacted when Arthur Andersen's clients transferred to other audit firms and other similar research questions remain open and is left for future research.

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research question put forward. It is the auditors' judgment process that is of interest and not the performance of the audit clients themselves. Nevertheless, to the extent that auditors' decisions regarding the substantial doubt criterion are systematically different for those firms that went bankrupt compared to the firms in the samples of these studies, sample selection issues may still be a valid issue, and the results should be viewed with this in mind.

CHAPTER 6

Conclusion

FOREWORD: This chapter concludes the research conducted in this thesis. The purpose of this thesis was to examine the effectiveness of auditing standards in ensuring consistency of audit outcomes. Firstly, the results on consistency of auditors' reporting behaviour from the two studies conducted will be reviewed. Secondly, the chapter will consider implications of the results, provide suggestions for future research and conclude the thesis.

6.1 Introduction

The premise behind auditing standards is that they will lead to uniform audit processes and thus lead to consistent outcomes. This thesis provides information about consistency in audit outcomes in general, and auditors' thresholds for issuing going concern modifications in particular. Because the auditing standards relating to auditors' assessments of the going concern assumption are principles-based, there are factors in the audit environment that may cause auditors to interpret and apply the auditing standards differently. A central tenet of this thesis is that the network structure of the audit firm is an important facilitator of national and international consistency: a common audit methodology within an audit firm ensures common interpretation and application of the auditing standards. This chapter will discuss the results of the two studies conducted in this thesis and the resulting implications of the results for regulators and the profession, as well as avenues for future research.

The focus on the going concern modification as an outcome of the audit process, namely the audit report, is important because principles-based auditing standards allow auditors to exercise their judgment in the design of audit procedures. Irrespective of the different procedures utilised by auditors, the audit should arrive at the same audit opinion, given the principles laid down in the auditing standards.

6.2 Results

The research questions examined in study one (Chapter 4) relate to whether auditors are consistent in their reporting behaviour in an international setting. By evaluating auditors' reporting behaviour with respect to going concern modifications, the results indicate that there is a lack of consistency in audit reporting behaviour across countries. This suggests that even given near identical auditing standards, auditors in different countries apply standards differently, which leads to inconsistency in audit outcomes, which again may not be known or appreciated by users of audited financial statements. This lack of consistency, however, is found to be moderated by international audit firm networks, demonstrating an advantage of these networks beyond the individual national firm. The study also shows that the differences between countries in audit reporting behaviour have

decreased over the time period studied, suggesting a greater alignment in audit practices between countries over the period 2001 to 2006.

The research questions raised in the second study (Chapter 5) examine whether auditors are consistent in their assessment of substantial doubt. More specifically, the study looks at US auditors' substantial doubt thresholds for first-time issuance and withdrawal of going concern modifications. The US setting is used (as distinct from the international study in Chapter 4) due to difficulties in identifying a sufficiently large sample from other countries. This choice of a single country also has the advantage of limiting the influence of cross-sectional variation in the general audit environment. Auditors are found to be moderately inconsistent in their assessment of the substantial doubt criterion. The *ceteris paribus* probability of observing a going concern modification is 6.9% lower when the going concern modification is first issued, compared to when it is withdrawn. This suggests that auditors have a higher threshold for withdrawing the going concern modification compared to when it was first issued. The results indicate no substantial differences in the results between Big N and non-Big N auditors. However, when an audit client changes auditors, evidence of a lack of consistency is observed. In other words, for a given audit client, auditors from different audit firms assess substantial doubt differently. This suggests that, even with the same auditing standard in the same country, different auditors interpret the standard or apply the standard differently in a manner which leads to inconsistent audit outcomes.

Overall, both studies show evidence of inconsistency in audit outcomes. Without consistency in auditors' reporting behaviour, it is very difficult for a user of audit reports to determine where differences come from; economic differences, differences in auditing methods, interpretation of standards or even due to the auditors' independence. Uniformity in audit practice requires that audit firms develop methodologies consistent with national and international standards. But the standards that govern auditors' assessments of the going concern assumption are based exclusively on broad principles. Whenever there is a possibility of interpreting information in different ways, inconsistency thrives. Varying incentives and deterrents for reaching different conclusions in similar circumstances create inconsistencies over time and across geographical locations. The lack of specific guidelines and structure to restrict auditors' interpretations causes inconsistency in practice which, in turn, leads to inconsistent audit outcomes. Both studies confirm this

assertion. In study one, it was found that auditors are inconsistent in their reporting behaviour across countries. The results are consistent with differing levels of litigation risk and bankruptcy laws impacting auditor decision making. Similarly, in study two, it was found that auditors assess the substantial doubt threshold differently for the issuance of the initial going concern modification compared to when it is withdrawn.

It has been argued in this thesis that the audit firm networks, both at a national and an international level, act as facilitators of consistency through the use of a shared common approach to the audit. This common audit approach necessitates a common interpretation of auditing standards which are influenced by the networks' collective competence in terms of shared knowledge and expertise. In turn, when auditors execute the audit, they rely on the common audit approach and this ensures a sufficient structure for audits to be executed consistently. The results of the studies support this notion. In study one, it was found that the differences across countries were much smaller for auditors that were members of global audit firm networks, compared to the differences across countries in the reporting behaviour of domestically located audit firms. Similarly, in study two, it was found that auditors' differences in the substantial doubt threshold were driven by between-audit firm differences, and not by within-audit firm differences. The results highlight the role of the audit firm networks in providing the necessary structure for consistency in audit outcomes.

In addition, the thesis documents that the country differences have decreased over time, suggesting progress in light of the current harmonisation efforts of the audit profession. Despite widespread concerns about the market concentration of the large international audit firms, it appears that they have been the driving forces behind the harmonisation of audit reporting behaviour.

6.3   Implications of the Research Findings

Whether auditors are consistent and accurate in their auditing practices is clearly of interest to regulators, as outlined below. But the findings are also of importance to auditors and academic researchers. Although many studies have focused on the issuance of going concern modifications, very little has been known about those firms that have their going concern modification withdrawn, and how the audit decision regarding the modification threshold compares to when they received the initial going concern

modification. Furthermore, little has been known about whether the harmonisation of international auditing standards has led to more consistent audit reporting. This thesis has contributed to knowledge in these areas.

The studies contained in this thesis are concerned with factual statements that attempt to describe and explain inconsistencies in auditors' threshold for issuing going concern modifications. Nevertheless, based on the findings of this thesis, there are some unanswered normative questions that should be contemplated.

6.3.1 Implications for Regulators and Standard Setters

From a regulatory perspective, this study's evidence of inconsistencies in audit outcomes is of concern. A fundamental premise behind auditing standards is to ensure consistency in practice. Indeed, the international harmonisation efforts behind auditing standards rest on the presumption that these will lead to higher uniformity in practice. As the International Federation of Accountants (IFAC 2010) recently set out in its reply to the European Commission's Green Paper, *Audit Policy: Lessons from the Crisis*:

> "The international adoption of a common set of auditing standards will improve the comparability and transparency of financial information. This will ultimately improve the quality of financial information. In the global context, the transparency of financial information is dependent upon the uniformity of its assessment across multiple jurisdictions."

Both at a national and international level, inconsistencies may arise out of either deficient application of the auditing standards by auditors, or deficient standards with insufficient guidelines to ensure consistency in interpretation, and in turn, consistency in audit outcomes. Furthermore, inconsistencies are *prima facie* evidence of the existence of incorrect issuance or omission of going concern modifications. Incorrect audit reports carry unnecessary costs to a number of stakeholders. Irrespective of whether the causes of the inconsistencies are due to deficiencies on part of the auditor or the audit standards, the seriousness of a lack of consistency warrants that both standard setters and regulators reflect on the issue of inconsistency.

What level of inconsistency is acceptable? Consistency in the information provided by audit reports is a desirable characteristic. But as auditing is not an exact science, one may conclude that principles-based standards never will be interpreted and applied in a fully

consistent manner (Wustemann and Wustemann 2010). As shown in this thesis, principles-based auditing standards may be applied differently to identical issues by different auditors and this does not ensure consistency in the application of the auditing standards. That is because principles alone do not provide a sufficient structure to limit auditors' judgements in the application of the principles to the specific economic situations of clients. This does not mean consistent application by auditors is not to be desired. Nor does it imply that on a comparative basis there cannot be more consistency (or less inconsistency) between auditors. So if absolute consistency is unachievable, knowing at what level inconsistency stops being acceptable is a normative, albeit important, matter.

What exactly is substantial and significant doubt? Should more guidance be put into the standards to clarify these terms, or is it better to leave it to the professional judgements of auditors? Auditors' doubts about the viability and the correctness of the going concern assumption of a client could range from absolute to virtually no doubt. Due to the lack of specific guidance in the current standards, at what point on that continuum doubt should be considered substantial or significant, is an open question. If consistency in the application of auditing standards is strived for, more specific guidance needs to be provided by the standard setters. On the other hand, specific guidance can be circumvented, but it is difficult to evade the intended purpose of a principle. Furthermore, due to the flexibility of principles and the required use of professional judgement, the auditors have the capacity to give consideration to the particularities of individual clients. Another reason why principles are preferable to specific guidance is that it allows for the market to infer auditors' private information about the firm's underlying economics by virtue that auditors have some choice when guided by principles. Thus in relation to the current auditing standards for auditors' assessment of the going concern assumption, one must perhaps be willing to accept a certain level of inconsistency.

Should enforcement of auditing and accounting standards become more holistic at the global level? Interestingly, audit firm networks' common audit methodologies appears to provide a structure for auditors' judgments regarding the going concern assumption so as to ensure consistency in audit outcomes. Still, in the case of the principles-based standards relevant to auditors' going concern assessments, enforcement agencies have to accept that there will be circumstances where auditors will make different judgments even

when facing identical circumstances. The current auditing standards in relation to auditors' assessments of the going concern assumption are based on broad principles and therefore allow for differing interpretation. In the absence of specific guidance, enforcement agencies would find it difficult to judge whether an auditor's judgment regarding the going concern assumption does not conform to the broad principles of the standard. At the international level, this concern may be heightened given that regulation of the audit profession is primarily on the national level, despite the auditing standards being international in nature. Given this regulatory gap, it would be difficult to enforce international consistency in application of auditing standards, especially if there is no effective regulation and enforcement at a global level. The work of International Forum of Independent Audit Regulators (IFIAR) to promote international collaboration in regulatory activity is promising in this regard. Cross-border collaboration and exchange of information is especially important when it comes to regulatory inspections of audit firm networks that operate across national borders. Further, a common view or position among audit regulators would help to ensure international consistency in audit outcomes across those audit firms and networks that confine their operations to a single domestic market. International auditing standards coupled with globally consistent regulation would help alleviate information asymmetries which occur when countries' auditing and audit reporting vary in depth, scope, and quality. In a world where cross-border capital flows are rife, such asymmetries can give rise to economic uncertainties which also contribute to systemic risks in the marketplace (IFAC 2010). Although this thesis does not provide definitive answers to the questions raised above, it does provide valuable knowledge on the extent of consistency issues, particularly in the going concern context that is a valuable input to such discussions.

6.3.2 Implications for Audit Profession

This thesis emphasises the paramount importance of maintaining international consistency in reporting behaviour throughout the audit firm networks. The thesis also shows some evidence that there are consistency issues between different audit firms. The findings of this thesis also highlight the challenges faced by audit firms that operate domestically in achieving audit outcomes consistent with their counterparts in other countries. But the thesis also supports the notion that global audit firm networks are a facilitator of audit consistency across national borders through the use of a common audit methodology. This

suggests that professional cross-border association and a shared common methodology is successful in maintaining consistency in audit quality throughout the network.

6.3.3 Theoretical Implications

From a theoretical perspective, this study contributes to our knowledge and understanding of consistency in auditing in two areas that have received little attention. Firstly, the thesis contributes to knowledge of the international audit environment. The actions to harmonise auditing standards at an international level is based on the premise that uniform standards will result in uniform application of these standards across firms and national boundaries. This study is one of the first to provide such evidence by empirically investigating whether there is consistency in the application of auditing standards across countries, between audit firms and over time. It is important to understand that the majority of audit firms are networks between local offices that can have connections both at a national and an international level. This structure of the audit firm network allows for efficient sharing of knowledge and technology across national borders which in turn means that this structure affects audit reporting behaviour on an international scale. Secondly, the thesis provides information on auditors' consistency regarding the withdrawal of the going concern modification in comparison to when the same modifications were first issued. As previous research has shown, not all companies that receive a going concern modification go bankrupt, and it is therefore a natural extension to investigate what happens when auditors choose to withdraw the going concern modification. In this regard, the thesis shows that there is little inconsistency within audit firms, and that consistency is predominantly an issue between audit firms. The empirical findings related to the structure of the audit firm are relevant to future research investigating the role of the audit firm within the audit environment.

6.4 Potential Limitations

There are three areas of potential limitations relevant to this study. The first relates to the time period in which the study is conducted (2001-2006 for study one; 2000-2008 for study two). The harmonisation process of auditing and accounting standards has been going on for a number of years now and is, of course, not exclusive to this period. Furthermore, over the past decade, there have been a few disruptions to the auditing environment, including the downfall of Enron and concurrently Arthur Andersen, the dot-

com bubble, regulatory changes around the world, and the onset of the global financial crisis in late 2007. Although a large number of sensitivity analyses were conducted in both studies, it is difficult to rule out that the occurrence of these events in the time period under investigation has affected auditors' reporting behaviour in ways that have not been anticipated. Although this potentially weakens the link between these results and an underlying theoretical cause, it does not change the empirical results. From a regulatory perspective, knowledge about the level of auditors' consistency is important, irrespective of whether the underlying reasons for the differences and changes in consistency are known.

Second, a limitation is related to the databases and sources of data used in this thesis. To the extent that the databases differ systematically in the coverage of the countries, and the model is inadequate to control for these differences, the results herein may be affected. In addition, auditors have access to information which is not publicly available through databases or other sources. This represents difficulties in modelling auditor's actual judgments regarding the going concern assumption. Although this limitation is relevant to all empirical research on auditors' reporting behaviour that uses publicly available datasets, care have been given to alleviate this issue through research designs that lowers heterogeneity among observations, in effect reducing both sampling variability and sensitivity to unobserved bias.

The final potential limitation relates to the method by which the auditors' decision regarding the assessment of the going concern assumption is investigated. In this research, it is assumed that it is the same variables that constitute mitigating and contrary factors across countries, as well as at both the initial issuance of the going concern modification and the subsequent withdrawal. This may not necessarily be the case. But if it is not, then this would also imply inconsistency which is important to be document and for regulators to understand.

6.5 Conclusion and Further Research

This study finds conclusive support that there are inconsistencies in auditors' reporting behaviour. This conclusion is supported both at the national and international level. There is a strong support for the proposition that the structure of the audit firm is an important facilitator of consistency: a common audit methodology within an audit firm facilitates

common interpretation and application of the auditing standards. Different auditors assess doubt about the going concern assumption differently. Country differences are smaller among affiliates of global audit firm networks. This suggests that audit firm networks confer benefits beyond the firm both on a national and international scale. In addition, country differences have decreased over time, suggesting progress in light of the current harmonisation efforts of the audit profession.

Although the operations of policy makers, standard setters, auditors and audit clients have moved into the international realm, regulation and enforcement of auditing still predominately occurs at a national level. If a high level of consistency is a desirable characteristic, this is likely to be inadequate. The work of International Forum of Independent Audit Regulators (IFIAR) to promote collaboration in regulatory activity is promising in this regard. Besides regulation and enforcement, a discussion is needed as to whether it is desirable to have more specific guidance in the auditing standards related to auditors' assessment of the going concern assumption. The broad principles of the current standards do not seem to be adequate to ensure consistency between auditors in general and between auditors from different countries in particular.

Little research has to date been conducted on the withdrawal of the going concern modification and on audit reporting behaviour in an international setting. Future research opportunities in these areas are many. Research into misclassification rates regarding auditors issuing first-time going concern modifications to firms that subsequently do not go bankrupt exists (e.g. Altman 1982; Mutchler and Williams 1990; Citron and Taffler 1992; Geiger et al. 1998; Carey et al. 2011), but there is no identified research that examines misclassification rates regarding cases where the auditor withdraws the going concern modification and the firm subsequently became bankrupt. Future consideration could be directed to understanding the difference between the probability of receiving a going concern opinion given a previous going concern opinion and the probability of receiving a going concern opinion given a previous clean opinion. Moreover, future research in different settings and/or alternative research designs could aid in assessing the individual effects of litigation risk, independent threats and reputational costs on auditors' decision to withdraw the going concern modification, and how this possibly interacts with type and choice of auditor. The global audit regulatory arena is a complex, intricate and shifting domain. As Humphrey et al. (2009) notes, if the globalised nature of auditing is

to be oriented around audit practice, then it is important to study not only the institutions delivering that practice, but also the standard setters and regulators that monitor and shape the boundaries of audit practice.

Some natural extensions that flow from the events in recent years are how the comparative audit reporting behaviour of different countries was affected by the onset of the Global Financial Crisis in early 2007. Different countries were impacted differently, and so has their recovery, as well as differences in timing of their monetary (interest rate cuts by central banks) and fiscal (government expenditure and decreases in taxation rates) stimulus. The interaction between auditors' judgments and the clients' level of financial distress in relation to different and changing business environments is an interesting setting for future international comparative audit research.

Because of the research design in Chapter 4, there are some dimensions of the theoretical framework that were not explored. Extending the scope of the research in Chapter 4 to countries that vary in culture and that are members of different legal families would allow for an investigation of these important aspects of a globalised audit environment. As national culture and legal system origins by definition do not tend to change, understanding the influence of variation in national cultures and different legal systems on audit practices around the world may not only aid the current understanding, but more importantly help to guide the future decisions of audit firms, regulators and standard-setters.

APPENDIX A

Convergence in Reporting Behaviour among Global Audit Firm Networks: Evidence from Predicted Probabilities of Issuing Going Concern Modifications

FOREWORD: In the wake of globalisation, regulators have harmonised accounting and auditing standards based on the premise that uniform standards will lead to uniform application by audit firms. This study extends upon the research in Chapter Four and empirically investigates convergence – the increase in consistency – in audit reporting behaviour between and among national audit firms that are members of international audit networks. By evaluating the auditors' reporting behaviour with respect to going concern modifications, the results indicate that audit reporting behaviour has only increased in consistency (i.e. converged) when faced with clients under severe financial distress. Moreover, the study also documents that there is a significant movement in the distribution of audit reporting behaviour over time for audit firms that are members of international networks.

A.1 Introduction and Research Questions

Whether audit reporting behaviour is converging – specifically, whether the differences in audit reporting behaviour are getting smaller over time – is of great interest to policymakers and users of financial statements, as over a hundred countries now either use International Standards on Auditing (ISAs), or are in the process of implementing them into their national auditing standards (IFAC 2011a). The expectation from harmonisation is that users of audited financial statements can expect consistent reporting behaviour under ISAs. Currently it is not known whether the recent push for international convergence in auditing standards has resulted in convergence of auditing reporting behaviour: whether convergence in policy output (*de jure* convergence) leads to a convergence in policy outcomes (*de facto* convergence). Unsuccessful *de facto* convergence undermines the potential benefits of international auditing standards.

Convergence in auditing standards is not necessarily synonymous with convergence in implementation by auditors, as there are many intervening factors between a standard and the output of its application. For example, audit reporting behaviour may differ due to variation in litigation risk or bankruptcy regulation despite similar auditing standards. Audit quality has been shown to vary between countries with different levels of litigation risk, and absent reputational concerns, litigation risk provides incentives for both audit effort and truthful reporting (Melumad and Thoman 1990; Dye 1993; Schwartz 1997). Research shows that auditors in the United States and Australia have changed their audit reporting behaviour and become more likely to issue going concern opinions after 2001 (Geiger et al. 2006; Myers et al. 2008; Fargher and Jiang 2009). It is currently not known if this applies to other countries, but recent global events – such as a wave of corporate scandals across the world (e.g. Enron and WorldCom in the US, as well as OneTel and HIH Insurance in Australia), the subsequent demise of Arthur Andersen; regulatory changes (e.g. SOX in the United States, CLERP 9 in Australia and the Companies Act 2004 in the United Kingdom); and, in late 2007 the subprime crises – have transformed the global legal environment that auditors operate in and show that the matter of litigation risk is not unique to the United States (Fargher and Jiang 2009).

Some features of the current audit environment facilitate achievement of *de facto* convergence. Within each audit firm network,[86] benefits arise from consistent audit reporting and, consequently, may lead to observable similarities across the audit firm members of such an international network. First, it reduces moral hazard. By subjecting network affiliates to quality assurance that promotes consistent reporting behaviour, the reputation and the brand name of the network is protected (Lenz and James 2007). Second, consistency of audit reporting brings significant economies of scale when engaged in transnational audit appointments and when staff transfers between network affiliates take place. Third, as a requirement for an international network to achieve full membership in the Forum of Firms, the firms must demonstrate that they have in place a globally coordinated quality assurance program. Empirical evidence suggests that affiliated firms of an international audit network share similar characteristics in terms of specialisation (Carson 2009). Further, conditions that facilitate consistency between international audit firm networks have emerged. All members of the Forum of Firms are committed to the use of ISAs, the International Federation of Accountants' (IFAC) Code of Ethics for Professional Accountants for transnational audits, and the International Auditing and Assurance Standards Boards' (IAASB) International Standard on Quality Control 1. Furthermore, many of the world's major capital markets have come to accept and expect the use of ISAs in audits of foreign companies.

Convergence in audit reporting behaviour means it is becoming increasingly similar over time with respect to one or more indicators. The concept of convergence (or its opposite, divergence) has a dynamic nature; its static counterpart is consistency. Here convergence means increasing consistency and divergence mean decreasing consistency. The degree *of* convergence increases with the extent that audit reporting behaviour of audit firms become increasingly similar to each other over time. The direction of convergence, by contrast, indicates the extent to which convergence coincides with an upward or downward shift in the level of audit reporting behaviour. In this analysis, both the degree and direction of convergence in audit reporting behaviour among audit firms that are members of international networks is investigated. Two research questions are raised:

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[86] The audit profession itself – through the Global Public Policy Symposium – has defined the leading international audit networks to consist of the current six largest audit firms (DiPiazza et al. 2006); that is, the Big 4 firms as well as BDO and Grant Thornton.

R1: Has audit reporting behaviour among national audit firms in international networks converged?

R2: Has the average level of audit reporting behaviour among national audit firms in international networks changed?

A.2 Measuring Audit Reporting and Convergence

The method is broken down into two stages, as audit reporting behaviour is a latent variable (i.e. not observable). The first stage operationalises and measures audit firms' audit reporting behaviour in terms of the predicted probability to issue a going concern modification for financially distressed firms. The second stage measures the convergence in predicted probability. Both stages of the method, as well as the sample, are discussed below.

A.2.1 Method Stage One: Measuring Audit Reporting Behaviour

Going concern modifications are ultimately a manifestation of audit reporting behaviour. This analysis operationalises audit reporting behaviour as the predicted probability that an audit firm will issue a going concern modification given certain financial distress characteristics. The going concern modification is an appropriate frame to investigate convergence in audit reporting behaviour. The auditor's report plays a critical role in warning market participants of a firm's ability to continue as a going concern (DeFond et al. 2002; Geiger et al. 2006): it should not be a matter for negotiation between the auditor and the company (as distinct to mere disagreements with management, which can be negotiated), and it involves subjective judgment on auditors' part in evaluating and deciding the threshold at which the evidence becomes so negative as to warrant the inclusion of a going concern modification in the audit report (Levitan and Knoblett 1985). Consistent with prior research (e.g. Raghunandan and Rama 1995; Behn et al. 2001; DeFond et al. 2002; Geiger and Rama 2003; Carey and Simnett 2006), the sample in this study is restricted to financially distressed audit clients.[87] Financially distressed firms are defined in this analysis as firms with a current year loss.[88] The sample is limited to three

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[87] Investigations of going concern opinion decisions should be conducted on samples that have been partitioned into stressed and non-stressed categories because auditors' decision predicament are different for stressed and non-stressed companies (Hopwood et al. 1994).

[88] How distressed firms are operationalised within the literature varies. For example, some papers (e.g. DeFond et al. 2002; Carey and Simnett 2006) use one, two or more characteristics – e.g. loss and/or negative cash flow – other papers (e.g. Krishnan and Krishnan 1996; Fargher and Jiang 2009) use a distress

countries: Australia, the United Kingdom and the United States. These countries, for all practical purposes, have identical audit requirements with respect to the auditor's going concern evaluation and subsequent reporting decision. Moreover, the annual financial statements in these countries are prepared on the premise that organisations will continue operations as a going concern. The similarities in the institutional environments of these three countries strengthen the internal validity of the analysis.[89] Six years of data were obtained for the time period 2001 to 2006. A total of 11,017 firm-year observations, excluding financial firms,[90] fit the criteria of reporting a current year loss and the financial and audit data required to run the model specified below.[91]

A binary logit model of going concern modifications can be motivated by invoking audit reporting behaviour as a latent variable. The going concern modifications can only be observed in two states: an auditor has issued a going concern modification, or the auditor has not. Yet, the observed going concern modifications are not issued under identical circumstances. While audit reporting behaviour cannot be directly observed, at some point a change in audit reporting behaviour will result in a change in what is observed: namely, going concern modifications. For example, as the relative magnitude of an indicator of financial distress increases, it is reasonable that an auditor's propensity to issue a going concern modification also increases. At some point, that propensity would cross a 'threshold' that would result in the auditor issuing a going concern modifications. More formally, let y=1 if the client receives a going concern modification, and y=0 otherwise. In this model, the latent variable y* – namely, audit reporting behaviour – determines the value of the observed binary variables y – that is, going concern modifications – according to the relationship y = 1 if y* > τ and y = 0 if y* ≤ τ, where τ is the *threshold*.

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[89] or bankruptcy prediction model in order to identify the sample of distressed firms. To the extent that both methods identify distressed firms, the sample selection criteria should be invariant to any inferences drawn, as the sample stratification is exogenous.

[89] These three countries are all English-speaking and issue their respective auditing standards in English, all have a common law legal system, and all three have developed economies with well-established capital markets and an entrenched auditing profession that play a similar economic role. Consequently, the countries' institutional characteristics are likely to have a similar impact on auditor reporting behaviour.

[90] Financial firms have a relatively small portion of their assets in tangible assets and also have short term obligations often in excess of shareholders' funds. These firms are also subject to various forms of regulation and supervision to specifically guard against unsound practices. For these reasons, financial firms (GICS Sector Code 40) were excluded.

[91] Australian financial data is drawn from Aspect Financial and audit data from the UNSW Audit Fee Database; the United Kingdom, financial data from Compustat Global, and audit data obtained from MergentOnline and various company websites; the United States, financial data was collected from Compustat North America, and audit data from Audit Analytics.

Assume that $\tau = 0$ and that e is independent of $\mathbf{x}$, and that the distribution of e, call it G(.), is symmetric about 0, then:

$$
\begin{aligned}
\Pr(y = 1 \mid \mathbf{x}) \quad &= \Pr(y^* > 0 \mid \mathbf{x}) \\
&= \Pr(e > - (\beta_0 + \mathbf{x}\boldsymbol{\beta}) \mid \mathbf{x}) \\
&= 1 - G\,(-(\beta_0 + \mathbf{x}\boldsymbol{\beta})) \\
&= G\,(\beta_0 + \mathbf{x}\boldsymbol{\beta}) \tag{5}
\end{aligned}
$$

Where:
$\mathbf{x} = x_1 + x_2 + \ldots + x_k$
$\mathbf{x}\boldsymbol{\beta} = \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k$

Further, assuming that the $\mathrm{Var}(e \mid \mathbf{x}) = \pi^2 / 3$, the logit model is given as:

$$\Pr(y = 1 \mid \mathbf{x}) = \exp(\mathbf{x}\boldsymbol{\beta})/(1+\exp(\mathbf{x}\boldsymbol{\beta})) = 1/ (1+\exp(- \mathbf{x}\boldsymbol{\beta})) \tag{6}$$

In this analysis, the probability to issue a going concern modification is taken to be a function of the following variables:

$$
\begin{aligned}
\Pr(\text{OPINION}=1 \mid \mathbf{x}) = f(&\beta_0 + \beta_1\text{PBANK} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\Delta\text{LEV} + \beta_5\text{CURRENT} + \\
&\beta_6\text{WC} + \beta_7\text{QUICK} + \beta_8\text{ROA} + \beta_9\text{MATERIALS} + \beta_{10}\text{INFOTECH} + \beta_{11}\text{LLOSS} + \\
&\beta_{12}\text{NEGEQ} + \beta_{13}\text{LOPINION} + \boldsymbol{\beta_{14}}\textbf{AUDITFIRM}) \tag{7}
\end{aligned}
$$

Where:

OPINION = 1 if a firm receives a GC modified opinion, 0 otherwise

PBANK = the Zmijewski (1984) score measuring the probability of bankruptcy

SIZE = the natural logarithm of year-end total assets in USD millions (where necessary using end of year exchange rates)

LEV = end of year total liabilities divided by end of year total assets

ΔLEV = end of year leverage divided by beginning of year leverage minus 1

CURRENT = end of year current assets divided by end of year current liabilities

WC= end of year working capital to end of year total assets

QUICK = end of year cash and short term investments divided by end of year current liabilities

ROA = end of year loss divided by end of year total assets

MATERIALS = 1 if the firm belongs in the GICS materials sector, 0 otherwise

INFOTECH = 1 if the firm belongs in the GICS information technology sector, 0 otherwise

LLOSS= prior year loss; 1 if the firm reported a loss in the prior financial year, 0 otherwise

NEGEQ= 1 if the firm's end of year total liabilities is greater than its end of year total assets, 0 otherwise.

LOPINION = prior year audit opinion; 1 if the firm received a going concern modified opinion in the prior financial year, 0 otherwise

AUDITFIRM= country and time-period specific indicator variable for each audit firm

The variables have been used in prior literature and similar models have shown acceptable explanatory power (See Menon and Schwartz 1987; DeFond et al. 2002; Carey and Simnett 2006). As noted by Dopuch et al. (1987), such models are suitable for assessing

the extent to which going concern modifications could be expected, based on publicly available data and for *ex ante* comparison purposes between auditors.

Without the assumptions about the mean and the variance of ε, the magnitude of βs in the logit model cannot be interpreted directly. This is because the βs reflect both the relationship between the independent variables and audit reporting behaviour (y*), and the identifying assumptions regarding the mean and variance of ε. The probability that a going concern modification is issued, however, is an estimable function and invariant to the identifying assumptions of the model above and can therefore be interpreted without concern for the arbitrary scale for ε (Long 1997).[92]

Thus using probabilities as the focus for analysis, rather than the βs, allows for interpretation of how the parameters correspond to meaningful changes in going concern modifications. Within this frame, and by fixing the control variables at a given value, comparable audit firm probabilities for issuing a going concern opinion for an identical, albeit hypothetical, client may be predicted by shift in the model intercept by the variables denoted AUDITFIRM. Consequently, a distribution of audit firms' predicted probabilities to issue going concern modifications, given the same underlying client characteristics, is obtained. The characteristics of the sample countries also ensure that these predicted probabilities are obtained under near identical audit requirements with regard to assessing the going concern assumption and the economic role played by auditors.

It would be unrealistic, however, to expect the same dispersion in audit firms' predicted probabilities to issue a going concern modification irrespective of client variables and the relative level of the distress they signify. In other words, there may be differences in disparity among audit firms depending on whether the clients show evidence of more or less financial distress. Thus, the audit firms' predicted probabilities to issue a going concern modification is obtained by holding the control variables that represent the audit client characteristics at four different combinations: the mean, median, negative (positive) model coefficients at their 25th (75th) percentile value, and negative (positive) model

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[92] Since, in practice, all information relating to the auditors' judgment process with respect to going concern modifications cannot be gathered or known, deterministic predictions of the issuance of going concern modifications given certain financial characteristics cannot be made. On the other hand, predicting the probability of observing going concern modifications given certain financial characteristics, is unproblematic insofar as the assumptions made about the information that are not observed, is not erroneous.

coefficients at their 10th (90th) percentile value.[93] These four 'archetype' combinations of client values are hereafter labelled mean, median, moderate and extreme, respectively. Thus, allowance is made for the non-linearity in predicted probabilities when audit client characteristics change and become more financially distressed.

A.2.2 Method Stage Two: Measuring Indicators of Convergence

For a measurement of degree of convergence, the concepts of β-convergence and σ-convergence are appropriate and widely used within the economics literature.[94] These concepts are related but deal with different distribution characteristics.

β-convergence focuses on the mobility, or the change in position, within the distribution. This can be measured by comparing initial base-year values with subsequent rates of change. If the observations with below average initial values have relatively higher (lower) rates of positive (negative) change, then convergence occurs. In other words, those observations with low initial values "catch up" to those with higher values. Because this concept is often measured as the cross-sectional correlation between initial values and subsequent rate of change, this type of convergence is often labelled β (beta) convergence. A more comprehensive measure is found in looking at the dispersion in the variance or standard deviation of the distribution. Because the letter σ (sigma) is a common symbol for the standard deviation, this type of convergence is called σ- convergence. However, β-convergence is not a sufficient condition for σ-convergence (Friedman 1992). Quah (1993) and Friedman (1992) both suggest that σ-convergence should be of interest since it directly tests whether the variance of the distribution is becoming smaller. Still, β-convergence has remained a primary focus of the empirics in the economics literature, perhaps because, intuitively, it would seem to be a necessary condition for σ-convergence (Young et al. 2007; Furceri 2005), and because there are aspects of β-convergence not captured by that of σ–convergence (Boyle and McCarthy 1997).

However, the statistical tendency of historically high or low change rates to be followed by more moderate rates may just be an example of 'regression towards the mean' as there

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[93] The model coefficients refer to the coefficients of Model 2, Table A-3, and the variable values are depicted in Table A-1.

[94] In economics, the convergence literature usually refers to the increasingly large literature typified by the seminal papers by Barro and Sala-i-Martin (1992) and Mankiew et al. (1992) (See Temple 1999; Islam 2003) but the application has spread beyond economics. The convergence metrics have also been applied at a firm-level.

may be enough fluctuation around the mean (including higher or lower change rates among those audit firms that were initially 'mediocre') to maintain the same overall dispersion (Friedman 1992; Quah 1993). To overlook this possibility would be fallacious. That said, β-convergence is a necessary condition, even if it does not automatically imply σ-convergence, and this paper, with respect to degree of convergence, investigates both mobility (β-convergence) and changes in dispersion (σ-convergence) of audit reporting behaviour between audit firms that are members of international networks.

σ-convergence is investigated by testing if the standard deviation of predicted probabilities of issuing a going concern opinion is smaller in the latter period than in the former, against the null hypotheses of no-convergence. Because the distributions in the two periods are not independent, the likelihood ratio test statistic developed by Carree and Klomp (1997) is used. This test statistic is a function of the variance in each period as well as the covariance of predicted probabilities in the two periods. The test statistic is defined as:

$$T = (N - 2.5)\ln\left(1 + \frac{1}{4}\frac{\left(\hat{\sigma}^2_{0103} - \hat{\sigma}^2_{0406}\right)^2}{\hat{\sigma}^2_{0103}\hat{\sigma}^2_{0406} - \hat{\sigma}^2_{0106}}\right)$$

(8)

where N is the number of audit firms, $\hat{\sigma}^2_{0103}$ is variance of predicted probabilities in period 2001-2003, $\hat{\sigma}^2_{0406}$ is the variance of predicted probabilities in period 2004-2006, and $\hat{\sigma}^2_{0106}$ is the covariance of the predicted probabilities (y) over the two periods, $\hat{\sigma}_{0106} = \sum_i (y_{i0103} - \bar{y}_{0103})(y_{i0406} - \bar{y}_{0406})/N$ The test statistic is χ^2 distributed with 1 degree of freedom.

β-convergence is examined by regressing initial predicted probabilities in the 2001-2003 period on the subsequent *change* in the predicted probabilities:

Initial Predicted Probabilities = $\beta_0 + \beta_1 \Delta$ Predicted probabilities + ε (9)

β-convergence would be present if β_1 is negative, suggesting that those observations with low (high) initial values get closer to those observations with higher (lower) values, because low initial values would exhibit large positive changes whereas high initial values would exhibit negative or low positive changes.

The measurement of direction of convergence is estimated by an upward or downward shift in the mean predicted probability of issuing a going concern opinion between the two time periods. Within the context of this analysis, the direction of the convergence can generally be attributed to the "strictness" and "leniency" in the application of "contrary" and "mitigating" factors in the auditing standards relevant to the evaluation of the going concern assumption. For example, a *ceteris paribus* upward (downward) shift in the mean predicted probability of issuing a going concern would suggest that auditors put more (less) emphasis and weight on "contrary" factors and less (more) on "mitigating" factors as found in the auditing standards. Convergence at the top or bottom presupposes therefore both a decrease of standard deviation and a shift of the mean.[95]

Thus, by using a sample of 11,017[96] distressed audit firm clients from eighteen national audit firms – representing the six large international audit networks in three Anglo Saxon countries – over the time period 2001 to 2006, a logit model is fitted and the probability of issuing a going concern modification is predicted for each audit firm over two different time periods. Subsequently, it is possible to investigate the degree as well as the direction of convergence in audit reporting behaviour with respect to going concern modifications, by investigating changes in the distribution properties of the audit firm's probabilities to issue going concern modifications.

A.3 Results

A.3.1 Descriptive Results

Table A-1 presents descriptive results on the full sample for the client variables used to estimate the going concern opinion base model. All continuous variables have been winsorised at the 95th percentile and at the 5th percentile because financial ratios tend to be skewed (Horrigan 1965; Deakin 1976; Frecka and Hopwood 1983) and in particular when

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[95] Without considering the advantages and disadvantages of an upward or downward shift in the mean predicted probabilities for a given level of client characteristics, one can, however, state that, *ceteris paribus*, a downward shift in the mean predicted probabilities will suggest an increase in auditor's Type II errors, but a decrease of Type I errors, with respect to evaluation of the going concern assumption.

[96] The sample 11,017 observations in this appendix is based on the sample of 19,157 observations in Chapter Five of which 11,111 observations were audited by members of global audit firm networks and 94 of the observations were audited by Arthur Andersen. The Arthur Andersen observations are excluded from this chapter.

Table A-1: Descriptive Statistics for Base Model (n=11,017)

Variable	Mean	Median	10th percentile	25th percentile	75th percentile	90th percentile	Min	Max	St Dev.	Skewness
OPINION	0.122	0	0	0	0	1	0	1	-----	-----
PBANK	-1.206	-1.622	-4.342	-3.127	0.041	2.597	-5.002	5.584	2.675	0.890
ASSETS (US$ Mil.)	450.527	89.596	5.826	20.045	371.540	1,463.752	2.950	3,388.154	856.251	2.539
SIZE	4.498	4.495	1.762	2.998	5.918	7.289	1.082	8.128	1.957	0.062
LEV	0.527	0.469	0.091	0.216	0.752	1.061	0.050	1.397	0.371	0.725
ΔLEV	0.241	0.086	-0.321	-0.049	0.357	1.033	-0.530	1.945	0.575	1.566
CURRENT	3.354	1.931	0.677	1.125	4.054	8.594	0.437	13.719	3.483	1.798
WC	0.253	0.211	-0.105	0.030	0.480	0.708	-0.278	0.812	0.299	0.230
QUICK	2.320	0.724	0.039	0.159	2.863	7.655	0.014	12.569	3.412	1.892
ROA	-0.278	-0.142	-0.789	-0.373	-0.045	-0.015	-1.240	-0.007	0.334	-1.663
MATERIALS	0.121	0	0	0	0	1	0	1	-----	-----
INFOTECH	0.263	0	0	0	1	1	0	1	-----	-----
LLOSS	0.745	1	0	0	1	1	0	1	-----	-----
NEGEQ	0.116	0	0	0	0	1	0	1	-----	-----
LOPINION	0.091	0	0	0	0	0	0	1	-----	-----

Notes to Table A-1:
1. Variables are winsorised at the 5% and 95% percentile of the original distributions of independent variables. The reported values are post-winsorising.
2. Variable Definitions:

OPINION = 1 if a firm receives a GC modified opinion, 0 otherwise.
PBANK = the Zmijewski (1984) score measurement of bankruptcy.
SIZE = the natural logarithm of year-end total assets in USD millions.
LEV = end of year total liabilities divided by end of year total assets.
ΔLEV = end of year leverage divided by beginning of year leverage minus 1.
CURRENT = current assets divided by current liabilities at end of year.
WC= end of year working capital to end of year total assets.

QUICK = end of year cash and ST investments divided by end of year current liabilities.
ROA = end of year loss divided by end of year total assets.
MATERIALS = 1 if the firm belongs in the materials sector as defined by GICS, 0 otherwise.
INFOTECH = 1 if the firm belongs in the information technology sector as defined by GICS, 0 otherwise.
LLOSS= 1 if firm had a loss in previous fiscal year, 0 otherwise.
NEGEQ= 1 if a firm's end of year total liabilities are greater than its end of year total assets, 0 otherwise.
LOPINION = 1 if firm received a GC modified opinion in previous fiscal year, 0 otherwise.

applied to "abnormal" firms – such as financially distressed firms.[97] Table B-1 shows that 12.2% of the observations in the sample received a going concern modification, and that 9.1% of the observations in the sample received a going concern modification in the preceding year.

The mean and median firm size, measured in total assets, is US$450.527 million and US$89.596 million, indicating a skewed distribution and therefore justifying the use of log assets in the multivariate analysis. The mean and median values for LEV are 0.527 and 0.469, respectively, and the median for ΔLEV is 0.086. The three liquidity measures – CURRENT, WC and QUICK – display mean values of 3.354, 0.253 and 2.320, and median values of 1.931, 0.211, and 0.724 respectively. Given these are all loss-making firms, net income to total assets (ROA) exhibits a mean of -0.278 and a median of -0.142. Further, Table A-1 shows that 74.5% of the firms had a loss in the preceding year (LLOSS) and that 11.6% of the firms have negative equity (NEGEQ). Table A-1 also shows that 12.1% of the firms in the sample belong to the materials sectors (MATERIALS), and that 26.3% of the firms are in the information technology sector (INFOTECH).

Table A-2, Panels A to D, presents descriptive statistics on the number of clients for each audit firm, as well as how many of these that received a going concern modification. The audit firms in United States are represented with a total of 7,435 clients (742 with going concern modifications), whilst audit firms in the United Kingdom and Australia are represented with 1,560 (180 with going concern modifications) and 1,902 (420 with going concern modifications) clients, respectively. The smallest number of clients for any one of the audit firm within a single time period is 64, and the smallest number of going concern modifications for an audit firm is 9. In contrast, the highest number of clients for an audit firm is 1,188, and the highest number of clients with going concern modifications is 116.

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[97] Since the distribution of client characteristics is heavily influenced by outliers, winsorising the client characteristics is necessary in order to obtain a Model with coefficients that are more robust to outliers. Note that it is only the distribution of client characteristics that the Model is based upon that are winsorised, not the predicted audit firm probabilities. Nevertheless, all parts of this analysis were re-performed without winsorising the client characteristics (not reported), and the overall results are qualitatively similar.

Table A-2: Audit Firm Clients and Going Concern Observations

Panel A: United States

Audit firm	2001-2003 Clients	(GC)	2004-2006 Clients	(GC)	Total Clients	(GC)
DT	732	(80)	418	(39)	1,150	(119)
EY	1,188	(116)	872	(47)	2,060	(163)
KPMG	854	(111)	461	(32)	1,315	(143)
PWC	935	(70)	517	(31)	1,452	(101)
BDO	395	(69)	317	(44)	712	(113)
GT	445	(75)	301	(28)	746	(103)
Total	4,549	(521)	2,886	(221)	7,435	(742)

Panel B: United Kingdom

Audit firm	2001-2003 Clients	(GC)	2004-2006 Clients	(GC)	Total Clients	(GC)
DT	117	(18)	110	(18)	227	(36)
EY	148	(16)	81	(14)	229	(30)
KPMG	216	(22)	144	(13)	360	(35)
PWC	270	(18)	144	(16)	414	(34)
BDO	78	(9)	64	(13)	142	(22)
GT	99	(9)	89	(14)	188	(23)
Total	928	(92)	632	(88)	1,560	(180)

Panel C: Australia

Audit firm	2001-2003 Clients	(GC)	2004-2006 Clients	(GC)	Total Clients	(GC)
DT	135	(27)	116	(24)	251	(51)
EY	253	(53)	228	(61)	481	(114)
KPMG	217	(51)	194	(40)	411	(91)
PWC	212	(25)	174	(27)	386	(52)
BDO	99	(25)	120	(49)	219	(74)
GT	66	(14)	88	(24)	154	(38)
Total	982	(195)	920	(225)	1,902	(420)

Panel D: All Countries

Audit firm	2001-2003 Clients	(GC)	2004-2006 Clients	(GC)	Total Clients	(GC)
DT	984	(125)	644	(81)	1,628	(206)
EY	1,589	(185)	1,181	(122)	2,770	(307)
KPMG	1,287	(184)	799	(85)	2,086	(269)
PWC	1,417	(113)	835	(74)	2,252	(187)
BDO	572	(103)	501	(106)	1,073	(209)
GT	610	(98)	478	(66)	1,088	(164)
Total	6,459	(808)	4,438	(534)	10,897	(1,342)

A.3.2 Analytical results

Table A-3, Models 1 and 2, shows the estimated logit model, with and without audit firm indicator variables respectively. The estimated logit model shows a reasonable explanatory power with adjusted pseudo R^2 of 38.6% in Model 1, and R^2 38.5% in Model 2 when audit firm dummies are included (coefficients are included in a supplementary table at the end of this appendix).[98] PBANK, SIZE, CURRENT, WC, QUICK, ROA, INFOTECH, LLOSS, LOPINION are significant (p<.05, two-tailed) in both models, MATERIALS is marginally significant (p<.10, two-tailed) in Model 1 but not in Model 2. LEV, ΔLEV and NEGEQ are not significant in both models. By holding all control values stable in different 'archetype' combination, the predicted probabilities for each country and time-period specific audit firms are obtained. These are presented in Table A-4.

When holding the audit client variables at their mean as per Table A-1, the average (median) audit firm probability of issuing a going concern is 6.6% (6.0%). The minimum (maximum) observed predicted probability is 3.1% (15.6%) of issuing a going concern modification. When holding the audit client variables at their median values as per Table A-1, the average (median) predicted probability of issuing a going concern is 5.2% (4.7%), and the minimum (maximum) observed predicted probability of issuing a going concern modification is 2.4% (12.7%). When the client characteristics are set at moderate values, and thus represent an audit client with a higher degree of financial distress, the average (median) predicted probability of issuing a going concern modification is 23.9% (22.6%). The minimum (maximum) observed predicted probability is 12.8% (46.1%) of issuing a going concern modification. When the client distress characteristics are set at extreme values, and thus represent the characteristics of an audit client that is very likely to obtain a going concern modification, the average (median) predicted probability of issuing a going concern is 74.6% (74.7%). The minimum (maximum) observed predicted probability is 59.6% (89.6%) of issuing a going concern modification. Unsurprisingly, the audit firms' predicted probabilities become higher when the variables are set at values that are indicative of higher financial distress.

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[98] The measure of fit labelled pseudo R^2 and adjusted pseudo R^2 refers to the MacFadden R^2 and MacFadden's adjusted R^2 respectively.

Table A-3: Logit Model of Going Concern Modifications

Variables	ALL FIRMS Model 1				ALL FIRMS Model 2			
	Coef.	Std. Err.	z	P>|z|	Coef.	Std. Err.	z	P>|z|
CONSTANT	-2.114	.284	-7.440	.001	-2.652	.387	-6.860	.001
PBANK	0.115	.045	2.560	.010	0.117	.046	2.560	.011
SIZE	-0.186	.024	-7.870	.001	-0.163	.028	-5.780	.001
LEV	0.122	.302	0.400	.687	0.214	.308	0.700	.487
ΔLEV	-0.032	.070	-0.460	.643	-0.063	.072	-0.890	.375
CURRENT	0.144	.049	2.950	.003	0.135	.049	2.720	.006
WC	-2.558	.209	-12.210	.001	-2.425	.218	-11.140	.001
QUICK	-0.157	.048	-3.290	.001	-0.163	.049	-3.370	.001
ROA	-1.360	.217	-6.270	.001	-1.431	.221	-6.470	.001
MATERIALS	0.192	.111	1.730	.083	0.115	.117	0.990	.324
INFOTECH	-0.540	.100	-5.380	.001	-0.516	.103	-5.040	.001
LLOSS	0.279	.105	2.660	.008	0.248	.106	2.330	.020
NEGEQ	0.183	.158	1.160	.246	0.174	.159	1.100	.273
LOPINION	2.646	.092	28.680	.001	2.604	.094	27.810	.001
Country-period audit firm indicator variables	No				Included			
N	11,017				11,017			
Pseudo R^2	.389				.397			
Adj. Pseudo R^2	.386				.385			
Log likelihood	-2493.51				-2461.56			
Prob>chi2	.001				.001			

Notes to Table A-3:

1. All p-values two-tailed.

2. Coefficients for individual, period specific audit firms at the national level are presented in a supplementary table at the back of this appendix.

Table A-4: Individual Audit Firm Predicted Probabilities of Issuing a GC Modification

Panel A: United States

Financial Distress: Audit firm	MEAN 2001-2003	MEAN 2004-2006	MEAN ΔPr.	MEDIAN 2001-2003	MEDIAN 2004-2006	MEDIAN ΔPr.	MODERATE 2001-2003	MODERATE 2004-2006	MODERATE ΔPr.	EXTREME 2001-2003	EXTREME 2004-2006	EXTREME ΔPr.
DT	.069	.058	-.011	.055	.046	-.009	.255	.221	-.034	.775	.741	-.034
EY	.061	.043	-.018	.049	.034	-.015	.230	.171	-.059	.751	.675	-.076
KPMG	.074	.044	-.031	.059	.035	-.025	.271	.175	-.096	.789	.681	-.109
PWC	.051	.053	.002	.040	.042	.002	.198	.204	.006	.713	.721	.008
BDO	.053	.056	.003	.042	.044	.002	.206	.214	.008	.723	.733	.010
GT	.074	.041	-.033	.059	.032	-.027	.269	.164	-.105	.788	.665	-.123

Panel B: United Kingdom

Financial Distress: Audit firm	MEAN 2001-2003	MEAN 2004-2006	MEAN ΔPr.	MEDIAN 2001-2003	MEDIAN 2004-2006	MEDIAN ΔPr.	MODERATE 2001-2003	MODERATE 2004-2006	MODERATE ΔPr.	EXTREME 2001-2003	EXTREME 2004-2006	EXTREME ΔPr.
DT	.060	.075	.015	.026	.060	.034	.134	.273	.139	.609	.791	.182
EY	.050	.084	.033	.040	.067	.027	.197	.297	.100	.712	.810	.098
KPMG	.047	.058	.012	.037	.046	.009	.184	.222	.038	.695	.743	.048
PWC	.050	.066	.016	.040	.052	.013	.195	.245	.050	.709	.766	.057
BDO	.032	.078	.046	.025	.063	.037	.133	.282	.150	.606	.799	.192
GT	.031	.054	.023	.024	.043	.019	.128	.208	.081	.596	.726	.131

Panel C: Australia

Financial Distress: Audit firm	MEAN 2001-2003	MEAN 2004-2006	MEAN ΔPr.	MEDIAN 2001-2003	MEDIAN 2004-2006	MEDIAN ΔPr.	MODERATE 2001-2003	MODERATE 2004-2006	MODERATE ΔPr.	EXTREME 2001-2003	EXTREME 2004-2006	EXTREME ΔPr.
DT	.071	.099	.028	.057	.080	.023	.262	.337	.075	.782	.837	.055
EY	.078	.092	.014	.062	.074	.012	.281	.320	.039	.798	.826	.028
KPMG	.058	.072	.014	.040	.057	.017	.220	.263	.043	.740	.783	.043
PWC	.036	.072	.036	.028	.058	.029	.146	.264	.118	.633	.783	.151
BDO	.095	.156	.061	.077	.127	.050	.328	.461	.133	.831	.896	.065
GT	.072	.112	.039	.058	.090	.032	.266	.368	.102	.785	.854	.069

Panel D: Descriptive Statistics for Audit Firm's Predicted Probabilities of Issuing a GC Modification at Various Level of Financial Distress

Financial Distress:	MEAN	MEDIAN	MODERATE	EXTREME
Mean	.066	.052	.239	.746
Median	.060	.047	.226	.747
Min	.031	.024	.128	.596
Max	.156	.127	.461	.896

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Table A-5, Panels A and B, presents the results with respect to σ-convergence for the predicted probabilities of issuing a going concern modification at the national level for the six international audit firms – that is, Big 4 plus BDO and Grant Thornton – and the Big 4 audit firms at various audit client characteristics, respectively.

Table A-5: Sigma-convergence

Panel A: Large 6 Audit Firm Networks (n=18)

	Mean	Median	Moderate	Extreme
σ_{0103}:	0.0173	0.0149	0.0582	0.0723
σ_{0406}:	0.0287	0.0235	0.0763	0.0637
H0:	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$
H1:	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$
T (1 df):	4.630	3.697	1.253	0.252
p-value:	.031	.055	.267	.616

Panel B: Big 4 Audit Firms (n=12)

	Mean	Median	Moderate	Extreme
σ_{0103}:	0.0153	0.0120	0.0475	0.0598
σ_{0406}:	0.0180	0.0146	0.0532	0.0524
H0:	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$	$\sigma_{0103} = \sigma_{0406}$
H1:	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$	$\sigma_{0103} \neq \sigma_{0406}$
T (1 df):	1.129	0.358	0.122	0.167
p-value:	0.288	0.549	0.727	0.682

In Panel A, the test of equality of standard deviation in predicted probabilities across the two time periods is not significant when the audit clients show moderate or extreme levels of financial distress. However, when audit clients show characteristics of relatively low financial distress – mean and median values – there is a significant (p<.05) and marginally significant (p<.10) difference in the standard deviation in predicted probabilities across the two time periods, respectively. The later time period shows a standard deviation that is higher than the standard deviation in the earlier time period. Consequently, it appears that σ-convergence among the six international audit firms in audit reporting behaviour with respect to issuing going concern modifications is not present. To the contrary, there is some evidence of σ-divergence in auditors' propensity to issue going concern modifications when their clients show low levels of financial distress. In Panel B, the equality of standard deviation in predicted probabilities across the two time periods are

investigated with respect to Big 4 audit firms only. The difference in dispersion of predicted probabilities across time periods is not significant at conventional levels when audit client characteristics are held at the mean, median, moderate or extreme values.[99]

Table A-6 presents the results with respect to β-convergence for the predicted probabilities of issuing a going concern modification for the six international audit firms in Panel A, as well as only the Big 4 audit firms in Panel B at various levels of audit client characteristics.

In Table A-6, Panel A, the cross-sectional correlation between 2001-2003 values and subsequent rate of change in predicted probabilities are investigated with respect to the six international audit firms. The results suggest that β-convergence in audit reporting behaviour is present as the correlation is negative and significant ($p<.05$, two-tailed) when audit client characteristics are held at the extreme and negative and marginally significant ($p<.10$, two-tailed) for moderate levels. This suggests that those with lower predicted probabilities are 'catching up' with those of higher predicted probabilities of issuing a going concern modification. Although the correlation is negative for mean and median values, the results are insignificant. Panel B shows stronger results for Big 4 audit firms with regard to β-convergence. The correlation is negative and marginally significant ($p<.10$, two-tailed) when audit client characteristics are held at mean values, and negative and significant ($p<.05$, two-tailed) for median, moderate and extreme levels of financial distress.[100]

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[99] Using the more conventional two sample variance comparison test where the ratio of variances in the first period and second period is used as test statistic with an F (N-1, N-1) distribution to test the convergence hypothesis yields qualitatively similar results.

[100] In addition, the Kendall's index of rank concordance is used. This measure captures the change in ordinal rankings with respect to mobility within the distribution. Following Boyle and McCarthy (1997), a binary version of Kendall's rank concordance is constructed by focusing on the ranking of predicted probabilities for audit firms in the time periods 2004-2006 and 2001-2003:

$$RC=Variance (PR_{i0406} + PR_{i0103}) / Variance (2* PR_{i0103}),$$

where PR_{i0103} = the rank of audit firm i's probability in the period 2001-2003; PR_{i0406} = the rank of audit firm i's probability in the period 2004-2006. If mobility is present, the RC index will be less than unity, and the closer to zero the index is, the more mobility within the distribution. The hypothesis of association between ranks is tested against the null of no association between ranks of the different periods (i.e. the time periods' rankings of the predicted probabilities are independent of each other). The test statistic is χ^2 distributed and calculated as:

$$\chi^2 =2(N-1)RC,$$

where N is the number of audit firms and RC is the calculated rank concordance measure. There are (N-1) degrees of freedom. For the large 6 international firms (audit client characteristics at mean values) the RC value is 0.572 with a test statistic of 19.447 with 17 degrees of freedom (not significant at conventional

Table A-6: Beta-convergence

Panel A: Large 6 Audit Firm Networks (n=18)

	Mean	Median	Moderate	Extreme
β_0 Constant:	0.060	0.047	0.230	0.749
β_1 ΔProbability:	-0.102	-0.143	-0.300	-0.572
R^2:	.023	.043	.162	.510
H0:	$\beta_1 = 0$	$\beta_1 = 0$	$\beta_1 = 0$	$\beta_1 = 0$
H1:	$\beta_1 \neq 0$	$\beta_1 \neq 0$	$\beta_1 \neq 0$	$\beta_1 \neq 0$
t-value:	-0.620	-0.850	-1.760	-4.080
p-value:	.546	.410	.098	.001

Panel B: Big 4 Audit Firms (n=12)

	Mean	Median	Moderate	Extreme
β_0 Constant:	0.062	0.048	0.230	0.746
β_1 ΔProbability:	-0.307	-0.391	-0.443	-0.557
R^2:	.250	.366	.437	.617
H0:	$\beta_1 = 0$	$\beta_1 = 0$	$\beta_1 = 0$	$\beta_1 = 0$
H1:	$\beta_1 \neq 0$	$\beta_1 \neq 0$	$\beta_1 \neq 0$	$\beta_1 \neq 0$
t-value:	-1.820	-2.400	-2.790	-4.020
p-value:	.098	.037	.019	.002

Figure A-1, Panel A and D, shows the correlation between initial predicted probabilities and the subsequent changes in predicted probabilities for national members of international networks at different levels of client distress. Similarly, Figure A-2, Panel A and D, shows the correlation between initial predicted probabilities and the subsequent changes in predicted probabilities for national members of the Big 4 auditors at different levels of client distress. The figures show that the correlation is negative across all levels of client distress and that this correlation increases in magnitude as client distress increases. The figures also show that the correlation is stronger for Big 4 firms as a sub group of the global audit firm networks.

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levels). Similarly for the Big 4 audit firms (audit client characteristics at mean values) the RC value is 0.537 with a test statistic of 11.820 with 11 degrees of freedom (not significant at conventional levels). Consequently, the null hypothesis of no concordance is not rejected in both instances. This, in addition to the low RC values, suggests that there is mobility in the distribution over the two time periods, supporting the findings with respect to β-convergence in Table A-6.
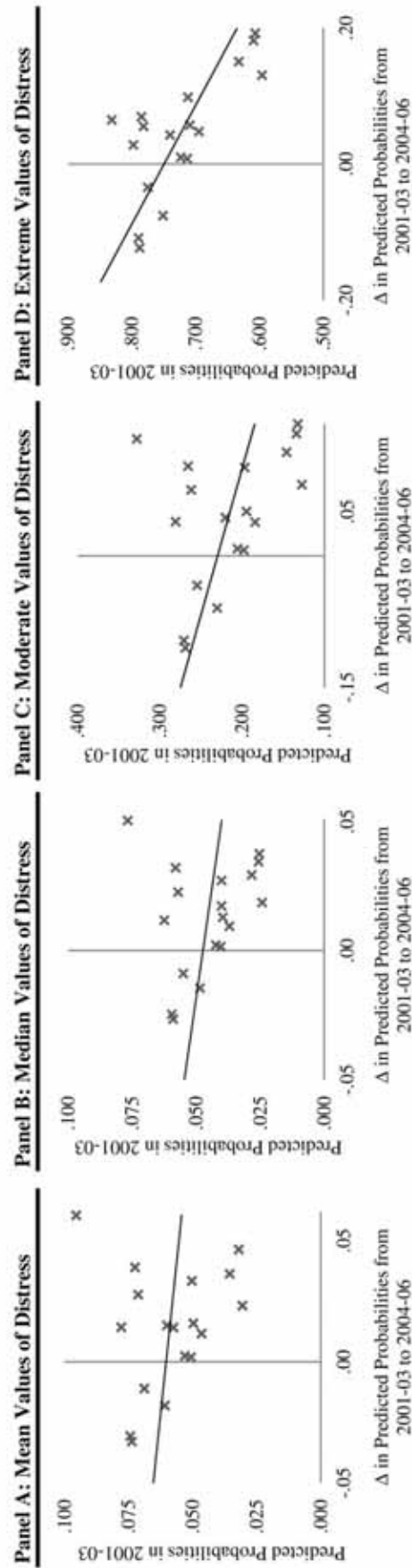
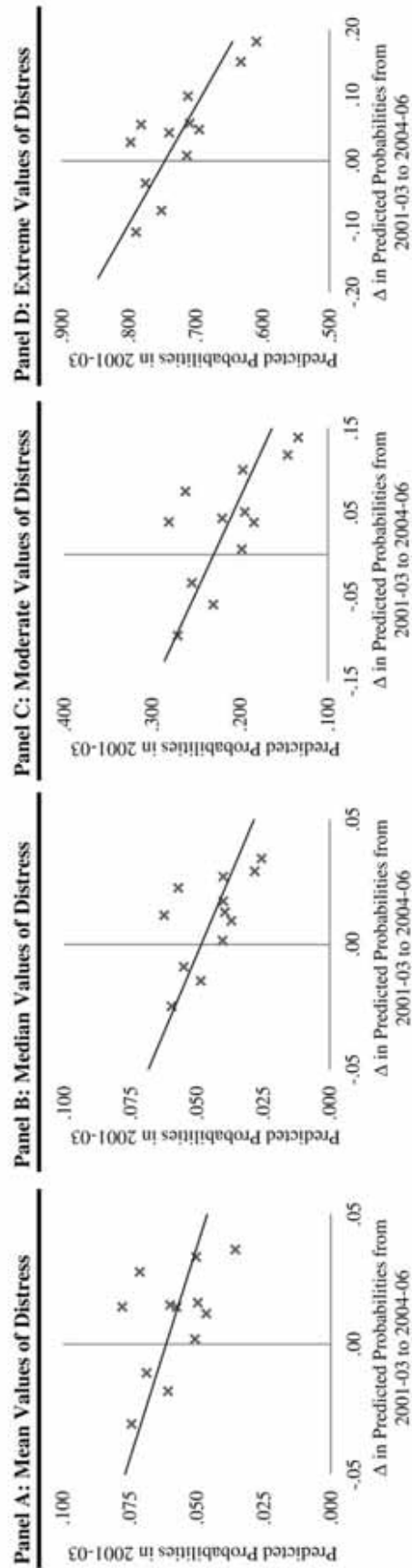Figure A-1: β-Convergence Among National Members of International Networks

Figure A-2: β-Convergence Among National Members of Big 4 Audit Firms

Table A-7 presents the results with regard to *direction of the convergence*, tested using a paired t-test of difference in means between the period 2001-2003 and 2004-2006 for the six international audit firm networks in Panel A and for the Big 4 audit firms as a sub-sample in Panel B. The evidence points to an upward shift in the level of audit reporting behaviour with regard to going concern modifications, as the mean differences are either significant (p<.05, two-tailed) or marginally significant (p<.10, two-tailed) in Panel A. However, in Panel B, none of the differences in mean values of predicted probabilities are significant except when client characteristics are held at median variables, then the difference is marginally significant (p<.10, two-tailed).

Table A-7: Test of Means

Panel A: Large 6 Audit Firm Networks (n=18)

	Mean	Median	Moderate	Extreme
μ_{0103}:	0.0589	0.0455	0.2168	0.7241
μ_{0406}:	0.0728	0.0584	0.2606	0.7682
H0:	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$
H1:	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$
t-value (17 df):	-2.311	-2.532	-2.374	-2.077
p-value:	.034	.022	.030	.053

Panel B: Big 4 Audit Firms (n=12)

	Mean	Median	Moderate	Extreme
μ_{0103}:	0.0586	0.0445	0.2144	0.7254
μ_{0406}:	0.0678	0.0543	0.2494	0.7630
H0:	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$	$\mu_{0103} = \mu_{0406}$
H1:	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$	$\mu_{0103} \neq \mu_{0406}$
t-value (11 df):	-1.575	-1.858	-1.704	-1.545
p-value:	.144	.090	.117	.151

There is no evidence to suggest that the dispersion in predicted probabilities of issuing a going concern modification among the audit firms is becoming smaller (σ-convergence). But there is quite some movement within the distribution (β-convergence). One potential explanation for this movement within the distribution is that evaluating the going concern assumption is an inherently imprecise task. In fact, the evidence suggests that there is no precise and objective probability that the predicted probabilities of the audit firms are

converging towards, but that there is rather a band of predicted probabilities within which the audit firms' predicted probabilities lie. This "band" of predicted probabilities does not seem to get any narrower over the time periods but there is quite some movement within this "band". There is some evidence to suggest that the mean value of predicted probabilities is shifting upwards.

A.4   Limitations

This study, as other empirical studies, has some limitations. First, since only observations with complete data are used to estimate the logit model and incomplete data observations may occur non-randomly, a potential limitation of this study is sample selection bias. In particular, the use of multiple data sources and restricting the sample to financially distressed firms may elevate this concern. This does not necessarily influence any statistical inferences (Zmijewski 1984), but the possibility that the results may be influenced by selection bias cannot be ruled out. Second, although the model in Table A-3 fits comparably well relative to similar models used in research on going concern modifications, it cannot be ruled out that the estimates of parameters are affected by omitted variable bias. The concern for omitted variable bias is elevated by the fact that this is an international study and that structural differences between countries may not have been adequately controlled. This concern, however, is mitigated to some extent by research design. By studying only Anglo-Saxon countries there are a number of similarities between the countries. They are all English-speaking and issue their respective auditing standards in English, all have a common law legal system, and all three have developed economies with well-established capital markets and an entrenched auditing profession that play a similar economic role. Further, they have similar auditing requirements with respect to evaluating going concern assumption and audit reporting. Consequently, the countries' institutional characteristics are likely to have a similar impact upon auditor reporting behaviour. Moreover, only similar types of audit firms are studied. They are all large, they all have an international presence, they are all part of international networks, and they are all members of the Global Public Policy Symposium and the Forum of Firms. Furthermore, the sample upon which the model is estimated is limited to distressed audit firm clients. Due to this research design, one must also be careful not to extrapolate the results beyond this sample to other countries, other audit

firms and other time-periods. Furthermore, Arthur Andersen is not included in the study as observations are not obtained across the entire time period and the results may be influenced by survivorship bias. It is also acknowledged that the computed probabilities at the mean and various other percentiles are constructs and does not necessarily approximate any specific member of the sample (Long 1997).

A.5 Conclusion

Regulators have taken action to harmonise accounting and auditing standards. These actions have been based on the premise that uniform standards will be consistently applied and that consistent auditor reporting behaviour will result. At the same time, the international audit firm networks have become more prevalent and integrated with institutions, such as the Forum of Firms, that promote consistent application of auditing standards. Thus, in the face of converging auditing standards and the promotion of consistent application of those standards, one would expect auditing reporting behaviour to converge. The study uses a sample of 18 audit firm observations – the large six international audit firm networks across three Anglo-Saxon countries with 11,017 client observations over the period 2001 to 2006 – to empirically investigate if audit reporting behaviour in terms of going concern modifications has converged. By using convergence metrics used in the economics growth literature, this study documents that there has been significant convergence among the audit firms under investigation when faced with clients that exhibit an extreme degree of financial distress. Moreover, it is also documented that there is a significant movement in the audit reporting behaviour over time for audit firms that are members of international networks. The results indicate that audit firm differences in audit reporting behaviour across Anglo-Saxon countries have partially diminished over time suggesting progress in light of the current harmonisation efforts of the audit profession. There is no evidence of divergence in auditor's reporting behaviour.

Supplementary Table:

Audit Firm Coefficients

The supplementary table in this appendix includes the coefficients not tabulated in Table B-3 of all the indicator variables for each audit firm's country office in the respective time period. The observations relating to the Grant Thornton office in the US for the period 2004-2006 are included in the constant.

Variables	Coef.	Std. Err.	z	P>|z|
	ALL FIRMS			
	Model 2			
Refer to Table B-3 for Coefficients on Variables in Base Model				
PWC (0103 UK)	0.207	.377	0.550	.583
PWC (0406 UK)	0.502	.425	1.180	.237
PWC (0103 AUS)	-0.140	.381	-0.370	.713
PWC (0306 AUS)	0.601	.384	1.570	.117
PWC (0103 US)	0.228	.304	0.750	.453
PWC (0406 US)	0.267	.338	0.790	.430
KPMG (0103 UK)	0.139	.384	0.360	.718
KPMG (0406 UK)	0.375	.439	0.860	.392
KPMG (0103 AUS)	0.362	.351	1.030	.301
KPMG (0406 AUS)	0.599	.363	1.650	.099
KPMG (0103 US)	0.637	.292	2.180	.029
KPMG (0406 US)	0.073	.339	0.210	.830
DT (0103 UK)	-0.239	.418	-0.570	.567
DT (0406 UK)	0.646	.426	1.520	.129
DT (0103 AUS)	0.592	.376	1.570	.116
DT (0406 AUS)	0.950	.414	2.300	.022
DT (0103 US)	0.554	.299	1.850	.064
DT (0406 US)	0.368	.342	1.080	.282
EY (0103 UK)	0.221	.421	0.520	.601
EY (0406 UK)	0.766	.486	1.580	.115
EY (0103 AUS)	0.687	.336	2.050	.041
EY (0406 AUS)	0.872	.330	2.640	.008
EY (0103 US)	0.421	.290	1.450	.146
EY (0406 US)	0.049	.317	0.160	.877
BDO (0103 UK)	-0.251	.519	-0.480	.628
BDO (0406 UK)	0.695	.513	1.360	.175
BDO (0103 AUS)	0.910	.403	2.260	.024
BDO (0406 AUS)	1.471	.371	3.960	.001
BDO (0103 US)	0.277	.315	0.880	.379
BDO (0406 US)	0.326	.337	0.970	.333
GT (0103 UK)	-0.296	.507	-0.580	.559
GT (0406 UK)	0.292	.461	0.630	.527
GT (0103 AUS)	0.610	.467	1.310	.191
GT (0406 AUS)	1.084	.427	2.540	.011
GT (0103 US)	0.627	.310	2.020	.043

Notes to Supplementary Table:

1. GT (0406 US) included in the constant.

2. All p-values are two-tailed.

APPENDIX B

Audit Fees at the First-Time Issuance and Withdrawal of the Going Concern Modification

FOREWORD: Audit fees are a function of effort costs and expected legal costs. Audit fees therefore give additional insight into auditors' evaluation of risk and effort associated with their judgment of the "substantial doubt" criterion. This study complements Chapter Five, by comparing audit fees when firms had their going concern modifications withdrawn with when the going concern modifications were initially issued.

B.1 Background and Research Questions

Audit fees are a function of an effort costs component and an expected legal costs component (Simunic 1980). The effort costs component is driven by the number of expended audit hours together with the hourly rate charged to the client. The legal costs component is driven by the expected future legal costs:

$$\text{Audit fees} = p*q + E(L) \tag{10}$$

Where
p: hourly pricing
q: number of auditing hours
E(L):expected future legal costs

The first component $(p*q)$ represents the required audit effort. It is based on auditors' evaluation of the risk that a material error exists in the financial statements (inherent risk) of the client, and that the risk that the client's internal control could not detect it (control risk). For a risky client, auditors would exert higher effort through increased quantity of work resulting in more audit hours, and/or through quality of staff resulting in a higher hourly rate. The second component is the expected future legal costs and will manifest itself as a risk premium. This component consists of risks in conjunction with the amount of future legal costs as well as the costs of damage to reputation that may arise from the audit. These two components are not completely separate, in that expected liability losses should generally decrease with increasing audit effort (Simunic 1980).

Audit fees therefore give additional insight into auditors' risk judgments regarding the "substantial doubt" criterion. Consider a firm that at some point has its going concern modification withdrawn: at an earlier time, that same firm must also have been issued with an initial going concern modification. In both of these situations, the auditor has made a decision that the audit client has crossed the "substantial doubt" threshold since the last audit opinion. However, the auditor's level of effort and expectations of future legal costs may be different. Costs related to independence threats, litigation risk as well as reputation are most salient when the financial distress of the company becomes so negative that the auditor must consider whether there is substantial doubt about the going concern assumption, and subsequently whether to modify the audit report for the first

time. Similarly, such costs may also be considered when a company has been issued with a modified going concern opinion in the prior year, but the financial outlook of the company has improved. The auditor must then assess if the substantial doubt about the going concern assumption is no longer warranted; and if so, subsequently withdraw the going concern modification and issue a clean opinion. However, different risk perceptions regarding these situations may impact audit fees through increased audit effort and/or an additional risk premium (Chow and Rice 1982; Geiger et al. 1998; DeFond et al. 2002; Blay 2005).

Auditors have economic bonds to their clients, and future economic rents are contingent on auditors being retained by their clients. As a result, auditors have an incentive to be sensitive to client preferences (DeAngelo 1981). Indeed, prior research suggests that auditors tend to reach client-preferred decisions (Hackenbrack and Nelson 1996; Blay 2005). Since it is highly likely that the client would prefer a clean audit opinion, the dismissal risk and the pressure to issue a clean opinion is arguably less if the client already had a going concern modification in the prior year. Conversely, providing a clean audit opinion, if the company already had a going concern modification in the prior year, might carry additional litigation risk and reputational risk if it turns out that the company is still faced with going concern issues. Consequently, the following research question is asked:

R1: Are audit fees different when going concern modifications are withdrawn compared to when the going concern modifications compared are first issued?

Many studies document that Big 4 audits around the world carry a premium relative to the audits of other firms, after controlling for client characteristics affecting audit fees such as size, complexity and auditor-client risk sharing (Simunic 1980, Hay 2006). Previous studies have shown that the average the Big 4 premium has been around 20% (Francis 2004). A higher audit fee implies higher audit quality, *ceteris paribus*, either through more audit effort through more hours and/or through greater expertise of the auditor that results in higher billing rates. DeAngelo (1981) reasons that large audit firms are more independent and thus argues that accounting firm size is a proxy for quality. Large auditors have no single client that it is imperative to keep and have more to lose (their reputation and subsequently their entire clientele) if they misreport. Small auditors, on the other hand, with only one client may logically conclude that they have more to gain by

submitting to their client's wishes and misreport than by staying independent and potentially losing business. Accordingly, Big N auditors also have a different risk profile to small auditors in terms of lower expected cost associated with dismissal risk, but higher expected costs associated with litigation and reputation risk. Consequently, the following research question is asked:

R2: Is there any difference between Big N audit fees and non-Big N audit fees in the context of issuing first-time going concern modifications and their withdrawal?

B.2　Methodology

The sample is a matched within subject design, consisting of 321 firms that received both an initial going concern modification and also had the modification subsequently withdrawn between 2000 and 2008.[101] Although these firms did not go bankrupt, for each firm in the sample the auditor has at some point decided that the financial health has deteriorated so much that it warrants substantial doubt about the going concern assumption and as a result issued a modification. But at a later point, the auditor has also decided that the financial health has improved to such a degree that there is no longer substantial doubt about the going concern assumption and therefore issued a clean opinion. Using the firms themselves as a control of idiosyncratic firm characteristics, this setting presents an opportunity to investigate audit fees associated with both the initial issuance and the withdrawal of the going concern modification. Referring to the event of the initial going concern modification in Figure B-1, the firm was issued with a clean opinion in the last year but received a going concern opinion in the current year (point A and point B, respectively). In the case of the going concern modification withdrawal, the firm was issued with a going concern modification in the prior year, but a clean opinion in the current year (point C and point D, respectively).[102]

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[101] The sample is based on the same sample as in Chapter Five. However, firms for which there was no audit fee information were excluded.

[102] Of course, observation A and D are always different. This is not necessarily true of observation B and C, which may in fact be the same observation if the going concern modification is withdrawn after one year.
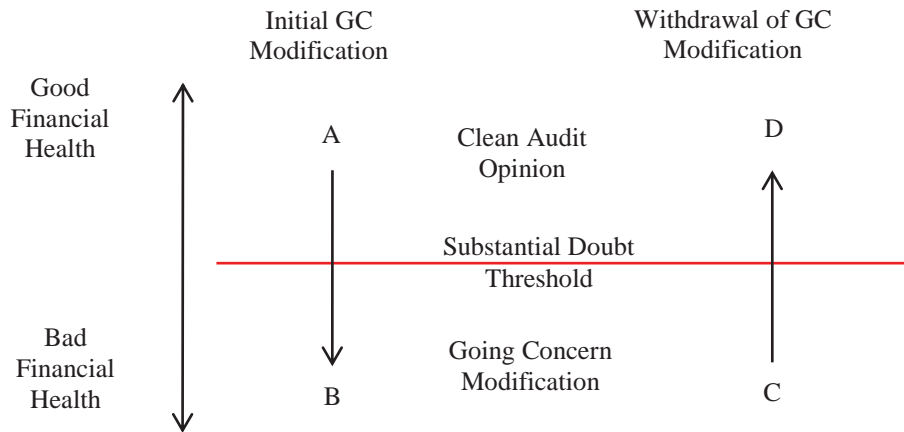
Figure B-1: Substantial Doubt Threshold for Issuing and Withdrawing Going Concern Modifications

In both cases the threshold for what constitutes substantial doubt is crossed. Thus, by comparing the audit fees across these four data points for the same audit client, in particular the change in audit fees as the firm goes from A to B – with the change in audit fees as the firm goes from C to D – some insights can be gained with regard to auditors' perception of their risk associated with issuing and withdrawing going concern modifications.

In order to draw *ceteris paribus* inferences with regard to changes in audit fees, the following fixed effects[103] audit fee model is estimated using OLS regression:

$$\ln(\text{Fee}) = \beta_0 + \beta_1\text{SIZE} + \beta_2\text{CATA} + \beta_3\text{CURRENT} + \beta_4\text{LOSS} + \beta_5\text{LEV} + \beta_6\text{ROA} + \beta_7\text{CFO} + \beta_8\text{PERIOD} + \beta_9\text{FIRM*} + \boldsymbol{\beta_{10}\text{GC}} + \boldsymbol{\beta_{11}\text{WITHDRAWAL}} + \boldsymbol{\beta_{12}\text{WITHDRAWAL*GC}} + \beta_{13}\text{BIGN} + \boldsymbol{\beta_{14}\text{WITHDRAWAL*BIGN}} + \boldsymbol{\beta_{15}\text{GC*BIGN}} + \boldsymbol{\beta_{16}\text{WITHDRAWAL*BIGN*GC}} + \varepsilon \qquad (11)$$

where:

Dependent Variable

ln(Fee) = Natural log of Audit Fee in thousands of US dollars.

Independent Control Variables

SIZE = natural log of end of year total assets in millions of US dollars.
CATA = end of year current assets to end of year total assets.

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[103] The fixed effect model may traditionally be viewed to assume that the unobserved effect is a parameter to be estimated for each firm. One way to estimate an intercept in the model for each firm is to put an indicator variable for each cross-sectional observation along with the explanatory variables. The R-squared for such dummy variable regressions is usually high. This occurs because an indicator variable for each cross-sectional unit is included, which explains much of the variation in the data (Wooldridge 2006; p. 491).

CURRENT = End of year current assets divided by end of year current liabilities.

LOSS = Indicator variable that equals 1 if the firm has a loss in current year, 0 otherwise.

LEV = End of year total liabilities to end of year total assets.

ROA = net income/(loss) divided by end of year total assets.

CFO = cash flow from operations divided by end of year current liabilities.

PERIOD= 2 indicator variables for the periods 2003-2005 and 2006-2008, with the period 2000-2002 included in the intercept.

FIRM* = 320 indicator variables to account for fixed effects: 1 for each firm, with 1 firm in the constant.

Independent Variables of Interest

GC= 1 if the observation is a going concern opinion, 0 otherwise.

WITHDRAWAL= indicator variable coded 1 if the observation is a withdrawal, 0 if the observation is a going concern modification.

WITHDRAWAL*GC= interaction variable between GC and WITHDRAWAL.

BIGN = 1 if the observation had a Big N auditor, 0 otherwise.

WITHDRAWAL*BIGN= interaction variable between WITHDRAWAL and BIGN.

GC*BIGN = interaction variable between BIGN and GC

WITHDRAWAL*BIGN*GC = interaction variable between WITHDRAWAL, BIGN and GC.

The variables of interest captures differences in audit fees across the different observation points as depicted in Figure B-1. The relationship between the coefficients on the variables of interest, the reference group and the different data points is summarised in Table B-1. As summarised in Table B-1, Panel A, where only GC (β_9), WITHDRAWAL (β_{10}) and WITHDRAWAL*GC (β_{11}), in addition to the control variables are included in

Table B-1: Interpretation of Model Coefficients to Reference Group

Panel A: All Auditors

FTGC	Opinion/Obs	All Auditors
Initial Issuance of GC Modification	Clean (A)	Reference
	GC (B)	β_9
Withdrawal of the GC Modification	GC (C)	$\beta_9+\beta_{10}+\beta_{11}$
	Clean (D)	β_{10}

Panel B: Big N and non-Big N Auditors

WGC	Opinion/Obs	non-Big N	Big N
Initial Issuance of GC Modification	Clean (A)	Reference	β_{12}
	GC (B)	β_9	$\beta_9+\beta_{12}+\beta_{14}$
Withdrawal of the GC Modification	GC (C)	$\beta_9+\beta_{10}+\beta_{11}$	$\beta_9+\beta_{10}+\beta_{11}+\beta_{12}+\beta_{13}+\beta_{14}+\beta_{15}$
	Clean (D)	β_{10}	$\beta_9+\beta_{10}+\beta_{11}$

the Model, the audit fees associated with the clean audit opinion prior to the initial going concern modification would be the reference group. Coefficient β_9 will capture the

average difference in audit fees between the reference group and when the first going concern modification was issued. The sum of the coefficients β_9, β_{10} and β_{11} will capture the average difference in audit fees between the reference group and the going concern modification prior to withdrawal. Coefficient β_{10} will capture the average difference in audit fees between the reference group and the clean opinion issued when the going concern modification was withdrawn.

As summarised in Table B-1, Panel B, where all the variables of interest – GC (β_9), WITHDRAWAL (β_{10}), WITHDRAWAL*GC (β_{11}), BIGN (β_{12}), WITHDRAWAL*BIGN (β_{13}) GC*BIGN (β_{14}), and WITHDRAWAL*BIGN*GC (β_{15}) – in addition to the control variables are included in the Model, the audit fees associated with the clean audit opinion prior to the initial going concern modification for non-Big N auditors would be the reference group. Coefficient β_9 will capture the average difference in audit fees between the reference group and the going concern modification prior to withdrawal for non-Big N auditors. The sum of the coefficients β_9, β_{10} and β_{11} will capture the average difference in audit fees between the reference group and the going concern modification prior to withdrawal for non-Big N auditors. Coefficient β_{10} will capture the difference between the reference group and the clean opinion issued when the going concern modification was withdrawn for non-Big N auditors. Coefficient β_{12} will capture the difference between the reference group and the clean audit opinion prior to the initial going concern modification for Big N auditors. The sum of the coefficients β_9, β_{12} and β_{14} will capture the difference in audit fees between the reference group and the going concern modification prior to withdrawal for Big N auditors. The sum of the coefficients β_9, β_{10}, β_{11}, β_{12}, β_{13}, β_{14} and β_{15} will capture the difference between the reference group and the going concern modification prior to withdrawal for Big N auditors. Finally, the coefficients β_{10}, β_{12} and β_{13} will capture the difference between the reference group and the clean audit opinion issued when the going concern modification was withdrawn.

The Model includes controls for attributes related to audit fees. SIZE is a determinant of audit fees and in line with other studies is operationalised as the natural logarithm of total assets. A positive relationship between size and fees is expected. The Model also control for the audit firm's professional risk by including variables related to the risk of a client failing and ROA (net income divided by total assets), LOSS (loss for the current year),

CFO (cash flow from operations to current liabilities), CURRENT (ratio of current assets to current liabilities) and LEV (ratio of total liabilities to total assets) are included in the Model. Poor financial performance increases the auditor's professional risk (Simunic 1980). Hence, it is expected that audit fees will be negatively related to ROA, CFO and CURRENT and positively with LOSS and LEV. In addition, FIRM indicator variables are included for each observation related to each firm. This controls for firm fixed effects such as type of industry, the number of subsidiaries, foreign subsidiaries as well as other factors that do not tend to change over time. As audit fees are known to change over time (Williams 2001), this is controlled for by the variables denoted PERIOD*. For simplicity, the variable FIRM* is not tabulated.

B.3   Results

The sample is constructed in four stages. First, using audit data from Audit Analytics, companies with a going concern withdrawal in the years 2001-2008 were identified. Second, data was obtained for the preceding first-time going concern modification event. Third, financial data from the current and prior year was obtained from Compustat North America. Forth, companies from the financial sector (GICS 40), or with total assets less than US$100,000, or companies that prepared their financial statements on a liquidation basis for any of the years were excluded.[104] Companies with missing financial or audit data were also excluded. The final sample consists of 1,284 observations – 321 firms which each have four observations: an initial going concern modification and the preceding clean opinion, and with a going concern modification withdrawal and the preceding going concern modification during the period 2000 to 2008.

Table B-2, Panel A, shows that the three years with the largest number of observations are 2002, 2003 and 2004. This is as expected for two reasons. First, for a firm to be included in the sample it needs both events and since the events are sequential, the middle years should exhibit a larger proportion of the observations. Second, the time period when the fallout from the dot-com bubble occurred is contained within the sample years, which explains the high proportion of observations for 2002-2003.

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[104] The sample excludes financial services companies because companies in this industry are structurally different.

Table B-2: Sample Composition

Panel A: Sample Composition by Year

	First-Time GC		Withdrawn GC		
	Clean (A)	GC (B)	GC (C)	Clean (D)	Total
2000	53	0	0	0	53
2001	97	53	19	0	169
2002	54	97	82	19	252
2003	34	54	62	82	232
2004	50	34	46	62	192
2005	22	50	49	46	167
2006	11	22	39	49	121
2007	0	11	24	39	74
2008	0	0	0	24	24
Total	321	321	321	321	1,284

Panel B: Sample Composition by Sector

GICS Sector	# Firms	%
ENERGY	21	6.54%
MATERIALS	22	6.85%
INDUSTRIAL	53	16.51%
CONS. DISC.	41	12.77%
CONS. STAP.	11	3.43%
HEALTH CARE	78	24.30%
INFO. TECH.	75	23.36%
TELE - COMM.	12	3.75%
UTILITIES	8	2.49%
Total	321	

Panel C: Type of Auditor

FTGC	Big N	non-Big N	Total
Clean (A)	199	122	321
GC (B)	183	138	321
Total	382	260	642

WGC	Big N	non-Big N	Total
GC (C)	160	161	321
Clean (D)	127	194	321
Total	287	355	642

Table B-2, Panel B, shows that most of the firms in the sample belong to the Health Care Sector (24.30%), and that the sample consists of relatively few firms from the Utilities Sector (2.49%). Other sectors that are relatively well represented in the sample are Information Technology (23.36%), Industrial (16.51%), Consumer Discretionary (12.77%) and Materials (6.85%).

Table B-2, Panel C, shows that the proportion of the 321 firms that had a Big N auditor decreases from the initial observations. When the firms received the clean audit opinion prior to the initial going concern modification, 199 (62%) of the firms had a Big N auditor. When the firms received the clean opinion following the withdrawal of the going concern modification, only 127 (39.6%) firms had a Big N auditor. This may suggest that Big N auditors perceive firms with going concern difficulties as more risky than non-Big N auditors.

Table B-3 presents descriptive statistics on the 1,284 observations for the variables used in the going concern model. All continuous variables have been winsorised at the 95th percentile of absolute values because financial ratios tend to be skewed (Horrigan 1965; Deakin 1976; Frecka and Hopwood 1983) and this inherent characteristic of financial ratios becomes even more prominent when applied to "abnormal" firms – such as the financial distressed firms in this sample.

The mean and median firm size, measured in total assets, is US$249.73 million and US$28.35 million, indicating a skewed distribution. Similarly, mean and median values for audit fees are US$489,165 and US$166,285. Consequently, natural log of assets and audit fees are used in the multivariate analysis. The mean and median values for LEV are 0.699 and 0.668, respectively. CATA and CURRENT exhibits mean and median values of 0.521 and 0.499, and 1.958 and 1.313. As these are all financially distressed firms, ROA exhibits a mean of -.509 and a median of -.272. Similarly CFO exhibits a mean of -1.042 and a median of -0.276. The BIGN variable indicates that a little over half (52.1%) of the 1,248 observations were audited by a Big N auditor. 84.6% of the observations had a current year loss.

Table B-3: Descriptive Statistics for Model (n=1,284)

Variable	Mean	Median	Min	Max	Std. Dev	Skewness
FEE	489,165	166,285	2,600	2,893,719	739,492	2.278
LN(FEE)	12.244	12.022	7.863	14.878	1.296	0.264

Variable	Mean	Median	Min	Max	Std. Dev	Skewness
ASSETS (US$ Mil.)	249.730	28.350	0.120	2075.190	527.090	2.640
SIZE	3.656	3.345	-2.087	7.638	2.002	0.307
CATA	0.521	0.499	0.004	0.956	0.274	0.085
CURRENT	1.958	1.313	0.004	7.063	1.813	1.581
LOSS	0.846	1	0	1	------	------
LEV	0.699	0.668	0.000	1.721	0.430	0.742
ROA	-0.509	-0.272	-2.334	2.334	0.683	-1.063
CFO	-1.042	-0.276	-5.622	3.242	1.739	-1.374
P0002	0.369	0	0	1	------	------
P0305	0.374	0	0	1	------	------
P0608	0.171	0	0	1	------	------
GC	0.500	0.500	0	1	------	------
WITHDRAWAL	0.500	0.500	0	1	------	------
BIGN	0.521	1	0	1	------	------

Notes to Table B-3:

1. Variable Definitions

FEE = Audit fees in US dollars.

LN(FEES) = Natural log of audit fees in thousands of US dollars.

ASSETS (US$ Mil.) = total assets at the end of year measured in millions of US dollars.

SIZE = the natural logarithm of total assets at the end of the year measured in millions of dollars.

CATA = end of year current assets divided by end of year total assets.

CURRENT = end of year current assets divided by end of year current liabilities.

LOSS = Indicator variable that equals 1 if the firm has a loss in the current year, 0 otherwise.

LEV = total liabilities over total assets at the end of the fiscal year.

ROA = net income (loss) divided by end of year total assets.

CFO = operating cash flows divided end of year current liabilities.

P0002; P0305; P0608 = indicator variables equal to 1 if the fiscal year is in the period 2000-2002, 2003-2005, and 2006-2008, respectively.

GC = 1 if a firm receives a GC modified opinion, 0 otherwise.

WITHDRAWAL= an indicator variable equal to 1 if the observations are associated with the withdrawal of the going concern modifications, 0 otherwise.

BIGN = an indicator variable equal to 1 if the auditor is a member of the Big N auditors, 0 otherwise.

2. All continuous variables are winsorised at the 95th percentile of absolute values.

Table B-4: Pearson Correlation Coefficient

		LN(FEE)	SIZE	CATA	CURRENT	LOSS	LEV	ROA	CFO	GC	BIGN
SIZE		0.793									
	sig.	.001									
CATA		-0.136	-0.370								
	sig.	.001	.001								
CURRENT		-0.189	-0.164	0.494							
	sig.	.001	.001	.001							
LOSS		-0.100	-0.168	0.029	0.006						
	sig.	.001	.001	.294	.824						
LEV		0.283	0.160	-0.099	-0.540	0.024					
	sig.	.001	.001	.001	.001	.392					
ROA		0.253	0.476	-0.213	-0.034	-0.423	-0.080				
	sig.	.001	.001	.001	.222	.001	.004				
CFO		0.320	0.428	-0.325	-0.603	-0.283	0.353	0.540			
	sig.	.001	.001	.001	.001	.001	.001	.001			
GC		0.033	-0.039	-0.051	-0.194	0.198	0.131	-0.165	-0.022		
	sig.	.239	.163	.067	.001	.001	.001	.001	.428		
BIGN		0.483	0.536	-0.103	0.019	-0.030	0.054	0.107	0.041	0.027	
	sig.	.001	.001	.001	.497	.291	.053	.001	.141	.343	
WITHDRAWAL		0.058	-0.024	0.059	-0.025	-0.060	0.082	0.044	0.065	0.000	-0.148
	sig.	.038	.389	.036	.381	.031	.004	.116	.020	1.000	.001

Notes to Table B-4:
1. All p-values are two-tailed.

2. See Table B-3 for variable definitions.

The pairwise correlation coefficients are exhibited in Table B-4. None of the correlation coefficients are above .80. There are three variable pairs with correlation higher than .50: SIZE is highly correlated (0.793) with the dependent variable LN(FEE), LEV has a correlation of -.540 with CURRENT, and ROA has a correlation of .540 with CFO. A high correlation between SIZE and the dependent variable is not unexpected as size has consistently been shown to influence audit fees (Hay et al. 2006). Correlation between the independent variables in the Model is to some extent expected as they all convey information about financial performance and position. In this sense, a lack of correlation would be of greater concern. However, none of the control variables are perfectly correlated, and as such, convey some unique information.[105] Fortunately, the consequence of high multicollinearity only applies to independent variables that are highly collinear, and none of the control variables exhibit correlation coefficients with each other greater than .60.

Table B-5 presents the results of estimating the audit fee model above with the variables of interest to test the hypotheses. Model 1 and 2 presents the baseline case of the model without including any variables of interest, and with and without indicator variables for time periods and each firm, respectively. Models 3 and 4 sequentially introduce the variables of interest.

The results indicate that model 1 does a reasonably good job of explaining audit fees. The adjusted R^2 is 70.2%. The model is significant, and all coefficients, except LOSS, are significant ($p<.05$, two-tailed) and in expected directions. Model 2 includes, in addition to the variables in Model 1, indicator variables for time periods and for each firm (not tabulated) to control for the effect of time and firm specific factors on audit fees. The variables indicated time periods are significant ($p<.05$, two-tailed), and as expected, adjusted R^2 increases, and Model 2 exhibits an adjusted R^2 of 88.7%. Thus the Model with time and firm indicator variables "explain" quite a large proportion of the variation in audit fees. LOSS is still insignificant. CURRENT and CATA is no longer significant in

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[105] The high correlation between the control variables makes it problematic to obtain good estimates of their distinct effects on the dependent variable, because this may make their standard errors inflated, although it does not bias the coefficients (Wooldridge 2006). Thus control variables that appear to have weak effects individually, may actually have quite strong effects as a group with respect the auditor reporting behaviour on going concern opinions. Variance Inflation Factors are examined Table the variables of interest.

Table B-5: Multivariate Model of Audit Fee Differences

VARIABLES	ALL FIRMS Model 1 coef.	P>|t|	ALL FIRMS Model 2 coef.	P>|t|	ALL FIRMS Model 3 coef.	P>|t|	ALL FIRMS Model 4 coef.	P>|t|
CONSTANT	9.384	.001	11.727	.674	11.756	.000	11.911	.686
SIZE	0.593	.001	0.333	.001	0.343	.001	0.312	.001
CATA	1.158	.001	0.056	.022	-0.074	.568	-0.051	.229
CURRENT	-0.110	.001	-0.039	.163	-0.020	.238	-0.019	.245
LOSS	-0.054	.379	-0.068	.001	-0.085	.078	-0.054	.001
LEV	0.288	.001	0.266	.015	0.235	.001	0.259	.017
ROA	-0.182	.001	-0.087	.018	-0.105	.003	-0.081	.087
CFO	-0.053	.007	-0.043	.001	-0.039	.029	-0.030	.001
P0305	-----	-----	0.198	.001	0.119	.001	0.147	.001
P0608	-----	-----	0.172	.001	0.007	.888	0.017	.745
FIRM*	-----	-----	Not Tabulated		Not Tabulated		Not Tabulated	
GC	-----	-----	-----	-----	0.216	.001	0.183	.001
WITHDRAWAL	-----	-----	-----	-----	0.292	.001	0.233	.001
WITHDRAWAL*GC	-----	-----	-----	-----	-0.267	.001	-0.203	.004
BIGN	-----	-----	-----	-----	-----	-----	0.294	.001
GC*BIGN	-----	-----	-----	-----	-----	-----	0.067	.315
WITHDRAWAL*BIGN	-----	-----	-----	-----	-----	-----	0.267	.001
WITHDRAWAL*GC*BIGN	-----	-----	-----	-----	-----	-----	-0.244	.011
N	1,284		1,284		1,284		1,284	
R²	.704		.916		.922		.927	
Adj. R²	.702		.887		.894		.901	
Prob>chi2	.001		.001		.001		.001	

Notes to Table B-5:
1. All p-values are two-tailed

2. See Table B-3 for variable definitions.

Model 2, but that may possibly be explained by the fact that variation in current assets is to some degree dependent on industry, which is firm specific.

Model 3 introduces the variables GC, WITHDRAWAL and WITHDRAWAL*GC. All three variables are significant (p<0.5, two-tailed). This suggests that there is some variation in audit fees associated with observations with a going concern modification and whether this related to the initial issuance or last time going concern modification. The results are summarised in Figure B-2, which show the audit fees across the four observation points for each firm in terms of index numbers[106], with the reference group given the value 100.


■ Audit Fees Index Numbers

100.00	124.10	127.17	133.90
A: Clean opinion in the year before the initial going concern modification	B: The initial going concern modification	C: The going concern modification in the year before the withdrawal	D: Clean opinion in the year the going concern modification was withdrawn
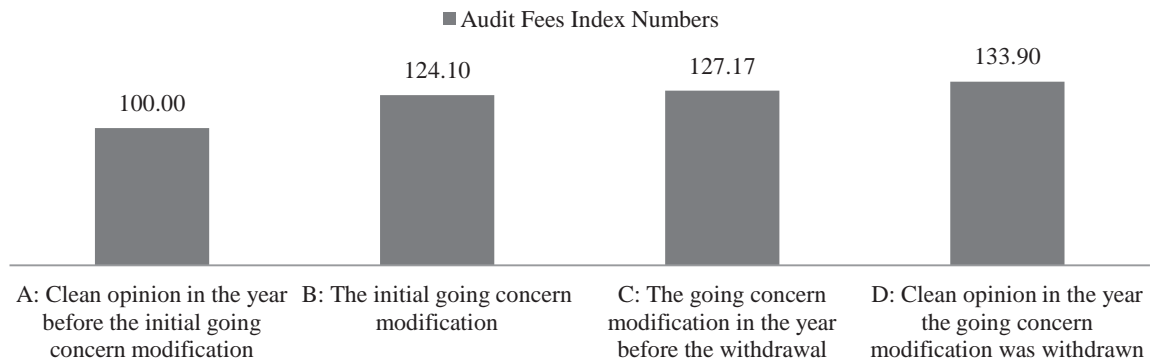
Figure B-2: Audit Fee Index for Initial Issue and Withdrawal of the GC Modification

The results indicate that as the firm goes from a clean opinion to a going concern modification, the audit fee index increases by 24.1 (24.1%)[107]. Although the audit fees are higher for the two observations associated with the withdrawal compared to the two observations associated with the initial issue, the change in audit fees as the firm goes from a going concern modification opinion to a clean audit opinion is small – the audit fee index only increases by a trivial 6.7(1.1%)[108]. This may suggest that there is no additional risk premium that is associated with the withdrawal that was not already priced into the audit fees with respect to the initial issuance of the going concern modification.

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[106] Index numbers are used because they make differences in audit fees easy to compare. Because the magnitude in audit fees associated with the different opinions are calculated from the coefficients in Table B-5, the audit fee index numbers are after controlling for confounding factors.

[107] Change in index is calculated as $24.09 = (\exp^{(0.216)} - 1)100$. The percentage change is calculated as $24.09 = (124.09 - 100)/100$

[108] Change in index is calculated as $6.72 = (\exp^{(0.292)} - 1)100 - (\exp^{(0.216+0.292-0.267)} - 1)100$. The percentage change is calculated as $1.05 = (133.89 - 127.17) / 127.17$.

Consequently, and with reference to research question one, the results indicate that there is an audit fee premium associated with the initial going concern modification, and although there is no additional audit fee premium, the audit fee premium is still carried forward as the going concern modification is withdrawn.

Model 4 introduces the variables BIGN, WITHDRAWAL*BIGN, GC*BIGN, and WITHDRAWAL*BIGN*GC. Consequently, it is possible to investigate differences in audit fee premiums between Big N auditors and non-Big N auditors. All the variables of interest are significant ($p<.05$, two-tailed), with the exception of GC*BIGN. More importantly, when the variables are jointly tested for significance with respect to the reference group as per Table B-1, each of the combinations of the variables are significant. The results are summarised in Figure B-3, which show the audit fees across the four observation points for each firm in terms of index numbers, with the reference group given the value of 100.
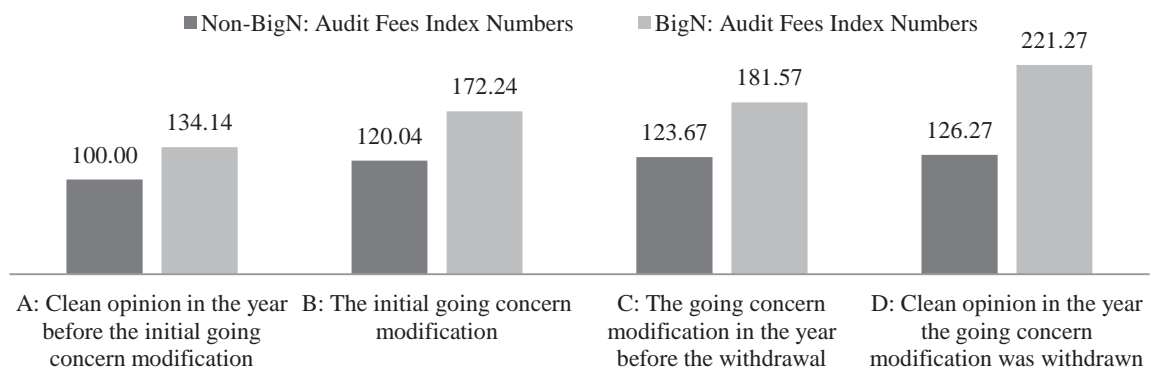
Figure B-3: Big N and non-Big N Audit Fee Index for Initial Issue and Withdrawal of the GC Modification

The results indicate that as the firm goes from a clean opinion to a going concern modification, the audit fee index increases by 20.0 (20.0%)[109] for a non-Big N auditor. By comparison, the audit fee index increases by 38.1 (28.4%)[110] for Big N auditors. This suggests that Big N auditors have an additional audit fee premium associated with the initial going concern modification that is about 8.3 percentage points higher than non-Big N auditors.

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[109] Change in index is calculated as $20.0 = (\exp^{(0.183)} - 1)100\%$.
 The percentage change is calculated as $20.04 = (120.04 - 100)/100$
[110] Change in index is calculated as $38.1 = (\exp^{(0.183+0.294+0.067)} - 1)100 - (\exp^{(0.294)} - 1)100$.
The percentage change is calculated as $28.39 = (172.24 - 134.14)/134.14$

The change in audit fees as the firm goes from a going concern modification opinion to a clean audit opinion is small for non–Big N auditors – the audit fee index increases by 2.6 (1.0%)[111]. For Big N auditors, however, the audit fee index increases by 39.7 (21.9%)[112]. This suggests that for Big N auditors, there is an additional audit risk premium that is associated with the withdrawal of the going concern modifications beyond the audit fee premium that was priced with respect to the issuance of the initial going concern modification. This is not the case for non-Big N auditors, which do not have an additional audit fee premium associated with the withdrawal, although much of the audit fee premium associated with the initial issuance of the going concern modification is still priced at the time of the withdrawal.

Consequently, and with reference to research question two, the results indicate that there is a difference in perceptions of risk and consequently audit fee premiums between Big N and non-Big N auditors with respect to the initial issuance and withdrawal of the going concern modification. Both Big N auditors and Non-Big N auditors have an audit fee premium associated with the initial issuance of the going concern modification but this audit fee premium is relatively bigger for Big N auditors than for non-Big N auditors. Furthermore, the additional audit fee premium associated with the initial going concern modification is in place at the withdrawal of the going concern modification for both Big N and non-Big N auditors. However, Big N auditors have an additional audit fee premium associated with the withdrawal of the going concern modification beyond the audit fee premium associated with the initial going concern modification. This is not the case for non-Big N auditors.

In order to ensure the robustness of the statistical significance of the results presented in Table B-5, the results in Table B-5 are replicated using natural log of total fees instead of natural log of audit fees as the dependent variable (not tabulated). The results remain unchanged. The results from Table B-5 are maintained when using robust standard errors.

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[111] Change in index is calculated as $2.61 = (\exp^{(0.233)} - 1)100 - (\exp^{(0.183+0.233-0.203)} - 1)100$.
The percentage change is calculated as $1.02 = (126.27 - 123.67) / 123.67$.
[112] Change in index is calculated as:
$39.70 = (\exp^{(0.183+0.294+0.067)} - 1)100 - (\exp^{(0.183+0.233-0.203+0.294+0.067+0.267-0.244)} -1)100$.
The percentage change is calculated as: $21.87 = (221.27 - 181.57) / 181.57$.

B.4 Discussion and Summary of Findings

When auditors assess the validity of the going concern assumptions and make a judgement about whether there is "substantial/significant doubt", the influence of litigation risk, dismissal risk and reputation risk are most likely to impact audit fees. Audit fees therefore give additional insight into auditors' assessment of the going concern assumption and their judgment regarding the "substantial/significant doubt" criterion. In Chapter Five, Table 5-7, there were no substantial differences in the results between Big N and non-Big N auditors. However, it was found, in Chapter 5, Table 5-8, that a large number of clients switched auditors between the initial going concern modification and the subsequent withdrawal, and that there were some inconsistencies *between* audit firms in the assessment of substantial doubt. The results presented here may provide some evidence as to why a large number of clients switched auditors from Big N to non-Big N. The audit fee premium associated with the issuance of an initial going concern modification is larger for Big N auditors (28.4%) compared to non-Big N auditors (20.0%). More importantly, when the going concern modification is withdrawn, the Big N auditors continue to charge a fee premium of 21.9% compared to the fee premium charged at the initial going concern modification. Non-Big N auditors do not charge this additional fee premium. It may be tempting to conclude that this is evidence that audit opinions may be bought for an additional fee, but that would contradict the findings in Chapter Five.[113] It is therefore reasonable to interpret the results as *prima facie* evidence that the perception of risk associated with issuing and withdrawing a going concern modification is different for Big N auditors and non-Big N auditors. The higher fee premiums charged by Big N auditors compared to non-Big N auditors would explain why there is an incentive to change auditors, especially from Big N to non-Big N, even if the new auditor is not more lenient in their interpretation of substantial doubt, compared to the previous auditor.

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[113] Although the change in audit opinion may be endogenous as a result of auditors changing their fees in response to the audit opinion, and changing their willingness to issue a certain audit opinion in relation to fees, it is, however, viewed as unlikely. This relationship has been investigated in previous literature in relation to auditor independence, but there has not been found any evidence of such a relationship between going concern modifications and the fees charged by the auditors (e.g. DeFond et al. 2002). Furthermore, it should be noted that there is no incentive for a firm with a going concern modification to choose a more independent auditor that charges lower fees and that would possibly be less likely to withdraw the going concern modification.

APPENDIX C

The Use of Logit Models in Assessing Auditors' Going Concern Decisions: Critical Issues and Justification of Methodology Choices

FOREWORD: Failure to understand how the logit model differs from ordinary least squares linear models can lead to a misunderstanding of statistical results and incorrect conclusions. Based on a review of the methodological literature, this appendix identifies critical issues in the use of the logit model and provides further justification for the methodological choices made in this thesis.

C.1 Introduction

The binary logit model is appropriate whenever modelling which of two alternatives occur. In the auditing literature, the typical use of the logit model is to investigate whether auditors will issue a going concern modification or not to a client. Likewise, the logit model is also the primary tool used for empirical analysis in this thesis. However, certain features of the logit model are notably different from an ordinary least square (OLS) linear regression, and as such, care must be taken when interpreting the results of the logit model. This appendix will draw upon recent developments in the methodological literature to highlight some of the critical issues, and to provide an in-depth justification of the methodological choices made in this thesis.

C.2 Identifying the Logit Model in a Going Concern Context

The binary logit model of going concern modifications can be motivated by invoking audit reporting behaviour as a latent variable. Going concern modifications can only be observed in two states: an auditor has issued a going concern modification, or the auditor has not. Yet, the observed going concern modifications are not issued under identical circumstances. While audit reporting behaviour cannot be directly observed, at some point a change in audit reporting behaviour will result in a change in what is observed: that is, going concern modification. For example, as the relative magnitude of an indicator of financial distress increases, it is reasonable that audit reporting behaviour changes and the auditor's propensity to issue a going concern modification increases. At some point, that propensity would cross a 'threshold' that would result in the auditor issuing a going concern modification. More formally, let y=1 if the client receives a going concern modification, and y=0 otherwise. In this model, the latent variable y* – namely, audit reporting behaviour that ranges from ∞ to -∞ – determines the value of the observed binary variables y – that is, going concern modification – according to the relationship y = 1 if y* > τ and y = 0 if y* ≤ τ, where τ is the *threshold*. Assume that τ = 0 and that *e* is independent of **x**, and that the distribution of *e*, call it G(.), is symmetric about 0, then:

$$\Pr(y = 1 \mid \mathbf{x}) = \Pr(y^* > 0 \mid \mathbf{x}) = \Pr(e > -(\beta_0 + \mathbf{x}\boldsymbol{\beta}) \mid \mathbf{x}) = 1 - G(-(\beta_0 + \mathbf{x}\boldsymbol{\beta})) = G(\beta_0 + \mathbf{x}\boldsymbol{\beta}) \qquad (5)$$

Where:
$\mathbf{x} = x_1 + x_2 + \ldots + x_k$
$\mathbf{x}\boldsymbol{\beta} = \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k$

Further, assuming that the $\text{Var}(e \mid \mathbf{x}) = \pi^2 / 3$, the logit model is given as:

$$\Pr(y = 1 \mid \mathbf{x}) = \frac{\exp(\mathbf{x}\boldsymbol{\beta})}{1+\exp(\mathbf{x}\boldsymbol{\beta})} = \frac{1}{1+\exp(-\mathbf{x}\boldsymbol{\beta})} \qquad (6)$$

This formula has two favourable characteristics. First, y is limited to between 0 and 1, as appropriate for a probability. Second, and as Hoetker (2007, p. 333) explains, the distribution (Figure C-1) is intuitively attractive.
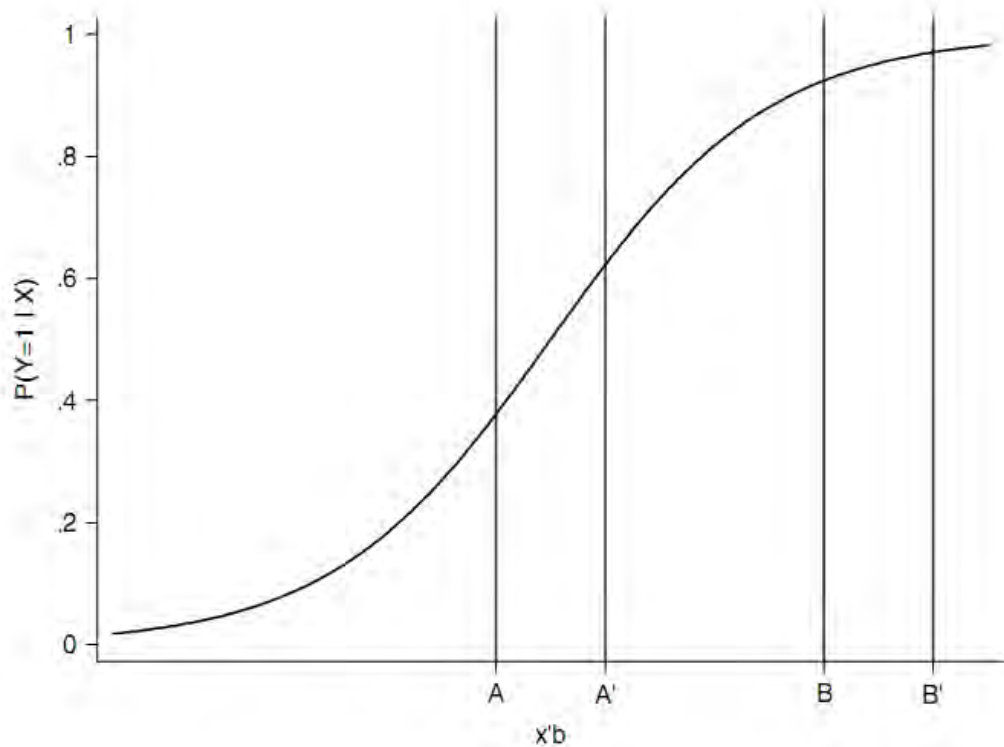
Figure C-1: The Logit Distribution

(Source: Hoetker 2007, p. 332)

The impact of changes in the coefficients on the probability of an event occurring depends on the initial probability of an event. If $\mathbf{x}\boldsymbol{\beta}$ moved from point A to point A', the probability increases from 0.4 to 0.6. However, a move of equal magnitude from point B to point B' increases the probability of the event by a smaller amount (approximately 0.92 to 0.97). This makes sense: an equal change in, say, liquidity is much more likely to change the decision of an auditor of a client with roughly equal propensity of receiving a going

concern modification than the decision of an auditor with a client with already a 90 percent chance of getting a going concern modification due to other factors.

C.3 Sample Size

Unlike linear regressions which are often fitted by using the least squares approach, the logit model is fitted by using maximum likelihood (ML) estimation. The (ML) estimator is consistent, efficient, and asymptotically normal under the usual assumptions, and these properties hold as the sample size approaches infinity (Long 1997). Although ML estimators are not necessarily bad estimators in small samples, the small-sample behaviour of ML estimators is largely unknown (Long and Freese 2006).[114] With this in mind, Long (1997, p. 77) proposed the following guidelines for the use of ML in a small sample:

> "It is risky to use ML with samples smaller than 100, while samples over 500 seem adequate. These values should be raised depending on characteristics of the model and data. First if there are many parameters, more observations are needed [….] A rule of at least 10 observations per parameter seems reasonable […] This does not imply that a minimum of 100 is not needed if you have only two parameters. Second, if the data are ill-conditioned (e.g. independent variables are highly collinear) or if there is little variation in the dependent variable (e.g. nearly all outcomes are 1), a larger sample is required."

The samples used in the empirical studies of this thesis vary from 19,571 client observations in the study with the most observations, to 1,284 in the study with the least. Further, analysis on sub-samples within the study with the least observations is performed with as little as 60 observations. The result on such small samples must be viewed with scepticism and interpreted with caution, as this is not only less than the 500 observation guideline proposed by Long (1997), and it is well under the minimum of 100 observations plus an additional 10 observations for each variable.

Furthermore, sample size always has an indirect effect on findings. In assessing the observed statistical disparity in a variable of interest, the probability concept of statistical significance is relied upon. This should, of course, under no circumstances be interpreted as being either important or meaningful. As the sample size increases (holding both the size of the effect and noise constant), smaller statistical disparities in a variable of interest are deemed not to be due to chance, and thus found statistically significant. It is therefore

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[114] It has recently been noted that logistic regression tends to systematically overestimate odds ratios or beta coefficients in samples of small and moderate size (Nemes et al. 2009).

imperative to assess the size of the effect (i.e. economic significance) – the magnitude and implications of the alleged statistical disparity – and not limit the discussion to statistical significance and the sign of the coefficients alone. Unfortunately, this is not a straight forward exercise due to the non-linear nature of the logit model, and thus care must be taken when interpreting the logit model's coefficients.

C.4   Interpreting Coefficients

Besides reporting on the significance and sign of logit coefficients, it is extremely useful to discuss economic significance by commenting on the variable's marginal effect: how much a change in a variable changes the probability of observing a going concern modification. This is more subtle than interpreting the coefficients in a linear OLS model, as the logit model's coefficients are unidentified without the stated assumptions about the mean and the variance of the error term. In other words, the magnitude of coefficients in the logit model cannot be interpreted directly as the logit model's coefficient reflect both the relationship between the independent variables and the underlying variable (in this case, audit reporting behaviour) as well as the identifying assumptions regarding the mean and variance of error term.[115] However, the probability that a going concern modification is issued (as given by equation 6 above) is an estimable function and invariant to the identifying assumptions of the logit model and can therefore be interpreted without concern for the arbitrary scale of the error term (Long 1997).[116] Thus, using probabilities and changes in probabilities as an integral part of the analysis in this thesis allows for interpretation of how the parameters correspond to meaningful changes in going concern modifications. Unlike statistical significance tests, these are independent of sample size. They are therefore similar to correlation coefficients in OLS. Yet, and as shown in Figure C-1, the effect of a change in one variable depends on the initial probability of observing a going concern modification – which is equivalent to say that the marginal effect of one variable depends on what the values are of all the other variables. Consideration has

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[115] A good illustration is the difference in the coefficients between fitting a logit and a probit model on the same data. The logit and the probit model produce different coefficients. This difference is mostly due to the identifying assumptions about the variance of the error term. However, in terms of probabilities, the logit and probit model are close to identical and lead to similar inferences.

[116] Since, in practice, all information relating to the auditors' judgment process with respect to going concern modifications cannot be gathered or known, deterministic predictions of the issuance of going concern modifications given certain financial characteristics cannot be made. On the other hand, predicting the probability of observing going concern modifications given certain financial characteristics, is unproblematic insofar as the assumptions made about the information that is not observed, is not erroneous.

therefore been given to present the results in an elegant and straightforward manner that still does justice to the complexities of the nonlinear logit model (Long and Freese 2006).

When considering the marginal effect of a variable of interest, one of the most common approaches is to set the other variables at the mean[117] (Long 1997), and this is also the primary method chosen to present the results in this thesis. Thus, in this thesis, economic significance is interpreted as the change in probability of receiving a going concern modification as the independent variable goes from nil to one, or from minimum to maximum, holding all other variables at their mean values.[118] Alternatively, one can set the other variables at some theoretically and empirically interesting values (e.g. median values, at certain percentiles, or the values of a specific firm, or any other values of interest). In this thesis, extensive sensitivity analysis is performed by holding the other independent variables at values other than the mean.

Some tend to report the marginal change in probability for a variable or even use odds ratios. However, these two methods of interpreting the magnitude of the effect of an independent variable may not always be appropriate. The marginal change is the instantaneous rate of change, and because the logit model is not linear, it does not equal the actual change in probability for a given finite change in the independent variable unless the marginal change is in a region of the probability curve that is approximately linear (Long and Freese 2006). As such, marginal change in probability may be an inappropriate interpretation of the economic significance, especially in the case of binary independent variables and financial ratios which may have rather large finite changes (Long 1997). Odds ratios are frequently presented and easy to calculate, but they are often misinterpreted and not intuitively meaningful (Hoetker 2007). The effect of a one unit change in variable x is to change the odds by a factor of $\exp(\beta x)$. Values greater than one increase the odds of the event occurring and values less than one decrease the odds. The benefit to this method is that this calculation applies for all variables and does not depend on the values of the other variables, avoiding the interpretation technicalities with probabilities. Unfortunately, a constant change in odds does not imply a constant change

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[117] This, however, should not be confused with an "average effect" (Hoetker 2007). The "average effect" may be obtained by calculating the response for each observation and then averaging those responses, and some prefer this method because it is unlikely that any single observation has the mean value of all variables (Train 1986, p43).

[118] For binary dummy variables, this is equivalent to saying as the value goes from nil to one, as the minimum is nil and the maximum is one.

in probabilities. As Long (1997, p 82) illustrates, if the original odds were 1:10, doubling the odds to 1:5 increases the probability from 0.091 to 0.167, a change of 0.076. On the other hand, if the original odds were 1:1, doubling the odds to 1:2 increases the probability from 0.5 to 0.667, an increase of over twice as much. Furthermore, the magnitude of the effect on probability is not symmetric around one (Long 1997, p. 82). The positive impact of multiplying the odds of an event by 5 ($\exp(\beta) = 5$) is the same as the negative impact of dividing the odds by 5 ($\exp(\beta) = 0.2$). It is far from intuitive that a coefficient of 5 corresponds in magnitude to 0.2, making misinterpretation likely.

C.5   Comparing Coefficients across Groups and Interactions

A peculiarity of the logit model is that the regressors are automatically interactive with respect to probabilities (i.e. the effect of a change in one variable on the probability to observe a going concern modification is dependent on the value of the other independent variables). However, to model interactions beyond what is incorporated into the nature of the logit link, there are two alternatives. A common method in the accounting literature to test for interactions between particular independent variables and across group factors (e.g. type of auditor: Big N vs non-Big N) is to have a product term that consist of the independent variable and a dummy variable(s) representing the group factors. An equivalent practice, but not so common in the accounting literature, is to estimate separate models for the group factors and then compare coefficients.[119] Unfortunately, because of the non-linear nature of the logit model, interpreting interaction effects by using product terms is complicated. Furthermore, in the case of logit models, both methods may lead to invalid conclusions if residual variation differs across groups.

C.5.1 Interactions by Product Terms

Ai and Norton (2003) demonstrate the difficulties in assessing the marginal effect of product terms in a logit model. In OLS models the interpretation of the coefficients of the interaction between two variables is straightforward. If x_1 and x_2 are continuous, the interaction effect of the independent variables x_1 and x_2 is the cross-derivative of the expected value of y:

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[119] In OLS, estimating regressions for two groups is equivalent of running a model that includes interaction terms for all independent variables with a dummy variable representing the groups. Thus, estimating the models for each group separately allows for any structural differences in regression functions across the groups beyond what is achieved with one simple interaction.

$$\frac{\partial^2 E[y|x_1, x_2, X]}{\partial x_1 \partial x_2} = \beta_{12} \qquad (12)$$

Similarly, if x_1 and x_2 are dichotomous, then the interaction effect of a change in both x_1 and x_2 from zero to one is found by taking discrete differences:

$$\frac{\Delta^2 E[y|x_1, x_2, X]}{\Delta x_1 \Delta x_2} = \beta_{12} \qquad (13)$$

The statistical significance of the interaction effect can be tested with a single t-test on the coefficient β_{12}. The intuition from linear models, however, does not extend to nonlinear logit models. To illustrate, suppose that x_1 and x_2 are continuous, except that the dependent variable y is binary variable: going concern modification or not. Ai and Norton (2003) and Hoetker (2007) state that the interaction effect of the variables, x_1 and x_2, is then the cross partial derivative[120] of π – the standard logistic probability distribution – with respect to each other:

$$\frac{\partial^2 \pi}{\partial x_1 \partial x_2} = \pi(1-\pi) \frac{\partial^2 X\beta}{\partial x_1 \partial x_2} + \pi(1-\pi)(1-2\pi) \frac{\partial^2 X\beta}{\partial x_1} \frac{\partial^2 X\beta}{\partial x_2} \qquad (14)$$

However, many interpret the marginal effect of the interaction term to be

$$\frac{\partial^2 \pi}{\partial x_1 \partial x_2} = \beta_{12}\pi \qquad (15)$$

As Ai and Norton (2003) explain, this is probably because software packages do not usually distinguish between uninteracted independent variables and product terms, and compute the marginal effect for any independent variable. But, clearly, equation 14 is quite different from equation 15. The implications are non-trivial. As Ai and Norton (2003, p. 124) explain:

> "Firstly, the interaction effect could be non-zero, even if $\beta_{12} = 0$ […] Secondly, the statistical significance of the interaction effect cannot be tested with a simple t-test on the coefficient of the interaction term β_{12}. Thirdly, the interaction effect is conditional on the independent variables, unlike the interaction effect in linear models [as explained above, this is similar to the marginal effect of a single uninteracted variable in a non-linear model is conditional on the value of the other independent variables]. […] Fourthly, the interaction effect [unlike a single uninteracted variable] may have different signs for different values of covariates."

Ai and Norton (2003) also demonstrate a method where the standard error of the estimated interaction effect can be found by applying the Delta method (see Ai and Norton 2003, p

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[120] Or in the case of binary independent variables: the cross-partial difference.

125). This is, however, beyond the scope of this discussion. The use of product terms in this thesis has been deliberately avoided because of the apparent complexities involved with using product terms in logit models to investigate interaction effects.[121] Furthermore, the issue concerning different residual variation across group-factors (discussed below) is still a valid concern when using product terms to investigate these factors. Indeed, since testing interaction by product terms involves only one equation, the problem regarding differing residual variation may cause even more distortion in estimated effect(s), as the presence of a single error term forces the unobserved variation to be the same across group factors (Hoetker 2007).

C.5.2 Interactions by Comparing Coefficients across Groups

Hoetker (2007) states that unlike OLS regression, comparing covariates' effects across group-factors is only valid if a little-noted and often violated assumption is true. In particular (Hoetker 2007, p. 28), "For cross-group differences in logit coefficients to be meaningful, each group must have the same amount of unobserved variation, that is, the variation in outcomes beyond that explained by the independent variables". Allison (1999, p. 190) states that if this is not the case, then "Differences in the estimated coefficients tells us nothing about the differences in the underlying impact of x on the two groups". Recall that the real interest is in the unobserved variable audit reporting behaviour, which ranges from $-\infty$ to ∞. Audit reporting behaviour (y^*) is related to the observed independent variables by the structural equation:

$$y^* = \mathbf{x\beta} + e \tag{16}$$

Of course, one cannot observe the audit reporting behaviour and the auditor's propensity to issue a going concern modification, only its actual choice (y): going concern modification or not. In equation 12, it was shown that for given value of $\mathbf{x}$:

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[121] Jaccard (2001, p. 21) notes that "For an interactive logistic model with two qualitative predictors, X and Z, and the relevant product terms XZ (defined using dummy coding), the logistic coefficient for any dummy variable for X is conditioned to the reference group for Z. The exponent of the logistic coefficient for any dummy variable for X is the odds ratio that divides the predicted odds for the group scored 1 on the dummy variable for X by the predicted odds for the reference group on X, for the case where the dummy variable on Z equal zero". Further, Jaccard (2001, pp.22-23) notes that " For an interactive logistic model with two qualitative predictors, X and Z, and a product term, XZ, let X be the focal independent variable and let Z be the moderator variable. For the case of dummy coding, the exponent of the logistic coefficient for a product term is a ratio of predicted odds ratios. It focuses on the predicted odds for the group scored 1 on the dummy variable X divided by the predicted odds for the reference group on X and divides this odds ratio when computed for the group scored 1 on the dummy variables for Z by the corresponding odds ratios for the reference group on Z". Thus, interpreting product terms by focusing on odds is possible, but this provides results that are not very intuitive and hard to interpret. As noted above, even simple odds ratios are difficult to interpret. It follows that interpreting a ratio of odds ratios is even harder.

$$\Pr(y = 1 \mid \mathbf{x}) = \Pr(y^* > 0 \mid \mathbf{x}) \qquad (12)$$

Further, by substituting the structural term and rearranging the terms:

$$\Pr(y = 1 \mid \mathbf{x}) = \Pr(e > - (\beta_0 + \mathbf{x}\boldsymbol{\beta}) \mid \mathbf{x}) \qquad (17)$$

This equation shows that the probability depends on the distribution of the error e, which when assumed to be distributed logistically with $\mathrm{Var}(e \mid \mathbf{x}) = \pi^2 / 3$ leads to binary logit model (equation 6). The problem arises because there is no natural numeric scale for y^* - the underlying variable that is audit reporting behaviour – and thus certain assumptions for the error term are necessary to obtain an estimable model (Hoetker 2007). These assumptions lead to the following relationship between the coefficient terms in Equation 16 for the unobserved latent variable (y^*) and the coefficient terms in Equation 6 for the observable actual outcomes (y):

$$B_y = \frac{\beta_{y*}}{\sigma} \qquad (18)$$

where σ is the standard deviation of the error term or unobserved variation, e. If σ could be identified, β_{y*} could be calculated, the variable of real theoretical interest, for a given estimate of β_y. Unfortunately, and as both Allison (1999) and Hoetker (2007) remark, σ is unobservable.

Allison (1999) proposes a test that removes the effect of residual variation by assuming that the coefficient for at least one independent variable is the same across the group-factors. Unfortunately, a lack of sufficient theoretical or empirical information may make such an assumption hard to justify (DeMarris 2004). Making an ad hoc decision that some regression coefficients are equal can thus lead to incorrect inferences. But as Hoetker (2007) explains, if the model is estimated separately for the groups, one can – at a minimum – compare the statistical significance of the coefficients across the group-factors, as the coefficients and standard errors are consistent within each group. Obviously, such statements are more informative if the samples are of roughly the same sample size, the model well specified and the p-values do not straddle a particular significance level (e.g. 0.06 for one group and 0.04 for another) (Hoetker 2007).

Furthermore, under the strict assumption that there is no difference in unobserved variation, differences in a specific coefficient can be formally tested by using a simple Wald test as proposed by Liao (2004). The test statistic is calculated as:

$$\chi^2 = \frac{(\beta_1 - \beta_2)^2}{(Std.Err_1^2 + Std.Err_2^2)} \qquad\qquad (19)$$

The test statistic is χ^2 distributed with one degree of freedom. Furthermore, by using two groups, one can formally test the null hypothesis that two populations or groups follow the same regression function, against the alternative that one or more of the slopes differ across the groups.

In OLS, the Chow test is a useful F statistic for testing the equality of regression parameters across group-factors (e.g. Big N and non-Big N). Let SSR_1 be the sum of squared residuals obtained estimating the regression for first group and SSR_2 be the sum of squared residuals obtained from estimating the regression for the second group. Let SSR_P be the sum of squared residuals from pooling the groups and estimating the regression. Once these are obtained, the F statistic is simply calculated as:

$$F = \frac{[SSR_p - (SSR_1 + SSR_2)]}{SSR_1 + SSR_2} * \frac{[n - 2(k+1)]}{k+1} \qquad\qquad (20)$$

Where n is the total number of observations and k is the number of explanatory variables. Because the Chow test is just an F test, under the null hypothesis, the error variances for the two groups must be equal. There is an analogue of the Chow test for logistic regression (see outline by DeMarris 2004, pp. 283-284).[122] The Chow test analogue for logistic regression involves estimating the model for the pooled sample and for each group separately. For two groups, the test statistic is:

$$\chi^2 = -2\ln L_p - [-2\ln L_1 + (-2\ln L_2)] \qquad\qquad (21)$$

where lnL_p is the fitted log likelihood for the pooled sample, lnL_1 is the fitted log-likelihood for group one, and lnL_2 is the fitted log likelihood for group two. Under the null hypothesis that regressor effects are the same across groups, χ^2 has a chi-squared distribution with degrees of freedom equal to the difference in number of parameters estimated in the pooled sample versus the sum of the parameters of the two groups. Again,

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[122] Liao (2004) also suggested a Wald test for the equality of regression parameters without the need to run a pooled regression.

this test is only valid under the strict assumption that there is no difference in unobserved variation between the groups.

In the empirical studies of this thesis, comparisons of coefficients across group-factors are done by estimating the logit model separately for groups. In doing so, the coefficients and standard errors are ensured to be consistent within each group. Further, this allows for differences in the regression function across all the independent variables.[123] Differences in specific coefficients are tested by using the Wald statistic as proposed by Liao (2004) and differences in the regression function is tested using the analogue of the Chow test for logistic regression. Nevertheless, it is noted that this formal testing is conducted under the assumption that there is equal unobserved residual variation across groups. As Hoetker (2007) has noted, while it is frustrating not to be able to conduct comparisons across groups with the same confidence as in the linear setting, no results are superior to spurious results.

C.6 Model Fit

In OLS regression, it is common to provide a measure of how well the model fits the data, such as R^2. Unfortunately, no direct equivalent to R^2 exists for logit models. A wide range of pseudo-R^2 measures have been proposed. For a given model, the different pseudo-R^2 might take on different values, and this difference is not necessarily consistent across models and samples. Often the pseudo-R^2 of a model is reported without identifying which specific pseudo-R^2 measure is being used. Without that information, the meaning of the measure or comparisons to similar models in other papers becomes hard. In this thesis MacFadden's pseudo-R^2 and MacFadden's adjusted pseudo-R^2 is used throughout. The formula for MacFadden's pseudo-R^2 is:

$$\text{Pseudo-}R^2 = 1 - \frac{\ln L_U}{\ln L_R} \tag{22}$$

where L_U and L_R are the likelihood of the model with and without regressors respectively. The formula for MacFadden's adjusted pseudo-R^2 is:

$$\text{Adjusted pseudo-}R^2 = 1 - \frac{\ln L_U - K}{\ln L_R} \tag{23}$$

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[123] For a given regression specification in an OLS setting, running separate regressions in subsamples is essentially the same as running one regression in the combined sample where the regression includes interactions between the regression variables with an indicator variable for subsample membership.

where L_U and L_R are the likelihood of the model with and without regressors respectively, and K is the number of regressors. Because audit reporting behaviour is unobservable, it is not possible as it is in linear models to calculate what percentage of its variance the model explains (Hoetker 2007). Consequently, pseudo-R^2 should not be interpreted this way either. Nevertheless, the ratio of the likelihoods suggests the level of improvement over the intercept model offered by the full model. A likelihood falls between 0 and 1, so the log of a likelihood is less than or equal to zero. If a model has a very low likelihood, then the log of the likelihood will have a larger magnitude than the log of a more likely model. Thus, a small ratio of log likelihoods indicates that the full model is a far better fit than the intercept model. Since McFadden's pseudo R^2 measure subtracts the ratio of log likelihoods from 1, in a comparison between two models McFadden's pseudo R^2 would be higher for the model with the greater likelihood. McFadden's adjusted pseudo R^2 penalises a model for including too many predictors. If the predictors in the model are effective, then the penalty will be small relative to the added information of the predictors. However, if a model contains predictors that do not add sufficiently to the model, then the penalty becomes noticeable and the adjusted pseudo R^2 can decrease with the addition of a predictor, even if the pseudo R^2 increases slightly. Note that negative McFadden's adjusted pseudo R^2 are possible.

C.7 Matched Samples

By using a matching procedure, it is possible to restrict and reorganise the sample to exhibit better balance and overlap in confounding variables[124] across countries. Matching is a technique used to lessen model dependence (Sekhon 2009).[125]

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[124] Imbalance occurs if the distributions of relevant control variables differ between the countries at hand (Sekhon 2009). Imbalance creates problems because more reliance needs to be put on the model correctness than if the samples were balanced with respect to confounding variables across countries. Lack of complete overlap occurs if there are regions in the space of relevant control variables where there are observationsfrom one country, but none from other countries. Overlap describes the extent to which the range of the data is the same across the variables of interest. Lack of complete overlap creates problems because it means that there are observations from one country for which there are no counterfactuals (that is, observations from other countries with the same covariate distribution) and vice versa. A model fitted to such data is forced to extrapolate beyond the support of the data.

[125] The illustrate the point, Rosenbaum (2005, p. 151) cites an observational study that deals with the heterogeneity issue in a clever way: "Different crashes occur on different motorcycles, at different speeds, with different forces, on highways or country roads, in dense or light traffic, encountering deer or Hummers. One would like to compare two people, one with a helmet, the other without, on the same type of motorcycle, riding at the same speed, on the same road, in the same traffic, crashing into the same object. Is

While larger samples are usually equated with smaller standard errors and less uncertainty, which should equal better inferences, Rosenbaum (2005, p. 151) presents a different view. He demonstrates that heterogeneity, and not sample size, matters for the sensitivity of inferences to omitted variable bias. He concludes that:

> "In observational studies, reducing heterogeneity reduces both sampling variability and sensitivity to unobserved bias—with less heterogeneity, larger biases would need to be present to explain away the same effect. In contrast, increasing the sample size reduces sampling variability, which is, of course useful, but it does little to reduce concerns about unobserved bias."

Consequently, and although matching cannot solve the problem of omitted variable bias, it may to some extent alleviate it. This is an important point, as controlling for all possible variables which affect an auditor's assessment of the going concern assumption is inherently difficult as auditors are privy to information that is not publicly available.

Matching on exogenous variables, as done in Chapter 4 section 4.5.4, is essentially sampling from different strata of the exogenous variables at different rates. Once the matched observations have been selected out of the larger dataset, they can be analysed to estimate the effect of the variables of interest in the area of overlap. Matching will result in the density in the sample to be different from that of the population. If the matching is done purely on exogenous variables, however, then the usual maximum likelihood estimator is still consistent because the conditional density of type of audit report (y) given the independent variables (**x**) in the sample is the same as that in the population (Cameron and Trividi 2005). Thus, exogenous stratification does not affect the analysis and the normal logit model is still appropriate.

When using choice-based samples (i.e. selected on dependent variables) as in Chapter 5 of this thesis, the use of the "normal" logit model is incorrect and may lead to rejection of the null hypothesis when the null is true or failure to reject the null hypothesis when the null is false (Cram et al. 2009). Cram et al. (2009) further note three specific errors commonly made with choice-based samples: Error 1, the use of unconditional analysis, when analysis

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this possible? It is when two people ride the same motorcycle, a driver and a passenger, one helmeted, the other not...." The extension to auditing and the issue on hand is clear. When assessing country differences in auditors' assessment of the going concern assumption across countries, one would like make comparisons of auditors across countries that have similar audit clients. If the analysis focuses on similar audit clients across countries, less dependence on the model to control for the differences is required.

conditional on effects of matching variables is needed; Error 2, failure to control for effect of imperfectly matched variables; and Error 3, failure to reweight observations according to differing sampling rates. Since the research design of the study found in Chapter 5 uses a matched within subject sample – four firm-year observations for the same firm – Error 1 is of particular concern. In a within-subject design, Error 2 is not possible; there is a perfect matching of each firm. Furthermore, if subjects are chosen randomly, then there is no issue of non-random selection that would require reweighting to strata proportions – so, within-subjects studies are not affected by Error 3.

As Cram et al. (2009, pp. 479-480) explains, Error 1 constitutes a threat to internal validity. Outcomes used as dependent variables in accounting research, such as going concern modifications and audit fee levels, will vary by, for example, industry. Other independent variables that might predict those outcomes, such as accounting ratios, will also vary by industry. One might hope to control for industry by a modified analysis of a sample selected using matching that obtains pairs of observations from the same industry. Pair-wise differences in an outcome could then be explained by pair-wise differences in independent variables. Within pairs, the pair-wise difference in industry is zero, so industry variables would drop out of the analysis. An OLS regression investigating audit fees can implement such a differences-on-differences approach directly (i.e. a first-differenced equation). Equivalent results are obtained by OLS regression of the pooled data without taking pair-wise differences but including a dummy variable for each pairing (as done in Appendix B of this thesis). This also has the benefit of being able to investigate key explanatory variables that do not vary much over time (Wooldridge 2006). For discrete outcomes such as going concern modifications, the correct method of analysis taking pairings into account is termed conditional logit. These are conditional analyses in that they find effects that are conditional on, for example, industry. For instance, within a given industry it may be found that an accounting ratio has an effect on bankruptcy. This within-group effect may not be found if the data are pooled (as in an unconditional analysis) rather than analysed conditionally on industry. Thus, to avoid Error 1, pairing is accounted for in the analysis in Chapter 5 by using conditional logit for the analysis of going concern modifications.

The conditional logit model allows fitting as to how the choice of nominal alternatives is affected by characteristics of the alternatives that vary across cases. In the conditional logit model, the predicted probability of observing outcome m is

$$\Pr(y = m \mid \mathbf{z}) = \frac{\exp(\mathbf{z}_m \mathbf{\gamma})}{\sum_{j=1}^{J} \exp(\mathbf{z}_j \mathbf{\gamma})} \text{ for } m = 1 \text{ to } J \tag{24}$$

where $\mathbf{z}_m$ contains values of the independent variables for alternative m for each case. In this thesis, the conditional logit model is used where there are two alternatives for each firm: a going concern modification and a clean audit opinion. For a single independent variable, z_m, for example, the level of liquidity of a firm at each of the two different alternatives. Then $\mathbf{\gamma}$ is a parameter indicating the effect of liquidity on the probability of choosing one alternative over the other.

C.8   Summary

The primary tool used in the empirical studies of this thesis is the logit model. The logit models differ from linear OLS models, and failure to understand this may lead to significant misunderstanding of empirical results and the associated theoretical relationships. In analysing and presenting the results of the empirical studies within this thesis, much attention has been given to address the critical issues identified in recent methodological literature across multiple disciplines; in particular, interpretation of coefficients in a meaningful way, in comparing coefficients across groups, measuring the model fit, and how to deal with matched samples. These critical issues are reflected in the methodology choices made in this thesis, and consideration has been given to present the results in an elegant and straightforward manner. The methodology and presentation of results may not coincide with the conventional practice within the accounting literature, but recent advances in methodology are too important to ignore.

References

AASB, 2007, *Auditing Standard ASA 570: Going Concern*, Auditing and Assurance Standards Board, Melbourne

Advisory Committee on The Auditing Profession 2008, *Final Report of the Advisory Committee on the Auditing Profession to the U.S. Department of the Treasury*, viewed on 15 Oct 2008 available at:
< http://www.treasury.gov/about/organizational-structure/offices/Pages/acap-index.aspx >

Ai, C and Norton, E 2003, 'Interaction Terms in Logit and Probit Models', *Economic Letters*, Vol. 80, No. 1, pp. 123-129.

AICPA 1988, *The Auditor's Consideration of an Entity's Ability to Continue as a Going Concern*, SAS No. 59, AICPA, New York.

AICPA 2010, AU Section 341: *The Auditor's Consideration of an Entity's Ability to Continue as a Going Concern*, viewed on 28 Aug 2010 available at:
<http://www.aicpa.org/Research/Standards/AuditAttest/DownloadableDocuments/AU-00341.pdf>

Aizenman, J and Marion, N 1993, 'Macroeconomic Uncertainty and Private Investment', *Economic Letters*, Vol. 41, No. 2, pp. 207-210.

Alexander, D 2006, 'Legal Certainty, European-ness and *Realpolitik*', *Accounting in Europe*, Vol. 3, No. 1, pp. 65-80.

Alexander, D and Jermakowicz, E 2006, 'A True and Fair View of the Principles/Rules Debate', *Abacus*, Vol. 42, No. 2, pp. 132-164.

Allison, P 1999, 'Comparing Logit and Probit Coefficients across Groups', *Sociological Methods and Research*, Vol. 28, No. 2, pp. 186-208.

Allison, P 2009, *Fixed Effects Regression Models*, (Sage University Papers Series on Quantitative Applications in Social Sciences, Series no. 07-160), Sage, Thousand Oaks.

Altman, E 1968, 'Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy', *The Journal of Finance*, Vol. 23, No. 4, pp. 589-609.

Altman, E 1982, 'Accounting Implications of Failure Prediction Models', *Journal of Accounting, Auditing and Finance*, Vol. 6, No.1, pp. 4-19.

Altman, E and McGough, T 1974, 'Evaluation of a Company as a Going Concern', *Journal of Accountancy*, Vol. 136, No. 6, pp. 51-57.

Argenti, J 1976, *Corporate Collapse: The Causes and Symptoms*, McGraw-Hill, London.

Ashton, A 1985, 'Does Consensus Imply Accuracy in Accounting Studies of Decision Making?', *The Accounting Review*, Vol. 60, No.2, pp. 173–185.

Ashton, A and Ashton, R 1988, 'Sequential Belief Revision in Auditing', *The Accounting Review*, Vol. 63, No. 4, pp. 623–641.

Auditing Standards Board 2010, *The Statement on Quality Control Standards No. 7 (SQCS 7): A Firm's System of Quality Control*, AICPA.

Audit Quality Forum 2005, '*Agency Theory and the Role of Audit*', The Institute of Chartered Accountants in England and Wales, viewed 20 June 2008 available at:
<www.icaew.co.uk/auditquality>

Baginski, S, Hassell, J Kimbrough, M 2002, 'The Effect of Legal Environment on Voluntary Disclosure: Evidence from Management Earnings Forecasts Issued in U.S. and Canadian Markets', *The Accounting Review*, Vol. 77, No. 1 , pp. 25-50.

Baker, C, and Barbu, E 2007, 'Trends in Research on International Accounting Harmonisation', *The International Journal of Accounting,* Vol. 42, No. 3, pp. 272-304.

Ball, R 2005, 'International Financial Reporting Standards (IFRS): Pros and Cons for Investors', Working Paper.

Bamber, E and Bylinski, J 1982, 'The Audit Team and the Audit Review Process: An Organizational Approach', *Journal of Accounting Literature*, Vol. 1, pp. 33-55.

Barnes, P 2004, 'The Auditor's Going Concern Decision and Types I and II Errors: The Coase Theorem, Transaction Costs, Bargaining Power and Attempts to Mislead' *Journal of Accounting and Public Policy*', Vol. 23, No. 6, pp. 415-440.

Barro, R and Sala-I-Martin, X 1992, 'Convergence', *Journal of Political Economics*, Vol. 100, No. 2, pp. 223-251.

Bebbington, J and Song, E 2004, 'The Adoption of IFRS in the EU and New Zealand: A Preliminary Report', Working Paper, available at: <http://aei.pitt.edu/10940/>

Bedard, J, Carson, E and Simnett, R 2010, 'The Impact of Cross-Listing on Audit Fees: Disentangling the Effects of Litigation Risk and Audit Effort, Working Paper.

Behn, B, Kaplan, S and Krumwiede, K 2001, 'Further Evidence on the Auditor's Going-Concern Report: The Influence of Management Plans', *Auditing: A Journal of Practice and Theory*, Vol. 20, No. 1, pp. 13-29.

Bell, T and Tabor, R 1991, 'Empirical Analysis of Audit Uncertainty Qualifications', *Journal of Accounting Research*, Vol. 29, No. 2, pp. 350-370.

Beneish, M and Press, E 1993, 'Costs of Technical Violation of Accounting-Based Debt Covenants', *The Accounting Review,* Vol. 68, No. 2, pp. 223-257.

Bernanke, B 1990, 'On the predictive power of interest rates and interest rate spreads', *New England Economic Review,* Issue (Nov), pp. 51-68.

Besanko, D, Dranove, D, Shanley M and Schaefer, S 2006, *Economics of Strategy*, 4th Edn., John Wiley and Sons, Hoboken.

Blay, A 2005, 'Independence Threats, Litigating Risk, and the Auditor Decision Process', *Contemporary Accounting Research*, Vol. 22, No. 4, pp. 759-789.

Blay, A and Geiger, M 2001, 'Market Expectations for First-Time Going-Concern Recipients', *Journal of Accounting, Auditing, and Finance*, Vol. 16, No. 3, pp. 209–226.

Blay, A, Geiger, M and North, D 2011, 'The Auditor's Going-Concern Opinion as a Communication of Risk', *Auditing: A Journal of Practice and Theory*, Vol. 30, No. 2, pp.77-102.

Bowrin, A 1998, 'Review and Synthesis of Audit Structure Literature, *Journal of Accounting Literature*, Vol. 17, pp. 40-71.

Boyle, G and McCarthy, T 1997, 'A Simple Measure of B-Convergence', *Oxford Bulletin of Economics and Statistics*, Vol. 59, No. 2, pp. 257-263.

Butterworth, S and Houghton, K 1995, 'Auditor Switching and the Pricing of Audit Services' *Journal of Business Finance and Accounting*, Vol 22, No. 3, pp. 431-454.

Cameron, A and Trividi, P 2005, *Microeconometrics: Methods and Applications*, Cambridge University Press, New York.

Camfferman, K and Zeff, S 2007, *Financial Reporting and Global Capital Markets: A History of the International Accounting Standards Committee*, *1973-2000*, Oxford University Press, Oxford.

Commonwealth Government of Australia 2004, *Corporation Law Economic Program Act of 2002* (CLERP 9), Australian Government Publishing Service, Canberra.

Campbell, S 1996, 'Predicting Bankruptcy Reorganization for Closely Held Firms', *Accounting Horizons* Vol. 10, No. 3, pp. 12-25.

Carcello, J, Hermanson, D and Huss, H 1995, 'Temporal Changes in Bankruptcy-Related Reporting', *Auditing: A Journal of Practice and Theory*, Vol. 14, No. 2, pp. 133-143.

Carcello, J, Hermanson, D and Huss, H 2000, 'Going-Concern Opinions: the Effects of Partner Compensation Plans and Client Size', *Auditing: A Journal of Practice and Theory*, Vol. 19, No. 1, pp. 66-77.

Carcello, J and Neal, T 2000, 'Audit Committee Composition and Auditor Reporting', *The Accounting Review*, Vol. 75, No. 4, pp. 453-467.

Carcello, J and Neal, T 2003, 'Audit Committee Characteristics and Auditor Dismissals Following "New" Going-Concern Reports', *The Accounting Review*, Vol. 78, No. 1, pp. 95–117.

Carcello, J and Palmrose, Z 1994, Auditor Litigation and Modified Auditing Report and Modified Reporting on Bankrupt Clients, *Journal of Accounting Research*, Vol. 32, (supplement), pp. 1-30.

Carey, P, Geiger, M and O'Connell, B 2008, 'Costs Associated With Going-Concern-Modified Audit Opinions: An Analysis of the Australian Audit Market', *ABACUS*, Vol. 44, No. 1, pp. 61-81.

Carey, P, Kortum, S and Moroney, R 2011 , 'Auditors' Going-Concern Modified Opinions after 2001: Measuring Reporting Accuracy', *Accounting and Finance*, Forthcoming.

Carey, P and Simnett, R 2006, 'Audit Partner Tenure and Audit Quality', *The Accounting Review*, Vol. 81, No. 3, pp. 653-676.

Carree, M and Klomp, L 1997, 'Testing the Convergence Hypothesis: A Comment', *The Review of Economics and Statistics*, Vol. 79, No. 4, 683-686.

Carson, E 2006, *Global Industry Specialization by Audit Firm Networks*, Thesis (PhD), University of New South Wales.

Carson, E 2009, 'Industry Specialization by Global Audit Firm Networks', *The Accounting Review*, Vol. 84, No. 2, pp. 355-382.

Carson, E and Dowling, C 2010, 'The Production of Audit Services: The Relationship between Audit Support System Design and Audit Pricing by Global Audit Firm Networks', Working Paper.

Causholli, M, De Martines, M, Hay, D and Knechel, R 2011, 'Audit Markets, Fees and Production: Towards an Integrated View of Empirical Audit Research', *Journal of Accounting Literature*, Forthcoming.

Causholli, M, Knechel, R, Lin, H and Sappington, D 2010,'Competitive Procurement of a Credence Good: The Case of Auditing', Working Paper.

Chen, K and Church, B 1992, 'Default on Debt Obligations and the Issuance of Going-Concern Opinions', *Auditing: A Journal of Practice and Theory*, Vol. 11, No. 2, pp. 30-50.

Chenok, P 1994, 'Worth Repeating' *Journal of Accountancy,* Vol. 177, No. 1, pp. 47–50.

Choi, J, Kim, J, Liu, X, and Simunic, D 2008, 'Audit Pricing, Legal Liability Regimes, and Big 4 Premiums: Theory and Cross-Country Evidence, *Contemporary Accounting Research*, Vol. 25, No. 1, pp. 55-99.

Choi, J and Wong, T 2007, 'Auditors' Governance Functions and Legal Environments: An International Investigation', *Contemporary Accounting Research*, Vol. 24, No. 1, pp. 13-46.

Chow, C, Kramer, L and Wallace, W 1988, 'The Environment of Auditing', in: Abdel-khalik, A and Solomon, I (ed), *Research Opportunities in Auditing: The Second Decade*, American Accounting Association, Sarasota.

Chow, C and Rice, S 1982, 'Qualified Audit Opinions and Auditor Switching', *The Accounting Review*, Vol. 57, No. 2, pp. 326–335.

Church, B 1990, 'Auditors' Use of Confirmatory Processes', *Journal of Accounting Literature*, Vol. 9, pp. 81-112.

Citron, D and Taffler, R 1992, 'The Audit Report under Going Concern Uncertainties: An Empirical Analysis', *Accounting and Business Research,* Vol. 22, No. 88, pp. 337-347.

Cook, J, Freedman, E, Groves, R, Madonna, J, O'Malley, S and Weinbach, L 1992, 'The Liability Crisis in the United States: Impact on the Accounting Profession', *Journal of Accountancy*, Vol. 174, No. 5, pp. 19–23.

Cram, D, Karan, V and Stuart, I 2009, 'Three Threats to Validity of Choice-Based and Matched-Sample Studies in Accounting Research', *Contemporary Accounting Research*, Vol. 26, No. 2, pp. 477-516.

Craswell, A, Francis, J and Taylor, S 1995, 'Auditor Brand Name Reputations and Industry Specializations', *Journal of Accounting and Economics*, Vol. 20, No. 3, pp. 297-322.

Cushing, B and Loebbecke, J 1986, *Comparison of Audit Methodologies of Large Accounting Firms*, American Accounting Association, Sarasota.

Darley, J and Gross, P 1983, 'A Hypothesis-Confirming Bias in Labelling Effects', *Journal of Personality and Social Psychology*, Vol. 44, No. 1, pp. 20-33.

Davidson, P and Wahlund, R 1992, 'A Note on the Failure to Use Negative Information', *Journal of Economic Psychology*, Vol. 13, No. 2, pp. 343-353.

Davis, E, Kennedy, S, Mianes, L 2000, 'The Relation between Consensus and Accuracy in Low-to-Moderate Accuracy Tasks: An Auditing Example', *Auditing: A Journal of Practice & Theory*, Vol. 19, No. 3, pp. 101-122.

Deakin, E 1976, 'Distributions of Financial Accounting Ratios: Some Empirical Evidence', *The Accounting Review*, Vol. 51, No. 1, pp. 90-96.

DeAngelo, L 1981, 'Auditor Independence, "Low Balling", and Disclosure Regulation', *Journal of Accounting and Economics*, Vol. 3, No. 2, pp. 113–127.

DeAngelo, L 1981, 'Auditor Size and Audit Quality', *Journal of Accounting and Economics*, Vol 3, No. 2, pp. 189–199.

DeFond, M, Raghunandan, K and Subramanyam, K 2002, 'Do Non-Audit Service Fees Impair Auditor independence? Evidence from Going Concern Audit Opinions', *Journal of Accounting Research*, Vol. 40, No. 4, pp. 1247-1274.

DeMaris, A 2004, *Regression With Social Data: Modelling Continuous and Limited Response Variables*, John Wiley and Sons, Hoboken.

DeMasi, P 1997, 'IMF Estimates of Potential Output: Theory and Practice', in: *Staff Studies for the World Economic Outlook,* International Monetary Fund, Washington.

Dickey, J and Scanlon, M 2006, '"Principles-Based" Accounting Standards – An Accident Waiting to Happen?', *Insights: The Corporate & Securities Law Advisor*, Vol. 20, No. 2, pp. 13-18.

DiPiazza, S, McDonnell, D, Parrett, W, Rake, M, Samyn, F, and Turley, J 2006, 'Global Capital and the Global Economy; A Vision from the CEOs of the International Audit Networks', Global Public Policy Symposium, viewed on 03 Jan 2011 available at: <http://www.globalpublicpolicysymposium.com/CEO_Vision.pdf>

Dirsmith, M and McAllister, J 1982, 'The Organic vs. the Mechanistic Audit', *Journal of Accounting, Auditing, & Finance*, Vol. 5, No. 3, pp. 214-228.

Dopuch, N, Holthausen, R and Leftwich, R 1986, 'Abnormal Stock Returns Associated with Media Disclosures of "Subject to" Qualified Audit Opinions', *Journal of Accounting and Economics*, Vol. 8, No. 2, pp. 93–118.

Dopuch, N, Holthausen, R and Leftwich, R 1987, 'Predicting Audit Qualifications with Financial and Market Variables', *The Accounting Review*, Vol. 62, No.3, pp. 431-454.

Dopuch, N, and Simunic, D 1980, 'Competition in Auditing: An Assessment', Proceedings of the *Symposium on Auditing Research IV*, University of Illinois, Urbana-Champaign, pp. 403-450.

Duff, A 2004, *Auditqual: Dimensions of Audit Quality*, The Institute of Chartered Accountants of Scotland, Edinburgh.

Dye, R 1993, 'Auditing Standards, Legal Liability, and Auditor Wealth', *Journal of Political Economy*, Vol. 101, No. 5, pp. 887-914.

Eilifsen, A, Messier, W, Glover, S, Prawitt, D 2006, *Auditing and Assurance Services: International Edition*, McGraw-Hill, Maidenhead.

Ellingsen, J, Pany, K and Fagan, P 1989, 'SAS No. 59: How to Evaluate Going Concern', *Journal of Accountancy*, Vol. 167, No. 1, pp. 24–31.

Elliott, R 1998, 'Assurance Services and the Audit Heritage' *Auditing: A Journal of Practice and Theory,* Vol. 17, (Supplement), pp. 1-8.

Elliott, R and Jacobson, P 1987, 'The Auditor's Standard Report: The Last Word or in Need of Change?', *Journal of Accountancy*, Vol. 165, No. 2, pp. 72-79.

Elliott, R and Pallais, D 1997, 'Are you ready for new assurance services?', *Journal of Accountancy*, Vol. 183, No. 6, pp. 47-51.

Ettredge, M, Li, C and Emeigh, E 2011, 'Auditor Independence during the 'Great Recession' of 2007-2009, Working Paper.

European Commission 2010, *Green Paper on Consultation of Audit Policy – Lessons from the Crises*, viewed on 20 October 2010 available at: <http://ec.europa.eu/internal_market/consultations/2010/green_paper_audit_en.htm>

Fabozzi, F 2005, *The Handbook of Mortgage-Backed Securities*, 6th Edn., McGraw-Hill, New York.

Fama, E and Jensen, M 1983, 'Separation of Ownership and Control', *Journal of Law and Economics*, Vol. 26, No. 2, pp. 301-325.

Fargher, N and Jiang, A 2009 'Changes in the Audit Environment and Auditors' Propensity to Issue Going-Concern Opinions', *Auditing: A Journal of Practice and Theory*, Vol. 27, No. 2, pp. 55-77.

FASB 2009, *Board Meeting Handout: Proposed FASB Statement on Going Concern*, viewed on 15 Jan 2011 available at: <http://www.fasb.org/jsp/FASB/Document_C/DocumentPage&cid=1176155874246>

Ferguson, A, Francis, J and Stokes, D 2003, 'The Effects of Firm-Wide and Office-Level Industry Expertise on Audit Pricing', *The Accounting Review,* Vol. 78, No. 2, pp. 429-448.

Fleak, S, and Wilson, E 1992, 'The Incremental Information Content of the Going-Concern Audit Opinion', *Journal of Accounting, Auditing and Finance*, Vol. 9, pp. 149–166.

Francis, J 1984, 'The Effect of Audit Firm Size on Audit Prices: A Study of the Australian Market', *Journal of Accounting and Economics*', Vol. 84, No. 2, pp. 133-151.

Francis, J 2004, 'What do We Know about Audit Quality?', *The British Accounting Review*, Vol. 36, No. 4, pp. 345-368.

Francis, J 2011,'A Framework for Understanding and Researching Audit Quality', *Auditing: A Journal of Practice and Theory*, Vol. 30, No. 2, pp. 125-153.

Francis, J , Khurana, I and Pereira, R 2003, 'The Role of Accounting and Auditing in Corporate Governance and the Development of Financial Markets Around the World', *Asia Pacific Journal of Accounting and Economics*, Vol. 10, No.1, pp. 1-30.

Francis, J and Krishnan, J 2003, 'Evidence on Auditor Risk-Management Strategies Before and After the Private Securities Litigation Reform Act of 1995', *Asia-Pacific Journal of Accounting and Economics*, Vol. 9, No. 2, pp. 135-157

Francis, J, Stokes, D and Anderson, D 1999, 'City Markets as a Unit of Analysis in Audit Research and the Re-Examination of Big 6 Market Shares', *Abacus*, Vol. 35, No. 2, pp. 185-206.

Francis, J, and Wang, D 2008, 'The Joint Effect of Investor Protection and Big 4 Audits on Earnings Quality around the World', *Contemporary Accounting Research*, Vol. 25, No. 1, pp. 1-39.

Frecka, T and Hopwood, W 1983, 'The Effect of Outliers on the Cross-Sectional Distributional Properties of Financial Ratios', *The Accounting Review*, Vol. 58, No. 1, pp. 115-128.

Friedman, M 1992, 'Do Old Fallacies Ever Die?', *Journal of Economic Literature*, Vol. 30, No. 4, pp. 2129–2132.

Furceri, D 2005, 'Beta and Sigma-Convergence; A Mathematical Relation of Causality', *Economic Letters*, Vol. 89, No. 2, pp. 212-215.

Gay, G and Simnett, R 2003, *Auditing and Assurance Services in Australia*, McGraw-Hill, North Ryde.

Geiger, M and Raghunandan, K 2001, 'Bankruptcies, Audit Reports, and the Reform Act', *Auditing: A Journal of Practice & Theory*, Vol. 20, No. 1, pp. 187-195.

Geiger, M and Raghunandan, K 2002, 'Going-Concern Opinions in the "New" Legal Environment', *Accounting Horizons*, Vol. 16, No. 1, pp. 17-26.

Geiger, M, Raghunandan, K and Rama, D 1998, 'Cost Associated with Going-Concern Modified Audit Opinions: An Analysis of Auditor Changes, Subsequent Opinions, and Client Failures', *Advances in Accounting*, Vol. 16, pp. 117-139.

Geiger, M, Raghunandan, K and Rama, D 2005, 'Recent Changes in the Association between Bankruptcies and Prior Audit Opinions', *Auditing: A Journal of Practice and Theory*, Vol. 24, No. 1, pp. 21-35.

Geiger, M, Raghunandan, K and Rama, D 2006, 'Auditor Decision-Making in Different Litigation Environments: The Private Securities Litigation Reform Act, Audit Reports and Audit Firm Size', *Journal of Accounting and Public Policy*, Vol. 25, No. 3, pp. 332-353.

Geiger, M, and Rama, D 2003, 'Audit Fees, Non-Audit Fees, and Auditor Reporting on Stressed Companies', *Auditing: A Journal of Practice and Theory*, Vol. 22, No. 2, pp. 53-69.

Geiger, M and Rama, D 2006, 'Audit Firm Size and Going Concern Reporting Accuracy', *Accounting Horizons*, Vol. 20, No. 1, pp. 1-17.

Goyal, S 2007, *Connections: An Introduction to the Economics of Networks*, Princeton University Press, Oxfordshire.

Gray, S 1988, 'Towards a Theory of Cultural Influence on the Development of Accounting Systems Internationally', *Abacus*, Vol. 24, No. 1, pp. 1–15.

Griffin, P and Lont, D 2009, 'Non-Audit Fees and Auditor Independence: New Evidence based on Going Concern Opinions for U. S. Companies under Stress', Working Paper.

Hackenbrack, K and Nelson, M 1996, 'Auditors' Incentives and Their Application of Financial Accounting Standards', *The Accounting Review*, Vol. 71, No. 1, pp. 43–59.

Hay, D, Knechel, W and Wong, N 2006, 'Audit Fees: A Meta-Analysis of the Effect of Supply and Demand Attributes', *Contemporary Accounting Research*, Vol. 23, No. 1, pp. 141-191.

Hegarty, J, Gielen, F and Barros, A 2004, 'Implementation of International Accounting and Auditing Standards: Lessons Learned from the World Bank's Accounting and Auditing ROSC Program', *World Bank,* viewed on 15 Jan 2011, available at: <http://www.worldbank.org/ifa/LessonsLearned_ROSC_AA.pdf>

Hermanson, H, Hermanson, D and Carcello, J 2002, 'An Analysis of Multinational "Audit Failures"', *The International Journal of Accounting*, Vol. 31, No. 3, pp. 281-291.

Hicks, EL 1974, 'Standards for the Attest Function', *Journal of Accountancy*, Vol. 138, No. 2, pp. 39-45.

Hoetker, G 2007, 'The Use of Logit and Probit Models in Strategic Management Research: Critical Issues', *Strategic Management Journal*, Vol. 28, No. 4, pp.331-343.

Hofstede, G 1980, *Culture's Consequences: International Differences in Work-Related Values*, Sage Publications, Beverly Hills.

Hope, O 2003, 'Firm-Level Disclosures and the Relative Roles of Culture and Legal Origin', *Journal of International Financial Management and Accounting*, Vol. 14, No. 3, pp. 218-248.

Hope, O, Kang, T, Thomas, W and Yoo, Y 2008, 'Culture and Auditor Choice: A Test of the Secrecy Hypothesis', *Journal of Accounting and Public Policy*, Vol. 27, No. 5, pp. 357-373.

Hopwood, W, McKeown, J and Mutchler, J 1989, 'A Test of the Incremental Explanatory Power of Opinions Qualified for Consistency and Uncertainty', *The Accounting Review,* Vol. 64, No. 1, pp. 28-48.

Hopwood, W, McKeown, J and Mutchler, J 1994, 'A Re-Examination of Auditor versus Model Accuracy within the Context of Going Concern Opinion Decision', *Contemporary Accounting Research*, Vol. 10, No. 2, pp. 409-431.

Horrigan, J 1968, 'A Short History of Financial Ratio Analysis', *The Accounting Review*, Vol. 43, No. 2, pp. 284-294.

Hotchkiss, E, John, K, Mooradian, R and Thorburn, K 2008, 'Bankruptcy and the resolution of financial distress', in: Eckbo, E (Ed), *Handbook of Empirical Corporate Finance*, Vol. 2, Elsevier**,** New York.

Humphrey, C, Loft, A and Woods, M 2009, 'The Global Audit Profession and the International Financial Architecture: Understanding Regulatory Relationships at a Time of Crises, *Accounting, Organizations and Society*, Vol. 34, No. 6/7, pp. 810-825.

Hwang, J and Carson, E, 2008, 'The Impact of the Demise of Arthur Andersen on UK, US and Australian Audit Markets: A Comparative Analysis', Working Paper.

IAASB 2008, *International Standard on Quality Control*, International Auditing and Assurance Standards Board, New York.

IAASB 2009, *International Standard on Auditing 570: Going Concern*, International Auditing and Assurance Standards Board, New York.

IAASB 2010, *Terms of Reference*, International Auditing and Assurance Standards Board, viewed on 30 Aug 2010, available at:
<http://web.ifac.org/download/IAASB-Amended_Terms_of_Reference.pdf>

IFAC 2010, *Re: European Commission's Green Paper*, *Audit Policy: Lessons from the Crisis*, International Federation of Accountants, viewed 15 April 2010 available at:
<web.ifac.org/media/publications/f/european-commission-s-gre-2/-3.pdf>

IFAC 2011a, *International Auditing and Assurance Standards Board Fact Sheet*, International Federation of Accountants, viewed on 15 Mar 2011, available at:
 <http://www.ifac.org/About/>

IFAC 2011b, *Forum of Firms Fact Sheet*, International Federation of Accountants, viewed on 15 Apr 2011 available at:
<http://www.ifac.org/Forum_of_Firms/>

IFIAR 2011, *Charter*, International Forum of Independent Audit Regulators, viewed on 18 Jan 2011, available at:
<http://www.frc.org.uk/documents/pagemanager/IFIAR/charterfinal.pdf>

Islam, N 2003, 'What have We Learnt from the Convergence Debate? A Review of the Convergence Literature', *Journal of Economic Surveys*, Vol. 17, No. 3, pp. 309–362.

Jaccard, J 2001, *Interaction Effects in Logestic Regressions*, (Sage University Papers Series on Quantitative Applications in Social Sciences, Series no. 07-135), Sage, Thousand Oaks.

Jaggi, B and Low, P 2000, 'Impact of Culture, Market Forces and Legal System on Financial Disclosures', *The International Journal of Accounting*, Vol. 35, No. 4, pp. 495–519.

Jennings, M, Reckers, M and Kneer, D 1993, 'The Significance of Audit Decisions Aids and Precase Jurists' Attitude on Perceptions of Audit Firm Culpability and Liability', *Conteporary Accounting Research*, Vol. 9, No. 2, pp. 489-507.

Jensen, M and Meckling, W 1976, 'Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure', *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305–360.

Kane, G, Richardson, F and Meade, N 1998, 'Rank Transformations and the Predication of Corporate Failure', *Contemporary Accounting Research*, Vol. 15, No. 2, pp. 145-166.

Kausar, A, Taffler, R and Tan C 2009, 'The Going-Concern Market Anomaly', *Journal of Accounting Research*, Vol. 47, No. 1, pp. 213-239.

Khurana, I and Raman, K 2004, 'Litigation Risk and the Financial Reporting Credibility of Big 4 versus Non-Big 4 Audits: Evidence from Anglo-American Countries', *The Accounting Review*, Vol. 79, No. 2, pp. 473-495.

Kida, T 1980, 'An Investigation into Auditors' Continuity and Related Qualification Judgments', *Journal of Accounting Research*, Vol. 18, No. 2, pp. 506–523.

Klaassen, J, and Buisman, J 2000, 'International Auditing', in: Nobes, C and Parker, R (ed), *Comparative International Accounting*, Pearson Education Limited, Essex.

Klayman, J and Ha, Y 1987, 'Confirmation, Disconfirmation, and Information in Hypothesis Testing', *Psychological Review*, Vol. 94, No. 2, pp. 211-228.

Krishnan, J 1994, 'Auditor Switching and Conservatism', *The Accounting Review*, Vol. 69, No. 1, pp. 200-215.

Krishnan, J and Krishnan, J 1996, 'The Role of Economic Trade-Offs in the Audit Opinion Decision: An Empirical Analysis', *Journal of Accounting, Auditing and Finance*, Vol. 11, No. 4, pp. 565-586.

Krishnan, J and Krishnan, J 1997, 'Litigation Risk and Auditor Resignations', *The Accounting Review*, Vol. 72, No. 4, pp. 539-560.

Krishnan, J and Stephens, R 1995, 'Evidence on Opinion Shopping from Audit Opinion Conservatism', *Journal of Accounting and Public Policy*, Vol. 14, No. 3, pp. 179-201.

Lam, K and Mensah, Y 2006, 'Auditors' Decision-Making under Going-Concern Uncertainties in Low Litigation-Risk Environments: Evidence from Hong Kong', *Journal of Accounting and Public Policy*, Vol. 25, No. 6, pp. 706-739.

La Porta, R, Lopez-de-Silanes, F, Schleifer, A and Vishny R 1998, 'Law and Finance', *Journal of Political Economy*, Vol. 106, No. 6, pp. 1113-1155.

LaSalle, R 2006, 'The Civil Justice System and Going Concern Audit Reports: Comments on "Auditors' Decision-Making under Going Concern Uncertainties in Low Litigation Risk Environments: Evidence from Hong Kong"', *Journal of Accounting and Public Policy*, Vol. 25, No. 6, pp. 740-745.

LaSalle, R and Anandarajan, A 1996, 'Auditors' Views on the Type of Audit Report Issued to Entities with Going Concern Uncertainties', *Accounting Horizons,* Vol. 10, No. 2, pp. 51-72.

Lennox, C 2000, 'Do Companies Successfully Engage in Opinion Shopping? Evidence from the UK', *Journal of Accounting and Economics*, Vol. 29, No. 3, pp. 321-337.

Lenz, H and James, M 2007, 'International Audit Firms as Strategic Networks: The Evolution of Global Professional Service Firms', in: Cliquet, G, Hendriksen, G, Tuunanen, M and Winsdspreger, J (ed), *Economics and Management of Networks: Franchising, Strategic Alliances, Cooperatives,* Physica-verlag, New York.

Levitan, A and Knoblett, J 1985, 'Indicators of Exceptions to the Going Concern Assumption', *Auditing: A Journal of Practice and Theory*, Vol. 5, No. 1, pp. 26-39.

Li, C 2009, 'Does Client Importance affect Auditor Independence at the Office Level? Empirical Evidence from Going Concern Opinions', *Contemporary Accounting Research*, Vol. 26, No. 1, pp. 201-230.

Liao, T 2004, 'Comparing Social Groups: Wald Statistics for Testing Equality among Multiple Logit Models', *International Journal of Comparative Sociology*, Vol. 45, No. 1 and 2, pp. 3-16.

Liggio, C 1974, 'The Expectations Gap: The Accountant's Waterloo', *Journal of Contemporary Business*, Vol. 3, No. 3, pp. 27-44.

Long, J 1997, *Regression Models for Categorical and Limited Dependent Variables*, SAGE Publications, Thousand Oaks.

Long, S and Freese, J 2006, *Regression Models for Categorical Dependent Variables Using Stata*, 2nd Edn., State Press, College Station.

Louwers, T 1998, 'The Relation between Going-Concern Opinions and the Auditor's Loss Function', *Journal of Accounting Research*, Vol. 36, No. 1, pp. 143-156.

Louwers, T, Messina, F and Richard, M 1999, 'The Auditor's Going Concern Disclosure as a Self-Fulfilling Prophecy: A Discrete Time Survival Analysis', *Decision Sciences,* Vol. 30. No. 3, pp. 805-824

Lys, T and Watts, R 1994, 'Lawsuits Against Auditors', *Journal of Accounting Research*, Vol. 32, (Supplement), pp. 65-93.

Maines, L, Bartov, E, Fairfield, P, Hirst, D, Iannaconi, T, Mallet, R, Schrand, C, Skinner, D and Vincent, L 2003, 'Evaluating Concept-Based vs. Rules-Based Approaches to Standard Setting', *Accounting Horizon*, Vol. 17, No. 1, pp. 73-89.

Mankiew, G, Romer, D and Weil, D 1992, 'A Contribution to the Empirics of Economic Growth', *Quarterly Journal of Economics*, Vol. 107, No. 2, pp. 407-437.

Marshall, A 1920, *Principles of Economics*, 8th Edn., Macmillan and Co., London.

Martens, D, Bruynseels, L, Baesens, B, Willekens, M and Vanthienen, J 2008, 'Predicting Going Concern Opinion with Data Mining', *Decision Support Systems*, Vol. 45, No. 4, pp. 765-777.

Mautz, R and Sharaf, H 1961, *The Philosophy of Auditing*, American Accounting Association, Sarasota.

McKeown, J, Mutchler, J and Hopwood, W 1991, 'Towards an Explanation of Auditor Failure to Modify the Audit Opinions of Bankrupt Companies', *Auditing: A Journal of Practice and Theory*, Vol. 11, (Supplement), pp. 1-13.

McMillan, J and White, R 1993, 'Auditors' Belief Revisions and Evidence Search: The Effect of Hypothesis Frame, Confirmation Bias, and Professional Skepticism', *The Accounting Review*, Vol. 68, No. 3, pp. 443-465.

Mednick, R 1990, 'Independence: Let's go Back to Basic', *Journal of Accountancy*, Vol. 1, No. 1, pp. 86-93.

Megginson, W and Sutter, N 2005, 'Globalisation and the Growth of Stock Exchanges', in: Gup, B (ed), *Capital Markets, Globalisation and Economic Development*, Springer, New York.

Melumad, N and Thoman, L 1990, 'On Auditors and the Courts in an Adverse Selection Setting', *Journal of Accounting Research*, Vol. 28, No. 1, pp. 77-120.

Menon, K and Schwartz, K 1987, 'An Empirical Investigation of Audit Qualification Decisions in the Presence of Going Concern Uncertainties', *Contemporary Accounting Research*, Vol. 3, No. 2, pp. 302-315.

Menon, K and Williams, D 2010, 'Investor Reaction to Going Concern Audit Reports', *The Accounting Review*, Vol. 85, No. 6, pp. 2075–2105.

Messier, W 1983, 'The Effect of Experience and Firm Type on Materiality/Disclosure Judgements', *Journal of Accounting Research*, Vol. 21, No. 2, pp. 611-618.

Monroe, G and Teh S 1993, 'Predicting Uncertainty Audit Qualifications in Australia using Publicly Available Information', *Accounting and Finance*, Vol. 33, No. 2, pp. 79-106.

Monroe, G and Woodliff, D 1993, 'The Effect of Education on the Audit Expecation Gap', *Accounting and Finance*, Vol. 33, No. 1, pp. 61-78.

Mutchler, J 1984, 'Auditors' Perceptions of the Going-Concern Opinion Decision', *Auditing: A Journal of Practice and Theory*, Vol. 3, No. 3, pp.17-30.

Mutchler, J 1985, 'A Multivariate Analysis of the Auditor's Going-Concern Opinion Decision', *Journal of Accounting Research*, Vol. 23, No. 2, pp. 668-682.

Mutchler, J 1986, 'Empirical Evidence Regarding the Auditor's Going-Concern Opinion Decision' , *Auditing: A Journal of Practice and Theory*, Vol. 6, No. 1, pp. 148-163.

Mutchler, J Hopwood, W and McKeown, J 1997, 'The Influence of Contrary Information and Mitigating Factors in Audit Opinion Decisions on Bankrupt Companies', *Journal of Accounting Research*, Vol. 35, No. 2, pp. 295-310.

Mutchler, J and Williams, D 1990, 'The Relationship between Audit Technology, Client Risk, and the Going-Concern Opinion Decision', *Auditing: A Journal of Practice and Theory*, Vol. 9, No. 3, pp. 39-54.

Myers, L, Schmidt, J and Wilkins, M 2008, 'Have Auditors Become too Conservative? Evidence from Going Concern Opinions', Working Paper.

Mynatt, C, Doherty, M, and Tweney, R 1977, 'Confirmation Bias in a Simulated Research Environment: An Experimental Study of Scientific Inference', *Quarterly Journal of Experimental Psychology,* Vol. 29, pp. 85-95.

Nemes, S, Jonasson, J, Genell A and Steineck G 2009, 'Bias in Odds Ratios by Logistic Regression Modelling and Sample Size', *BMC Medical Research Methodology*, Vol. 9, p. 56.

Nobes, C and Parker, R 2006, *Comparative International Accounting*, 9th Edn., Pearson Education Limited, Harlow.

Nogler, G 1995, 'The Resolution of Auditor Going Concern Opinions', *Auditing: A Journal of Practice and Theory*, Vol. 15, No. 2, pp. 54-73.

Nogler, G 2004, 'Long-Term Effects of the Going Concern Opinion', *Managerial Auditing Journal*, Vol. 19, No. 5, pp.681 – 688.

Norris, F 2011, 'Indian Accounting Firm is Fined $7.5 Million over Fraud at Satyam', *The New York Times*, viewed 5 Apr 2011, available at:
<http://www.nytimes.com/2011/04/06/business/global/06audit.html>

Norton, E, Wang, H and Ai, C 2004, 'Computing interaction effects and standard errors in logit and probit models', *The Stata Journal*, Vol. 4, pp. 154-167.

Ohlson, J 1980, 'Financial Ratios and the Probabilistic Prediction of Bankruptcy', *Journal of Accounting Research*, Vol. 18, No. 1, pp. 109-131.

Oxford Dictionaries 2010, *Significant*, Oxford University Press, viewed 20 Feb 2011, available at:
< http://www.oxforddictionaries.com/view/entry/m_en_gb0772380>

Oxford Dictionaries 2010, *Substantial*, Oxford University Press, viewed 20 Feb 2011, available at:
<http://www.oxforddictionaries.com/view/entry/m_en_gb0825470>

Palmrose, Z 1986, 'Audit Fees and Auditor Size: Further Evidence', *Journal of Accounting Research,* Vol. 24, No. 1, pp. 97-109.

Palmrose, Z 1987, 'Litigation and Independent Auditors: The Role of Business Failures and Management Fraud', *Auditing: A Journal of Practice and Theory*, Vol. 6, No. 2, pp. 90-103.

Palmrose, Z 1988, 'An Analysis of Auditor Litigation and Audit Service Quality', *The Accounting Review*, Vol. 63, pp. 55-73.

Peel, M 1989, 'The Going Concern Qualification Debate: Some UK Evidence', *The British Accounting Review*, Vol. 21, No. 4, pp. 329-350.

Penno, M and Walther, B 1996, 'The Concentration of Local Markets: A Study of Accounting, Advertising and Law', *Accounting Horizons*, Vol. 10, No. 2, pp. 88-99.

Ponemon, L and Raghunandan, K 1994, 'What is 'Substantial Doubt'?', *Accounting Horizons*, Vol. 8, No. 2, pp. 44-54.

Porter, B 1993, 'An Empirical Study of the Audit Expecation-Performance Gap', *Accounting and Business Research*,Vol. 24, No. 93, pp. 49-68.

Pratt, J and Stice, J 1994, 'The Effects of Client Characteristics on Auditor Litigation Risk Judgements, Required Audit Evidence and Recommended Audit Fees', *The Accounting Review*, Vol. 69, No. 4, pp. 639-656.

Pierce, A and Weetman, P 2000 'Measuring Financial Reporting Harmony and Harmonisation: Perception versus Reality', *The Irish Accounting Review,* Vol. 7, No. 2, pp. 91-124.

Pierre, K and Anderson, J 1984, 'An Analysis of the Factors Associated With Lawsuits Against Public Accountants', *The Accounting Review,* Vol. 59, No. 2, pp. 242-263.

Quah, D 1993, 'Galton's Fallacy and Tests of the Convergence Hypothesis,' *Scandinavian Journal of Economics* Vol. 95, No. 4, pp. 427-443.

Raghunandan, K and Rama, D 1995, 'Audit Reports for Companies in Financial Distress: Before and After SAS no. 59', *Auditing: A Journal of Practice and Theory*, Vol. 14, No. 1, pp. 50-64.

Raghunandan, K and Rama, D 1999, 'Auditor Resignations and the Market for Audit Services', *Auditing: A Journal of Practice and Theory*, Vol. 18, No. 1, pp. 124-134.

Raman, K and Wilson, E 1994, 'Governmental Audit Procurement Practices and Seasoned Bond Prices', *The Accounting Review*, Vol. 69, No. 4, pp. 517-538.

Reynolds, J and Francis, J 2000, 'Does Size Matter? The Influence of Large Clients on Office-Level Auditor Reporting Decisions', *Journal of Accounting and Economics*, Vol. 30, No. 3, pp. 375- 400.

Rosenbaum, P 2005, 'Heterogeneity and Causality: Unit Heterogeneity and Design Sensitivity in Observational Studies', *The American Statistician*, Vol. 59, No. 2, pp. 147-152.

Ryo, T and Roh, C 2007, 'The auditor's Going Concern Opinion Decisions', *International Journal of Business and Economics*, Vol. 6, No. 2, pp. 89-101.

Samsonova, A 2009, 'Local Sites of Globalisation: A Look at the Development of a Legislative Framework for Auditing in Russia', *Critical Perspectives in Accounting*, Vol. 20, No. 4, pp. 528-552.

Salman, F and Carson, E 2009, 'The Impact of Sorbanes-Oxley Act on the Audit Fees of Australian Listed Firms', *International Journal of Auditing*, Vol. 13, No. 2, pp. 127-140.

Salter, S and Niswander, F 1995, 'Cultural Influences on the Development of Accounting Systems Internationally: A Test of Gray's (1988) Theory', *Journal of International Business Studies*, Vol. 26, No. 2, pp. 379-397.

Schipper, K 2003, 'Principles-Based Accounting Standards', *Accounting Horizons*, Vol. 17, No. 1, pp. 61-63.

Schwartz, K and Menon, K 1985, 'Auditor Switches by Failing Firms', *The Accounting Review*, Vol. 60, No. 2, pp. 248-261.

Schwartz, R 1997, 'Legal Regimes, Audit Quality, and Investments', *The Accounting Review*, Vol. 72, No. 3, pp. 385-406.

Schwartz, S 1994, 'Beyond Individualism/Collectivism: New Cultural Dimensions of Values', in: Kim, U, Triandis, H, Kagitcibasi, C, Choi, S, Yoon, G. (ed), *Individualism and Collectivism: Theory, Method, and Applications*, Sage, Thousand Oaks.

Seetharaman, A, Gul, F and Lynn, S 2002, 'Litigation Risk and Audit Fees: Evidence from UK Firms Cross Listed on US markets', *Journal of Accounting and Economics,* Vol. 33, No. 1, pp. 91-115.

Sekhon, J 2009, 'Opiates for the Matches: Matching Methods for Causal Inference', *Annual Review of Political Science*, Vol. 12, No. 1, pp. 487-508.

Select Committee on Economic Affairs 2011, *Auditors: Market Concentration and Their Role*, Authority of the House of Lords, The Stationary Office Limited, London.

Silvoso, J 1972, 'Report of the Committee on Basic Auditing Concepts', *The Accounting Review*, Vol. 47, No. 4 (Supplement), pp. 15-74.

Simon, D and Francis, J 1988, 'The Effects of Auditor Change on Audit Fees: Tests of Price Cutting and Price Recovery', *The Accounting Review*, Vol. 63, No. 2, pp. 255-269.

Simunic, D 1980, 'The Pricing of Audit Services: Theory and Evidence', *Journal of Accounting Research,* Vol. 18, No. 1, pp. 161-190.

Sirois, L and Simunic, D 2010, 'Auditor Size and Audit Quality Revisited: The Importance of Audit Technology', Working Paper.

Smith, D 1986, 'Auditor and 'Subject to' Opinions, Disclaimers and Auditor Changes', *Auditing: A Journal of Practice and Theory*, Vol. 6, No. 1, pp. 95-108.

Spiegel, M and Stephens, L 1999, *Schaum's Outlines of Theory and Problems of Statistics*, 3rd Edn., McGraw-Hill, New York.

Stice, J 1991, 'Using Financial and Market Information to Identify Pre-Engagement Factors Associated with Lawsuits Against Auditors', *The Accounting Review*, Vol. 66, No. 3, pp. 516-553.

St. Pierre, K and Anderson, J 1984, 'An Analysis of Factors Associated with Lawsuits Against Public Accountants', *The Accounting Review,* Vol. 59, No. 2, pp. 242-263.

Subramanyam, K. and Wild, J 1996, 'Going-Concern Status, Earnings Persistence, and Informativeness of Earnings', *Contemporary Accounting Research*, Vol. 13, No. 1, pp. 251–273.

Taylor, M and Simon D 1999, 'Determinants of Audit Fees: The Importance of Litigation, Disclosure and Regulatory Burdens in Audit Engagements in 20 Countries' *The International Journal of Accounting*, Vol. 34, No. 3, pp. 375-388.

Temple, J 1999, 'The New Growth Evidence', *Journal of Economic Literature*, Vol. 37, No. 1, pp. 112-156.

Thomadakis, S 2008, 'Presentation to the Forum on Audit Quality', viewed 15 Oct 2008, available at:
< http://www.ipiob.org/speeches>

Train, K 1986, *Qualitative Choice Analysis: Theory, Econometrics, and an Application to Automobile Demand*, MIT Press, Cambridge.

Trotman, K 1996, *Research Methods for Judgment and Decision Making Studies in Auditing*, Monograph No. 3, Accounting Research Methodology: Coopers & Lybrand and Accounting Association of Australia and New Zealand.

Trotman, K, and Sng, J 1989, 'The Effect of Hypothesis Framing, Prior Expectations and Cue Diagnosticity on Auditors' Information Choice', *Accounting, Organizations & Society*, Vol. 14, No. 5/6, pp. 565-576.

Tucker, R, Matsumura, E and Subramanyam, K 2003, 'Going-Concern Judgements: An Experimental Test of the Self-Fulfilling Prophecy and Forecast Accuracy', *Journal of Accounting and Public Policy*, Vol. 22, No. 5, pp. 401-432.

Tweedie D 2006, *Statement before the Committee on Banking, Housing and Urban Affairs of US Senate*, Speech held 14 June 2006, Washington DC.

U.S. House of Representatives 2002, *The Sarbanes-Oxley Act of 2002*, Government Publishing Services, Washington DC.

Wallace, W 1987, 'The Economic Role of the Audit in Free and Regulated Markets: A Review', *Research in Accounting Regulation*, Vol. 1, No. 1, pp. 7-34.

Wallman, S 1996, 'The Future of Accounting, Part 3: Reliability and Auditor Independence', *Accounting Horizons*, Vol. 10, No. 4, pp. 76-97.

Watts, R and Zimmerman, J 1983, 'Agency Problems, Auditing and the Theory of the Firm: Some Evidence', *Journal of Law and Economics*, Vol. 26, No. 3, pp. 613-634.

White, H 1982, 'Maximum Likelihood Estimation of Misspecified Models, *Econometrica*, Vol. 50, No. 1, pp. 1-25.

Williams, D 2001, 'Long Term Trends in Audit Fees', *Auditing: A Journal of Practice and Theory*, Vol. 20, No. 1, pp. 115-136.

Willingham, J and Carmichael, D 1971, *Auditing Concepts and Methods*, McGraw-Hill, New York.

Wingate, M 1997, 'An Examination of Cultural Influence on Audit Environments', *Research in Accounting Regulation*, Vol. 11, (Supplement 1), pp. 129-148.

Wong, P 2004, 'Challenges and Successes in Implementing International Standards: Achieving Convergence to IFRS and ISAs', IFAC, viewed 15 Oct 2008 available at: < http://www.ifac.org/Members/Source_Files/Other_Publications/Wong_Report_Final.pdf>

Wood, P 2007, *Principles of International Insolvency*, The Law and Practice of International Finance Series: Volume 1, 2nd Edn., Sweet and Maxwell, London.

Wood, R 1996, 'Global Audit Characteristics across Cultures and Environments: An Empirical Examination', *Journal of International Accounting, Auditing and Taxation*, Vol. 5, No. 2, pp. 215-229.

Wooldridge, J 2006, *Introductory Econometrics; A modern approach*, 3rd Edn., Thomson Higher Education, Mason.

Woolf, E 1997, *Auditing Today*, 6th Edn., Financial Times Press, London.

Wustemann, J and Wustemann, S 2010, 'Why Consistency of Accounting Standards Matters: A Contribution to the Rules-Versus-Principles Debate in Financial Accounting', *Abacus*, Vol. 46, No. 1, pp. 1-27.

Ye, P, Carson, E and Simnett, R 2011, 'Threats to Auditor Independence: The Impact of Relationship and Economic Bonds', *Auditing: A Journal of Practice and Theory*, Forthcoming.

Young, A, Higgins, M and Levy, D 2007, 'Sigma Convergence versus Beta Convergence: Evidence from US country-level data', Working Paper.

Yáñez, M, Cherchi, E, Heydecker, B and Ortúzar, J 2011, 'On the Treatment of Repeated Observations in Panel Data: Efficiency of Mixed Logit Parameter Estimates', *Networks and Spatial Economics*, Forthcoming.

Xu, Y, Carson, E, Fargher, N and Jiang L 2011, 'Auditor Responses to Changes in Business Risk: The Impact of the Global Financial Crises on Auditors' Behaviour in Australia', Working Paper.

Zhao, S 2009, 'The Successful Resolution of Auditor Going Concern Opinions: Evidence from the U.S. and Australia', Working Paper.

Zmijewski, M 1984, 'Methodological Issues Related to the Estimation of Financial Distress Prediction Models', *Journal of Accounting Research*, Vol. 22, (Supplement), pp. 59-82.