Credit ratings & the auditor's going-concern opinion : the interplay of information intermediaries' signals

Citation for published version (APA):

Funcke, N. (2015). Credit ratings & the auditor's going-concern opinion : the interplay of information intermediaries' signals. [Doctoral Thesis, Maastricht University]. Datawyse / Universitaire Pers Maastricht. <https://doi.org/10.26481/dis.20150402nf>

Document status and date:

Published: 01/01/2015

DOI:

[10.26481/dis.20150402nf](https://doi.org/10.26481/dis.20150402nf)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Credit Ratings and the Auditor's Going-Concern Opinion

The Interplay of Information Intermediaries' Signals

Nadine Funcke

Connacher Oil and Gas Ltd. R Ratings Lowered To 'D' From 'CC' Following Announced Recapitaliz

TORONTO (Standard & Poor's) Feb. 2, 2015—Standard & Poor's Ratings Services said today it lowered its long-term corporate credit rating and debt issue ratings on Calgary, Alta.-based Connacher Oil and Gas Ltd. to 'D' from 'CC', following the company's announcement of its proposed recapitalization, in which the company intends to exchange its existing C\$350 million and US\$550 million senior secured second-lien debt (plus accrued interest) for equity.

secured second-lien debt (plus accrued interest) for equity.

The dramatic reduction in crude oil prices since June 2014 caused a rapid deterioration in Connacher's liquidity position, such that the company will be unable to fund both its debt servicing obligations and minimum maintenance capital spending requirements.

Clearly, this situation is the existence of a market which may cast significant doubt on the Company's ability to continue as a going concern.

...ing concern a
...be unable to rea
...and discharge its liabi
...normal course of business

ratings to 'D' is consistent with our criteria, which view the proposed recapitalization that will exchange the company's existing C\$350 million and US\$550 million second-lien debt and accrued interest to Feb. 1, 2015 into equity, as an event of default," said Standard & Poor's credit analyst Michelle Dathorne.

Cons
disse
tracti
voca
frustr
enir

Wendy's Placed on CreditWatch List

CreditWatch List
NEW YORK (Standard & Poor's) Feb. 3, Charles Pinso
2015—Standard & Poor's Ratings calculate adjust
Services today placed its ratings on about 4.4x, ar
quick service hamburger restaurant we estimate v
chain The Wendy's Co., including the debt to EBIT
corporate credit rating, on 6.8x. The pro
CreditWatch with negative implications, would be
the CreditWatch list.

pany's announcement that it will target to recapitalize the company to target an increase of net debt to EBITDA (as the company calculates the ratio) of about two to three times to five and six times from its current level of about three to four times. And that this metric will be used to determine whether the company is leveraged "financed" or not. We will resolve the following our recapitalize financial risk review the company profile in light of trends and. Nonetheless, debt increase, to a do-

Balance Sheets?

Generally publicly accessible signals of financial trouble that acts as a negative announcement mitigates of subsequent bankruptcy filings. But unfortunately, as is the case of the 2011 top 10 U.S. bankruptcies, the results of the audit reports accompanying the filing in particular with increased scrutiny in the light of high-profile alleged audit failures such as the Enron, Parmalat and WorldCom problems and the audit of the

of the going-concern industry prior to bankruptcy coupled with non-financial distress of financial trouble prior to filing (e.g., size of the company, debt-to-equity ratio) and the inclusion of companies with embedded risks reveal

Lehman Auditor May Bear The Brunt

The contrasting fact is that Ernst & Young and Lehman Brothers, which went bankrupt in 2008, may reflect the fact that Ernst is the only firm left to punish—a going concern from which to extract

"We firmly
that our work met all
applicable standards,
applying the rules
that existed at the
time"

Modified Opinions Conglomerate Filers

...cast significant uncertainty on the company's ability to continue its operations and therefore it is unable to realize its assets and discharge its liabilities in the course of business.

Firms with High

Lehman Brothers, Bear Stearns and Morgan Stanley, the three largest U.S. investment banks, filed for protection under Chapter 11 of the U.S. bankruptcy code in late September. The move was a surprise, as the banks had been widely expected to be rescued by the U.S. government. The bankruptcy filings were a result of the banks' massive losses in the subprime mortgage market, which had led to a sharp decline in their stock prices and a loss of confidence from investors. The bankruptcy filings were a result of the banks' massive losses in the subprime mortgage market, which had led to a sharp decline in their stock prices and a loss of confidence from investors.

two to three turns to
and six times from its
that this metric
does not

Balancing Concepts

Humm... think of MF says. This is a question that must be asked.

Generally publicly accessible information that acts as a *filing*, negative announcement mitigates that non-equivalent bankruptcy filings of financial statements, as in the case of default or Chapter 10 U.S. bankruptcies.

Auditor reports accompany accounting practices, especially those companies in particular with embedded risks related to the audit.

In the light of such opinions, auditor failures can be seen by investors and analysts.

taliz
risk
ca
ght
d
e

ern Opinions fo

**LOGAN'S ROADHOUSE INC.
DOWNGRADED TO 'CCC' ON
WEAK OPERATING TRENDS;
OUTLOOK IS NEGATIVE**

NEW YORK (Standard & Poor's) Feb. 3, 2015—Standard & Poor's Ratings Services today lowered its corporate credit rating on Logan's Roadhouse Inc. to 'CCC' from 'B'. We removed all ratings from CreditWatch, where we placed them with negative implications on Nov. 21, 2014, to reflect the company's declining liquidity and looming debt maturity on its revolving credit facility.

Netflix Inc. Downgraded To B+' Outlook Negative

will reflect our expectation that cash flow deficits over the next year will be high during that time. The 'BB+' rating is supported by the debt leverage and the cash flow at year-end will be in the 'BB+' range. The 'BB+' rating is supported by the debt leverage and the cash flow at year-end will be in the 'BB+' range.

Sources & disclaimer regarding the cover picture:

The statements displayed on the cover are solely intended for illustrative purposes. They only represent part of the respective press releases. Please refer to the original sources for the complete articles/reports: www.standardandpoors.com, www.wsj.com, www.sec.gov, www.garyrushin.com, www.content.time.com.

© Copyright Nadine Funcke, Maastricht 2015

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronically, mechanically, photocopying, recording or otherwise, without the prior permission in writing from the author.

ISBN 978 94 6159 418 1

Credit Ratings & the Auditor's Going-Concern Opinion

The Interplay of Information Intermediaries' Signals

DISSERTATION

to obtain the degree of Doctor at Maastricht University,
on the authority of the Rector Magnificus, Prof. Dr. L.L.G. Soete,
in accordance with the decision of the Board of Deans,
to be defended in public
on Thursday, April 2, 2015 at 14.00 hours

by

Nadine Funcke

Supervisor

Prof. Dr. Ann Vanstraelen

Co-supervisor

Prof. Dr. W. Robert Knechel, University of Florida, United States

Assessment Committee

Prof. Dr. Roger Meuwissen (Chairperson)

Prof. Dr. Rob Bauer

Prof. Dr. Jean C. Bedard, Bentley University, United States

Prof. Dr. Marleen Willekens, Katholieke Universiteit Leuven, Belgium

To my family

Acknowledgments

My PhD journey has been interesting, inspiring and challenging, but mostly a great experience with many learning opportunities and countless joyful moments. During the last four years as a PhD candidate, I learned a lot which helped me grow as a researcher and even more so as a person. I am thankful to all the people who have supported me along the way and made this time an unforgettable journey. It is my pleasure to take the opportunity to thank all of you.

First and foremost, I want to thank my promoters Prof. Dr. Ann Vanstraelen and Prof. Dr. W. Robert Knechel. Ann, your enthusiasm for research has always been motivating and your support and guidance from day one onwards have helped me tremendously throughout the PhD. I thank you for the freedom you gave me in exploring my own research interests and your encouragement as well as the confidence you had in me when I was doubting my progress. Robert, your insights into auditing research have been inspiring and your feedback and support have been invaluable. I highly appreciate that you always made time to fit me in your busy schedule and I am extremely grateful for the invitation to the Fisher School of Accounting at the University of Florida. I am glad I had the opportunity to participate in classes and workshops and to observe different research approaches. Overall, the time at UF was simply an enriching experience from which I still benefit.

I also extend my gratitude to the members of the assessment committee, Prof. Dr. Roger Meuwissen, Prof. Dr. Jean Bedard, Prof. Dr. Rob Bauer and Prof. Dr. Marleen Willekens, for taking the time to assess my dissertation and for providing me with helpful feedback.

During the PhD, I have been fortunate to be part of the Accounting and Information Management Department at Maastricht University and I would like to thank my former colleagues. The collegial atmosphere and supportive environment always provided opportunities for research-related questions and personal chats. I appreciate the support of Prof. Dr. Philip Vergauwen and Prof. Dr. Roger Meuwissen in their functions as dean and department chair who provided me with the opportunity to revisit the University of Florida. Moreover, I would like to thank Leon, who was the one who encouraged me to apply for a student tutor position and a couple years later suggested I pursue a PhD. I also owe a lot to Frank: while you were not officially my supervisor, you always found the time to help me with any research question I had and I am glad that you have also become a friend over the years. I owe a big thank you to you, Isabella, for all the fun times we spent together and every time you listened to me when I was in doubt about research ideas or career choices. My gratitude also goes to my long-term office mates Réka, Anant and Britt: Anant, your happy attitude always

made the office a sunny place. Réka, while we often disagreed on lighting and heating status in the office, you have helped me tremendously with your constructive criticism and suggestions regarding my papers. Even during the final stages of our PhD you still found the time to read my dissertation. Thank you! Britt, our conversations on research and life were always refreshing and I am glad to have had you in the office. Furthermore, I would like to thank Caren for her support and collaboration in teaching and the excellent quality of her tutor materials. I am also thankful to our lovely secretary ladies Tanja, Sabine, Marjo, Juliëtte, Miranda and Sacha, for making my life a lot easier and all the pleasant chats we had over the years.

Additionally, I want to extend my thanks to the finance department, which adopted me more than once. Over the years, I became friends with many colleagues from the finance department and I was always welcome with research related questions and at countless celebratory occasions. Likewise, I also want to thank the faculty and PhD students at the FSOA at UF who welcomed me with open arms and have not only taught me a lot with respect to research, but also introduced me to the way of American life at the office as well as at football games and tailgating, countless lunches at TJ Flats, road trips, dinners and drinks.

Next, I would like to thank my friends who were part of the office life and made hallway chats, coffee breaks and dinner parties memorable. Bart, Bas, Christoph, Falko, Franzi, Lars H., Lars R., Lei, Mona, Norbert, Ronny and Ron – without you, the office would not have been the same and I am glad that you were around. Matteo, I especially have to thank you – not only for your advice regarding econometrics and my research in general, but more importantly your friendship and all our shared adventures. I also want to thank my friends from Improv, Salsa and the University Choir, particularly Ale, Ayse, Dionne, Franzi S., Franzi T., Gabri, Irina, Jan, Jason, Julie, Klaartje, Mare, Mari, Maria, Mehrdad, Nevena, Nordin, Paula, Paul and Tuulia. The many laughs we shared always brightened up my days and during busy days at the office I looked forward to spending time with you. All of you understood the life of a PhD all too well and often gave valuable advice that helped me during my PhD. I hope to stay in contact with many of you in the future.

Jonas, Thomas and Patrick – when I think of my PhD, I think of you. During the beginning of the PhD, it was not an exception that I spent more time in your office than in mine. You were always happy to critically evaluate my research ideas and provide me with feedback. I cannot count the endless lunches during which you offered insightful views on diverse topics and you often took the time to discuss some issues repetitively and in detail. We also spent time out of the office on evenings and weekend trips and the stories were often legendary. When I did not attend the same courses, conferences or weekend trips, you still integrated me by sending me pictures, calling me or at least providing a full report once you were back. Jonas, I am glad that we took

classes together and discussing research ideas was always a positive and fruitful endeavor. Patrick, you were my walking research paper database and you introduced me to SAS. Without you, my data analyses would have taken at least three times as long. Thomas, your feedback, advice and occasional pep-talks have helped me tremendously and I am glad that we are still colleagues in Rotterdam and even better friends. The three of you have certainly contributed significantly to my PhD, so thank you!

Importantly, I have to thank Jessie and Simone. It is an honor to have you as my paranymphs. Simone, you were my partner in crime at the office and whether we were at University, an academic function, a party or on vacation – we managed to create unforgettable memories. Jessie, your endless creativity, energy and positivity are refreshing and have been a source for so many of our amazing activities and trips. Regardless of the time of the day or the fact that we were often on different continents, the two of you were always happy to listen to and critically discuss my latest research issues. Your friendship and advice have helped to put things into perspective whenever I faced challenges during the PhD and your support via Skype has made even the longest days at the office enjoyable. Thank you for being part of my journey!

Finally, and most importantly, I would like to thank my parents and siblings. You have always supported me in all my choices and I am incredibly lucky to have a team of doctors, IT-specialists, cheerleaders and consultants as my family. I feel extremely fortunate for your ability to always provide the correct advice, cheer me up in any situation and share all the excitement of my life. I could not have wished for a better, happier or more loving family. Thank you!

Nadine Funcke

Rotterdam, February 2015

Table of Contents

Chapter 1 - Introduction	1
1.1 Introduction to the Problem Statement	1
1.2 Background and General Motivation	2
1.3 Structure and Contribution of the Dissertation	5
Chapter 2 - Background on Credit Rating Agencies	11
2.1 Brief History of Credit Rating Agencies.....	12
2.2 The Rating Process	13
2.2.1 <i>Specific Aspects of the Rating Process</i>	14
2.2.2 <i>The Outcome of the Rating Process: Credit Ratings</i>	18
2.2.3 <i>The Surveillance Aspect of Credit Ratings</i>	20
2.4 Regulatory Developments Regarding Credit Rating Agencies	22
2.5 The Value of Credit Ratings	25
Chapter 3 - Credit Ratings and the Auditor's Going-Concern Opinion Decision ..	27
Abstract.....	27
3.1 Introduction.....	28
3.2 Background.....	30
3.2.1 <i>The Auditor's Going-Concern Decision</i>	30
3.2.2 <i>Credit Ratings</i>	30
3.2.3 <i>Hypotheses Development</i>	33
3.3 Research Design	35
3.3.1 <i>Sample</i>	35
3.3.2 <i>Empirical Model</i>	36
3.3.3 <i>Variables of Interest</i>	37
3.3.4 <i>Control Variables</i>	38
3.4 Results.....	39
3.4.1 <i>Descriptive Statistics</i>	39
3.4.2 <i>Univariate Tests</i>	42
3.4.3 <i>Regression Results</i>	46
3.4.4 <i>Sensitivity Analyses</i>	56
3.5 Summary and Conclusion	58
Appendix 3.....	60
Chapter 4 - Credit Rating Changes & Auditor Reporting Accuracy	63
Abstract.....	63
4.1 Introduction.....	64
4.2 Background and Hypotheses Development	66
4.2.1 <i>Audit Reporting Accuracy</i>	66

4.2.2 Credit Ratings.....	67
4.2.3 Development of Hypotheses.....	69
4.3 Research Design	71
4.3.1 Sample	71
4.3.2 Empirical Model.....	72
4.3.3 Variables of Interest	73
4.3.4 Control Variables	74
4.4 Results.....	75
4.1 Descriptive Statistics	75
4.2 Univariate Results	76
4.3 Regression Results.....	81
4.4 Additional Analyses.....	86
4.5 Summary and Conclusion	91
Appendix 4.....	93
 Chapter 5 - The Informative Value of the Auditor's Going-Concern Opinion	
Incremental to Signals from Other Information Intermediaries.....	97
Abstract.....	97
5.1 Introduction.....	98
5.2 Background & Hypotheses Development.....	100
5.2.1 The Value of the Auditor's GCO Report.....	100
5.2.2 Information Intermediaries.....	101
5.3 Research Design	107
5.3.1 Sample	107
5.3.2 Empirical Model.....	108
5.4 Results.....	110
5.4.1 Descriptive Statistics	110
5.4.2 Regression Results	112
5.4.3 Additional Analyses	118
5.4.4 Sensitivity Analyses.....	123
5.5 Summary and Conclusion	124
Appendix 5.....	126
 Chapter 6 - Conclusion.....	129
6.1 Summary of the Results	130
6.2 Limitations and Future Research	132
6.3 Contributions and Implications	134
 Valorization	149
 Curriculum Vitae.....	155

Chapter 1

Introduction

1.1 Introduction to the Problem Statement

Provision of financing by capital markets is the foundation of today's economies worldwide and the importance of capital markets is well documented in academic as well as professional literature. Capital markets have existed since long before the 19th century and have increased tremendously in volume and significance since then (Obstfeld and Taylor 2003). By 2012, global capital markets had passed \$212 trillion, with approximately \$54 trillion in stock market capitalization, \$41 trillion in outstanding public debt securities, and the remainder in bonds and loans (Roxburgh, Lund, and Piotroski 2011). The value of shares traded on the New York Stock Exchange (NYSE) in 2013 amounted to \$13.7 trillion. Nonfinancial corporate bond issuance in the U.S. in 2010 was \$506 billion and has been growing ever since (World Federation of Exchanges 2014; Roxburgh et al. 2011).

In order for capital markets to function effectively, investors require reliable information concerning firms' true economic performance. Due to information asymmetries between companies and investors, regulators require companies that are listed on stock exchanges to provide disclosure of relevant information in the annual report, including financial statements, footnotes, management discussion and analyses (www.sec.gov). Because firms' management has incentives to overstate the value of their firm to gain personal benefits, the Securities Act of 1933 further stipulates that companies must have their financial statements audited by independent, certified public accountants who attest that the financial statements are fairly presented, which means

that they represent the true and fair view of the firm (e.g., Watts and Zimmerman 1983). One of the fundamental assumptions underlying the preparations of the financial statements is that companies will continue to operate in the foreseeable future. Auditors are therefore required to assess this assumption, and if there exists “substantial doubt” about the continued viability of the client over the next fiscal year they have to issue an audit report modified for going-concern, commonly referred to as a going-concern opinion (GCO) (AICPA 1988).¹

The going-concern opinion has been a subject of research and discussion among academics, regulators and practitioners for many years. It appears to be a very sensitive decision for auditors and prior research suggests that auditors make economic trade-offs in deciding on whether or not to issue a GCO (Carcello, Vanstraelen, and Willenborg 2009). The GCO has recently received a lot of attention in the public press after the financial crisis of 2008. Some of the issues debated with respect to the GCO, especially after the financial crisis, were audit reporting error rates. Academic research shows that audit reporting misclassifications occur relatively frequently and during the financial crisis several companies that did not receive a GCO from auditors went bankrupt shortly after the auditor’s assessment (e.g., Carson et al. 2013). Moreover, the going-concern opinion’s relevance to investors has been questioned because of its binary nature and because it has been argued that investors can derive information regarding firms future viability from other sources (e.g., Hopwood, Mutchler, and McKeown 1991; Blay and Geiger 2001). Despite the large body of literature on GCOs, this continues to raise questions as to how auditors decide to issue a GCO, what factors influence audit reporting misclassification rates, and what the continued relevance of a GCO is to investors.

This dissertation contributes to the discussion on going-concern opinions by examining associations between the auditor’s GCO and other publicly available signals of financial health or distress, namely credit ratings. More particularly, it investigates whether credit ratings are considered in the auditor’s GCO, whether they function as signals reducing audit reporting misclassifications, and whether investors value the information communicated via the GCO even if other information intermediaries, such as credit rating agencies and equity analysts, previously issued other signals pertaining to a firm’s future viability.

1.2 Background and General Motivation

Professional standards in the U.S. prohibit independent auditors from disclosing any additional information regarding the audited company besides the information included in the audit report (AICPA 2010). Auditors can thus only communicate their perceived

¹ The terms audit report modified for going-concern and going-concern opinion are used interchangeably in this dissertation.

risk regarding the continued viability of a client as part of the going-concern opinion (GCO). While auditors provide some information with respect to the reason of the GCO, audit reports are fairly standardized in wording and the general outcome is binary, i.e. either the auditor issues a GCO or not. Investors perceive audit reports modified for going-concern as a warning regarding potential approaching bankruptcy (Chen and Church 1996).

The auditor's decision to issue a going-concern opinion is highly complicated and involves a great deal of judgment by auditors. As part of their assessments auditors consider financial and non-financial data, proprietary firm information, as well as industry and economy-wide factors. Moreover, if auditors suspect that the going-concern assumption might be violated, they are also required to consider management's plans for mitigating actions in the future. In order to disentangle the complexity and understand auditors' decisions to issue GCOs better, prior research has developed numerous models to determine what factors best predict the issuance of a GCO (e.g., Mutchler 1984; Dopuch, Holthausen, and Leftwich 1987; Bell and Tabor 1991; Mutchler, Hopewood, and McKeown 1997; Behn, Kaplan, and Krumwiede 2001). Other information intermediaries also provide signals regarding firms' future viability but have a different focus than auditors and differ in their information aggregation and processing that might result in incremental information to auditors. However, there is little literature that considers how an auditor's decision to issue a GCO might be influenced by signals from other information intermediaries. It is important to understand how signals by other information intermediaries influence auditors in their GCO decisions in order to obtain a more complete picture of the auditor's decision making process.

The complexity of the going-concern assessment is also reflected in audit reporting error rates. There are two different kinds of errors that can occur with respect to the auditor's decision whether to issue a going concern opinion. On the one hand, auditors might issue a GCO for clients that are subsequently viable, which is commonly referred to as a Type I error. On the other hand, auditors might fail to issue a GCO to companies that subsequently file for bankruptcy, which is commonly labeled as a Type II error. Prior literature documents that Type I error rates within the U.S. are commonly around 80-90% and 40-50% of companies that file for bankruptcy did not receive a GCO previously (Carson et al. 2013). It is therefore questionable whether these misclassification rates are too high, what explains them, and what ways there are to reduce them.

Ultimately, the question arises whether investors value the issuance of GCOs. Prior literature has argued that investors do not value GCOs when they are expected since it does not provide any news (e.g., Jones 1996; Menon and Williams 2010). Investors can use bankruptcy prediction models for example to forecast a GCO. These

bankruptcy prediction models are arguably more accurate than auditors' going-concern assessments. However, calculating bankruptcy prediction models requires skills and effort by investors. Investors might lack the necessary resources or skills. Additionally, the information environment is much richer now than when audit reports were first required. Public signals regarding a firm's future viability are sometimes available that might provide investors with an indication whether the company is likely to survive the next fiscal year. In determining the relevance of GCOs to investors, it seems important to also consider these other signals and whether, and to what degree, they influence the value of GCOs to investors.

Based on these motivations, this dissertation has the following main objectives: It considers credit ratings as publicly available signals that provide information regarding a firm's future viability. First, it will be examined whether credit ratings are informative to auditors and can be used in the auditor's GCO decision. Second, it conducts an empirical analysis on the association of credit rating changes and audit reporting misclassifications. This provides evidence to the question whether independent signals regarding firm's financial information, like credit ratings and credit rating changes, provide additional information to auditors and thereby improve auditors' decision making during the going-concern assessment; or whether credit ratings are perceived as a warning that there are potential problems in a firm and increase auditor conservatism in their reporting decisions. Lastly, I examine the value of the auditor's GCO to investors above and beyond the information regarding a firm's future viability that investors can derive from other information intermediaries. For this analysis, I consider signals by both credit rating agencies and equity analysts.

The examination of credit ratings is motivated by the fact that they can directly signal a firm's deteriorating performance. They are a credit rating agency's assessment of a firm's ability and willingness to meet contractual and financial obligations when they become due (Standard & Poor's 2003). As firms have increasing financial difficulties, it becomes less likely that they will be able to repay their debt and more likely that they eventually will have to file for bankruptcy. Credit rating agencies specialize in the assessment of credit risk and, because they cover a large proportion of companies, they acquire a substantial amount of experience and expertise within and across industries. Moreover, credit rating agencies have access to proprietary firm information which allows them to provide market participants with more informative assessments compared to signals using only publicly available information. While credit ratings consider backward looking information, they are intended as a future outlook of a company's creditworthiness. Given that some investment regulations are tied to credit ratings and that credit ratings are frequently used in debt covenants, downgrades in credit ratings might also trigger future events. In aggregate, these characteristics make credit ratings potentially informative in relation to auditor's GCO decisions.

1.3 Structure and Contribution of the Dissertation

The second chapter of this dissertation provides a more detailed description of credit ratings and credit rating agencies. Credit ratings are used as variable of interest in all three empirical studies conducted as part of this dissertation and I therefore offer more information regarding their characteristics and prior research findings on issues that provide useful background information.

Figures 1.1 to 1.3 are a schematic representation of the auditor's decision making framework and outline the three empirical studies of this dissertation. As depicted in Figure 1.1, Chapter 3 offers the first empirical study, regarding the association between credit ratings and GCOs. Credit ratings are similar to the auditor's GCO in the sense that they provide indications of approaching financial difficulties for a firm. However, credit rating agencies and auditors differ in the focus of their assessments, as credit rating agencies consider only the probability of default while auditors consider the reliability of financial statements as a whole. Moreover, credit rating agencies and auditors differ in their information access and information processing. Credit ratings and changes in credit ratings might therefore influence an auditor's going-concern decision. Analyzing a sample of U.S. financially distressed firms between 1999 and 2011, I find that lower grade credit ratings are positively associated with the probability of auditors issuing a GCO. Moreover, auditors are significantly more likely to issue GCOs for firms that have been downgraded throughout the year being audited. The analyses show that this effect is stronger for more recent and more severe downgrades. Additional tests consider the effect of auditor competence, measured by auditor specialization. Consistent with the argumentation that specialist auditors have superior knowledge, experience and expertise, the results provide evidence supporting the notion that specialized auditors are more competent and thus less likely to rely on external signals like credit ratings in their GCO assessments.

These findings contribute to the existing literature on GCO determinants and raise the question whether preceding credit rating changes might help auditors reduce their audit reporting error rates. The study also contributes to the existing literature regarding the role of credit rating agencies as information intermediaries. Since the financial crisis, regulatory changes for credit rating agencies as well as auditors have been widely debated and partly also initiated. These findings of strong associations between lowest grade credit ratings and GCOs therefore add to the discussion whether there are signals that influence the auditor's decision to issue a GCO. The findings are also particularly interesting with respect to regulation of credit rating agencies, namely the Dodd-Frank Act (2010) which discusses potential alternatives to credit ratings in statutory references.

FIGURE 1.1
Positioning of Empirical Study 1 in Auditors' Decision Making Framework

The decision whether to issue a GCO or not is critical to auditors because audit reporting misclassifications can be quite costly for them. Going-concern decisions that are identified as incorrect *ex post* are often associated with loss of reputation, and client loss or litigation concerns. Yet, previous literature shows that audit reporting error rates are quite high. Chapter 4 therefore addresses the question whether publicly available signals regarding a firm's financial health help auditors to reduce their reporting error rates (see Figure 1.2). On the one hand, independent signals from other information intermediaries could contain incremental information that helps to decrease the ambiguity surrounding the going-concern decision. On the other hand, they might be perceived as a signal that a firm's financial performance is deteriorating. If this confirms the auditor's own assessment, the auditor might become more conservative in his going-concern decisions and may thus be more likely to issue a GCO which would result in a higher probability of Type I and lower probability of Type II errors.

Analyzing a sample of financially distressed firms that have credit ratings outstanding between 1999 and 2012, I find some evidence that Type I errors are positively associated with credit rating downgrades while there is only weak evidence that GCOs are negatively associated with Type II errors. These results are generally consistent with the argument that credit rating downgrades increase auditor conservatism, resulting in more Type I and less Type II errors. Again, I examine differences with respect to auditor specialization. If specialized auditors indeed provide higher quality audits, one expects to find a performance gap between specialized and non-specialized auditors. An analysis focusing on auditors without specific expertise in the client's industry at hand, provides results that are consistent with these auditors deriving incremental information from credit rating downgrades. This is reflected in a more narrow performance gap between auditors without specific expertise in the client industry and other auditors in the presence of credit rating downgrades.

These findings further extend the existing literature on determinants of audit reporting misclassifications and the relevance of credit ratings. Additionally, the results are relevant for auditors, practitioners and regulators because it is critical to understand when auditors are likely to issue GCOs and in which situations this leads to a more accurate vs. a more conservative assessment. Moreover, this finding increases awareness of situations where external signals potentially influence the auditor's going-concern decision and it is important for auditors and stakeholders to incorporate this in their decision making. Regulators might want to consider when auditors are prone to make going-concern reporting errors and how potential regulatory changes of credit rating agencies affect auditors' decisions (and vice versa).

FIGURE 1.2
Positioning of Empirical Study 2 in Auditors' Decision Making Framework

Since audit reporting misclassifications are quite high and the information environment of firms is rich, in the sense that there are other information intermediaries providing an indication as to a firm's future viability, the question arises whether investors value auditors' GCOs. Chapter 5 hence investigates the incremental market reaction to GCOs that have been preceded by signals regarding a firm's viability from other information intermediaries, as illustrated in Figure 1.3. The information intermediaries considered are credit rating agencies and equity analysts. Analyzing a sample of all firms that are covered by credit rating agencies or equity analysts between 1999 and 2012, the results indicate that market reactions to GCOs are mitigated when GCOs have been preceded by credit rating downgrades. This effect is stronger for more recent and more severe rating downgrades. This finding is not confirmed for downgrades in analysts' investment recommendations. However, market reactions to GCOs are also mitigated by preceding downgrades in analysts' cash flow forecasts. When credit rating agencies or equity analysts downgrade their signals severely, so that there is little ambiguity that the assessed company is likely to obtain a GCO, the market reaction to GCOs is not statistically different from zero. Overall, these findings answer the question whether GCOs are valuable and relevant to investors as I show that they provide incremental information to investors beyond the information communicated by other information intermediaries. This is relevant for auditors because it implies that their assessment is valued and that it is critical that they provide accurate assessments. Moreover, this adds to the literature on the information provision by credit rating agencies and equity analysts. Additionally, it is important for regulators who are currently considering to change the structure of the audit report in order to make it more informative. Regulators might want to be aware of how regulatory changes regarding one information intermediary also indirectly affect the importance of the signals of other information intermediaries.

Finally, Chapter 6 concludes this dissertation by providing a summary of the findings, discussing the main findings and limitations, and offering directions for future research.²

² While the three empirical studies build up on each other and were intended and designed as one overall PhD dissertation, the autonomous structure of each study allows the chapters to be read independently from each other.

FIGURE 1.3
Positioning of Empirical Study 3 in Auditors' Decision Making Framework

Chapter 2

Background on Credit Rating Agencies

Besides auditors, there are other information intermediaries who provide disclosures about firms, such as financial analysts, credit rating agencies and the financial press (Healy and Palepu 2001). These information intermediaries often also provide indications as to a firm's financial performance. While audits are mandatory for all listed companies, there are no regulations stipulating that companies have to be covered by credit rating agencies, equity analysts or the financial press. Companies have to provide auditors access to information and proprietary documents, but this is not the case for other information intermediaries. In some cases however, managers grant information intermediaries access to proprietary firm information voluntarily because it allows them to communicate private information to investors without jeopardizing their firm's competitive advantage (Gul and Goodwin 2010).³ Generally, the benefit of being covered by credit rating agencies or equity analysts is that it reduces a firm's cost of capital (e.g., Bowen, Chen, and Cheng 2008; Faulkender and Petersen 2006; Sufi 2009).

³ The decision whether or not to disclose proprietary information to some interested parties and what information can be released is regulated by the U.S. Securities and Exchange Commission (SEC). The SEC explicitly prohibits companies from selectively disclosing proprietary information to a subset of parties that might use this information for investment purposes (Regulation Fair Disclosure) (SEC 2000). However, in cases where information intermediaries agree not to selectively disclose the obtained information to other parties but only to disclose it indirectly to the public without preferential treatment of any party, they are exempted from Regulation Fair Disclosure.

Although there are no regulatory requirements for these information intermediaries to signal approaching financial difficulties of the firms they cover, they usually do so as it is expected by investors. As credit rating agencies provide similar information regarding approaching financial difficulties at a firm but are different in their focus and approaches, it is interesting to consider the relationship between credit ratings and the auditor's GCO decision. This is particularly the case since both auditors and credit rating agencies were criticized in the financial crisis for their failure to warn markets about firms' deteriorating performance in a timely and accurate manner. In order to understand why credit ratings might potentially inform an auditor's going-concern decision, it is relevant to know the structure and background of credit rating agencies, how they arrive at the credit ratings they issue, and what changes in these signals indicate to markets.

2.1 Brief History of Credit Rating Agencies

Credit rating agencies originated in the United States during the early 20th century when railroad building in the U.S. increased the demand for outside capital lending (e.g., Partnoy 1999). Prior to this period, bonds had generally been issued by nations or governments and were public. Privately issued bonds were not that common or had been issued by related parties, where lenders knew borrowers and could therefore also judge their credibility (e.g., White 2013). With increasing demand by private railroad companies to borrow capital, there was an opportunity for smaller investors to lend capital at a profit. However, a service was needed that determined the creditworthiness of borrowers. John Moody therefore published the first bond rating in 1909.⁴ His company sold detailed manuals to investors that provided background information on the creditworthiness of borrowers. The information that was aggregated in rating manuals included a borrower's current financial position and future prospects but also its track record (e.g., White 2013). Moreover, Moody's provided monitoring services because it offered lenders to buy updated manuals in response to changes in the financial position and prospects of borrowers (e.g., White 2013). While larger lenders could perform these services themselves, smaller investors lacked the necessary time, skills and resources to do so. The introduction of credit rating agencies therefore enabled smaller investors to participate in capital lending as well. Given the high demand for these services, Moody's was soon followed by Poor's Publishing Company in 1916, the Standard Statistics Company in 1922, and the Fitch Publishing Company in 1924 (e.g., White 2009).⁵

⁴ Before the initiation of credit rating agencies, lenders were also vetted via the financial press and investment bankers. However, this was their side business and they did not specialize in assessing creditworthiness in that time period (e.g., Sylla 2001).

⁵ Poor's and Standard merged in 1941 to form Standard & Poor's and were an independent rating agency before they were absorbed by the publishing house McGraw-Hill in 1966.

As the bond market grew in importance over the years, so did the credit rating business. Moody's expanded its credit rating analysts from a handful in the early 1920s to about 560 analysts and total staff of about 1,700 people in 1995 and Standard & Poor's (S&P) had become even larger in the same time period with more than 800 analysts and total staff of over 2,000 people in its rating business (Partnoy 1999). By the year 2000, S&P and Moody's rated about 20,000 public and private bond issuers each in the U.S. (Partnoy 1999). Additionally, they also rated non-issuers such as governments or non-issuing corporations which resulted in a total of more than \$7trillion worth of securities being rated just by Moody's and S&P (Partnoy 1999). Besides Moody's, S&P and Fitch, which is considerably smaller than Moody's and S&P but still considered one of the three major rating agencies, other credit rating agencies emerged over the years. To date there are seven other officially registered U.S. credit rating agencies, and the credit rating market has developed into a multi-billion dollar industry that is considered an important component of financial markets and a pillar of economies worldwide (e.g., Güttler and Wahrenburg 2007).⁶

2.2 The Rating Process

The main purpose of credit rating agencies is to provide investors with independent assessments regarding a firm's creditworthiness. Their services are therefore aimed at aggregating information about borrowers in order to determine the ability and willingness that issuers repay their debt in accordance with the terms of the lending agreements (Standard & Poor's 2003). In contrast to the beginning years of credit rating agencies when investors requested reports regarding potential investments, the structure of the rating process has changed and nowadays companies, instead of investors, request to be rated.

There are generally three different rating categories. Credit rating agencies differentiate between sovereign ratings, issuer ratings and issue ratings. Sovereign credit ratings are ratings of the risk assessment of central governments (Cantor and Packer 1996). Issuer credit ratings are the assessment of a firm's overall ability and willingness to repay their obligations in accordance with the terms of those obligations (Standard & Poor's 2003). Issue credit ratings pertain to individual debt issues such as bonds by governments or corporations, or structured finance products. When credit rating agencies rate individual bond issues or structured finance products they first assign an overall credit rating to the company and then determine the riskiness of the individual bond rating depending on the characteristics of the bond or product (Standard & Poor's

⁶ The other seven nationally recognized statistical rating organizations beside Moody's, S&P and Fitch are A.M. Best Company, Dominion Bond Rating Service Limited, Egan-Jones Ratings Co., HR ratings de México, SA. de C.V., Japan Credit Rating Agency, Ltd., Kroll Bond Rating Agency, Inc. and Morningstar Credit Ratings, LLC (www.sec.gov).

2003). Since the focus of this dissertation is on issuer credit ratings, I will not elaborate on sovereign or issue credit ratings further.⁷

Standard & Poor's describes the issuer rating process in eight different steps, as depicted in Figure 2.1 (www.sparatings.com).⁸ They explain that they first obtain a request by the client company and formulate a contract, which is to be understood as an engagement letter and signed by clients as well as the credit rating agency. Second, S&P conducts a pre-evaluation where a team of analysts with particular experience and expertise is assembled that will then review the pertinent client information. In the third step of the rating process, analysts meet with the client firm's management to obtain and discuss additional, proprietary information that is necessary for or useful in the rating process. All of the collected information is then evaluated by analysts and aggregated into a credit rating which is then proposed to the rating committee. In the fifth step, the rating committee, that usually consists of five to six members, reviews and discusses the recommended rating and votes on the decision what credit rating to issue. Based on this assessment, the client company is then notified with a "pre-publication rationale for its credit rating for fast checking and accuracy purposes" (www.sparatings.com). Shortly after this, S&P usually issues a press release that the credit rating has been determined and publishes the credit rating on its website. As a final step of the rating process, S&P provides surveillance of the rated issuer to ensure that the credit rating provides an up-to-date, forward-looking assessment of the firm's creditworthiness.

2.2.1 Specific Aspects of the Rating Process

The previous outline of the rating process is rather broad and does not provide details on the specific information that is included in the rating process. However, more detailed information is warranted to understand the implications of credit ratings.⁹ First of all, it is important to note that credit rating agencies do not perform audits on the information they receive and therefore require a minimum quality of the information they obtain from clients. They specify that companies requesting a credit rating should have been audited for the past three years. They usually also start by analyzing the financial

⁷ The turmoil in financial markets in 2007 and 2008 did not primarily originate from issuer credit ratings but from the rating of structured finance products. Credit rating agencies have extensively been criticized that they rated products that they were unfamiliar with and that they did not assess the riskiness of these products adequately.

⁸ The rating process differs slightly among the different rating agencies. The rating process and the rating determinants discussed in this section are based on S&P because credit ratings by S&P are later used in the empirical studies. However, the processes are similar across all rating agencies who are paid by the issuers, including Moody's & Fitch.

⁹ This entire section is based on Standard & Poor's "Corporate Methodology" and "Methodology: Industry Risk" that was published in November 2013 and can be found on their website www.standardandpoors.com. For brevity reasons I will not reference this source throughout this section. The information provided here is a broad summary of the rating methodology. Please see the methodology description by S&P for details.

FIGURE 2.1
The Ratings Process

Source: Standard & Poor's, 2014 (www.spratings.com).

strength of the company based on the published annual financial statements of firms as part of their pre-evaluation (Standard & Poor's 2003).

S&P describes their rating development itself in more detail as part of their corporate rating methodology, which is depicted in Figure 2.2 (Standard & Poor's 2013a). They start their analysis by determining a client's financial and business risk profiles. The most important determinants of the financial risk profile are a firm's cash flow and leverage as these significantly influence liquidity and thus also the ability to repay debt obligations. S&P therefore identifies funds from operations to debt and debt to earnings-before-interest-tax-depreciation-and-amortization (EBITDA) as the core financial ratios being considered. These ratios are then supplemented with other ratios concerning interest coverage, free cash flow and discretionary cash flow. This part of the analysis is of quantitative nature as it is based on the financial data provided by the firm. In order to ensure appropriate evaluation, these ratios are usually benchmarked against comparable situations of the same firm from earlier time periods or competitors. The aggregated information is then analyzed by means of proprietary models that perform time series analysis with stronger weights placed on future than on past years, since S&P has the goal to provide forward-looking ratings.

The business risk profile consists of three different parts, namely industry risk, country risk and the client's competitive position. The industry risk component is mainly based on cyclicity, competitive risk and growth. Cyclicity is further split into cyclicity of revenues and profits, with revenue cyclicity obtaining a stronger weight. The cyclicity calculations are then calibrated with stress scenarios in order to ensure that credit ratings are eventually comparable over time and across sectors. Competitive risk and growth are determined by "the barriers to entry of an industry; the level and trend of industry profit margins; risk of secular changes and substitution of products, services and technologies; and risk in growth trends" (Standard & Poor's 2013b). Overall, the industry risk assessment will then provide indications as to the relative health and stability of the market in which the client company operates. The second component of the business risk profile, country risk, is determined by the economic strengths and the governance structure of the countries the rated entity operates in. More specifically, S&P considers institutional and governance effectiveness, the strength of the financial system in the countries of operation, the legal system and its effectiveness, and cultural determinants of the likelihood to repay debt. If rated entities operate in multiple countries, each country is assessed in isolation and the overall risk score is determined by weighting each country according to the share of business conducted in that country. The competitive position, which is the third component in the business risk profile, results from comparative analyses of direct competitors and considers factors

FIGURE 2.2
Standard & Poor's Corporate Criteria Framework

Source: Standard & Poor's, 2014 (www.spratings.com).

like the competitive advantage of firms, their scale, scope and diversity of operations, how efficiently they operate, and their profitability. This assessment results in an indication as to which companies are best positioned to mitigate approaching risks or take advantage of key industry opportunities.

After the business risk profile and the financial risk profile have been conducted, they are combined into a so-called ‘anchor’, which can be understood as a preliminary credit rating. This anchor is adapted depending on several modifiers which include diversification across different business lines, capital structure, financial policy, liquidity and management and governance. The effect of each of these modifiers on the anchor is considered independently in order to determine how each modifier impacts the anchor. Before arriving at the stand alone credit profile, S&P will then conduct a comparable rating analysis, which is a holistic review of the individual credit risk profiles and results in an aggregated issuer’s credit risk profile. If the entity to be rated belongs to financial institutions, insurance groups or government entities, the credit rating is adapted to reflect the additional/mitigated risks, otherwise the stand alone credit profile is the issuer credit rating.

While the overall assessment is clearly based on quantitative factors, S&P also considers a substantial amount of qualitative information. Furthermore, the overall assessment is an outcome of a mix of analyses by proprietary models and credit analysts’ judgment that are based both on public as well as proprietary firm information. It is important to stress that part of the value of credit ratings originates from the fact that credit rating agencies rate a major share of the market and therefore acquire a substantial amount of private firm information from different companies and industries, and particularly also from direct competitors. This allows them to incorporate these effects into their analysis and provide relative indications regarding how likely companies are to repay their debt.

2.2.2 The Outcome of the Rating Process: Credit Ratings

While the credit rating process itself is rather complicated and opaque to the average investor, the outcome is summarized on an alphabet-oriented ordinal scale ranging from AAA to D, indicating the issuer’s creditworthiness.¹⁰ This can be interpreted fairly straightforward, as explained in Figure 2.3. The highest rating category, AAA,

¹⁰ Prior to the financial crisis, credit rating agencies were less regulated and not required to disclose specific information regarding the rating process. The information contained in section 2.2.1 has only become available in such detailed format as a result of the Dodd-Frank Consumer Protection Act of 2010, which addresses the fact that the rating process was very opaque until and during the financial crisis. S&P published the detailed version of their methodology in November 2013, and a preliminary version earlier in 2013 but prior to that investors mostly relied on the general information (such as described in the rating process) provided by the rating agencies.

FIGURE 2.3*General Summary of the Opinions Reflected by S&P's Ratings*

Investment Grade	AAA	Extremely strong capacity to meet financial commitments. Highest rating
	AA	Very strong capacity to meet financial commitments
	A	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
	BBB	Adequate capacity to meet financial commitments, but more subjective to adverse economic conditions
	BBB⁻	Considered lowest investment grade by market participants
Speculative Grade	BB⁺	Considered highest speculative grade by market participants
	BB	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
	B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
	CCC	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
	CC	Currently highly vulnerable
	C	A bankruptcy petition has been filed or similar actions taken. But payments of financial commitments are continued
	D	Payment default on financial commitments
Ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.		

Source: Standard & Poor's, 2014 (www.spratings.com).

represents an extremely strong capacity to meet financial commitments. All credit ratings until BBB⁻ are generally considered investment grade while credit ratings of BB⁺ or lower fall in the non-investment grade category.¹¹ The lowest credit rating is D, which conveys payment default on financial commitments. Within the different rating levels one differentiates among rating notches, which are + or - indicators that convey the relative credit standing within the rating category.

Credit ratings are not intended to provide investment merit or function as investment advice to investors (Standard & Poor's 2013c). They only concern the risk aspect of companies' debt obligations and need to be matched to investors' financial situations. While credit ratings provide an indication as to the probability that a company will default, they do not provide absolute default probabilities, i.e. one cannot assign a fixed percentage of the probability that a credit rating will default.¹² *Ex post*, however, actual default probabilities indicate how well credit rating agencies performed. S&P's (2012) annual corporate default rates (represented in Figure 2.4) show that companies with lower grade credit ratings are indeed more likely to default within one year as compared to companies with higher credit ratings. In other studies S&P also showed that there is more volatility but generally a similar pattern of default probabilities across different rating categories over longer-term horizons (Standard & Poor's 2012b). This provides some evidence regarding the accuracy of credit ratings to investors.

2.2.3 The Surveillance Aspect of Credit Ratings

As part of their rating process, credit rating agencies include the surveillance of outstanding ratings. Given economic and firm-specific developments, credit rating agencies are monitored and reevaluated intermittently and depending on the surveillance outcome, credit ratings can be upgraded, downgraded or affirmed. A critical aspect of the surveillance is that credit rating agencies rate "through-the-cycle", which means that they attempt to avoid unnecessary rating volatility by ignoring changes in a client's business or financial risk profiles that occur as part of the regular business cycle and are likely to be reversed shortly after (Standard & Poor's 2003). Their policy is to adapt credit ratings only when the underlying determinants of credit ratings change and these changes impact the long-term creditworthiness of the issuer.

¹¹ Bonds in this category are also commonly referred to as 'junk bonds'.

¹² Credit ratings by S&P are indicators of the default probability, which translates into the likelihood that the lender will experience some loss. Other credit rating agencies, such as Moody's and Fitch, do not only incorporate that a company might default but also encompass the expected amount of the loss given default (SEC 2012).

FIGURE 2.4
Standard & Poor's One-Year Global Corporate Default Rates by Rating Category

Standard & Poor's One-Year Global Corporate Default Rates By Refined Rating Category, 1981-2008															COC to		
	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	C
1981	-	-	-	-	-	-	-	-	-	-	-	2.86	7.04	-	3.28	-	-
1982	-	-	-	-	-	0.33	-	-	0.68	-	-	2.22	2.33	7.41	21.43	-	-
1983	-	-	-	-	-	-	-	-	-	1.33	2.17	1.59	1.22	9.8	4.76	6.67	-
1984	-	-	-	-	-	-	-	-	1.4	-	-	1.64	1.49	2.13	3.61	7.69	26
1985	-	-	-	-	-	-	-	-	-	-	1.64	1.49	1.33	2.59	13.11	8	15.38
1986	-	-	-	-	-	-	0.78	-	0.78	-	1.82	1.18	1.12	4.65	12.16	16.67	23.08
1987	-	-	-	-	-	-	-	-	-	-	-	0.83	1.31	5.95	6.82	12.28	-
1988	-	-	-	-	-	-	-	-	-	-	-	2.33	1.98	4.5	9.8	20.37	-
1989	-	-	-	-	-	-	0.9	0.78	-	-	-	1.98	0.43	7.8	4.88	31.68	-
1990	-	-	-	-	-	-	0.76	-	-	1.1	2.78	3.06	4.46	4.87	12.26	22.58	31.25
1991	-	-	-	-	-	-	0.83	0.74	-	-	3.7	1.11	1.05	8.72	16.25	32.43	33.87
1992	-	-	-	-	-	-	-	-	-	-	-	-	-	0.72	14.93	20.83	30.19
1993	-	-	-	-	-	-	-	-	-	-	-	1.92	-	1.3	5.88	4.17	13.33
1994	-	-	-	-	0.45	-	-	-	-	-	-	0.86	-	1.83	6.68	3.23	16.67
1995	-	-	-	-	-	-	-	-	0.63	-	-	1.55	1.11	2.76	8	7.69	28
1996	-	-	-	-	-	-	-	-	-	0.86	-	0.65	0.55	2.33	3.74	3.92	4.17
1997	-	-	-	-	-	-	0.36	-	0.34	-	-	0.41	0.72	5.19	14.58	12	-
1998	-	-	-	-	-	-	-	-	0.54	0.7	1.29	1.06	0.72	2.57	7.47	9.46	42.86
1999	-	-	-	0.36	-	-	0.21	0.27	-	0.28	0.3	0.51	1.33	0.9	4.2	10.55	15.45
2000	-	-	-	-	-	-	0.24	0.56	-	0.26	0.88	-	0.8	2.29	5.6	10.66	11.5
2001	-	-	-	-	0.57	0.49	-	0.24	0.48	0.27	0.49	1.19	5.27	5.94	15.74	23.31	44.55
2002	-	-	-	-	-	-	-	1.11	0.65	1.31	1.5	1.74	4.62	3.69	9.63	19.53	44.12
2003	-	-	-	-	-	-	-	-	0.19	0.52	0.48	0.94	0.27	1.7	5.16	9.23	33.13
2004	-	-	-	-	-	0.23	-	-	-	-	-	0.61	0.76	0.46	2.68	2.82	15.11
2005	-	-	-	-	-	-	-	-	0.17	-	0.36	-	0.25	0.78	2.59	2.98	8.87
2006	-	-	-	-	-	-	-	-	-	-	0.36	-	0.48	0.54	0.78	1.58	13.06
2007	-	-	-	-	-	-	-	-	-	-	-	0.3	0.23	0.19	-	0.88	14.81
2008	-	0.43	0.4	0.31	0.21	0.58	0.18	0.59	0.71	1.14	0.63	0.63	0.63	2.97	3.29	7.02	26.53
Mean	-	0.02	0.03	0.05	0.06	0.08	0.16	0.28	0.28	0.28	0.68	0.89	1.53	2.44	7.28	9.97	22.67
Median	-	-	-	-	-	-	-	-	0.08	-	0.18	0.83	0.86	2.06	6.27	7.69	22.25
Minimum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maximum	-	0.43	0.4	0.57	0.49	0.78	1.11	1.4	1.33	3.7	3.06	7.04	8.72	16.25	32.43	44.55	-
Standard Deviation	-	0.08	0.1	0.14	0.13	0.2	0.32	0.36	0.43	0.96	0.84	1.83	2.02	4.51	7.82	11.93	-

Source: Standard & Poor's, 2014 (www.globalcreditportal.com).

In addition to rating changes themselves, there are two other major surveillance activities: rating outlooks and placing ratings on CreditWatch. Rating outlooks provide an indication of the potential direction of a long-term rating over the intermediate term, which is usually considered the next six to 24 months. When there is a more than 50% chance that the rating will be changed in the near future as a result of an event, and unexpected deviation from anticipated performance or trends or a change in rating criteria, credit ratings are put on CreditWatch. Yet, this does not mean that a rating change is inevitable and rating changes can also occur without preceding CreditWatch listings.

2.4 Regulatory Developments Regarding Credit Rating Agencies

Since the introduction of credit rating agencies in the early 1920s, public debt markets developed, investors became more sophisticated, and advances of technologies influenced information acquisition and therefore also the role of information intermediaries in markets. As a result of those changes, the business of and regulations regarding credit rating agencies adapted as well.

In the early 1920s, credit rating agencies sold rating manuals to investors as the market demanded these manuals to assess the creditworthiness of potential borrowers. Over time, these credit rating manuals increased in importance and popularity and were also relied upon more frequently. By 1926, bank regulators determined for the first time that if banks invested in bonds, these bonds were not allowed to be classified as non-investment grade (e.g., Partnoy 1999). Moreover, regulators specified that these rating reports had to be “recognized rating manuals”, implying that the reputation of the credit rating agency mattered (e.g., Partnoy 1999). While credit ratings were voluntary before, this change in regulation implied that credit rating agencies, and especially Moody’s, S&P and Fitch now had guaranteed customers in need of their rating services. Additionally, it meant that credit rating agencies now had the power to determine which bonds were considered safe.

During the course of the following decades regulators of insurance companies and pension funds also adopted references to credit rating agencies. Particularly important was the Employee Retirement Income Security Act (ERISA) of 1974 which stipulated that defined benefit pension plans were only allowed to invest in bonds that were rated investment-grade. One year later, in 1975, the Securities and Exchange Commission (SEC) adopted a rule that specified that the capital requirements of securities firms had to match the riskiness of the bonds that they were holding and again credit ratings were used as an indicator of bond riskiness (e.g., White 2013). Yet, the SEC went a step further than prior regulators because it was concerned with the quality of credit ratings and introduced the concept of nationally recognized statistical rating organizations (NRSROs). Their regulations required that the credit ratings used were issued by NRSROs, which at the time were defined as Moody’s, Fitch and S&P. Many of the

other regulators also adapted the NRSRO status in their regulations and credit ratings were used more frequently as statutory reference.

However, several issues arose during this time. First, credit rating agencies switched from the investor-pays model that had been established by Moody's in 1906 to the issuer-pays model in the beginning of the 1970s. This meant that the companies that were to be rated, requested and paid for that rating, which introduced a potential independence concern. Moreover, the NRSRO status was a severe barrier to entry for additional competitors in the credit rating industry, particularly because there were no clearly defined standards or rules specifying when credit rating agencies qualified as NRSROs and the SEC was opaque with respect to its decision process to grant additional credit rating agencies as NRSROs.¹³ This implied that credit rating agencies had become quite powerful. On the one hand, issuers needed them in order to obtain investment status and credit rating agencies could potentially abuse this power to obtain higher fees for the rating services (e.g., Beales and Davies 2007). On the other hand, this introduced the concern of favorable ratings as issuers could threaten to employ another credit rating agency if they did not obtain the desired rating. With respect to pressuring credit rating agencies into favorable ratings, credit rating agencies developed 'unsolicited' ratings, which are ratings solely based on public information. This meant, when clients tried to pressure credit rating agencies into favorable ratings, the rating agencies could issue ratings based on publicly available information only, which would potentially make a client's credit rating even worse. Unsolicited ratings therefore worked as incentives to stop pressuring credit rating agencies. Another reason for independence concerns is the provision of ancillary services by credit rating agencies, such as pre-rating advice or consultation. The agencies address these concerns and argue that they implement Chinese walls between staff that negotiates business terms and the rating analysts in order to prevent potential conflicts of interests to influence their ratings. Moreover, academic literature has addressed this concern and Covitz and Harrison (2003) for example, conclude that credit rating agencies are primarily motivated by reputation concerns which alleviates the problem of ancillary service provision.

Despite these concerns, there were no major regulations regarding credit rating agencies during the 1980s and 1990s and initial studies show that market participants (still) valued credit ratings and changes therein. Ederington and Yawitz (1987) find that bond ratings provide additional information to the market above and beyond a set of accounting variables. Ziebart and Reiter (1992) show that credit ratings directly affect

¹³ Since the introduction of the NRSRO status in 1975, the SEC granted the NRSRO status to an additional four firms, namely Duff & Phelps in 1982; McCarthy, Crisant & Maffey in 1983; IBCA in 1991; and Thomson BankWatch in 1992 (e.g., White 2013). However, mergers among these credit rating agencies and of those newly recognized NRSROs with the major three credit rating agencies resulted in the only NRSROs being left by 2000 to be Moody's, Fitch and S&P.

bond yields, and several other studies provide evidence of negative abnormal stock returns in response to bond rating downgrades (e.g., Holthausen and Leftwich 1986; Hsueh and Liu 1992; Goh and Ederington 1993).

In August 2000 the SEC adopted Regulation Fair Disclosure (Reg FD), which was aimed at preventing selective disclosure of material information by publicly traded issuers to individuals or entities that could trade on that information (www.sec.gov).¹⁴ This included equity analysts who previously had access to proprietary firm information and provided investment recommendations to investors. Credit rating agencies however were exempted from Reg FD because they argued that they publish their opinion on issuers' creditworthiness but do not provide investment advice. This argument is also the reason why credit rating agencies are protected by the First Amendment right to free speech that shields them from legal liability (e.g., Frost 2007). While Reg FD did not directly apply to credit rating agencies, it affected them. They were one of the few independent information intermediaries that were still allowed to acquire and use proprietary firm information. It is thus only reasonable that investors react to changes in credit ratings, especially after the introduction of Reg FD, as they indirectly communicate the private information obtained during the rating process (Jorion, Liu, and Shi 2005).

In 2003, credit rating agencies were criticized for late rating adjustments in response to the failure of Enron: until five days before Enron failed, all three major rating agencies still rated Enron as investment grade. This raised concerns regarding the quality of and competition between credit rating agencies. As a consequence, market participants and particularly bond and equity holders, increased the pressure on the SEC to clarify the determinants for NRSROs and why there were only three. Following this criticism, the SEC granted two additional credit rating agencies the NRSRO status by 2005, but it still did not specify on which criteria it founded this decision. Due to persistent investor dissatisfaction, the Credit Rating Agency Reform Act (CRARA) was issued and signed in 2006, with the aim "to improve ratings quality for the protection of investors and in the public interest by fostering accountability, transparency, and competition in the credit rating agency industry" (www.sec.gov). It clearly defines the NRSRO status and the criteria to obtain it, which lead to increased competition amongst credit ratings, and since 2008, there are ten NRSROs.

While the concern of too little competition has been somewhat alleviated with the introduction of the CRARA, credit rating agencies have still been criticized for late rating adjustments and inadequate assessments, especially since the global financial crisis. The morning that Lehman Brothers filed for bankruptcy, Moody's, Fitch and S&P still rated it as investment grade. Investors wondered how credit rating agencies

¹⁴ Regulation Fair Disclosure became effective October 23rd, 2000.

arrive at their ratings. Until the financial crisis, the rating process was highly opaque. S&P for example, only provided information on the general process but kept the specific determinants of credit ratings rather vague. Moreover, the reference of credit ratings in statutory regulations has been criticized, particularly since the rating process is not transparent due to the use of proprietary models by credit rating agencies.

As a consequence of the financial crisis and the resulting criticism, the Dodd-Frank Consumer Protection Act was issued in 2010. It had several implications for credit rating agencies. First, credit rating agencies were required to increase transparency in the rating process. This included that they had to publish specifics regarding their rating methodologies and make historic ratings and default studies available.¹⁵ Second, credit ratings have been eliminated from statutory references and regulators are currently debating potential alternatives to credit ratings in these. Third, credit rating agencies are no longer exempt from Reg FD. Europe, where credit rating agencies also played a role in the Euro crisis, established the European Securities and Markets Authority (ESMA), which is exclusively responsible for the registration and supervision of credit rating agencies. The ESMA is also working on increasing transparency of the rating process and improving comparability of credit ratings.

These regulatory changes provide an indication of the importance of credit ratings to capital markets. While it is not entirely clear how the recent regulatory changes affect the credit rating industry and capital markets, one can certainly argue that it is critical to better understand credit rating agencies and their influence on investors as well as other market participants.

2.5 The Value of Credit Ratings

Academic research has examined the value of credit ratings and credit rating changes to investors. These studies provide evidence regarding the importance of credit ratings to bond as well as equity markets. Ashbaugh-Skaife, Collins, and LaFond (2006) demonstrate that credit ratings directly affect bond yields and that a one notch rating change can often result in a 100 basis point yield difference. Such differences are considerable because they can easily accumulate to a difference of millions of dollars in interest payments over the lifetime of a bond (Brandon, Crabtree, and Maher 2004). Credit default swaps also strongly react to changes in credit rating downgrades (e.g., Ziebart and Reiter 1992; Elbannan 2009). Moreover, equity markets also react to changes in credit ratings. Specifically, stock market prices react positively to rating upgrades and negatively to downgrades, and firms receiving upgrades outperform firms

¹⁵ Prior to the Dodd-Frank Act, the information provided in Section 2.2.1 as well as the information regarding S&P default history were not publicly available. Now they are publicly available although one has to register with S&P in order to access some of the information and while credit rating agencies now publish a sample of 10% of their historic ratings, investors can still not obtain the large majority of historic ratings without purchasing them.

receiving downgrades in the year following the rating change (e.g., Holthausen and Leftwich 1986; Goh and Ederington 1993; Dichev and Piotroski 2001). Norden and Weber (2004) find that the reaction to changes in credit ratings and the magnitude of the reaction, both for bond and equity investors, is influenced by prior rating changes and the level of the pre-rating change. Additionally, prior research has examined the effect of rating outlooks and CreditWatch placements and shows that bond and stock markets react to CreditWatch placements as well (Hand, Holthausen, and Leftwich 1992; Elayan, Maris, and Young 1996). Overall, the evidence confirms that stock markets value credit ratings.

Despite some of the concerns raised, especially since the most recent financial crisis, credit ratings are important mechanisms in financial markets and credit rating downgrades are informative of firms' deteriorating future prospects. This is particularly the case, since credit rating agencies seem to be somewhat slow and maybe even reluctant in adapting their ratings downwards. Besides the information that credit rating agencies communicate to investors, downgrades potentially have consequences for investors and the issuing firms because they are used as references in investment regulations. Given the importance of credit ratings and the fact that changes have recently been considered, it is critical to understand how credit ratings affect other market participants. This dissertation therefore examines the interrelationships of credit ratings with going-concern opinions.

Chapter 3

Credit Ratings and the Auditor's Going-Concern Opinion Decision

Abstract

This study examines whether credit ratings are considered in auditors' going-concern assessments. Given credit rating agencies' private information access, experience and expertise, I predict that credit ratings and especially credit rating downgrades contain incremental information for going-concern opinion (GCO) decisions. Furthermore, I investigate if the association between credit ratings and GCOs, and credit rating downgrades and GCOs varies as a function of local auditor industry specialization. Based on a sample of financially distressed, U.S. public companies with Standard & Poor's credit ratings between 2000 and 2011, I find evidence of a strong association between credit ratings and the probability of auditors issuing a GCO. In particular, companies experiencing rating downgrades are more likely to receive a GCO, and specifically more recent and more severe downgrades are associated with a higher probability of a GCO. Finally, I find modest evidence that the association between credit ratings and GCOs differs between local auditor industry specialists and non-specialists. Overall, the results are consistent with the view that credit ratings provide incremental information to auditors.

Keywords: going-concern audit opinion; credit rating (changes); auditor industry specialization

3.1 Introduction

Since the recent financial crisis, the creditworthiness of companies and the likelihood to survive in the near future are in the spotlight again as an issue of concern for stakeholders, academics and regulators. Two parties that can issue a public warning signal on the financial situation of a company are external auditors and credit rating agencies. Surprisingly, however, prior research examining the relationship between the issuance of a going-concern opinion (GCO) and companies' credit ratings is scarce.

Once a year, shortly after fiscal year-end, auditors issue the audit report, which assumes that the auditor assesses the going-concern assumption as valid. Either the company receives a clean report and is expected to survive the next year, or the auditor expresses doubts that the firm will survive the next year by issuing a GCO. Credit rating agencies report on the creditworthiness of the obligor (Standard & Poor's 2012a). Contrary to audit reports, credit ratings can be updated at any time during the year and credit ratings are measured on ordinal scales, ranging from AAA, i.e. extremely strong capacity to meet financial obligations, to D, which indicates default. Given that credit rating agencies monitor their ratings on an ongoing basis (Standard & Poor's 2003), credit ratings are expected to be adjusted on a timelier basis than audit reports.

Investors are particularly concerned about information on whether a company is in financial distress and whether it faces the risk of bankruptcy. Although the issuance of a GCO is not intended to be a prediction of bankruptcy (AICPA 1993), "investors appear to expect the auditor to provide them with a warning of approaching financial failure" (Chen and Church 1996, 118). Likewise, stakeholders and particularly creditors expect credit rating agencies to adjust the company's credit rating to reflect the risk of approaching bankruptcy. Since both audit reports and credit ratings are perceived as indicative of potential financial failure, are publicly available and entail credible information (Blay, Geiger, and North 2011; Ederington and Goh 1998), I examine if credit ratings and credit rating downgrades are related to auditors' decisions to issue GCOs.

I expect to find a positive association between worse credit ratings and GCOs and credit rating downgrades and GCOs for several reasons. First, credit rating agencies could be considered third-party specialists from whom auditors could derive information because companies are allowed to share private information with credit rating agencies without having to disclose it publicly (e.g., SEC 2000; Jorion et al. 2005; Poon and Evans 2013). Given that credit rating agencies are specialized, they are likely better at identifying relevant facts, analyzing these and drawing conclusions. Second, the decision to issue a GCO is rather sensitive (Carcello et al. 2009) and credit ratings may play a role in this decision. Theory predicts that auditor reporting behavior is influenced by the perceived consequences in terms of expected costs of losing a client, being exposed to third-party lawsuits, and loss of reputation (e.g., Carcello and

Palmrose 1994; Krishnan and Krishnan 1997; Vanstraelen 2003). Specifically, Matsumura, Subramanyam and Tucker (1997) present a model of the auditor's going-concern decision which shows that a potential penalty associated with issuing an incorrect opinion affects the auditor's expected payoff of issuing a GCO. Ignoring publicly available information is likely to increase this penalty. Hence, this study argues that auditors – who tend to be conservative – are unlikely to ignore public information on the financial condition of a company such as credit ratings, or credit rating changes. On the contrary, credit rating agencies have been criticized for inaccurate risk assessments and late rating adjustments, which is why auditors might not consider them in their assessment.

In addition to analyzing whether there is an association between credit ratings and GCOs, this study also considers whether this association varies as function of auditor specialization, a key driver of audit quality (DeAngelo 1981). Auditors who are industry specialists are arguably more competent to assess the going-concern status of a client company within their specialization compared to non-specialists (e.g., Lim and Tan 2008; Reichelt and Wang 2010).¹⁶ Credit rating agencies do not have an irreproachable reputation (e.g., Wyatt 2002) and given auditor industry specialists' own expertise, auditor industry specialists may reach a different conclusion than credit rating agencies, resulting in a weaker association between credit ratings and GCOs for industry specialists.

Examining a sample of financially distressed U.S. firms who were audited between 2000 through 2011 and had a Standard & Poor's (S&P) credit rating outstanding during this time period, this study finds a positive and significant association between credit ratings and the likelihood of receiving a GCO.¹⁷ Specifically, having a non-investment grade credit rating and a credit downgrade prior to the audit report significantly increase the likelihood of a GCO for financially distressed firms. There is some evidence indicating that GCOs of local auditor industry specialists are less sensitive to credit ratings than non-specialists, consistent with specialist auditors relying on their own expertise over that of credit rating agencies. These findings contribute to the already substantial body of research investigating the determinants of the likelihood of a GCO (see Carson et al. 2013 for a review) and may also be of interest to regulators.

¹⁶ In his paper, Minutti-Mezza (2013) argues that Reichelt and Wang's findings are actually attributable to differences in client characteristics and the resulting decision to hire a specialist or non-specialist auditor.

¹⁷ Credit ratings are coded in reverse order so that the best credit rating is associated with the lowest numerical value, i.e. from AAA (1) to D (10).

3.2 Background

3.2.1 The Auditor's Going-Concern Decision

The audit report is the primary means by which auditors communicate information to stakeholders. During the audit, the assumption is made that the audited entity is able to survive in the foreseeable future, i.e. one year beyond the date of the financial statements being audited (AICPA 1972). If auditors find that the going-concern assumption is violated, they are required to modify their going-concern opinion (GCO) (AICPA 1988). Investors value GCOs and alter the market valuation of companies significantly if a GCO is issued (e.g., Blay et al. 2011), consistent with interpreting it as a warning signal of approaching bankruptcy (Chen and Church 1996).

Matsumura et al. (1997) developed a model of the economic consequences associated with the going-concern decision to the auditor. They examine two scenarios in which the auditor's decision might be wrong. First, the auditor might issue a GCO, which is *ex post* identified as incorrect (Type I error). Secondly, the auditor might make a Type II error, i.e. issue a clean opinion, which is revealed *ex post* to be incorrect when the client files for bankruptcy. Audit reporting errors usually result in reputational losses and can be quite costly to auditors due to client loss and loss of future quasi rents or potentially high litigation costs (e.g., Carcello and Palmrose 1994; Krishnan and Krishnan 1997; Vanstraelen 2003). Given the associated costs, the decision to issue a GCO is quite sensitive (Carcello et al. 2009).

The auditor's decision to issue a GCO is particularly complicated in situations that require the assessment of highly complex or subjective matters. In these situations, auditors or auditees can request assistance from a third-party specialist, i.e. a "person or firm possessing special skills or knowledge in a particular field other than accounting or auditing" (AICPA 1994). The audit process benefits in many ways from using specialists: First, evidence obtained from an independent, knowledgeable source is deemed more reliable (AICPA 1994). Second, third party specialists may have access to different information than the auditor. Third, the use of proprietary analytical models and differences in information processing could result in different conclusions between auditors and third-party specialists (Simnett 1996). Auditors can compare the results of specialists to their own analyses and thereby reduce uncertainty in the highly sensitive matter of the GCO decision. For these reasons, the SEC (2003) argues that the quality of an audit might be improved when specialists are utilized.

3.2.2 Credit Ratings

Besides auditors, credit rating agencies can also provide a public warning signal of approaching financial failure. They express opinions about a company's creditworthiness, i.e. the ability and willingness of an issuer to meet its financial obligations in accordance with the terms of those obligations (Standard & Poor's

2013c). Credit ratings are assessed on an ordinal scale ranging from AAA, indicating extremely strong capacity to meet financial commitments, to D, representing payment default on financial commitments (see Figure 2.3). Additionally, credit ratings are classified as either investment or speculative grade.¹⁸ Once a credit rating is issued, it is monitored and reevaluated (Standard & Poor's 2013a). If a credit rating agency finds that an event occurred which will impact the long-term creditworthiness of the company, they adapt the credit rating accordingly in order to always provide currently adequate and forward-looking indications of credit risk (Standard & Poor's 2013a).

During the rating process, credit rating agencies incorporate a multitude of financial factors, e.g., profitability, liquidity, cash flow adequacy and capital structure, as well as non-financial factors, such as better corporate governance and internal control quality (Bhojraj and Sengupta 2003; Anderson, Mansi, and Reeb 2004; Ashbaugh-Skaife et al. 2006; Elbannan 2009; El-Gazzar, Chung, and Jacob 2011; Hammersley, Myers, and Zhou 2012). Besides publicly available information, companies were legally allowed to share private information with credit rating agencies without disclosing the same information to the public during the sample period.¹⁹ The agencies convey this information to the market in their credit ratings (Jorion et al. 2005; Poon and Evans 2013; Livingston et al. 2011). This allows rated firms to signal information without jeopardizing their competitive advantage. Examples of private information often considered by rating agencies include minutes of board meetings, profit breakdowns by product line and new product plans (Ederington and Yawitz 1987).

A substantial body of research demonstrates that various players in the capital market value credit ratings as well as credit rating changes. Credit ratings directly affect bond yields and a difference of a single rating notch (e.g., B vs. B⁺) can result in a yield difference of 100 basis points, which easily accumulates to a difference of millions of dollars in interest payments over the life of the bond (e.g., Ziebart and Reiter 1992; Brandon et al. 2004). Stock returns also react to bond rating changes, and especially credit rating downgrades, suggesting the private information contained in credit ratings is also useful to equity investors (e.g., Holthausen and Leftwich 1986; Goh and Ederington 1993; Hsueh and Liu 1992). Besides investors, market intermediaries also value rating changes. Analysts, for example, revise their earnings forecasts in response to rating downgrades (Ederington and Goh 1998).

¹⁸ Until very recently, many regulatory requirements allowed investments to be made only in debt classifiable as 'investment grade'. The Federal Reserve Board for example allowed their members only to invest in corporate debt with investment grade ratings and the Department of Labor permits pension funds only to invest in securities with top rating categories (Standard & Poor's 2003).

¹⁹ Credit rating agencies were explicitly exempted from Regulation Fair Disclosure (Reg FD) (SEC 2000). Reg FD prevents companies from disclosing private information to market professionals, such as stock analysts, without disclosing the same information to the public. As a result of the recent financial crisis, the removal from Reg FD of the exemption of credit rating agencies became effective October 4th, 2010 (www.sec.gov).

Given regulations and market effects of credit ratings, managers have an incentive to improve or at least maintain their credit ratings. Several studies show an association between credit ratings and earnings (e.g., Jung, Soderstrom, and Yang 2013). Jiang (2008), for example, reports that beating earnings benchmarks has a positive impact on credit ratings but this effect is attenuated if firms meet benchmarks through earnings management. This finding supports the argument that credit ratings function as an effective monitoring and communication device and are therefore relevant to the market as well as management.

However, credit rating agencies do not have an irreproachable reputation. Their independence has widely been questioned as they employ the ‘issuer-pays’ model (e.g., Beales and Davies 2007; Lucchetti 2008). Credit rating agencies also provide ancillary advisory services, capitalizing on their reputation and expertise in risk analysis, which might further impair independence (e.g., Radley and Marrison 2003). Credit rating agencies respond to these concerns by explaining that they manage potential conflicts of interest by a number of safeguards like segregating the duties of negotiating business terms for rating assignments, conducting the credit analysis, and ancillary services (Standard & Poor’s 2012a). Covitz and Harrison (2003) examine the conflict of interest at credit rating agencies empirically and conclude that credit rating agencies are primarily motivated by reputation concerns.

Moreover, credit rating agencies have been criticized for inaccurate risk assessment (e.g., Gul and Goodwin 2010) and late rating adjustments (e.g., Baker and Mansi 2002; Löffler 2005). Credit rating agencies explain this with their intention to avoid excessive rating volatility while holding the timeliness of ratings at an acceptable level and trying to prevent rating reversals because it is quite costly (Cheng and Neamtiu 2009).²⁰ Hence, they only adjust ratings when they expect a long-term impact on the firm’s creditworthiness (Standard & Poor’s 2012a).

Despite these concerns, evidence of previous studies indicates that credit ratings convey important information to the market. The combination of access to private information, advanced models and evaluators’ experience and expertise offers the market improved information on firms’ creditworthiness.

²⁰ Besides high reputational costs to the credit rating agencies themselves, contracting parties face higher costs due to rating reversals since “many funds include portfolio governance rules that require the fund managers to hold only debt issues with credit ratings above certain thresholds, e.g., investment grade. Therefore, volatile and unexpected rating changes would force managers to trade at inopportune times. In addition, frequent rating reversals over short periods of time would cause some institutional investors to sell and then repurchase the same debt securities with high frequency, imposing large transaction costs.” (Cheng and Neamtiu 2009, 109).

3.2.3 Hypotheses Development

Previous literature argues that credit ratings reflect a firm's liquidity and function as governance mechanisms because rating agencies monitor performance (Gul and Goodwin 2010). Consistent with this information and monitoring role of credit rating agencies, Gul and Goodwin find evidence that credit ratings are negatively related to audit fees which leads them to conclude that credit ratings help in the auditor's risk assessment. This study argues that credit ratings do not only help in the audit risk assessment but might also be a relevant factor in the auditor's GCO decision. Previous research has shown that auditors incorporate publicly available information about their clients from independent sources into their GCO assessments (e.g., Mutchler et al. 1997). Credit ratings are an external source verifying the creditworthiness of a company and auditors could potentially incorporate this publicly available piece of information into their decisions.

Considering credit ratings in the GCO decision might be particularly important with respect to potential penalties associated with incorrect GCOs. Incorrect GCO decisions usually cause clients and investors to doubt audit quality. Publicly available information that seems to be ignored by the auditor amplifies investors' doubt about the auditor's quality. More particularly, if an auditor issues an opinion that proves to be incorrect *ex post* while the auditee had a low credit rating outstanding at the time of the GCO issuance, presumably having ignored this publicly available information piece causes investors to question the auditor's quality. The auditor's associated costs of the incorrect GCO are then likely to be higher than if there was no such publicly available piece of information like the credit rating.

Credit ratings can have incremental information value to the auditor's GCO decision due to differences in information access and information processing. Given credit rating agencies' specialized knowledge, professional experience, expertise and use of highly sophisticated models, credit rating agencies process information differently than auditors.²¹ Furthermore, creditworthiness is of primary concern to credit rating agencies while it is only an ancillary concern for auditors. One can therefore assume that credit rating agencies exercise more effort in identifying relevant facts, analyzing these and drawing conclusions with respect to creditworthiness. It seems thus only logical that credit rating agencies do not just process information differently but

²¹ Previous research has shown that auditors use task-specific knowledge in their assessments (e.g., Bonner 1990) and there are between-task as well as between-auditor differences in information processing (Brown and Solomon 1991). Simnett (1996) conducts an experiment concerning information processing of auditors and finds that information processing is a limiting factor in determining predictive accuracy of firms' bankruptcy. Moreover, several studies in behavioral economics have examined information processing and the associated decision qualities (see Hwang and Lin 1999 for an overview), and indicate an association to bankruptcy predictions. Based on these studies, it is reasonable to assume that auditors and credit rating agencies process information differently.

also focus on a different information set than auditors. Based on the foregoing discussion, the following hypothesis is proposed:

H1: There is a positive association between poor credit ratings and GCOs.²²

Besides the credit rating level, credit rating changes convey information to the market (e.g., Holthausen and Leftwich 1986). As credit rating agencies aim to adjust credit ratings on a timely basis – while avoiding excessive rating volatility – a credit rating downgrade can be considered a serious indicator of financial deterioration. Given the information and monitoring function of credit rating agencies, I hypothesize that there is a positive association between a credit rating downgrade and a GCO. More particularly, I expect that more severe downgrades are associated with a higher probability of receiving a GCO.

Furthermore, the closer downgrades occur to fiscal year-end and the signature date, the less time the company has to engage in mitigating actions. The auditor has also less time to verify the underlying causes and mitigating actions associated with the rating change. Given this uncertainty and auditors' conservatism, it is more likely that auditors incorporate the downgrade into their decision. Overall, I therefore propose the following hypotheses regarding the association between credit rating downgrades and GCOs:

H2a: There is a positive association between recent credit rating downgrades and GCOs.

H2b: The more severe rating downgrades are, the higher the probability of receiving a GCO.

H2c: The more recent rating downgrades occur, the higher the probability of receiving a GCO.

Apart from examining whether there is, on average, an association between credit ratings and GCOs, this study also analyzes whether this association varies as a function of auditor specialization. Auditor competence is one of the key drivers of auditor quality (DeAngelo 1981) and prior literature argues that specialist auditors build expertise in specific industries and adjust their investments to help them build and maintain their reputation of superior quality as an industry specialist (e.g., Carcello and Nagy 2004; Owoso, Messier, and Lynch 2002). In order to protect their reputation of high quality against potential litigation concerns, specialist auditors require enhanced disclosures (Dunn and Mayhew 2004) and will render a GCO based on a lower probability of client

²² The term 'poor credit ratings' is used to reflect lower grade credit ratings in this dissertation. It is not a judgment regarding whether the quality of the credit rating assigned by the rating agency is adequate.

failure than non-specialists (Reichelt and Wang 2010). Confirming these arguments, research shows that auditor industry specialists have a higher propensity for issuing modified audit reports (e.g., Lim and Tan 2008; Reichelt and Wang 2010).

Given their own experience and expertise in the auditee's industry, auditor industry specialists are better able to evaluate a client's ability to continue as a going-concern (Reichelt and Wang 2010), and are less likely to require third-party specialists. Since credit rating agencies do not have an irreproachable reputation, I argue that auditor industry specialists are better at assessing the underlying situation and are also better able to identify situations where credit ratings are less accurate. This leads to the following hypotheses:

H3a: There is a less positive association between poor credit ratings and a GCO among specialist auditors when compared to non-specialist auditors.

H3b: There is a less positive association between a credit rating downgrade and a GCO among specialist auditors when compared to non-specialist auditors.

3.3 Research Design

3.3.1 Sample

Audit firm information and GCOs for the period 2000 through 2011 from Audit Analytics are matched with financial information from Compustat and the Center for Research in Security Prices (CRSP), resulting in 93,936 firm-year observations. Consistent with prior research, I eliminate the financial sector (two-digit SIC codes 60-69) and restrict the analyses to financially distressed firms (e.g., DeFond, Raghunandan, and Subramanyam 2002; Lim and Tan 2008; Li 2009). Firms are considered financially distressed if they report negative net income or negative operating cash flows during the current fiscal year (e.g., Gramling, Krishnan, and Zhang 2011). Additionally, the focus is on first-time GCOs since "deciding to render an initial going-concern modified opinion to an audit client is particularly difficult for the auditor" (Geiger and Rama 2003, 59). Issuing a consecutive GCO is less risky for auditors since the likelihood of losing a dissatisfied client is considerably lower (Geiger, Raghunandan, and Rama 1998; Carcello and Neal 2003). After eliminating observations with missing values, the final sample consists of 13,827 firm-year observations for 4,636 firms.

For the analyses addressing different credit rating levels, this base sample is further reduced since there are only 2,264 firm-year observations that have an S&P long-term issuer credit rating available in Compustat. The sample is further reduced by another 147 firm-year observations where no prior year credit rating is available for analyses regarding credit rating changes. The entire sample selection procedure is outlined in Table 3.1.

TABLE 3.1
Sample Selection Procedure

Initial sample	93,936
Less foreign companies & auditors	-10,007
Less financial sector	-14,445
Less financially non-distressed	-35,014
Less previous-year GCO	-7,158
Less missing values	-13,485
Basic sample for analyses	13,827
Less missing credit rating	-11,563
Final sample for credit rating level analyses	2,264
Less missing previous year credit rating	-147
Final sample for credit rating change analyses	2,117

This table represents the sample selection procedure and is based on a sample of all firms covered in Compustat and CRSP with available audit opinions from Audit Analytics and credit ratings outstanding by Standards & Poor's during the time 2000 to 2011. The financial sector excluded is defined as firms with two-digit SIC codes between including 60 and 69 and financial distress encompasses all firms with negative net income or negative net operating cash flow.

For the tests regarding industry specialization, local auditor specialists are computed based on Metropolitan Statistical Area (MSA) codes. Like Francis, Reichelt, and Wang (2005), at least two auditees per industry (2-digit SIC codes) are required to ensure that there is potential competition within the industry. Due to this constraint and the fact that not all clients are within an MSA, the samples are further reduced to 10,101; 1,448 and 1,339 firm-year observations for the base, credit rating level and credit rating change analyses, respectively.

3.3.2 Empirical Model

To test the hypotheses, I follow prior research and estimate the coefficients of the following probit model which illustrates the auditor's probability to issue a modified GCO for a financially distressed client:

$$GCO = \beta_0 + \beta_1 ZMIJ + \beta_2 \ln AT + \beta_3 \ln RETURN + \beta_4 VOLRET + \beta_5 PLOSS + \beta_6 REPORTLAG + \beta_7 BIGN + \beta_8 \ln AGE + \beta_k X + YEAR + \varepsilon \quad (1)$$

where:

- GCO = An indicator variable equal to 1 if the auditor issues a going-concern opinion (otherwise 0);
- $ZMIJ$ = Zmijewski's (1984) probability of bankruptcy score;
- $\ln AT$ = The natural logarithm of the firm's total assets at fiscal year-end measured in millions of dollars;

$\ln RETURN$	=	The natural logarithm of the firm's annual stock return;
$VOLRET$	=	Volatility of the firm's annual stock return;
$PLOSS$	=	An indicator variable equal to 1 if the company reports a bottom-line loss in the previous year (otherwise 0);
$REPORTLAG$	=	The number of days between fiscal year end and the auditor's signature date;
$BigN$	=	An indicator variable equal to 1 if the audit is performed by one of the Big 4 (Big 5) auditors (otherwise 0);
$\ln AGE$	=	The natural logarithm of the number of years the firm has been listed on a stock exchange;
X	=	The vector of the variables of interest (see section 3.3.3).

Since certain firm effects might be overstated due to repetitive observations in the panel data set, this study follows prior literature (Petersen 2009; Gow, Orzamabal, and Taylor 2010) and clusters standard errors by firm, thereby simultaneously correcting for heteroskedasticity and possible correlation within a cluster.

3.3.3 Variables of Interest

In the model above, the variables of interest, X , are the credit rating variables, credit rating downgrade measures and their interactions with auditor specialization. In the first hypothesis, the relationship between low credit ratings and GCOs is analyzed. This relationship is examined in two different ways. First, a dummy for each credit rating level, i.e. AAA, AA, A, BBB, ..., D, is included in order to obtain a better overview of the association between credit ratings and GCOs. A worse credit rating is most likely to be associated with a higher probability of receiving a going-concern, which is why the coefficients of the credit rating level dummies are expected to be increasing with worse credit ratings. Secondly, the credit rating level, CR_LVL , which is an ordinal variable ranging from 1 (*AAA*) to 10 (*D*), is included. Worse credit ratings, i.e. higher values of CR_LVL , are expected to be associated with a higher probability of receiving a GCO, resulting in a positive coefficient of CR_LVL .

The set of Hypotheses 2a-2c concerns the association between credit rating changes and GCOs. Hence, a dichotomous variable for a downgrade occurring between the beginning of the fiscal year being audited and the auditor's signature date (*DOWN*) is included in the model. Since downgrades indicate a deterioration of the financial situation of the firm, *DOWN* is expected to have a positive coefficient, indicating a higher likelihood of receiving a GCO. To analyze the effect of the severity of a credit rating change, I include a credit rating change variable, expecting more severe changes to be associated with a higher probability of a going-concern, and consequently a positive coefficient. Since a one-notch downgrade might potentially not be significant enough to alter the probability of a GCO, but more severe downgrades could be, binary variables for one-notch downgrades (*1NOTCH_DOWN*), two-notch downgrades (*2NOTCH_DOWN*) and three-or-more notch downgrades (*3NOTCH_DOWN*) are

included.²³ The coefficients of the notch-down variables are expected to be positive and increasing with severity. As an alternative measure of downgrade severity, a dichotomous variable accounting for the reclassification from investment to speculative grade (*STATUS_CHANGE*) is incorporated in the model. *STATUS_CHANGE* is expected to have a positive coefficient. Concerning timing of downgrades, binary variables indicating the quarter in which a downgrade occurred are included, i.e., *DOWN_M12*, *DOWN_M9*, *DOWN_M6* and *DOWN_M3*, where *DOWN_M3* refers to the three months prior to the signature date, *DOWN_M6* to the four to six months prior to the signature date, etc. I expect positive and increasing coefficients for *DOWN_M12*, *DOWN_M9*, *DOWN_M6* and *DOWN_M3*.

Hypotheses 3a and 3b are concerned with the question of whether the association between credit ratings or rating changes and GCOs differs based on auditor specialization. An auditor is considered a specialist (*SPEC*) if the audit firm's market share, in terms of assets, in an industry-MSA market segment exceeds 30%. In order to analyze the association between credit ratings and specialization, the interaction terms between the credit rating level and an auditor industry specialist dummy (*CR_LVL* x *SPEC*) are examined. The relation between downgrades and specialists is assessed in two different ways, once with a dummy downgrade to examine if specialists react differently to downgrades (*DOWN* x *SPEC*) and then also with a level variable of the downgrade (*DOWN_LVL* x *SPEC*) to observe if more severe downgrades are perceived differently by specialists. The association between GCOs and low credit ratings or credit rating downgrades is expected to be less positive for specialists, likely resulting in negative coefficients of the interactions.

3.3.4 Control Variables

The control variables in model (1) above are based on SAS No. 59 as well as prior literature on going-concern determinants (e.g., Dopuch et al. 1987). SAS No. 59 identifies financial distress as an important factor in the auditor's decision to issue a GCO.²⁴ This study controls for the level of distress by including Zmijewski's (1984) bankruptcy score, *ZMIJ*, with higher values indicating a higher likelihood of bankruptcy.²⁵ The natural logarithm of the total assets of a company at fiscal year-end, *lnAT*, is included since larger companies are less likely to receive a GCO. Because younger firms are more prone to failure, the natural logarithm of the number of years the company is traded on the stock exchange, *lnAGE*, is included to control for age (Dopuch et al. 1987). Furthermore, like previous studies (e.g., Dopuch et al. 1987), this

²³ The base group against which these variables are compared are all firms without downgrades, which is why all three dichotomous variables are included in a model simultaneously.

²⁴ Although the sample is limited to firms that are considered financially distressed, I also control for the level of financial distress.

²⁵ Zmijewski's bankruptcy score accounts for firm performance, leverage and liquidity and is defined as $Zmij = -4.803 - 3.599 * \text{return on assets} + 5.406 * \text{long-term debt to total assets} - 0.1 * \text{current ratio}$.

study controls for market-based measures which have been shown to influence the probability of receiving a GCO: the stock's return over the last fiscal year, *lnRETURN* and the volatility of the stock's return, *VOLRET*, measured as the standard deviation of the client's monthly stock returns over the current fiscal year. While *lnRETURN* is likely to be negatively related to GCOs, *VOLRET* is expected to be positively associated with the probability of receiving a GCO. Firms with losses are more likely to fail (e.g., Reynolds and Francis 2000), which is why *PLOSS*, a dummy indicating that the firm had a bottom-line loss in the previous fiscal year, is included in the model. The *BIGN* variable is included as Big 4 (Big 5) auditors are more likely to issue GCOs (e.g., Mutchler et al. 1997). *REPORTLAG*, the number of days between the fiscal year-end and the auditor signature day, is controlled for because GCOs are positively associated with reporting delays (e.g., DeFond et al. 2002). The analyses concerning Hypotheses 2 also include controls for credit rating upgrades (*UP*, *UP_LVL*) and with respect to Hypotheses 3, I additionally control for the main effect of auditor industry specialization, *SPEC*, which is expected to be positively associated with the propensity to issue GCOs (e.g., Lim and Tan 2008; Reichelt and Wang 2010). Moreover, I control for year fixed effects.

3.4 Results

3.4.1 Descriptive Statistics

Over the sample period 2,264 firm-year observations have an S&P credit rating. Of those, 84% are considered speculative, which is not surprising since the analysis is restricted to financially distressed firms. Figure 3.1 shows the distribution of credit rating levels over time.²⁶ Credit ratings range from AA to D, with B and BB being most frequently assigned. The issuance of BBs has steadily decreased from 2001 until 2007, experienced a slight increase from 2007 to 2009 of 7%, and then fell again. B ratings have been more volatile. They increased by 10% from 2006 to 2007, fell by 10% from 2007 to 2008, decreased further by another 3% to then increase again to the maximum of 2006. BBB and CCC ratings were relatively stable and all other ratings barely occurred in the sample of financially distressed firms.

The most common credit rating at the time of the signature date is B⁺, while BB⁻ and B are also fairly common, as can be seen in Figure 3.2. Moreover, GCOs are mainly issued for companies that have a rating of B or worse. Interestingly, while all companies with a CCC rating obtain a GCO, only half of those rated CC and only 2/3 of those rated

²⁶ The figure excludes the year 2000. Due to the requirement that previous year information has to be present for some of the control variables, the number of observations of firms in year 2000 has been decreased dramatically and the actual trend in the data is not reflected by the figure anymore. Hence, I depict the figure from 2001-2011.

FIGURE 3.1

Credit Rating Levels for Financially Distressed Firms (2001-2011) as Percentage of Number of Credit Ratings Outstanding

This figure shows the Standard & Poor's credit rating levels outstanding as a percentage of all credit ratings outstanding during that year. It is based on a sample of all financially distressed firms with available audit opinions in Audit Analytics that also have Compustat and CRSP data available from 1999 to 2011. Please refer to Figure 2.3 for an explanation of the rating scale.

FIGURE 3.2

GCO Distribution per Credit Rating

This figure presents the distribution of audit opinion for the different rating categories. The underlying sample are all financially distressed firms between 1999 and 2011 with credit ratings by Standard & Poor's that have audit opinions available in Audit Analytics and are covered in Compustat and CRSP. Figure 2.3 provides an explanation of the rating scale.

D receive a GCO. The observations with a D rating that do not receive a GCO are particularly interesting because although the company defaults on its financial commitments, the auditor assumes that the company will survive the next fiscal year.²⁷ Overall, the pattern in Figure 3.2 is a first indication that there is an association between the credit rating and the likelihood of receiving a GCO.

Over the sample period, 708 firm-year observations with a credit rating, i.e. 33.4%, are subject to a credit rating downgrade in the twelve months preceding the auditor's signature date. Out of the firm-year observations that receive a GCO, 83.6% experience a downgrade in the twelve months prior to the GCO. Downgrades vary with respect to timing and severity (see Table 3.2). Panel A of Table 3.2 shows that the distribution of downgrades over the quarters is fairly even, and that the number of firms receiving a GCO increased with a downgrade occurring more frequently. Out of the 222 observations that were downgraded ten to twelve months before the signature date, only 5.8% received a GCO. Four to six and seven to nine months before the signature date there were 230 and 213 observations with downgrades respectively, out of which 7.4% and 12.6% later received GCOs. The three months immediately predating the audit report were the ones with the highest number of downgrades, i.e. 250, and out of those observations 15.6% received an audit report modified for going-concern, indicating that the association between downgrades and GCOs is stronger for more recent downgrades.

Panel B of Table 3.2 provides descriptives on downgrade severity, showing that 56.5% of downgrades are one notch, 26.1% are two notch and 17.4% are three-or-more notch downgrades. While 2.75% of observations in the one notch downgrade category receive a GCO, 6.49% and 30.89% receive GCOs in the two and three-or-more notch downgrade categories, respectively. This indicates that more severe downgrades are associated with a higher likelihood of auditors issuing a GCO.

Panel C of Table 3.2 shows that 563 firm-year observations have a downgrade in only one quarter, 141 observations are downgraded in two different quarters, 22 in three and only one firm is downgraded in all four quarters. Furthermore, the share of firms receiving a modified audit report is increasing with the number of quarters the firm is downgraded, which provides further indication that GCOs are indeed associated with the nature of the credit rating downgrade.

²⁷ One has to be careful in drawing conclusions since the absolute number of observations is rather low.

TABLE 3.2
Overview of Downgrade Timing and Severity

	non-GCO		GCO		Total	
	Count	Percentage	Count	Percentage	Count	Percentage
Panel A: Downgrade Timing Prior to the Signature Date						
DOWN_M3	211	84.40%	39	15.60%	250	100.00%
DOWN_M6	186	87.32%	27	12.68%	213	100.00%
DOWN_M9	213	92.61%	17	7.39%	230	100.00%
DOWN_M12	209	94.14%	13	5.86%	222	100.00%
Panel B: Downgrade Severity						
1NOTCH_DOWN	389	97.25%	11	2.75%	400	100.00%
2NOTCH_DOWN	173	93.51%	12	6.49%	185	100.00%
3NOTCH_DOWN	85	69.11%	38	30.89%	123	100.00%
Panel C: Downgrades in Multiple Quarters Prior to the Signature Date						
DOWN in 1 Quarter	528	93.78%	35	6.22%	563	100.00%
DOWN in 2 Quarters	120	85.11%	21	14.89%	141	100.00%
DOWN in 3 Quarters	17	77.27%	5	22.73%	22	100.00%
DOWN in 4 Quarters	0	0.00%	1	100.00%	1	100.00%

This table presents an overview of credit rating downgrade severity and timing. Panel A provides descriptives regarding the timing of the downgrade, as it shows the number of downgrades in each quarter. Panel B displays the distribution of downgrade severity for GCO and non-GCO firms and Panel C shows the pattern of firms that have been downgraded in multiple quarters over the fiscal year being audited. The sample consists of all financially distressed firms with available data in Audit Analytics, Compustat and CRSP from 2000 to 2010 that were downgraded by Standard & Poor's during that time.

3.4.2 Univariate Tests

Table 3.3 provides the descriptive statistics of the control variables for the full sample.²⁸ Overall, 6% of the firm-year observations in the sample receive a GCO, which is slightly less than in previous studies, reporting 8% or 9% of GCOs (e.g., Geiger and Rama 2003; DeFond, Francis, and Hu 2011; Blay and Geiger 2013).²⁹ On average, firms in this study have total assets of \$919.89 million, which is larger than the average size of firms examined in previous studies (e.g., DeFond et al. 2002; DeFond et al. 2011; Blay and Geiger 2013).³⁰ The mean *ZMIJ* of 0.23 for firms in this study is similar to that reported by DeFond et al. (2002) but remarkably lower than that of other studies (e.g., Geiger and Rama 2003; Callaghan, Parkash, and Singhal 2009), indicating that the

²⁸ All continuous variables are winsorized at 1% and 99% of their absolute values.

²⁹ Of those studies, DeFond et al. (2011) examine data from 2000-2006, which is closest to this study.

³⁰ Since these prior studies do not examine data referring to the years later than 2006, the on average larger firm size might indicate that larger firms are not as shielded from being financially distressed as they used to be.

firms included in this sample are less probable to encounter bankruptcy. With an average age of 9.6 years, firms in this study are younger than the ones reported in Blay and Geiger (2013) and DeFond et al. (2011) who report average age of 13 years, but older than the ones referred to in DeFond et al. (2002) which are on average seven years old. The remainder of the control variables for the overall sample are similar to those reported in other studies.

Table 3.3 also reports the mean differences between different subsamples. Firms receiving a credit rating are, on average, larger, older, less financially distressed and have less volatile returns as well as shorter reporting lags, compared to firms without a credit rating. They are also less likely to report a loss in the previous year and are more likely to be audited by one of the BigN auditors or auditor industry specialists. Given these characteristics, it is not surprising that firms with credit ratings are less likely to receive a GCO compared to firms without credit ratings. Furthermore, Table 3.3 confirms findings from prior studies (e.g., DeFond et al. 2002) that companies receiving a GCO are smaller, younger and more financially distressed than companies without a GCO. Additionally, firms with a GCO are more likely to have a loss in the previous year, a significantly larger reporting lag, and a lower stock return but a higher volatility in stock return. Contrary to prior findings, there is no mean difference between subsamples with respect to being audited by either a BigN or an auditor industry specialist.³¹

Panel B and C of Table 3.3 display the mean comparison for the credit rating level and downgrade sample, respectively. The median credit rating is B⁺. The mean credit rating is lower and the likelihood of being considered speculative grade is higher for firms receiving a GCO than for those without a GCO. Moreover, firms with a GCO are more likely to have a downgrade and the downgrade is significantly more severe. There is no difference in the likelihood of a change from investment to speculative grade amongst GCO and non-GCO firms.³² Overall, Table 3.3 shows that there are structural differences between firms with and without a credit rating. These differences increase the difficulty of disentangling whether differences in determinants of GCOs can be attributed to credit ratings or to differences in underlying firm characteristics.

³¹ Unreported tests reveal that the conclusions based on the descriptives of the control variables for GCO vs. non-GCO firm-year observations for the *complete* sample of firms are the same compared to the full sample, except for the results concerning BigN and auditor industry specialists. In the full sample firms receiving a GCO are less likely to be audited by a BigN auditor or an auditor industry specialist. Thus, independent sample t-tests for GCO vs. non-GCO subsamples based on the full sample are in line with previous literature.

³² This could be a power issue as there are only 10% of observations with a change from investment to speculative grade.

TABLE 3.3
Descriptive Statistics

Full Sample (N=13,827)				Mean difference in subsamples		Mean difference in subsample	
				Without CR (N=11,563)	With CR (N=2,264)	With CR & GCO (N=2,187)	With CR but no GCO (N=77)
Panel A: Control Variables				Mean	Mean	Mean	Sig.
Mean	Median	Std. Dev.					
GCO	0	0.24		0.07	0.03	0	***
AT	122.67	2938.53		281.82	4178.71	4234.6	***
lnAT	4.82	1.79		4.51	7.55	7.58	***
ZMIJ	0.23	0.1		0.22	0.27	0.26	***
LnRETURN	-0.26	0.84		-0.26	-0.24	-0.2	***
RETURN	-0.17	1.19		0.09	0.08	0.1	***
REPORTLAG	57	26.73		62.53	49.51	48.43	***
VOLRET	0.19	0.11		0.23	0.18	0.18	***
lnAGE	2.3	0.86		2.19	2.62	2.64	***
PLOSS	67.70%			70.74%	52.16%	51.53%	***
BIGN	72.07%			67.74%	94.17%	94.19%	***
SPEC	36.02%			31.68%	61.95%	61.89%	***
Panel B: Credit Rating Variables				Mean	Mean	Mean (N=2187)	Mean (N=77)
Mean	Median	Std. Dev.					
JUNK	83.86%					84.00%	99.00%
INV	16.32%					16.00%	1.00%
CR_LVL	5.47	1				5.41	7.09
CR_	13.38	2.74				13.24	17.42

Panel C: Credi Rating Downgrade Variables

	Mean difference in subsample				Sig.
	Full Sample (N=13,827)	With CR & GCO (N=2,187)	With CR but no GCO (N=77)		
	Mean	Median	Std. Dev.	Mean	
DOWN_LVL	0.6	0	1.11	1.34	3.4
UP_LVL	0.08	0	0.34	0.22	0.03
STATUS_CHANGE	10.00%			11.00%	5.00%

This table presents the descriptive statistics of the main variables used in the analyses. The sample consists of all financially distressed firms with available data in Audit Analytics, Compustat and CRSP from 2000 to 2011 that had credit ratings from Standard & Poor's outstanding during that time period. Panel A provides descriptors for the dependent and control variables and Panel B (C) shows the descriptors for the credit rating (downgrade) variables. The first block includes the full sample. The second block provides sample means and t-tests of sample mean differences between companies with and without credit ratings, and the third block reflects means and t-tests of differences between firms with and without GCOs for the sample of firms with credit ratings. SPEC reflects auditor industry specialization which is defined as a minimum of 30% market share in a particular industry in the metropolitan statistical area (MSA) of the client. Due to data unavailability of client MSAs, the observations regarding SPEC are reduced to 10,101 for the full and 9,512 (589) for the non-GCO (GCO) sample. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 3.

Table 3.4 shows the Pearson correlations between the regression variables. The results are generally in line with my expectations and below 0.6.³³ As expected, a worse credit rating and a credit rating downgrade are positively correlated with going-concern. Upgrades and a change from investment to speculative grade, however, are not correlated with the likelihood of receiving a GCO. In untabulated results, variance inflation factors are computed and all are well below 4, indicating that there are no multicollinearity issues (Judge et al. 1988).³⁴

3.4.3 Regression Results

Before examining the variables of interest, a baseline regression was examined to confirm the statistical significance of the control variables. Model 1 of Table 3.5 presents the baseline regression for the credit rating sample. The pseudo- R^2 of 31.3% indicates that the model explains the GCO decision well. The signs of all coefficients are in line with the expectations stated earlier as well as prior literature, and the univariate findings are confirmed. The marginal effects indicate that *VOLRET*, *LnRETURN*, *REPORTLAG* and *ZMIJ* are the most economically significant variables in the control regression.

GCOs & Credit Ratings – Tests of Hypothesis 1

Model 2 and 3 of Table 3.5 display the results from estimating the probit models with respect to Hypothesis 1. The credit rating level regression examines the effect of credit ratings on GCOs when credit ratings are measured as an ordinal variable ranging from AAA (1) to D (22). The pseudo- R^2 increases to 41.4% in the credit rating level from 31.7% in the control regression. The coefficient of *CR_LVL* is positive and significant, indicating that a worse credit rating is associated with a higher probability of receiving a GCO.³⁵ In terms of marginal effects, this coefficient suggests an 11% increase in the likelihood of auditors issuing a GCO in response to a lower grade credit rating.³⁶ The credit rating indicator regression includes indicator variables for the credit rating level, in order to examine the effect of each individual credit rating.³⁷ As predicted, the coefficients of the rating dummies are all statistically significant, with worse credit ratings being more statistically significant, and monotonically increasing as credit

³³ Exceptions are the obviously high correlations between the level of the credit rating and being in the speculative grade category, and credit rating and size. When the correlation analysis is limited to the credit-rating subsample, the correlation between credit rating and size is significantly lower.

³⁴ When accounting for all variables in the regressions, the highest VIF is not above 2.5.

³⁵ Credit ratings are coded in such a way that worse credit ratings have higher numerical values.

³⁶ Prior literature determines marginal effects as the change in probability of a GCO in response to a one-standard-deviation change in each of the respective independent variables, evaluated at the base-rate probability of a GCO (DeFond et al. 2002). I adapt this and consider the response to a one-notch change in a credit rating instead of a one-standard-deviation change.

³⁷ There is no variation in the investment grade credit ratings, i.e. AAA, AA, A and BBB with respect to GCOs. I therefore use the highest speculative grade rating, BB, as the base group and examine the effect of the remaining ratings in the speculative grade category on GCOs.

TABLE 3.4
Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) GCO														
(2) lnAT	-0.164													
(3) ZMIJ	0.336	-0.021												
(4) lnRETURN	-0.230	0.020	-0.247											
(5) REPORTLAG	0.236	-0.345	0.149	-0.066										
(6) VOLRET	0.140	-0.285	0.194	-0.060	-0.013									
(7) lnAGE	-0.065	0.191	-0.099	0.092	0.012	-0.279								
(8) PLOSS	0.092	-0.235	0.158	0.047	0.034	0.268	-0.195							
(9) BIGN	-0.065	0.407	0.015	-0.005	-0.352	0.016	-0.030	-0.007						
(10) SPEC	-0.042	0.320	0.003	0.017	-0.166	-0.072	0.033	-0.020	0.393					
(11) JUNK	-0.039	0.519	0.175	0.005	-0.129	-0.101	0.114	-0.083	0.190	0.185				
(12) CR_LVL	0.276	-0.492	0.409	-0.121	0.362	0.477	-0.345	0.381	-0.117	-0.105	0.752			
(13) DOWN_LVL	0.390	-0.021	0.156	-0.332	0.179	0.087	0.069	0.025	0.020	0.019	0.089	0.289		
(14) UP_LVL	-0.030	0.009	-0.021	0.110	0.002	0.067	-0.079	-0.031	-0.006	-0.033	0.024	0.008	-0.128	
(15) STATUS_CHANGE	-0.005	-0.023	-0.016	-0.006	-0.007	-0.004	-0.028	-0.043	-0.050	-0.017	0.144	0.032	0.375	-0.049

This table presents the results of Pearson correlations between the control variables and variables of interest. The correlations are based on a sample of financially distressed firms with available audit opinions in Audit Analytics that also have Compustat and CRSP data, and outstanding credit ratings from Standard & Poor's between 2000 to 2011. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 3. Bold values indicate correlations that are statistically significant at 5% (two-tailed).

TABLE 3.5
Probit Regressions Testing the Impact of Credit Ratings on GCOs

Variable	Dependent Variable: Going-Concern Opinion					
	Control Regression		Credit Rating Level Regression		Credit Rating Dummy Regression	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Constant	-3.2051***	(0.60)	-7.2158***	(0.95)	-3.7197***	(0.74)
CR			0.2795***	(0.05)		
BB					-0.4322	(0.45)
B					0.6222*	(0.36)
CCC					1.5834***	(0.42)
CC					1.9064***	(0.64)
D					2.5566***	(0.60)
ZMIJ	0.0562**	(0.02)	0.0476*	(0.03)	0.0414	(0.03)
lnAT	-0.0639	(0.06)	0.0429	(0.06)	0.0344	(0.07)
lnRETURN	-0.5105***	(0.09)	-0.3776***	(0.09)	-0.3697***	(0.09)
PLOSS	0.0707	(0.14)	-0.1649	(0.15)	-0.1564	(0.16)
BIGN	0.1565	(0.23)	0.0632	(0.25)	0.0503	(0.26)
REPORTLAG	0.0142***	(0.00)	0.0107***	(0.00)	0.0110***	(0.00)
VOLRET	2.6862***	(0.69)	0.6045	(0.78)	0.7290	(0.76)
lnAGE	0.0377	(0.09)	-0.0029	(0.10)	-0.0060	(0.10)
Year Dummies	Included		Included		Included	
Observations	2,264		2,264		2,264	
Pseudo R ²	0.317		0.414		0.424	

This table presents the results of the regressions analyzing the association of credit ratings and auditors' propensity to issue going-concern opinions. The sample includes financially distressed firms in Compustat and CRSP with available audit opinions from Audit Analytics and credit ratings outstanding by Standards & Poor's during the time 2000 to 2011. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 3. Marginal effects indicate the effect of a one-standard deviation change in the respective continuous variables on the probability of a GCO. Marginal effects for ordinal variables indicate the effect of a one unit change in the respective variable on the probability of a GCO, except for REPORTLAG where marginal effect describes the change in the probability of a GCO in response to an increase of a one week delay. Standard errors are clustered by firm and are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

ratings deteriorate. Untabulated results confirm that these coefficients are all statistically different from each other, which implies that worse credit ratings are associated with a higher probability of auditors issuing a GCO. The economic significance of lower grade credit ratings is fairly high. The marginal effects reveal that companies with a B rating are 27% more likely to obtain a GCO compared to companies that are rated investment grade. As the ratings decrease the marginal effects are increasing severely. Companies with a CCC (CC; D) rating are 2.68 (4.61; 10.63) times more likely to receive a GCO compared to firms rated investment grade. Overall, the findings in Table 3.5 provide supporting evidence for Hypothesis 1.

GCOs & Credit Rating Downgrades – Tests of Hypotheses 2

Table 3.6 presents the results with respect to Hypotheses 2 on the association of credit rating downgrades and GCOs. The downgrade dummy regression in Table 3.6 shows that in addition to the credit rating level, a downgrade is associated with a higher probability of receiving a GCO, as indicated by the statistically significant positive coefficient. Not differentiating between downgrades of different severity or timing, the average marginal effect of a downgrade is 21.23%.

The downgrade level, downgrade notch and status change regressions in Table 3.6 address the impact of downgrade severity on the going-concern decision. The downgrade level regression reveals that a more severe downgrade is associated with a higher probability of receiving a GCO, by about 6.46%, as indicated by the marginal effect. In the downgrade notch regression, the size and significance levels of the coefficients are monotonically increasing with downgrade severity. Untabulated results show that these coefficients differ significantly from each other, implying that the severity of the downgrade plays a significant role in the auditor's GCO decision. The marginal effects reveal that one and two notch downgrades are about equally strong in economic terms as they both result in an around 7% increased probability of obtaining a GCO. Downgrades of three or more notches have a marginal effect of 17.43%. The hypothesis that a change across investment categories is considered as more severe than a downgrade within an investment category is rejected based on the insignificant coefficient of *STATUS_CHANGE* in model 4.³⁸ Combining the results from the severity regressions, I conclude that absolute downgrade severity is more important in auditors' GCO decisions than the reclassification of investment status.

Downgrade timing is addressed in the last part of Table 3.6. Downgrades occurring more than six months prior to the signature date, reflected by *DOWN_M12* and *DOWN_M9*, are not statistically significant. More recent downgrades, however, are

³⁸ Another possible explanation is that the tests do not have enough power as there are few observations classified as investment grade in the subsample since the sample is restricted to financially distressed firms.

TABLE 3.6
Probit Regressions Testing the Impact of Credit Rating Downgrades on GCOs

Variable	Dependent Variable: Going-Concern Opinion											
	Downgrade Dummy Regression			Downgrade Level Regression			Downgrade Notch Regression			Status Change Regression		
	Coefficient (Standard Error)	Marginal Effect		Coefficient (Standard Error)	Marginal Effect		Coefficient (Standard Error)	Marginal Effect		Coefficient (Standard Error)	Marginal Effect	
Constant	-6.5888*** (0.98)			-4.6405*** (1.02)			-5.2986*** (0.97)			-6.9048*** (0.98)		
CR	0.2570*** (0.05)	6.68%		0.1725*** (0.05)	10.42%		0.1929*** (0.05)	12.76%		0.2813*** (0.05)	11.88%	
DOWN	0.5345*** (0.17)	21.23%										
UP	0.0576 (0.36)	1.11%										
DOWN_LVL				0.2437*** (0.05)	6.46%							
UP_LVL				0.0240 (0.20)	0.29%							
INOTCH_DOWN							0.3292* (0.19)	7.86%				
2NOTCH_DOWN							0.4417*** (0.22)	7.57%				
3NOTCH_DOWN							1.0526*** (0.24)	17.43%				
STATUS_CHANGE										0.4154 (0.33)	21.21%	
DOWN_M12												
DOWN_M9										0.1934 (0.21)	5.61%	
DOWN_M6										0.0719 (0.17)	1.75%	
DOWN_M3										0.4375*** (0.19)	18.18%	
ZMIJ	0.0323 (0.03)	1.09%		0.0239 (0.03)	2.14%		0.0216 (0.03)	2.05%		0.5408*** (0.17)	26.18%	
lnAT	-0.0055 (0.06)	-0.12%		-0.0783 (0.07)	-4.22%		-0.0404 (0.06)	-2.47%		0.0272 (0.03)	1.12%	
lnRETURN	-0.3186*** (0.10)	-3.23%		-0.2978*** (0.10)	-8.77%		-0.2982*** (0.10)	-9.42%		0.0030 (0.06)	0.11%	
PLOSS	-0.2331 (0.16)	-5.85%		-0.1095 (0.16)	-6.10%		-0.1357 (0.16)	-8.35%		-0.3821*** (0.10)	-5.94%	
BIGN	0.0050 (0.26)	0.09%		-0.0372 (0.25)	-1.89%		-0.0391 (0.25)	-2.13%		-0.2024 (0.16)	-7.65%	
REPORTLAG	0.0097*** (0.00)	1.47%		0.0093*** (0.00)	1.33%		0.0097*** (0.00)	3.44%		0.0053 (0.26)	0.15%	
VOLRET	0.7969 (0.81)	1.34%		1.1916 (0.79)	5.66%		1.1235 (0.78)	5.66%		0.0053*** (0.00)	2.28%	
lnAGE	0.0002 (0.10)	0.00%		-0.0591 (0.10)	-2.49%		-0.0326 (0.10)	-1.52%		0.0095*** (0.00)	1.61%	
Year Dummies	Included			Included			Included			Included		
Observations	2,117			2,117			2,117			2,117		
Pseudo R ²	0.437			0.452			0.453			0.423		
												0.446

TABLE 3.6 – continued

This table presents the results of the regressions analyzing the association of credit rating downgrades and auditors' propensity to issue GCOs. The sample includes financially distressed firms in Compustat and CRSP with available audit opinions from Audit Analytics and credit ratings outstanding by S&P during the time 2000 to 2011. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 3. Marginal effects indicate the effect of a one-standard deviation change in the respective continuous variables on the probability of a GCO. Marginal effects for ordinal variables indicate the effect of a one unit change in the respective variable on the probability of a GCO; for REPORTLAG the unit of change is one week. Standard errors are clustered by firm and are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

positively associated with issuance of a GCO. More specifically, the coefficient of *DOWN_M6* is positive and statistically significant at 5%, and the coefficient *DOWN_M3* is larger and statistically significant at 1%. This is in line with more recent events having more incremental value to the auditor's GCO decision, which can also be seen from the marginal effects. Downgrades occurring four to six months prior to the signature date have a marginal effect of 18.18% and downgrades in the last quarter prior to the signature date are associated with a 26.18% larger probability of receiving a GCO. Overall, Table 3.6 provides evidence supporting Hypotheses 2 that downgrade occurrence as well as downgrade severity and timing are positively associated with GCOs.

Auditor Industry Specialists, GCOs & Credit Rating (Downgrades) – Tests of Hypotheses 3

The regression results concerning Hypotheses 3, addressing whether the association between credit ratings and GCOs varies as a function of auditor specialization, are shown in Table 3.7. The rating level and specialist regression in Table 3.7 addresses the probability of issuance of a GCO for different credit ratings as a function of auditor specialization. The interaction term of the credit rating level and auditor industry specialization is negative and significant at 10% one-sided. Figure 3.3 depicts a graphical representation of the interaction term and shows that the slope of the curve representing specialists is less steep, implying that the association between credit ratings and GCOs is less positive for specialists.³⁹ This is in line with the argument that auditor

³⁹ According to Ai and Norton (2003), one would have to calculate cross partial derivatives and examine the point estimate and standard error for every observation in order to interpret interaction effects. Greene (2010) as well as Kolasinski and Siegel (2010) however, point out that the Ai & Norton measure makes it impossible to draw overall statistical inference about the sample. They conclude that for "contexts where researches are primarily concerned with proportional marginal effects, the econometric best practice is to rely on the interaction term coefficient for both interpreting and statistically testing interaction effects" (Kolasinski and Siegel 2010). Furthermore, the simpler and more traditional method still appears in many top journals (see e.g., Kolasinski 2009; Malmendier and Tate 2008), which is why my interpretations and statistical tests are based on the interaction coefficient.

In untabulated results, the cross-partial derivatives for each of the interactions are computed. The sign of the individual observations mostly coincides with the sign of the coefficient. Yet, the z-statistics of the cross-

industry specialists can use their superior knowledge, experience and expertise and are thus less likely to rely on external sources during their GCO assessment than non-specialists.

FIGURE 3.3

Predicted Probability of Going-Concern Opinions as a Function of Credit Ratings for Companies With and Without Local Auditor Industry Specialist

This Figure depicts the predicted probability of receiving a GCO for the different credit rating levels, once for auditor industry specialists and once for non-specialists. The underlying sample are all financially distressed firms between 1999 and 2011 with credit ratings by Standard & Poor's that have audit opinions available in Audit Analytics and are covered in Compustat and CRSP. Local auditor specialization is defined as having more than 30% market share in a client's industry, in that client's metropolitan statistical area (MSA) in a particular year. The figure is based on model (1) from section 3.3.2. All continuous variables are held at their mean and the values of the dichotomous variables in the model are set to one for representative purposes in the figure.

partial derivatives are all insignificant, which could be due to a power issue. Given these limitations, additional tests based on a larger sample size would be desirable.

TABLE 3.7
Probit Regressions Testing the Impact of Credit Rating Downgrades on GCOs as a Function of Local Auditor Industry Specialization

Variables	Dependent Variable: Going-Concern Opinion					
	Rating Level & Specialist Regression		Downgrade Dummy & Specialist Regression		Downgrade Level & Specialist Regression	
	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect	Coefficient (Standard Error)	Marginal Effect
Constant	-9.0398*** (1.68)		-6.4138*** (1.44)		-2.6595* (1.52)	
CR	0.4013*** (0.11)	6.77%	0.2477*** (0.08)	3.97%	0.0790 (0.08)	2.35%
DOWN			0.5676* (0.34)	15.66%		
UP			0.1698 (0.37)	2.39%		
DOWN_LVL					0.3401*** (0.10)	14.90%
UP_LVL					0.0667 (0.18)	1.95%
SPEC	2.8403 ^b (1.97)	25.63%	0.4480 (0.31)	10.07%	0.4553* (0.25)	23.70%
CR x SPEC	-0.1584 ^b (0.12)	25.58%				
DOWN x SPEC			0.0288 (0.39)	54.34%		
DOWN_LVL x SPEC					0.0706 (0.11)	59.16%
ZMIJ	0.0275 (0.04)	0.48%	0.0165 (0.04)	0.34%	0.0079 (0.04)	0.40%
lnAT	-0.0126 (0.09)	-0.13%	-0.0924 (0.09)	-1.04%	-0.2443** (0.11)	-5.40%
lnRETURN	-0.2899** (0.11)	-1.43%	-0.2549* (0.14)	-1.64%	-0.2521* (0.14)	-4.16%
PLOSS	0.0279 (0.22)	0.23%	-0.1179 (0.23)	-1.52%	0.1238 (0.25)	2.77%
BIGN	0.0926 (0.29)	0.69%	0.0516 (0.32)	0.51%	-0.1377 (0.30)	-4.47%
REPORTLAG	0.0111*** (0.00)	0.75%	0.0105*** (0.00)	0.89%	0.0095** (0.00)	1.95%
VOLRET	0.7881 (0.99)	0.67%	1.3544 (1.07)	1.55%	2.3002** (1.03)	7.25%
lnAGE	-0.0397 (0.14)	-0.30%	0.0136 (0.16)	0.14%	-0.0969 (0.16)	-2.11%
Year Dummies	Included		Included		Included	

Observations	1,448	1,339	1,339
Pseudo R ²	0.405	0.439	0.493

This table presents the results of the regressions analyzing the association of credit ratings and auditors' propensity to issue going-concern opinions as a function of local auditor industry specialization measured as market share percentage of metropolitan statistical areas (MSAs). The sample includes financially distressed firms in Compustat and CRSP with available audit opinions from Audit Analytics and credit ratings outstanding by Standards & Poor's during the time 2000 to 2011. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 3. Marginal effects indicate the effect of a one-standard deviation change in the respective continuous variables on the probability of a GCO. Marginal effects for ordinal variables indicate the effect of a one unit change in the respective variable on the probability of a GCO, except for REPORTLAG where marginal effect describes the change in the probability of a GCO in response to an increase of a one week delay. Standard errors are clustered by firm and are reported in parentheses. $\hat{p}$, *, **, *** indicate statistical significance at the 20%, 10%, 5% and 1% levels respectively (two-tailed).

The association between GCOs and credit rating downgrades does not differ between specialists and non-specialists as implied by the insignificant interaction term in Model 2. Likewise, the interaction term of the downgrade level variable with auditor industry specialization is insignificant as the last regression in Table 3.7 shows. A possible explanation is that downgrades entail new information that neither specialists nor non-specialists had incorporated in their assessment, potentially causing the association between credit rating downgrades and GCOs to be statistically similar for specialists and non-specialists.

Taken together, the results show a strong association between credit ratings and GCOs. Both rating levels and rating downgrades seem to be important factors related to the decision to issue a GCO, and downgrade severity and timing have a particularly strong association with the probability of GCOs. The findings that GCOs by non-specialists have a more positive association with credit ratings compared to GCOs issued by specialists, whereas downgrades matter equally amongst specialists and non-specialists are consistent with the argument that credit rating levels do not provide auditor specialists with new information while credit rating downgrades entail new information to non-specialists as well as auditor industry specialists.

3.4.4 Sensitivity Analyses

Investment Status

The analyses so far have considered the association between GCOs and credit ratings and rating changes based on a sample with credit ratings. If differences in information gathering or processing by credit rating agencies and auditors, and the timeliness of credit ratings indeed create value, I expect the presence of a credit rating to have an impact on the auditor's GCO decision. More particularly, an investment grade credit rating (*INV*) is, on average, expected to have a negative association with a GCO, while speculative grade credit ratings (*JUNK*) are expected to be positively associated with the probability to receive a GCO. I hence examine the effect of a credit rating on GCO when credit rating is measured as either investment grade or speculative grade, with the observations without a credit rating as the base group. Untabulated results reveal a positive and significant coefficient for *JUNK* which shows that the likelihood of receiving a GCO is higher for firms with a speculative grade credit rating. The coefficient of the investment grade status variable is negative, as predicted, but statistically insignificant.⁴⁰ This is not surprising as the sample of financially distressed firms has only a few firms classified as investment grade. These findings are consistent with auditors considering a credit rating in their going-concern assessment. Since many

⁴⁰ I obtain qualitatively similar results with respect to investment status of credit ratings when I rerun the regression based on a sample which is restricted to observations with credit ratings only.

companies in the sample do not have an S&P credit rating outstanding, future research could investigate the effect of unpublished credit ratings on GCOs.

Default Status

Prior literature has shown that technical defaults, i.e. debt covenant violations, are very important to going-concern decisions (e.g., Menon and Williams 2010). Moreover, defaults are highly correlated with low credit rating levels and credit rating downgrades (Güttler and Wahrenburg 2007). It is thus important to control for firms' default status. In untabulated tests, I control for payment as well as technical default and find that default is indeed significantly associated with the probability to receive a GCO.⁴¹ The variable of the credit rating level loses statistical significance and is only statistically significant at 10% (one-tailed) when the controls for default are included in the model. However, the results with respect to credit rating downgrades are robust. It thus seems that credit rating levels are not informative anymore when a company is in default, while more severe and more recent downgrades still increase the probability of receiving a GCO.

Limiting the Sample Period

A possible concern about the results reported above is that Reg FD only applies to credit rating agencies for parts of the sample period, i.e. from Aug 15th, 2000 until October 4th, 2010. To address this issue, the sample is limited to firm-year observations with the signature date between August 15th, 2001 and October 4th, 2010.⁴² In order to prevent an additional decrease in observations, the analyses are run without year fixed effects.⁴³ Untabulated results show no qualitative differences in the results.

Alternative Measure of Auditor Specialization

To assess the robustness of the results with respect to Hypotheses 3, the models are re-estimated using an alternative measure of auditor specialization, namely an auditor portfolio share measure. Neal and Riley (2004) argue that market-based measures of industry specialization potentially fail to recognize expertise in large and highly competitive industries where most of the major accounting firms generate significant revenues and where therefore each of these firms devotes significant audit technologies and expertise. Hence, defining an auditor as specialist based on his portfolio of clients

⁴¹ Covenant violations are obtained from Armin Sufi's website, where he publishes a dataset with quarterly covenant violations (<http://faculty.chicagobooth.edu/amir.sufi/data.html>). His sample period overlaps with my sample period from 1999-2007 (Nini, Smith, and Sufi 2012). This dataset is supplemented by manual data collection regarding the remaining years. Instead of reading the whole annual report, the search regarding covenant violations has been limited to the Item 7 – Management's Discussion and Analysis of Financial Condition and Results of Operations.

⁴² The restricted sample period starts in 2001 because credit ratings from a year before are required for the downgrade analyses.

⁴³ In untabulated results, I re-run all regressions presented in Tables 5-7 without year dummies and obtain qualitatively similar results.

might be superior. An auditor is considered a portfolio share specialist if the ratio of assets audited in one industry in a given MSA in a given year relative to the auditor's total assets audited in this MSA in this given year is larger than 30%. Untabulated results show that all interaction terms with portfolio share specialists are statistically insignificant. Thus, Hypotheses 3, that specialist auditors are less likely to rely on external sources during their assessment than non-specialists, are not robust to this different specification of auditor industry specialization.

3.5 Summary and Conclusion

This study considers the extent to which auditors employ the information content of credit ratings when assessing a company's probability of going-concern. More particularly, this study examines whether there is a positive association between low credit ratings and GCOs, credit rating downgrades and GCOs and if these associations vary as a function of local auditor industry specialization. Consistent with the view that auditors incorporate the information content of credit ratings, I find a strong association between credit rating levels and the probability of auditors issuing a GCO. Companies experiencing rating downgrades are on average more likely to receive a GCO. Specifically, more recent and more severe downgrades are associated with a higher probability of auditors issuing a GCO. There is modest evidence that the association between credit ratings and GCOs differs between auditor industry specialists and non-specialists, consistent with specialists relying less on external information signals.

The results of this paper need to be interpreted with caution due to some limitations relating to the generalizability of the results. First, one needs to be careful with inferences from the results regarding how the association between credit ratings and GCOs differs as a function of auditor specialization. As the sensitivity analysis shows, there is only modest evidence that the association between credit ratings and GCOs varies as a function of auditor industry specialization. A possible explanation for the lack of robustness is limited data availability. Future (experimental) research could provide additional insights on whether specialists and non-specialists incorporate information by credit rating agencies differently.

Second, credit watches and credit outlooks are not accounted for in this study due to data availability. Since credit watches and outlooks usually precede rating changes, they are likely to reduce the information content of credit ratings, i.e. make them less informative and probably work against the findings presented here. Future research could examine this issue and particularly focus on situations where credit watches are reversed subsequently and how this relates to auditors' GCO decisions.

Third, the sample period is not necessarily reflective of current and future auditing and credit rating practices. Regulations of credit rating agencies as well as regulations with respect to the use of and reliance on credit ratings have been changed since the

financial crisis and are currently still under debate. Moreover, auditors have been under more scrutiny. Given these changes, future research needs to examine if and how potential conservatism of auditors, other market participants, and increased auditor oversight causes auditors to adapt the audit process, whether auditors alter the quantity and quality of their audit procedures, and which role the use of and reliance on third-party specialists plays in the audit process.

This study contributes to the literature in several ways. First, it extends the existing literature on GCO determinants and establishes that there is a strong association between lower grade credit ratings and credit rating downgrades and GCOs. Moreover, it contributes to the finance literature that examines the informativeness of credit ratings. Regulators might also find these results interesting, particularly the Public Company Accounting Oversight Board (PCAOB), because it has issued a Concept Release in 2011 that addresses the usefulness of audit reports. Specifically, it questions whether there are alternatives to audit reports or potential additions that could improve the information included in the audit report (PCAOB 2011). My findings imply that credit ratings could potentially function as supplementary factors that might be interesting for investors in addition to the GCO assessment. My findings might also be useful with respect to regulations addressing credit rating agencies since the SEC is trying to replace credit ratings in statutory references (Dodd-Frank 2010). Given the strong association between low credit ratings and going-concern opinions, the auditor's assessment could potentially be considered as a replacement in statutory references.

Appendix 3

Variable Definitions

Variable	Description
<u>Dependent Variable</u>	
GCO	Indicator variable equal to 1 if the auditor issues a going-concern opinion (0 otherwise);
<u>Variables of Interest</u>	
JUNK	Indicator variable equal to 1 if the credit rating is below BBB (otherwise 0);
INV	Indicator variable equal to 1 if the credit rating is BB or above (otherwise 0);
CR_LVL	An ordinal variable ranging from 1 to 10, where 1 is indicative of an AAA rating, 2 of a AA rating,... 10 of a D rating. If not specified differently, the credit rating level refers to the credit rating outstanding at the auditor's signature date;
CR	An indicator variable ranging from 1 to 22, where 1 is indicative of a AAA rating, 2 of AA ⁺ , 3 of AA, 4 of AA ⁻ , ..., 22 of D. If not specified differently, the credit rating level refers to the credit rating outstanding at the auditor's signature date;
DOWN	Indicator variable equal to 1 if a net downgrade occurred in the 12 months preceding the signature date (otherwise 0);
DOWN_LVL	Number of notches the credit rating was downgraded (net) within the 12 month prior to signature date;
1NOTCH_DOWN	An indicator variable equal to 1 if a downgrade by one notch occurred in the 12 months preceding the signature date (otherwise 0);
2NOTCH_DOWN	An indicator variable equal to 1 if a downgrade by two notches occurred in the 12 months preceding the signature date (otherwise 0);
3NOTCH_DOWN	An indicator variable equal to 1 if a downgrade by three or more notches occurred in the 12 months preceding the signature date (otherwise 0);
STATUS_CHANGE	An indicator variable equal to 1 if a company which has previously been considered investment grade has been downgraded to speculative grade in the 12 months preceding the signature date (otherwise 0);

(continued)

Appendix 3 – continued

Variable	Description
DOWN_M12	Indicator variable equal to 1 if a downgrade occurred in the ten to twelve months preceding the signature date (otherwise 0);
DOWN_M9	Indicator variable equal to 1 if a downgrade occurred in the six to nine months preceding the signature date (otherwise 0);
DOWN_M6	Indicator variable equal to 1 if a downgrade occurred in the four to six months preceding the signature date (otherwise 0);
DOWN_M3	Indicator variable equal to 1 if a downgrade occurred in the 3 months preceding the signature date (otherwise 0);
<u>Control Variables</u>	
ZMIJ	Zmijewski's (1984) probability of bankruptcy score;
lnAT	Natural logarithm of the firm's total assets at fiscal year-end measured in millions of dollars;
lnRETURN	Natural logarithm of the firm's annual stock return;
VOLRET	Volatility of the firm's annual stock return;
PLOSS	Indicator variable equal to 1 if the firm reports a bottom-line loss in the previous year (otherwise 0);
REPORTLAG	Number of days between fiscal year end and the auditor's signature date;
BIGN	Indicator variable equal to 1 if the audit is performed by one of the Big 4 (Big 5) auditors (otherwise 0);
lnAGE	Natural logarithm of the number of years the firm has been listed on a stock exchange;
SPEC	Indicator variable equal to 1 if the auditor is a local auditor industry specialist, i.e. if the relative market share, based on the sum of clients' assets, in the client's MSA in a given 2-digit historical SIC industry in a given year is at least 30%;
UP	Indicator variable equal to 1 if a net upgrade occurred in the 12 months prior to signature date (otherwise 0);
UP_LVL	Number of notches the credit rating was upgraded (net) within the 12 month prior to signature date.

Chapter 4

Credit Rating Changes & Auditor Reporting Accuracy

Abstract

This study addresses the question whether independent information signals, namely credit ratings, by other information intermediaries are associated with auditor reporting accuracy. Since credit rating agencies have private information access and extensive experience and expertise, I examine whether auditors' going-concern opinion (GCO) reporting error rates are affected by the presence of poor credit ratings and especially credit rating downgrades. Furthermore, I investigate if the association between credit rating downgrades and auditor reporting errors varies as a function of auditor specialization. Based on a sample of financially distressed U.S. public companies with Standard & Poor's credit ratings between 1999 and 2012, I find that poor credit ratings are not associated with Type I errors, but significantly decrease Type II errors. However, credit rating changes and particularly more severe and more recent rating downgrades are associated with a higher probability of Type I errors. There is some evidence that severe credit rating downgrades are negatively associated with Type II errors. Finally, I find weak evidence that auditors without expertise in their client's industry are less conservative but that credit rating downgrades reduce their Type II reporting error rate. Overall, the results imply that credit ratings function as external warning signals that increase auditor conservatism.

Keywords: going-concern reporting errors; credit rating (changes); auditor industry specialization

4.1 Introduction

This study investigates the relationship between credit ratings and going concern reporting misclassifications. In addition to the effects of client and auditor characteristics on audit reporting accuracy examined in existing literature, I consider how external factors, more specifically publicly available credit ratings, influence auditors' going concern reporting error rates. Credit ratings are publicly available signals communicating financial difficulties. However, it is unclear whether these signals regarding firms' financial status are perceived by auditors as helpful in the going-concern decision and thus reduce audit reporting misclassifications, or whether auditors perceive them as potential warning signals, resulting in increased auditor conservatism and thus higher Type I and lower Type II reporting error rates.

The general public, and particularly financial statement users, expect auditors to provide them with a warning of approaching financial difficulties (Chen and Church 1996). Although bankruptcy prediction is not the auditor's responsibility (AICPA 1993), bankruptcies that are not preceded by a going concern report (Type II error), and going concern reports not followed by bankruptcy (Type I error), are often perceived as audit reporting failures (McKeown, Mutchler, and Hopwood 1991; Geiger and Raghunandan 2002). Given the public's perception and the auditor's own associated costs of issuing *ex post* incorrect going concern decisions, auditors have clear incentives to minimize their reporting error rate (Matsumura et al. 1997).⁴⁴

Previous research investigating potential reasons for, and variations in, auditor reporting inaccuracies concentrate on client and auditor characteristics (McKeown et al. 1991; Lennox 1999). Research has also shown that auditors do not just consider firm-specific information, such as financial ratios and management initiatives, in their going concern assessment, but that they incorporate other, broader aspects, such as news items (Gul and Goodwin 2010).

Credit ratings arguably also fall in the category of broader aspects worthy of consideration in going-concern assessments because they aim to reflect a company's ability and willingness to meet its financial obligations in accordance with the terms of those obligations (Standard & Poor's 2012a). Credit rating agencies' (CRAs) professional experience and expertise, use of highly sophisticated models, and access to proprietary firm data (SEC 2000) result in a highly specialized assessment of underlying firm information.⁴⁵ Once issued, credit ratings are monitored and updated as deemed necessary (Standard & Poor's 2003). Credit rating downgrades can therefore be

⁴⁴ See Carson et al. (2013) for a research synthesis about auditor reporting on going-concern uncertainty.

⁴⁵ Regulation Fair Disclosure (Reg FD) (SEC 2000) prevents companies from disclosing private information to market professionals, such as stock analysts, without disclosing the same information publicly. Credit rating agencies used to be exempt from this regulation. However, as a result of the recent financial crisis, credit rating agencies are no longer exempt from Reg FD (effective October 4th, 2010; www.sec.gov).

considered independent and reliable indicators of impending financial difficulties and capital market participants value the information content inherent in credit ratings and rating changes (Norden and Weber 2004; Bannier and Hirsch 2010).

While lower credit ratings and credit rating downgrades are positively associated with auditors' propensity to issue GCOs, as shown in Chapter 3, it is still unknown if that results in more accurate audit opinions. On the one hand, incorporating the information contained in credit ratings into the GCO decision may lead to overall lower audit reporting errors. On the other hand, credit rating downgrades may increase auditor conservatism which likely results in increased Type I and decreased Type II reporting errors. I therefore study whether there is an association between audit reporting errors and the presence of credit ratings. Moreover, I analyze the effect of credit rating changes and expect more severe and more recent rating changes to be particularly informative to auditors.

Additionally, I examine whether informative credit ratings have an influence on the association between audit reporting accuracy and auditor specialization. Previous literature establishes that auditor industry specialists provide higher quality audits resulting in lower audit reporting misclassifications (e.g., Solomon et al. 1999; Carcello and Nagy 2004). Specialists, arguably, do not need to rely on information conveyed in credit ratings. Non-specialist auditors, however, would likely benefit from the information contained in credit ratings. I therefore argue that the reporting error rate for non-specialist auditors are likely to decrease in the presence of an informative credit rating downgrade, and narrow the performance gap between auditor industry specialists and non-specialists.

Analyzing a sample of financially distressed U.S. firms who were audited between 1999 and 2012 and have long-term issuer credit ratings by Standard & Poor's (S&P) during this time period, I find results consistent with increased auditor conservatism. Specifically, I show that more severe and more recent credit rating downgrades are positively associated with Type I errors. For firms that eventually declared bankruptcy, there is also some evidence of reduced Type II errors. Furthermore, I find weak evidence that the association between credit ratings and audit reporting error rates differs for auditor specialists and non-specialists. In particular, there is some evidence that credit rating downgrades narrow the performance gap in Type II errors between specialist and non-specialist auditors.

This study extends prior research on audit reporting quality by examining if audit reporting accuracy improves in the presence of publicly available, independent signals of financial distress, more specifically credit ratings. My findings are relevant for practitioners because the evidence seems to suggest that overreliance on credit rating information can lead auditors to issue lower quality (less accurate) GCOs. These

findings might also be interesting for credit rating agencies and their assessment of credit quality of financially distressed firms.

The remainder of this chapter is organized as follows. In the next section, I describe the relevant background and develop the hypotheses. Section 4.3 describes the research design including the sample and empirical models. In section 4.4, I present the results and sensitivity analyses before section 4.5 concludes.

4.2 Background and Hypotheses Development

4.2.1 Audit Reporting Accuracy

Auditors are required to assess the validity of the assumption that a company will continue to operate in the foreseeable future (AICPA 1988).⁴⁶ If auditors doubt that a client company will survive the next year, they are required to disclose a GCO. The general public and particularly investors often interpret GCOs as future bankruptcy predictions and expect auditors to provide them with a warning signal of approaching financial failure. Yet, an auditor's GCO is only a prediction and might therefore be identified as incorrect *ex post*.

Incorrect GCOs can be classified into Type I and Type II reporting errors. Type I errors occur when an auditor issues a GCO and the company does not file for bankruptcy in the following year. This often results in dissatisfied clients who switch the auditor, which is associated with loss of future revenues for the auditor. When an auditor does not issue a GCO but a client subsequently files for bankruptcy (Type II error), the auditor usually faces dissatisfied investors suing the auditor which results in high litigation costs. Moreover, audit reporting errors are associated with a loss of reputation which can be quite costly for auditors (Matsumura et al. 1997). Despite these incentives to prevent audit reporting errors, prior research shows that 80-90 percent of U.S. companies receiving a GCO do not file for bankruptcy in the following year, while 40-50 percent of companies filing for bankruptcy in the U.S. did not previously receive a GCO (Carson et al. 2013). Considering these numbers, questions arise regarding why GCOs are not more accurate and if determinants exist to help auditors in their going concern assessment.

Studies addressing these questions analyze potential determinants of GCOs and report that financial variables, such as profitability, liquidity, leverage, and default status are important predictors of GCOs (Chen and Church 1992; Mutchler et al. 1997). Moreover, studies examine how auditor reporting accuracy is affected by differences in auditor characteristics, namely competence and independence – the two key drivers of

⁴⁶ Auditing standards explain that foreseeable future is generally the next twelve months beyond the date of the financial statements being audited.

audit quality (DeAngelo 1981). Competence is frequently proxied by auditor size or auditor specialization and studies using these measures report a positive association between auditor competence and auditor reporting accuracy (Geiger and Rama 2006; Bruynseels, Knechel, and Willekens 2011). Independence has been measured by auditor tenure and several (non-)audit fee-related variables (Geiger and Raghunandan 2002; Callaghan et al. 2009; Robinson 2008). Overall, these studies do not find evidence for higher reporting inaccuracies by less independent auditors in the U.S. (Carson et al. 2013).

Besides firm and auditor characteristics, external factors also influence audit reporting error rates. Previous research shows that auditors consider broader aspects in the GCO decision such as economic and industry-wide factors (Gul and Goodwin 2010; Lindberg and Maletta 2003) as well as information from the public press and other clients in comparable situations (e.g., Mutchler et al. 1997). This chapter examines whether the information contained in credit ratings helps auditors in their GCO assessment and tests whether audit reporting accuracy varies as a function of credit ratings and rating downgrades or whether it is an additional source of concern for auditors and results in more conservative reporting behavior by auditors.

4.2.2 Credit Ratings

Credit ratings are an overall judgment of an issuer's ability and willingness to meet its financial obligations in accordance with the terms of those obligations (Standard & Poor's 2013c). Since this overall judgment is based on a complex, in-depth analysis of quantitative as well as qualitative information of the rated firm, credit rating agencies (CRAs) summarize their findings in the credit rating, a condensed score ranging from AAA to D (see Figure 2.3 for the complete rating scale) (Standard & Poor's 2013c).

Although credit ratings are neither absolute measures of credit quality nor indications of investment merit, they signal relative credit quality by conveying prospective default probabilities of the rated entities (Standard & Poor's 2003). Since credit ratings might be influenced by future events and unforeseeable developments, CRAs monitor and reevaluate their credit ratings (Standard & Poor's 2013c). Any events that will likely impact the long-term creditworthiness of the rated entity triggers a rating change, which may occur at any point in time following the initial rating (Standard & Poor's 2013c).⁴⁷

The general public often raises the concern that CRAs fail to provide timely and accurate ratings due to independence issues (e.g., Gul and Goodwin 2010; Cheng and

⁴⁷ Standard & Poor's (2013c) states that they reassess all outstanding credit ratings at least on an annual basis and credit rating changes can result from changes in trends, changes in anticipated risks, unexpected deviations of performance or changes in ratings criteria. While a rating change is publicly disclosed, reassessments that did not result in rating changes are not that easily observable.

Neamtiu 2009). Currently, most CRAs pursue the issuer-pays model in which firms requiring credit ratings are charged with a fee for being provided with the credit rating. This raises concerns that CRAs inflate ratings in order to satisfy their customer and/or be re-employed by that customer (Beales and Davies 2007; Lucchetti 2008).⁴⁸ The agencies respond to this concern that they manage potential conflicts of interest by safeguards like segregating negotiating business terms, conducting credit analyses, and ancillary services (Standard & Poor's 2012a).

Addressing the criticism of inaccurate risk assessment and late rating adjustments, CRAs argue that they attempt to avoid excessive rating volatility while holding the timeliness of ratings at an acceptable level. Standard & Poor's (2013b) states that they do not adapt the credit rating to changes in short-term creditworthiness of the firm originating during the normal course of the business cycle and thereby aim at preventing rating reversals. Furthermore, CRAs intend to achieve consistency in the rating scale to ensure rating comparability over time (Standard & Poor's 2013b). Rating reversals identified as incorrect *ex post* can be quite costly to market participants and CRAs (Cheng and Neamtiu 2009), which is why CRAs have strong incentives to prevent them.⁴⁹ Hence, they only adjust credit ratings when they expect a long-term impact on the firm's creditworthiness (Standard & Poor's 2013b).

While the assignment of credit ratings is not an exact science, studies of debt default show that lower grade credit ratings are typically correlated with higher default rates and have typically been more volatile than higher grade ratings (Standard & Poor's 2012b). This indicates that credit ratings function as a predictor of approaching financial difficulties. Furthermore, an extensive stream of literature addresses the value of credit ratings to various market players (Hull, Predescu, and White 2004; Norden and Weber 2004) and shows that credit ratings and rating downgrades contain information which is valuable to bond and equity investors (e.g., Holthausen and Leftwich 1986; Ederington and Goh 1998). Additionally, several studies find that rating actions do not only

⁴⁸ This independence concern is particularly pronounced for firms that issue huge amounts of debt resulting in large profits for rating agencies, for companies that issue debt regularly and are thus in need of repetitive services by CRAs, and for companies that also seek ancillary services from CRAs, e.g., consultancy services (Radley and Marrison 2003).

⁴⁹ Contracting parties face higher costs as a result of frequent rating changes because "many funds include portfolio governance rules that require the fund managers to hold only debt issues with credit ratings above a certain threshold. Volatile and unexpected rating changes therefore force managers to trade at inopportune times. In addition, frequent rating reversals over short periods of time would cause some institutional investors to sell and then repurchase the same debt securities with high frequency, imposing large transaction costs." (Cheng and Neamtiu 2009, 109). For the rating agencies, frequent rating reversals or rating reversals identified as incorrect *ex post* consequently result in high reputational costs.

improve information provision but also function as a monitoring device (Hand et al. 1992; Bannier and Hirsch 2010).⁵⁰

4.2.3 Development of Hypotheses

Audit Reporting Accuracy and Credit Ratings

As both auditors and CRAs monitor a firm's financial situation, it is not surprising that they use common information (Gul and Goodwin 2010). Nevertheless, there are some arguments why credit ratings might be useful in the auditor's GCO assessment: First, information processing between auditors and CRAs likely differs.⁵¹ CRAs' evaluations are based on a combination of highly sophisticated models and qualitative assessments by specialized staff with extensive experience and expertise (Standard & Poor's 2013a). They focus on information related to a firm's creditworthiness and potentially examine these aspects in more depth than auditors which may allow CRAs to conduct a more thorough analysis from which auditors can benefit.

Secondly, information access between auditors and CRAs might differ. Both auditors and CRAs have access to proprietary firm information. However, some of these documents are only available upon request and auditors and CRAs might request different information. Previous research has, for example, shown that some private firm information, such as minutes of board meetings, new product plans and planned future strategies, is standard material incorporated into CRAs' rating assessment in addition to publicly available firm-specific information and broader economic and industry-wide factors (Ederington and Yawitz 1987; Dhaliwal et al. 2011). Potentially, auditors know that CRAs will request this information and rely on CRAs to save time and billable hours. Private information requests between CRAs and auditors may also differ and credit ratings might therefore contain incremental information for the auditor's GCO assessment.

Thirdly, credit ratings function as an effective governance mechanism (Boot, Milbourn, and Schmeits 2006). The monitoring by CRAs reduces the information asymmetry between a firm and its external stakeholders, promotes effective decision making, and limits opportunistic behavior by management (Ashbaugh-Skaife et al. 2006). Overall, this may lead to less ambiguity surrounding information which might

⁵⁰ The information role refers to the "reduction of information asymmetry, incorporating private information without jeopardizing competitive advantages and thereby helping stakeholders to differentiate amongst companies with different levels of creditworthiness. By incorporating and assessing firm (internal) information, CRAs potentially contribute to diminish opportunistic behavior by managers, thereby reducing agency conflicts (monitoring role)." (Gul and Goodwin 2010).

⁵¹ Simnett (1996) conducts an experiment concerning information processing of auditors and finds that information processing is a limiting factor in determining predictive accuracy of firms' bankruptcy. More generally, previous research has shown differences in information processing between tasks as well as between groups of subjects (e.g., Bonner, 1990; Brown & Solomon, 1991). Based on these studies, it is reasonable to infer that auditors and credit rating agencies also process information differently.

decrease the likelihood that auditors will misjudge the validity of the going concern assumption.

Based on these arguments, credit ratings potentially contain incremental information that allows auditors to make more informed decisions. The probability of audit errors is thus likely to decrease in the presence of credit ratings compared to companies that do not have credit ratings, both for Type I as well as Type II errors.⁵² On the other hand, poor credit ratings might function as a warning signal to auditors which could increase auditor conservatism. This would lead to more frequent issuance of GCOs and (by default) result in more Type I and less Type II errors. Given these two arguments, I test and predict a non-directional hypothesis for Type I errors and a directional hypothesis for Type II errors:

H1a: Type I audit reporting error rates are not associated with the presence of poor credit ratings.

H1b: Type II audit reporting error rates are negatively associated with the presence of poor credit ratings.

Besides the information that is, on average, contained in credit ratings, credit ratings likely differ with respect to informativeness to auditors. I thus test the effect of credit rating changes, more particularly credit rating downgrades, on going-concern reporting errors. Moreover, I examine the impact of more severe and more recent rating downgrades. Stronger downgrades are less ambiguous and might be a stronger signal to auditors. Furthermore, the implications of more severe downgrades might be larger for stakeholders. Downgrade timing is likely to matter to auditors as well because downgrades occurring closer to the audit report signature date potentially have implications for the firm.⁵³ Additionally, management has less time to take mitigating actions and auditors have less time to verify the causes and potential remedies for the downgrade and its implications. More severe and more recent downgrades might therefore be unambiguous signals helping auditors in their GCO assessment thereby reducing both types of reporting errors. Alternatively, more recent and more informative credit ratings might increase auditor conservatism resulting in a higher propensity to issue GCOs and hence more Type I and less Type II errors. Similar to H1a and H1b, I therefore predict and test a non-directional hypothesis for Type I errors and a directional hypothesis for Type II errors:

⁵² Since the going-concern assessment is most important for financially distressed firms, I focus on poor credit ratings as compared to no credit ratings.

⁵³ For example a reclassification of investment grade to non-investment grade can result in restructuring of debt. This might affect a firm's investors and potentially also firm performance.

H2a: Type I audit reporting errors are not associated with more severe credit rating downgrades.

H2b: Type II audit reporting errors are negatively associated with more severe credit rating downgrades.

H3a: Type I audit reporting errors are not associated with more recent credit rating downgrades.

H3b: Type II audit reporting errors are negatively associated with more recent credit rating downgrades.

Audit Reporting Accuracy, Credit Rating Changes, & Auditor Competence

Empirical evidence shows that audit reporting errors occur more frequently for less specialized auditors (Reichelt and Wang 2010). If signals from other information intermediaries, such as credit ratings, indeed contain incremental information for auditors, this likely affects GCO assessments of non-specialized auditors. Without the credit rating, less competent auditors have difficulties assessing the situation with the same accuracy as more competent auditors. If, however, CRAs improve the monitoring of the firm and summarize new and relevant information in the credit rating, then less competent auditors can easily incorporate this information in their assessment. Informative credit ratings may therefore narrow the performance gap between more and less competent auditors. This conjecture is formulated and tested by the following hypothesis:

H4: The performance gap between specialist and non-specialist auditors becomes smaller in the presence of poor credit ratings and credit rating changes.

4.3 Research Design

4.3.1 Sample

The sample consists of publicly listed U.S. firms for the years 1999 through 2012. Audit related information is obtained from Audit Analytics and supplemented with company fundamentals and credit ratings from Compustat and market-related information from CRSP. As in prior literature, the analysis excludes the financial sector (SIC codes 6000-6999) and is restricted to financially distressed companies. Following prior literature, financial distress is defined as having at least two of the following six distress measures: (i) negative net worth, (ii) negative operating cash flow, (iii) negative operating income, (iv) negative working capital, (v) negative net income or (vi) negative retained earnings (e.g., Chen and Church 1992; Bruynseels et al. 2011). The sample is further constrained by missing information needed for the multivariate analyses. Parts of the analyses are limited to a subsample of observations with credit ratings and the analyses considering

TABLE 4.1
Sample Selection Procedure

Initial sample	104,614
Eliminate all prior 1999	-376
Eliminate all financially non-distressed	-48,428
Eliminate financial sector	-11,252
Eliminate all observations with missing control variables	-22,520
Basic sample for analyses	22,038
Less observations without credit ratings	-18,216
Final sample for credit rating level analysis	3,822
Less observations with missing auditor industry specialization information	-807
Final sample for auditor specialization analyses	3,015

This table outlines the sample selection procedure which is based on all firms in Compustat with available audit opinions in Audit Analytics and necessary return data in CRSP between 1999 and 2012. Financial distress is defined as showing at least two of the following six distress measures: (i) negative net worth, (ii) negative operating cash flow, (iii) negative operating income, (iv) negative working capital, (v) negative net income or (vi) negative retained earnings. The financial sector encompasses all firms with two-digit SIC-codes from 60-69. Credit ratings are obtained from Compustat and are those issued by Standard & Poor's during the sample period.

auditor industry specialization are further reduced due to missing information on Metropolitan Statistical Areas (MSA) necessary to compute local auditor specialists (see Table 4.1 for the complete sample selection procedure).

4.3.2 Empirical Model

Existing literature on the determinants of audit reporting errors uses observable data with respect to the underlying firm situation as well as market measures (e.g., Callaghan et al. 2009; Mutchler et al. 1997; Robinson 2008). In order to test the hypotheses, I therefore estimate the following probit regression model:

$$ERROR = \beta_0 + \beta_1 \ln AT + \beta_2 LEVG + \beta_3 ROA + \beta_4 CURRENT + \beta_5 PLOSS + \beta_6 \ln RET + \beta_7 VARRES + \beta_8 LAG + \beta_9 BIGN + \beta_{10} EXCHG + \beta_k CRs + \varepsilon \quad (1)$$

where:

ERROR = a binary variable equal to 1 if an audit reporting error occurred, (0 otherwise);

- lnAT* = the natural logarithm of the firm's total assets at fiscal year-end measured in millions of dollars;
- LEV* = the ratio of total debt to total assets, both measured at fiscal year-end in millions of dollars;
- ROA* = the return on assets, i.e. the ratio of net income over total assets, both measured at fiscal year-end in millions of dollars;
- CURRENT* = the current ratio, i.e. the ratio of total current assets over total current liabilities, both measured at fiscal year-end in millions of dollars;
- PLOSS* = indicator variable equal to 1 if the company reports a bottom-line loss in the previous year (0 otherwise);
- lnRET* = natural logarithm of the firm's annual stock return;
- VARRES* = the variance of the residual of the market model over the fiscal year;
- LAG* = reporting lag, defined as the number of days between fiscal year end and the auditor's signature date;
- BIGN* = indicator variable equal to 1 if the audit is performed by one of the Big 4 (Big 5) auditors (0 otherwise);
- EXCH* = indicator variable equal to 1 if listed on the NASDAQ, New York or American Stock Exchange (0 otherwise);
- CRs* = representing the vector of the variables of interest (see below).

Given that companies filing for bankruptcy are conceptually different from companies that stay in business, I run equation (1) separately for the bankrupt and non-bankrupt sample. The dependent variable *ERROR* is therefore equivalent to Type I errors in the non-bankrupt sample and Type II errors in the bankrupt sample. Furthermore, I control for year fixed effects and standard errors are clustered by firm to control for heteroskedasticity and correlations within a cluster (Petersen 2009; Gow et al. 2010).

4.3.3 Variables of Interest

As explained above, there are potentially two opposing effects which are likely to influence audit reporting errors. On the one hand, credit ratings and rating changes can improve the information available to auditors and therefore reduce the ambiguity surrounding the GCO decision, decreasing both Type I and Type II errors. On the other hand, credit ratings and rating changes could function as a warning signal to auditors, thereby increasing auditor conservatism which likely results in an increase (decrease) of Type I (II) errors. Model (1) hence includes the following variables of interest to examine the effect of credit ratings and rating downgrades on audit reporting error rates. The indicator variable *D_JUNK* examines the effect of having a non-investment grade credit rating compared to having an investment grade credit rating or not having a credit rating at all. The indicator variable *D_CRA* is included in the model to control for credit rating changes. In order to see whether differences in audit reporting errors are attributable to down- or upgrades, I include the indicator variables *D_DWN* and *D_UP*. Credit rating severity is examined by an ordinal variable *DWN* where higher values are

associated with more severe downgrades. Alternatively, indicator variables for one-notch (D_INOTCH), two-notch (D_2NOTCH) or three-or-more notch (D_3NOTCH) downgrades are included. The effect of D_3NOTCH is expected to be larger than the one of D_2NOTCH and the effect of D_2NOTCH is expected to be stronger than the one of D_INOTCH . Credit rating downgrade severity is also considered to be larger if credit ratings are downgraded multiple times during the year, captured by NRQ which measures the number of quarters a company is downgraded in. I also expect a stronger association for more recent downgrades, and hence include indicator variables for the specific quarter the company received a downgrade in, i.e. $D_FQ1-DFQ4$. D_FQ1 is equal to one if a company is downgraded in the first quarter of the fiscal year and D_FQ4 if downgrades occurred during the last quarter, i.e. most recently.

Assuming credit ratings have incremental value to auditors, I expect that this value is more pronounced for non-specialist auditors since they can use the information provided by the rating agencies and therefore improve their performance. Hence, I include interaction effects of auditor specialization and the variables of interest and expect the performance gap between auditor specialists and non-specialists to narrow. Auditor industry specialization is examined in two different ways. First, I focus on non-specialist auditors. Auditors have to invest resources in order to specialize in a certain industry (Eichenseher and Danos 1981). There are non-specialized auditors, particularly small audit firms, who have less than 5% market share, who still invest resources in a particular industry because they have a large share of *their* portfolio invested in that particular industry. I therefore examine auditors with a portfolio share of less than 5% in a particular industry and label these as auditors without expertise in the specific industry of the client being audited (NO_EXP). This proxy is then interacted with the variables of interest.⁵⁴ Secondly, I examine the interaction effects of the variables of interest with auditor specialists and hence include $SPEC$, an indicator variable equal to one if auditors audit more than 30% of clients' assets in an MSA in a particular industry.⁵⁵

4.3.4 Control Variables

Prior research shows that larger companies have stronger negotiation power, deeper pockets and higher capacity to avoid bankruptcy (Reynolds and Francis 2000). I therefore include the logarithm of total assets ($lnAT$) to control for size and expect it to be negatively (positively) associated with Type I (Type II) reporting errors. A firm's financial health and the associated probability of bankruptcy are controlled for by leverage, return on assets and the current ratio. Higher leverage (LEV) is more likely associated with debt covenant violations (Beneish and Press 1993; Reynolds and

⁵⁴ An auditor's portfolio share is defined as the ratio of assets audited in an industry in a given MSA in a given year relative to all the assets audited by that auditor in all industries in that MSA in that year.

⁵⁵ This is the traditional market share specialization measure commonly used in prior literature (e.g., Hogan and Jeter 1999).

Francis 2000), and therefore predicted to have a positive (negative) coefficient in the non-bankrupt (bankrupt) sample. *ROA* and *CURRENT* on the contrary resemble a firm's profitability and liquidity which are expected to be negatively associated with GCOs⁵⁶. Prior literature has shown that previous year losses (*PLOSS*) are positively associated to the probability of GCOs (Callaghan et al. 2009), translating into a higher probability of Type I errors and a lower probability of Type II errors. GCOs are also expected to be negatively correlated with returns (*lnRET*) and positively correlated with volatility of returns (*VARRES*) (DeFond et al. 2002). Other measures commonly controlled for are *BIGN* since these auditors are commonly more conservative (Callaghan et al. 2009); firms being listed on major stock exchanges, *EXCHG*, because these firms are under more scrutiny by regulatory bodies; and reporting lag (*LAG*). For the sample of bankrupt firms, I also control for bankruptcy reporting lag (*BRLAG*) because Mutchler et al. (1997) find that the likelihood of receiving a GCO is lower the longer the period between the audit report date and the bankruptcy filing date.

Some of the analyses also include auditor industry specialization as a control. Consistent with existing literature, auditor industry specialization is measured on the local level, based on Metropolitan Statistical Areas (MSAs) (Ferguson, Francis, and Stokes 2003; Francis et al. 2005).⁵⁷ I expect a positive coefficient for *SPEC* in the non-bankrupt sample and a negative one in the bankrupt sample (Bruynseels et al. 2011). Finally, model (1) includes year dummies to allow for changes in auditor reporting behavior over time.⁵⁸

4.4 Results

4.1 Descriptive Statistics

Over the entire sample period 466 bankruptcies (2.1%) occurred. Bankruptcy filings varied significantly from year to year with a maximum of 97 in 2000 and a minimum of 12 in 2005. Out of those bankruptcies, 317 companies did not receive a GCO before, which translates into a Type II error rate of 31.97%. Moreover, auditors issued GCOs to 2,333 companies, i.e. 10.81%, who did not subsequently file for bankruptcy.⁵⁹ Within

⁵⁶ Some prior studies include the Zmijewski Score (1984) as explicit measure of the probability of bankruptcy (e.g., DeFond et al. 2002), but to allow for individual differences amongst the variables included in the composite measure, leverage, ROA and current are included in the model separately.

⁵⁷ Auditors are considered specialists if they audit at least 30 percent of an industry in a given MSA in a given year (e.g., Numan and Willekens 2012). Consistent with prior literature, each local market is required to have at least two observations per industry in order to ensure a minimum level of competition (e.g., Cahan, Jeter, and Naiker 2011).

⁵⁸ Geiger, Raghunandan, and Rama (2006) report that auditors are more likely to issue GCOs after January 2002.

⁵⁹ Prior literature often states that 80-90% of firms receiving a GCO do not file for bankruptcy in the following year (Carson et al. 2013). The sample in this study has 2650 firms that receive a GCO and 2,333, i.e. 88.04% of those do not file for bankruptcy. The sample is therefore consistent with samples examined in prior literature.

the sample of firms with credit ratings (3,822 observations), the Type I and Type II error rates are 3.42% and 33.33%, respectively. B ratings are overall the most common, none of the companies with a Type I error are classified as investment grade (Table 4.2, Panel A), and companies with a Type II error have barely any CCC, CC or D ratings (Panel B).

Table 4.3 provides an overview of credit rating changes. While there are 1,105 firm-year observations with downgrades during the fiscal year being audited, there are only 281 upgrades. This is not surprising because the sample is limited to distressed firms. Splitting the sample by bankruptcy, one can see that 80 (29), i.e. 8% (26.6%) of audit opinions given to firms with downgrades are identified as Type I (Type II) error *ex post*.

Table 4.4 addresses downgrade severity and timing. Panel A reveals that there are more Type I and less Type II errors as firms receive more severe downgrades. Both types of errors occur less frequently for companies that are downgraded in multiple quarters during the fiscal year (Panel B). However, Panel C shows that there is no easily detectable pattern of reporting error frequency with respect to downgrade timing.

4.2 Univariate Results

The univariate results in Table 4.5 reveal that firms in the sample with and without credit ratings have on average \$1,148 million in assets which is larger than the average size of firms analyzed in other studies of financially distressed samples. Moreover, 71% of the sample reported a bottom line loss in the previous year and the average leverage ratio is 26%. Average return for the sample is 21% which seems logical since distressed firms are high risk firms. The average lag of time between fiscal year-end and the audit report date is 73 days.

Unreported tests of mean differences between firms with and without a Type I error in the subsample of non-bankrupt firms shows that firms with a Type I error are smaller, are less likely to be listed on a stock exchange, have longer reporting lags, are more prone to bankruptcy and more likely to report bottom line losses in the previous year. Furthermore, they have more leverage, are more likely to report covenant violations, and have lower returns but a higher volatility of returns. Firms with Type I errors are also less likely to obtain credit ratings and if they have credit ratings, credit rating levels are worse and more likely to have recently been downgraded as compared to firms without reporting errors.

TABLE 4.2
Overview of Credit Rating Levels by Going-Concern Status

CR Level	Panel A: Non-Bankrupt Sample			Panel B: Bankrupt Sample		
	No GCO	GCO	Total	No GCO	GCO	Total
AA	9	0	9			
A	162	0	162			
BBB	536	0	536	2	1	3
BB	973	1	974	7	3	10
B	1,667	35	1,702	30	17	47
CCC	183	40	223	7	32	39
CC	11	7	18	0	11	11
D	14	43	57	1	30	31
Total	3,555	126	3,681	47	94	141

This table shows the distribution of audit reporting errors by credit rating levels. Type I errors are reflected in Panel A under the column “GCO” and Type II errors are presented in Panel B under the column “No GCO”. The distribution is based on a sample of all financially distressed firms with available audit opinions in Audit Analytics that have available data in Compustat and CRSP from 1999 to 2012. Figure 2.3 provides an explanation of the credit rating scale.

TABLE 4.3
Overview of Rating Changes

Rating Changes	Panel A: Non-Bankrupt Sample			Panel B: Bankrupt Sample		
	No GCO	GCO	Total	No GCO	GCO	Total
Upgrades	278	2	280	1	0	1
Downgrades	916	80	996	29	80	109
Total Changes)	1194	82	1276	30	80	110
Total Sample	3,300	121	3,421	47	88	135

This table shows the distribution of audit reporting errors for firms that experienced credit rating changes. Type I errors are reflected in Panel A under the column “GCO” and Type II errors are presented in Panel B under the column “No GCO”. The distribution is based on a sample of all financially distressed firms with available audit opinions in Audit Analytics that have available data in Compustat and CRSP from 1999 to 2012. Figure 2.3 provides an explanation of the credit rating scale. Variable Definitions are provided in Appendix 4.

TABLE 4.4
Overview of Downgrade Timing and Severity

Panel A: Downgrade Severity						
	Non-Bankrupt Firms			Bankrupt Firms		
	No GCO	GCO	Total	No GCO	GCO	Total
1NOTCH_DWN	541	14	555	12	10	22
2NOTCH_DWN	234	13	247	12	10	22
3NOTCH_DWN	141	53	194	5	60	65
Panel B: Repeated Downgrades						
	Non-Bankrupt Firms			Bankrupt Firms		
	No GCO	GCO	Total	No GCO	GCO	Total
DWN in 1Q	733	43	776	19	37	56
DWN in 2Q	166	25	191	9	31	40
DWN in 3Q	29	5	34	1	10	11
DWN in 4Q	2	5	7	0	1	1
Panel C: Downgrade Timing						
	Non-Bankrupt Firms			Bankrupt Firms		
	No GCO	GCO	Total	No GCO	GCO	Total
DWN_FQ4	294	36	330	11	53	64
DWN_FQ3	274	34	308	10	39	49
DWN_FQ2	299	29	328	8	27	35
DWN_FQ1	309	33	342	11	17	28

This table presents an overview of credit rating downgrade severity and timing. Panel A provides descriptives regarding the severity of the downgrade, as it shows the number of firms with and without GCOs for one-notch, two-notch and three-or-more-notch downgrades. Panel B displays the distribution of GCO and non-GCO firms depending on how often firms were downgraded and Panel C shows how many GCO and non-GCO firms were downgraded in the different fiscal quarters of the fiscal year being audited. The sample consists of all financially distressed firms with available data in Audit Analytics, Compustat and CRSP from 1999 to 2012 that were downgraded by Standard & Poor's during that time. Variable definitions are provided in Appendix 4.

TABLE 4.5
Univariate Statistics

Variables	N	Mean	S.D.	Min	Mdn	Max
Type I	22,038	0.11	0.31	0	0	1
Type II	22,038	0.01	0.08	0	0	1
lnAT	22,038	4.96	1.96	0	4.73	10.1
AT	22,038	1,148.66	3,577.66	0	112.66	2,4417.58
LEVG	22,038	0.26	0.38	0	0.15	7.66
ROA	22,038	-0.36	1.25	-46.31	-0.12	0.47
CURRENT	22,038	3.35	4.62	0	1.91	37.01
PLOSS	22,038	0.71	0.46	0	1	1
lnRET	22,038	-0.28	0.95	-3.44	-0.2	3.4
VARRES	22,038	0	0	0	0	0.03
LAG	22,038	72.82	37.49	19	71	392
BIGN	22,038	0.73	0.44	0	1	1
EXCH	22,038	0.71	0.45	0	1	1
BRLAG	465	112.57	117.82	-549	123	299
SPEC	19,052	0.35	0.48	0	0	1
D_JUNK	22,038	0.18	0.39	0	0	1
CRL	3,822	5.5	1.21	2	6	10
D_CRA	3,754	0.42	0.49	0	0	1
DWN	1,105	2.24	2.22	1	1	15
UP	281	1.56	1.55	1	1	11

This table presents the descriptive statistics of the main variables used in the analyses. The sample consists of all firms with available data in Audit Analytics, Compustat and CRSP from 1999 to 2012 that had credit ratings from Standard & Poor's outstanding and are considered financially distressed during that time. Type I reflects auditors' Type I reporting errors, defined as issuing a GCO to companies that subsequently do not file for bankruptcy. Type II errors are defined as clean audit opinions issued to companies that do not survive the next fiscal year. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4.

Firms with Type II errors on the contrary, are on average larger, have less leverage, lower bankruptcy scores, lower returns and a shorter time lag between the fiscal year end and the audit report date as well as the audit report date and bankruptcy reporting date. While there is no difference in the likelihood to obtain a credit rating for firms with and without Type II errors, those with Type II error have a lower probability of being downgraded. Overall, the structural differences between these subsamples increase the difficulty of disentangling whether these differences can be attributed to credit rating characteristics or whether they are just a result of differences in underlying firm characteristics.

The Pearson correlations between the regression variables are presented in Table 4.6. The results are in general in line with my expectations and except for the variables

TABLE 4.6
Pearson Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) ERROR		-0.138	-0.083	0.129	-0.128	-0.283	0.067	-0.258	0.285	0.180	0.038	-0.002	-0.401	-0.001	0.504	0.332	0.481	-0.118
(2) lnAT	-0.252		0.559	0.028	0.322	-0.079	-0.196	-0.085	-0.300	-0.064	0.417	0.402	-0.116	0.291	-0.096	0.030	0.065	0.009
(3) AT	-0.077	0.629		-0.006	0.093	-0.038	-0.121	0.035	-0.159	-0.073	0.163	0.378	0.038	0.172	-0.070	-0.053	-0.001	-0.025
(4) LEVG	0.153	0.171	0.106		-0.081	-0.261	0.088	-0.093	0.209	0.270	0.044	0.082	-0.328	0.003	0.405	0.118	0.278	0.044
(5) ROA	-0.264	0.258	0.074	-0.248		-0.016	-0.121	0.117	-0.265	-0.044	0.050	0.089	0.055	0.033	-0.216	-0.084	-0.190	0.066
(6) CURRENT	-0.121	-0.145	-0.126	-0.240	0.035		0.046	0.060	-0.126	-0.122	0.007	-0.025	0.221	0.058	-0.370	-0.234	-0.407	-0.007
(7) PLOSS	0.148	-0.305	-0.189	-0.038	-0.133	0.111		-0.065	0.228	-0.129	-0.058	-0.170	-0.025	0.027	0.295	0.003	0.147	0.048
(8) lnRET	-0.205	0.048	0.027	-0.053	0.152	0.065	0.040		-0.205	-0.066	-0.066	0.000	0.159	-0.041	-0.351	-0.244	-0.358	0.085
(9) VARRES	0.322	-0.402	-0.166	0.064	-0.237	-0.051	0.221	-0.175		0.040	-0.025	-0.103	-0.157	-0.043	0.397	0.185	0.297	-0.001
(10) LAG	0.167	-0.084	-0.041	0.073	-0.073	-0.099	0.012	-0.064	0.083		-0.058	0.040	-0.590	-0.055	0.346	0.099	0.281	-0.025
(11) BIGN	-0.138	0.401	0.167	0.018	0.091	0.008	-0.069	0.007	-0.156	-0.128		0.163	-0.087	0.300	0.046	0.147	0.133	0.020
(12) EXCH	-0.282	0.309	0.101	-0.104	0.140	0.053	-0.123	0.145	-0.321	-0.143	0.191		-0.094	0.222	-0.115	0.094	0.040	-0.055
(13) BRLAG														-0.063	-0.592	-0.369	-0.571	0.087
(14) SPEC	-0.089	0.263	0.143	0.032	0.058	0.012	-0.048	0.019	-0.119	-0.088	0.352	0.135			-0.087	-0.028	-0.053	
(15) CR	0.390	-0.481	-0.439	0.251	-0.195	0.086	0.353	-0.138	0.448	0.169	-0.096	-0.169		-0.077		0.311	0.879	-0.062
(16) D_CRΔ	0.121	-0.014	-0.013	-0.015	-0.136	-0.045	0.072	-0.151	0.170	0.074	-0.037	-0.085		-0.015	0.158		0.470	0.041
(17) DWN	0.393	-0.016	-0.001	-0.022	-0.219	-0.048	0.082	-0.324	0.353	0.150	-0.004	-0.148		-0.002	0.375	0.562		-0.085
(18) UP	-0.019	0.021	0.017	-0.002	0.077	-0.004	0.035	0.202	0.012	0.019	0.007	0.005		0.003	0.016	0.269	-0.090	

This table presents the results of Pearson correlations between the control variables and variables of interest. The white area in the lower left part represents the correlations for the non-bankrupt sample and the grey-shaded upper right part of the table reflects the correlations of the sample of bankrupt firms. The correlations are based on a sample of firms available in Audit Analytics with available Compustat and CRSP data that have outstanding credit ratings from Standard & Poor's and are considered financially distressed between 1999 and 2012. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4. Bold values indicate correlations that are statistically significant at 5% (two-tailed).

that are by construction related to each other, all correlations are below 0.6.⁶⁰ D_CRA is positively (negatively) related with Type I (Type II) error in the non-bankrupt (bankrupt) sample indicating that companies with credit rating changes are more likely to receive GCOs. This pattern also holds for downgrades (D_DWN) and downgrade severity (DWN).

4.3 Regression Results

Model 1 and 2 in Table 4.7 present the base line regressions for GCOs in the non-bankrupt and bankrupt sample, respectively. The pseudo R^2 s are 30.4% and 33.5% which indicate that the models explain the GCO decision fairly well. All coefficients are in line with expectations and prior literature, and confirm the univariate results. Model 3 and 4 present the regressions controlling for firm-year observations with a poor credit rating as compared to not having a credit rating. The pseudo R^2 s are virtually unchanged and D_JUNK is not significantly associated with Type I errors. In the bankrupt sample, however, the coefficient of D_JUNK is negative and statistically significant. The coefficient of -0.492 translates into a marginal effect of 21.6%, indicating that Type II errors are on average 21.6% less likely to occur at companies that had a non-investment grade credit rating outstanding at the signature date.⁶¹ The fact that the probability of Type I errors does not change while that of Type II errors increases in the presence of poor credit ratings is consistent with auditors becoming more conservative in the presence of a poor credit rating, therefore issuing more GCOs and hence making less Type II errors (Model 4).

Table 4.8 presents the results with respect to credit rating changes and GCOs.⁶² While changes in credit ratings (D_CRA) are positively associated with Type I errors (column 1), they do not impact the likelihood of Type II errors (column 2). More specifically, rating upgrades are not associated with reporting errors, and downgrades are positively associated only with Type I errors (columns 3 and 4).⁶³ This association is

⁶⁰ In untabulated results, variance inflation factors are computed and all are well below 4, indicating that there are no multicollinearity issues (Judge et al. 1988).

⁶¹ Marginal effects are computed as the change in the probability that a reporting error will occur as a response to a one-standard deviation change in the variable of interest, scaled by the base probability of the occurrence of a reporting error. In case of ordinal variables, the marginal effect represents a change in probability of the error in response to a one-unit increase from the median value of the variable of interest, scaled by the base probability of the occurrence rate of reporting errors. For dichotomous variables, the marginal effect shows the change in the probability of a reporting error as result from a change of zero to one in the variable of interest, scaled by the base probability of audit reporting errors. Marginal effects are not reported in the tables for brevity.

⁶² Unreported results for the baseline regression in a subsample of observations with credit ratings show that the R^2 s are slightly higher and that all control variables are in line with expectations and prior findings except for leverage which switches signs.

⁶³ It is not surprising that credit rating upgrades are not significant because there are only very few observations with an upgrade. The variable D_UP drops out of the regression in the bankrupt sample due to too few observations.

TABLE 4.7
Probit Regression Results for the Complete Sample

Variables	Dependent Variable: Reporting Error			
	(1) Type I Error	(2) Type II Error	(3) Type I Error	(4) Type II Error
	Coeff.	Coeff.	Coeff.	Coeff.
	(St. Err)	(St. Err)	(St. Err)	(St. Err)
Constant	-0.944***	-2.184**	-0.951***	-2.350**
D_JUNK			-0.021	-0.492***
lnAT	-0.145***	0.228***	-0.144***	0.297***
BIGN	0.010	-0.337	0.010	-0.317
EXCH	-0.521***	-0.268	-0.521***	-0.192
LAG	0.004***	0.004	0.004***	0.003
ROA	-0.263***	-0.012	-0.263***	-0.014
CURRENT	-0.063***	0.330***	-0.063***	0.346***
PLOSS	0.378***	0.090	0.378***	0.036
LEVG	0.386***	0.240	0.389***	0.279
lnRET	-0.231***	0.308***	-0.231***	0.292***
VARRES	4.542***	-4.938	4.549***	-4.637
BRLAG		0.006***		0.006***
Observations	21,572	465	21,572	465
Pseudo R ²	0.297	0.321	0.297	0.330

This table presents the results of the regression analyzing whether the presence of poor credit ratings is associated with audit reporting error rates. The sample includes all firms with available audit opinions in Audit Analytics and Compustat and CRSP data from 1999 to 2012 that have outstanding credit ratings by Standard & Poor's and are considered financially distressed. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4. Standard errors are clustered by firm and are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

TABLE 4.8
Probit Regression Results for Credit Rating Changes

Variables	Dependent Variable: Reporting Error											
	(1) Type I Error		(2) Type II Error		(3) Type I Error		(4) Type II Error		(5) Type I Error		(6) Type II Error	
	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)
Constant	-4.929***	(0.000)	3.535	(0.202)	-4.952***	(0.000)	3.535	(0.202)	-4.319***	(0.000)	2.597	(0.413)
CR	0.250***	(0.000)	-0.275***	(0.003)	0.248***	(0.000)	-0.275***	(0.004)	0.227***	(0.000)	-0.223*	(0.090)
D_CRA	0.316***	(0.009)	-0.251	(0.574)								
D_DWN					0.372***	(0.004)	-0.251	(0.574)				
D_UP					-0.116	(0.646)						
DWN									0.070*	(0.069)	-0.090	(0.539)
UP									0.017	(0.829)		
lnAT	-0.074	(0.136)	0.376**	(0.029)	-0.072	(0.143)	0.376**	(0.029)	-0.094*	(0.076)	0.398**	(0.017)
BIGN	0.109	(0.711)	-0.065	(0.946)	0.124	(0.673)	-0.066	(0.945)	0.119	(0.690)	-0.025	(0.979)
EXCH	-0.207	(0.202)	-0.858*	(0.088)	-0.195	(0.230)	-0.858*	(0.088)	-0.211	(0.202)	-0.805	(0.118)
LAG	0.004***	(0.001)	0.011	(0.150)	0.004***	(0.001)	0.011	(0.150)	0.004***	(0.001)	0.012	(0.124)
ROA	-0.173	(0.145)	1.434	(0.267)	-0.165	(0.170)	1.432	(0.268)	-0.182	(0.121)	1.333	(0.288)
CURRENT	-0.495***	(0.000)	0.363	(0.115)	-0.490***	(0.000)	0.363	(0.115)	-0.503***	(0.000)	0.342	(0.132)
PLOSS	-0.092	(0.457)	0.162	(0.692)	-0.077	(0.530)	0.161	(0.693)	-0.055	(0.651)	0.132	(0.753)
LEVG	-0.378	(0.117)	-0.054	(0.951)	-0.376	(0.120)	-0.053	(0.952)	-0.386	(0.119)	-0.110	(0.902)
lnRET	-0.157**	(0.042)	0.298	(0.322)	-0.138*	(0.081)	0.298	(0.322)	-0.149*	(0.059)	0.277	(0.377)
VARRES	3.115*	(0.090)	-15.323	(0.187)	3.146*	(0.086)	-15.334	(0.187)	3.325*	(0.091)	-18.716*	(0.098)
BRLAG			0.013***	(0.000)			0.013***	(0.000)			0.014***	(0.000)
Observations	3,421		134		3,421		133		3,421		134	
Pseudo R ²	0.513		0.646		0.515		0.642		0.512		0.647	

This table presents the results of the regression analyzing whether audit reporting misclassifications vary as a function of preceding credit rating changes. The sample includes all firms with available audit opinions in Audit Analytics and Compustat and CRSP data from 1999 to 2012 that are considered financially distressed and have outstanding credit ratings by Standard & Poor's. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4. Standard errors are clustered by firm and are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

stronger, the larger the magnitude of the downgrade (column 5). In terms of marginal effects, the coefficient of the downgrade variable in column 5 indicates a 1.53% increase in the likelihood of a Type I error in response to a downgrade.⁶⁴

Table 4.9 addresses credit rating severity and timing in more detail. The variables of interest in columns 1 and 2 are the number of notches a credit rating is downgraded by. Column 1 reveals that the association between Type I errors and downgrades is stronger, the larger the magnitude of the downgrade. Untabulated tests show that a one-notch downgrade is statistically different from a two-notch downgrade, and a three-or-more-notch downgrade. This implies that more severe rating downgrades are associated with a higher probability of a Type I error. Marginal effects show that one-notch, two-notch or three-or-more-notch downgrades manifest a 4.9%, 10.82% and 13.38% increase in Type I errors, respectively. There is also a positive association between the probability of a Type I error and the number of quarters a firm is downgraded in repetitively (column 3), with an average marginal effect of 3.62%. Moreover, the probability of Type I errors increases with downgrades occurring more recently (column 5). While downgrades in the first half of the fiscal year are not associated with the probabilities of reporting error rates, downgrades in the third (fourth) quarter increase the probability of a Type I error by 6.30% (8.88%) as indicated by their marginal effects. These results imply that auditors respond more conservatively to more severe and more recent credit rating changes. The probability of Type II errors is significantly lower for firms with three-or-more-notch downgrades (column 2), as the negative and significant coefficient shows. This coefficient translates into a marginal effect of -19.02%. None of the other timing and severity measures are associated with Type II errors.

Results with respect to auditor specialization are presented in Table 4.10 and show that *NO_EXP* and all of its interaction terms with the credit rating and rating downgrade variables are insignificant in the non-bankrupt sample. Yet, the significantly positive coefficient of the main effect in the bankrupt sample implies that auditors without expertise in the specific industry of the client being audited are less conservative than other auditors. The marginal effect of the non-specialist auditor variable is 45.51%, which implies that auditors without expertise in the specific industry of their client are approximately 45.51% more likely to make Type II errors. The interaction effects between the credit rating downgrade variables and *NO_EXP* mitigate this high probability of Type II errors as the negative and significant interaction coefficient shows. The interaction effect translates into an 18.82% lower probability of Type II

⁶⁴ One should be careful with the interpretation of the marginal effect coefficient as the effect of credit rating downgrades is unlikely to be linear. So the change of 1.53% needs to be understood as the average marginal effect. Specific effects of downgrades with different severity are examined in more detail as part of Table 4.9.

TABLE 4.9
Probit Regression Results for Credit Rating Severity and Timing

Variables	Dependent Variable: Reporting Error					
	(1) Type I Error Coeff. (St. Err.)	(2) Type II Error Coeff. (St. Err.)	(3) Type I Error Coeff. (St. Err.)	(4) Type II Error Coeff. (St. Err.)	(5) Type I Error Coeff. (St. Err.)	(6) Type II Error Coeff. (St. Err.)
Constant	-4.760*** (0.000)	2.703 (0.316)	-4.710*** (0.000)	3.559 (0.207)	-4.739*** (0.000)	3.012 (0.284)
CR	0.240*** (0.000)	-0.199** (0.032)	0.246*** (0.000)	-0.285*** (0.003)	0.248*** (0.000)	-0.275*** (0.005)
D_1NOTCH	0.261 (0.101)	-0.629 (0.381)				
D_2NOTCH	0.436** (0.021)	1.077* (0.087)				
D_3NOTCH	0.477*** (0.008)	-1.457** (0.041)				
NRQ			0.226*** (0.003)	0.025 (0.925)		
D_FQ1					0.110 (0.533)	0.508 (0.270)
D_FQ2					0.051 (0.768)	0.112 (0.835)
D_FQ3					0.338*** (0.049)	-0.463 (0.316)
D_FQ4					0.418*** (0.005)	-0.708 (0.127)
lnAT	-0.080 (0.114)	0.354** (0.032)	-0.078 (0.125)	0.350** (0.038)	-0.082 (0.112)	0.442** (0.018)
BIGN	0.109 (0.710)	1.157 (0.198)	0.052 (0.864)	-0.129 (0.891)	0.040 (0.895)	0.174 (0.876)
EXCH	-0.187 (0.241)	-0.835* (0.096)	-0.224 (0.166)	-0.866* (0.092)	-0.217 (0.173)	-1.157* (0.053)
LAG	0.004*** (0.002)	0.014 (0.103)	0.004*** (0.004)	0.012 (0.137)	0.004*** (0.004)	0.014* (0.081)
ROA	-0.159 (0.193)	0.628 (0.552)	-0.151 (0.216)	1.383 (0.271)	-0.154 (0.221)	1.661 (0.270)
CURRENT	-0.492*** (0.000)	0.150 (0.516)	-0.520*** (0.000)	0.388* (0.098)	-0.523*** (0.000)	0.456* (0.096)
PLOSS	-0.069 (0.574)	-0.509 (0.257)	-0.093 (0.446)	0.224 (0.578)	-0.081 (0.515)	-0.079 (0.873)
LEVG	-0.385 (0.110)	0.127 (0.900)	-0.351 (0.154)	-0.088 (0.920)	-0.333 (0.174)	-0.058 (0.949)
lnRET	-0.137* (0.079)	0.629* (0.081)	-0.142* (0.071)	0.328 (0.299)	-0.133* (0.093)	0.363 (0.298)
VARRES	3.226* (0.076)	-25.220* (0.058)	2.815* (0.096)	-15.460 (0.171)	2.940* (0.096)	-17.042 (0.164)
BRLAG		0.015*** (0.000)		0.014*** (0.000)		0.015*** (0.000)
Observations	3,421	134	3,404	133	3,404	133
Pseudo R ²	0.517	0.706	0.518	0.643	0.522	0.664

TABLE 4.9 – continued

This table presents the results of the regression analyzing whether audit reporting error rates vary as a function of preceding credit rating downgrade severity and timing. The sample includes all firms with available audit opinions in Audit Analytics and Compustat and CRSP data from 1999 to 2012 that are considered financially distressed and have outstanding credit ratings by Standard & Poor's. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4. Standard errors are clustered by firm and are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

errors as implied by the marginal effect. Potentially, auditors with less experience and expertise, pay attention to publicly available warning signals and hence issue less GCOs. While Type II error rates are higher for auditors without expertise in the specific industry of the client being audited, these auditors seem to react to credit rating information which reduces the error rate. Type I error rates do not seem to be significantly associated with auditors' industry expertise. Untabulated results with respect to specialized auditors reveal that neither the main effects of auditor specialization (*SPEC*) nor any of the interaction effects with the variables of interest are significant. This suggests that specialists do not react differently to credit ratings and rating changes.⁶⁵ Taken together, these findings indicate that downgrades generally amplify auditor conservatism but help auditors without expertise in the specific industry of the client to improve their going-concern assessment for soon to be bankrupt companies.⁶⁶

Overall, the results from the non-bankrupt sample support the argument that credit ratings are predominantly perceived as warning signals because the propensity to issue GCOs increases, resulting in a higher Type I error rate. Evidence regarding Type II errors, while fairly limited, is consistent with increased auditor conservatism. Yet, marginal effects show that the economic significance of downgrades is more pronounced for Type II than Type I errors. While the lack of statistical significance of the credit rating variables in the bankrupt sample could be explained by data limitations, it might also be the case that auditors of the bankrupt sample foresee that their clients will fail and might therefore not be as affected by credit rating information.

4.4 Additional Analyses

Litigation Risk

Prior literature reports that the Private Securities Litigation Reform Act (PSLRA) reduced litigation threats against auditors and resulted in auditors issuing less GCOs while the Sarbanes Oxley Act (SOX) increased auditor litigation concerns (e.g., Myers,

⁶⁵ In unreported tests, I also test whether specialist and non-specialist auditors react differently to credit rating timing and severity but I fail to find statistically significant differences.

⁶⁶ Given the limited number of observations, one should however be careful with drawing inferences from these results.

Schmidt, and Wilkins 2008; Fargher and Jiang 2008). Since litigation seems to be an influential factor in the GCO decision, I re-run all regression equations controlling for litigation risk.⁶⁷ Untabulated tests show that the results with respect to the presence of credit ratings are qualitatively similar. However, credit rating downgrades are associated with a lower probability of Type II errors. Additionally, more recent downgrades are associated with a higher probability of Type I errors and a lower probability of Type II errors. These findings confirm earlier results and the argument of increased auditor conservatism as Type I error rates increase while Type II error rates decrease. Controlling for litigation risk does not affect the results with respect to auditors without expertise in the specific industry of the client at hand or auditor specialists.⁶⁸

Bankruptcy Probability & Default Status

Existing evidence in the literature indicates that a firm's bankruptcy probability is a relevant factor in the GCO decision. While model (1) controls for potential bankruptcy by including leverage, the return on assets and the current ratio, I replace those variables with the Zmijewski (1984) score and alternatively also the Altman (1968) Z-score as robustness checks and find that the results hold.⁶⁹

Firm defaults are also related to firm bankruptcy and previous literature finds a positive association between defaults and GCOs (Menon and Williams 2010). The credit rating variables already control for payment default since a D rating is assigned if a firm is currently in payment default.⁷⁰ In order to ensure that the results presented earlier are not driven by D ratings, i.e. payment defaults, the analyses are re-run based on a sample excluding all observations with D ratings. The results (not tabulated for brevity) remain qualitatively unchanged.⁷¹ Besides payment default, technical default might also influence the propensity of reporting errors. I therefore include a variable

⁶⁷ High and low litigation risk industries are identified in line with prior research (e.g., Hogan and Jeter 1999): I include chemicals and allied products, industrial and commercial machinery and computer equipment, electronic and other electrical equipment and components, except computer equipment and business services, in the high litigation risk industries, i.e. the two-digit SIC codes 28, 35, 36 and 73. Low litigation risk industries are the retail trade industries (two-digit SIC codes 52-59).

⁶⁸ Another commonly controlled for industry group are regulated industries. In separate analyses I rerun all regressions controlling for regulated industries and find qualitatively similar results to those presented in the main section.

⁶⁹ The Zmijewski (1984) score is a bankruptcy prediction model which incorporates the fact that financial information for distressed firms is often missing. Moreover, the coefficients are adjusted for the common mistake of oversampling financially distressed firms.

⁷⁰ This rating category is thus conceptually different as all other rating categories are based on predictions and not actual outcomes.

⁷¹ As an alternative I include an indicator variable for D credit ratings in all regressions. The results are still qualitatively unchanged. However, this approach does not work in all regression models, I therefore prefer excluding all observations with D ratings.

TABLE 4.10
Probit Regression Results for Auditors Without Expertise in the Specific Industry of the Client being Audited

Variables	Dependent Variable: Reporting Error											
	(1) Type I Error		(2) Type II Error		(3) Type I Error		(4) Type II Error		(5) Type I Error		(6) Type II Error	
	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)	Coeff.	(St. Err.)
Constant	-4.827***	(0.000)	-1.540	(0.616)	-4.223***	(0.000)	-2.111	(0.541)	-4.913***	(0.000)	-1.483	(0.641)
CR	0.239***	(0.000)	-0.294**	(0.020)	0.215***	(0.000)	-0.245*	(0.072)	0.245***	(0.000)	-0.281**	(0.027)
D_DWN	0.394**	(0.013)	0.086	(0.888)								
D_UP	-0.263	(0.450)										
DWN			0.084*	(0.059)			-0.140	(0.534)				
UP			0.039	(0.677)								
NRQ												
NO_EXP	-0.564	(0.253)	1.942**	(0.044)	-0.105	(0.684)	6.670***	(0.000)	0.279***	(0.003)	-0.160	(0.645)
D_DWN x NO_EXP									-0.197	(0.525)	6.922***	(0.000)
NO_EXP	0.596	(0.267)	-0.508	(0.646)								
DWN x NO_EXP					0.008	(0.922)	-3.972***	(0.000)				
NRQ x NO_EXP									0.078	(0.633)	-4.844***	(0.000)
lnAT	-0.071	(0.272)	0.366*	(0.096)	-0.093	(0.175)	0.332	(0.217)	-0.059	(0.365)	0.287	(0.251)
BIGN	0.061	(0.851)			0.066	(0.839)			-0.020	(0.951)		
EXCH	-0.276	(0.144)	-0.427	(0.479)	-0.266	(0.174)	-0.525	(0.396)	-0.295	(0.122)	-0.459	(0.460)
LAG	0.004***	(0.001)	-0.001	(0.946)	0.004***	(0.003)	-0.006	(0.570)	0.004***	(0.006)	-0.004	(0.707)
ROA	-0.104	(0.447)	2.050**	(0.032)	-0.130	(0.306)	2.171*	(0.070)	-0.074	(0.623)	2.383**	(0.037)
CURRENT	-0.459***	(0.001)	0.610**	(0.045)	-0.464***	(0.001)	0.518	(0.119)	-0.472***	(0.001)	0.558*	(0.086)
PLOSS	0.109	(0.457)	0.129	(0.785)	0.135	(0.351)	-0.468	(0.320)	0.127	(0.378)	-0.347	(0.455)
LEVG	-0.272	(0.332)	2.514**	(0.024)	-0.278	(0.343)	2.942**	(0.018)	-0.218	(0.465)	3.236***	(0.004)
lnRET	-0.125	(0.146)	0.193	(0.535)	-0.136*	(0.100)	0.173	(0.595)	-0.118	(0.162)	0.183	(0.561)
VARRES	0.304	(0.904)	-7.586	(0.587)	0.686	(0.790)	1.824	(0.890)	0.345	(0.896)	-1.892	(0.882)
BRLAG			0.011***	(0.001)			0.014***	(0.001)			0.014***	(0.000)
Observations	2,695	2,695	84	84	2,695	2,695	79	79	2,682	2,682	78	78
Pseudo R ²	0.507	0.507	0.582	0.582	0.499	0.499	0.632	0.632	0.514	0.514	0.617	0.617

This table presents the results of the regression analyzing whether the association of credit rating information and audit reporting misclassifications differs as a function of auditor specialization. The sample includes all firms with available audit opinions in Audit Analytics and Compustat and CRSP data from 1999 to 2012 that are considered financially distressed and have outstanding credit ratings by Standard & Poor's. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 4. Standard errors are clustered by firm and are reported in parentheses. , * ** , *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

controlling for technical default, i.e. covenant violations, in the analyses. The results are also qualitatively similar.⁷²

Investment Grade Credit Ratings & Credit Rating Upgrades

Since the dataset is limited to financially distressed companies, the number of observations with investment grade credit ratings and credit rating upgrades are very limited and have almost no variation. I therefore rerun all analyses, first based on a sample excluding all investment grade credit ratings and secondly eliminating all credit rating upgrades in order to ensure that the results are not biased due to these observations. For both robustness tests, I find that the results are qualitatively similar.

Alternative Auditor Industry Specialization Measures

Besides the market share approach applied earlier, local auditor industry specialization has been measured in different ways in existing literature.⁷³ I therefore check whether the results change when auditor specialization is defined based on an auditor's portfolio share.⁷⁴ Untabulated results confirm that all interaction terms with portfolio share specialists are statistically insignificant.⁷⁵ This confirms earlier results that the association between poor credit ratings (rating downgrades) and reporting errors is not different for auditor industry specialists.

Regulation Fair Disclosure (Reg FD)

The results reported above are based on a sample from 1999-2012. Reg FD, which allowed firms to share private information with credit rating agencies without publicly disclosing it to other market participants, was only effective from August 15th, 2000 until October 4th, 2010. I therefore examine whether the results change for samples restricted to the Reg FD sub-period.⁷⁶ Unreported results do not reveal any qualitative differences.

⁷² Covenant violations are obtained from Armin Sufi's website and supplemented by manual data collection from the firms' annual reports. The directions of the coefficients are mostly unchanged but results are less significant when controlling for technical default, especially the results with respect to downgrade severity and timing.

⁷³ The market share approach has been criticized for potentially failing to recognize expertise in large and highly competitive industries where each of the major accounting firms generate a significant amount of revenue because each of the larger firms devote significant audit technologies and expertise in these industries (Neal and Riley 2004). Potentially some or all big N auditors could therefore be considered specialists.

⁷⁴ An auditor is considered a portfolio share specialist in an industry if the ratio of clients' assets audited in that industry in a given MSA in a given year relative to all the clients' assets audited in all industries in that MSA in that year by that auditor is larger than 30%.

⁷⁵ Besides the market share and portfolio share approaches, I also define specialist as market leader and portfolio leader. The analyses with these alternative specifications are neither significant.

⁷⁶ Since I need credit rating changes during the fiscal year for which the audit opinion is issued, I limit the sample to firm-year observations with the signature date between August 15th, 2001 and October 4th, 2010. The analyses are run without fixed year effects in order to prevent additional loss of observations.

4.5 Summary and Conclusion

This chapter examines the association between credit ratings and going-concern reporting errors. Auditor's GCO decisions require a large degree of professional judgment and the general public often views the accuracy of the audit report as a signal of audit quality. Given the uncertainty surrounding the GCO decision, it seems therefore likely that auditors use publicly available information, like credit ratings, that might help them in their GCO assessment. On the one hand, credit ratings potentially contain additional information that is useful to auditors, thereby reducing the ambiguity surrounding the GCO decision. On the other hand, credit ratings might confirm auditors own assessment and function as a warning signal, thereby increasing auditor conservatism which would most likely increase Type I errors and decrease Type II errors. It is therefore an empirical question whether and how audit reporting errors are associated with credit ratings and credit rating changes.

The main findings of this paper are consistent with the conservatism argument: The probability of Type I reporting errors is higher for firms that have been downgraded and that had more severe and more recent downgrades, while the probability of Type II errors is lower for firms with speculative grade ratings and those with more severe rating downgrades. Controlling for litigation risk, the results become more pronounced, i.e. Type I error rates increase while Type II error rates decrease. Furthermore, auditors without expertise in the specific industry of the client being audited are less conservative, seem to pay more attention to publicly available credit ratings, and issue more GCOs in the presence of rating changes as compared to other auditors. The associations between credit ratings and audit reporting errors do not vary as a function of auditor specialists. Based on these results, it is questionable whether specialists are indeed better or whether they are just more concerned about their reputation and therefore more conservative. Bruynseels et al. (2011) examine the association between audit reporting error rates and auditor specialization with respect to interpretation of management's mitigating initiatives and also find results consistent with the notion that auditors are conservative in their decision to issue GCOs due to reputation concerns and potential litigation exposure.

The results of this paper are subject to a number of limitations. First, while I am able to show an association between reporting errors and credit rating information, I face an endogeneity concern as I am unable to disentangle whether auditors derive (part of) their information from credit ratings or whether both GCOs and credit ratings are driven by the same underlying information and just released at different points in time. Second, the sample is limited by the necessary overlap of audit information and credit ratings in the financially distressed sample. Third, given regulatory changes as a result of the recent financial crisis, the sample period is not necessarily generalizable to current or future settings. Finally, the analyses focus on credit ratings by Standard & Poor's and there might be variations with respect to other rating agencies.

In conclusion, this study shows that there is a strong association between auditor reporting error rates and credit ratings. The significant associations support the theory that auditors perceive credit ratings as warning signals and therefore become more conservative. This finding is interesting for the profession since it seems that relying on external sources potentially increases audit reporting errors which are quite costly for auditors. Moreover, market participants may find this outcome interesting as they might become more careful with respect to interpreting public warning signals. The results are potentially also interesting for CRAs and their assessment of credit quality of financially distressed firms.

Appendix 4

Variable Definitions

Variable	Description
<u>Dependent Variable</u>	
ERROR	An indicator variable equal to 1 if the issued audit opinion at the signature date turned out to be incorrect <i>ex post</i> (otherwise 0);
<u>Variables of Interest</u>	
D_JUNK	An indicator variable equal to 1 if the company has a credit rating below investment grade outstanding (0 otherwise);
BB, B, etc.	Indicator variables for the individual credit rating levels;
CRL	An ordinal variable ranging from 1 to 10, representing the credit rating level outstanding at the audit report signature date;
D_CRA	An indicator variable equal to 1 if a credit rating change occurred during the fiscal year (0 otherwise);
D_DWN	An indicator variable equal to 1 if a credit rating downgrade occurred between the beginning of the fiscal year and the signature date (0 otherwise);
DWN	An ordinal variable representing the number of notches that a company has been downgraded between the beginning of the fiscal year and the auditor's signature date;
D_1NOTCH	An indicator variable equal to 1 if a company has been downgraded by one notch between the beginning of the fiscal year and the auditor's signature date (0 otherwise);
D_2NOTCH	An indicator variable equal to 1 if a company has been downgraded by two notches between the beginning of the fiscal year and the auditor's signature date (0 otherwise);
D_3NOTCH	An indicator variable equal to 1 if a company has been downgraded by three or more notches between the beginning of the fiscal year and the auditor's signature date (0 otherwise);
NRQ	An ordinal variable ranging from 1 to 4, indicating in how many different quarters over the fiscal year preceding the signature date the company has been downgraded;

(continued)

Appendix 4 – continued

Variable	Description
D_FQ1	An indicator variable equal to 1 if a firm has been downgraded in the first quarter of the fiscal year being audited (0 otherwise);
D_FQ2	An indicator variable equal to 1 if a firm has been downgraded in the second quarter of the fiscal year being audited (0 otherwise);
D_FQ3	An indicator variable equal to 1 if a firm has been downgraded in the third quarter of the fiscal year being audited (0 otherwise);
D_FQ4	An indicator variable equal to 1 if a firm has been downgraded in the last quarter of the fiscal year being audited (0 otherwise);
NO_EXP	An indicator variable equal to 1 if a company is audited by an auditor without industry expertise (0 otherwise);

Control Variables

lnAT	The natural logarithm of the firm's total assets at fiscal year-end measured in millions of dollars;
LEVG	The ratio of total debt to total assets, both measured at fiscal year-end in millions of dollars;
ROA	The return on assets, i.e. the ratio of net income over total assets, both measured at fiscal year-end in millions of dollars;
CURRENT	The current ratio, i.e. the ratio of total current assets over total current liabilities, both measured at fiscal year-end in millions of dollars;
PLOSS	An indicator variable equal to 1 if the company reports a bottom-line loss in the previous year (0 otherwise);
lnRET	The natural logarithm of the firm's annual stock return;
VARRES	The variance of the residual of the market model over the fiscal year;
LAG	Reporting lag, defined as the number of days between fiscal year-end and the auditor's signature date;
BIGN	An indicator variable equal to 1 if the audit is performed by one of the Big 4 (Big 5) auditors (0 otherwise);

(continued)

Appendix 4 – continued

Variable	Description
EXCH	An indicator variable equal to 1 if listed on the NASDAQ, New York or American Stock Exchange (0 otherwise);
BRLAG	Bankruptcy reporting lag, defined as the number of days between the audit report date and the bankruptcy date;
SPEC	An indicator variable equal to 1 if the auditor is considered to be an industry specialist (0 otherwise);
CR	An ordinal variable ranging from 1 to 22, representing the credit rating outstanding in notches at the audit report signature date;
D_UP	An indicator variable equal to 1 if a firm received a credit rating upgrade during the fiscal year being audited (0 otherwise);
UP	An ordinal variable representing the number of notches that a company has been upgraded between the beginning of the fiscal year and the auditor's signature date.

Chapter 5

The Informative Value of the Auditor's Going-Concern Opinion Incremental to Signals from Other Information Intermediaries

Abstract

This chapter examines the stock market reaction to the auditor's going concern opinion (GCO) conditional on information previously provided by other professional market intermediaries. Existing literature argues that markets only value GCOs when they are unexpected and I thus consider whether preceding signals regarding firms' future viability by credit rating agencies and equity analysts alter the market's reaction to GCOs. The evidence reveals that investors continue to react, though less strongly, to GCOs which have been preceded by credit rating downgrades or downward revisions of analysts' cash flow forecasts. Only when these signals predict that there is little to no ambiguity that a GCO is expected, market reactions to GCOs are statistically not different from zero. Likewise, changes in analyst investment recommendations only seem to function as a warning signal of an approaching GCO in cases of very severe downward revisions. Given that these severe revisions are very rare, I conclude that markets overall value GCOs above and beyond information provided by other information intermediaries.

Keywords: auditor's going-concern opinion; market reactions; credit rating downgrades; analyst forecast revisions.

5.1 Introduction

This paper addresses the issue whether markets react to going-concern opinions that have been preceded by signals from other information intermediaries regarding a firm's financial viability. Auditors are required to assess a firm's likelihood to continue as a going concern in the foreseeable future (AICPA 1988). They communicate their assessment in the form of a going-concern opinion (GCO), which is a pass/fail judgment whether the company is likely to survive the next year. In the past, the question has been raised whether these GCOs are relevant to investors and if auditors should issue GCOs at all (Bellovary, Giacomino, and Akers 2006). Prior literature has argued that the value of a GCO is determined by whether it provides incremental information to investors beyond other disclosures (Bell and Wright 1995). Evidence in this regard is mixed. Some studies fail to find market reactions to the GCO (Chow and Rice 1982; Dodd et al. 1984), some studies find negative excess returns in response to issuances of GCOs (e.g., Menon and Williams 2010) and some studies show that there is a market reaction to GCOs when they are unexpected (e.g., Loudder et al. 1992; Fleak and Wilson 1994; Jones 1996). The latter studies determine if a GCO is unexpected using prediction models based on the firm's own financial information (e.g., Blay and Geiger 2001). However, there is little evidence concerning the value of GCOs conditional on information coming from other professional information intermediaries.

Third party, non-audit specialists may provide indications about a firm's financial situation that might affect the relevance of GCOs to investors. Among these information intermediaries are credit rating agencies and equity analysts. Both of these information intermediaries gather, analyze and disseminate information that is useful to investors. Credit rating agencies focus on the evaluation of a firm's prospective default probability. Low credit ratings and credit rating downgrades thus function as warning signals of potential financial difficulties. Equity analysts commonly summarize their assessments of a firm's future prospects via investment recommendations, earnings forecasts and target price forecasts, including cash flow forecasts (Givoly, Hayn, and Lehavy 2009).⁷⁷ Issuance of negative investment recommendations and downward revisions of forecasts are also signals that a firm's performance is deteriorating.

While GCOs are rather static in nature and occur only once a year, shortly after fiscal year end, changes in credit ratings or analyst investment recommendations are more timely because they can occur any time during the year. Given that credit rating changes and analyst recommendations are publicly available signals of a company's

⁷⁷ Not all equity analysts provide all these three services and some equity analysts provide other services besides the ones mentioned here. However, these are some of the most commonly provided services and the ones I will focus on in this study. I therefore do not elaborate on the other services provided by equity analysts.

financial health, I examine whether the auditor's GCO has incremental value to the information conveyed via changes in credit ratings and analyst recommendations.

Analyzing a sample of U.S. firms between 1999 and 2012 with credit ratings by Standard & Poor's and analyst investment recommendations, I analyze whether there is a difference in the market reaction to GCOs that have been preceded by downgrades in credit ratings or analyst recommendations. Since the value investors derive from the GCO conditional on other preceding signals likely also depends on the characteristics of the signals, I also consider the effect of downgrade severity and timing.

With respect to credit rating downgrades, I find that the negative market reaction to GCOs is mitigated if it has been preceded by credit rating downgrades. This mitigating effect is more pronounced for stronger and more recent downgrades. In fact, if GCOs have been preceded by credit rating downgrades of five or more notches, the market reaction to these GCOs is no longer statistically different from zero. I fail to observe any mitigating effect to the market reaction of GCOs that have been preceded by downgrades in analyst recommendations. Analyzing the effect of timing and the severity of the downgrades in mean recommendations does not change these results. In an additional analysis I consider extreme signals of deteriorating performance, i.e. changes from a 'buy' or 'hold' to a 'sell' recommendation and no longer find a negative market reaction to GCOs following these changes. Moreover, I consider analyst coverage cessation as an alternative signal of approaching financial difficulties. I do not find a mitigating effect regarding the market reaction to GCOs with preceding analyst cessation in the overall sample. In a sample of financially distressed firms only, there is some evidence that investors do not react to GCOs when analysts have previously stopped covering that firm.

Since I find evidence regarding a mitigating effect of downgrades in credit ratings but not in analyst recommendations, I consider that this might be due to the fact that credit ratings are a more direct measure of solvency and liquidity than analysts' investment recommendations. Downward revisions of analysts' cash flow forecasts might thus be another signal that could affect markets' reactions to GCOs. Indeed I find some evidence that downward revisions in cash flow forecasts result in less pronounced market reactions to GCOs. Moreover, I find weak evidence that there is no market reaction to GCOs which have been preceded by extreme revisions of cash flow forecasts.

Overall, these findings contribute to the literature in several ways. First, I contribute to existing literature on going-concern opinions by examining the usefulness of GCOs and confirm prior literature that finds a negative market reaction to GCOs (e.g., Menon and Williams 2010). Moreover, I extend this literature as I show that this negative market reaction holds for firms with richer information environments.

Secondly, I analyze whether signals from information intermediaries affect market reactions to GCOs. Given that information intermediaries issue signals regarding firms' expected future performance, it can reasonably be expected that they influence the usefulness of GCOs. This has previously not been examined and I show that the auditor's GCO may provide incremental value to market participants above and beyond the information communicated via other information intermediaries. This is not only relevant for practitioners but also for regulators. Moreover, the findings imply that only signals which directly provide information regarding firms' ability to generate cash in the future, i.e. credit ratings and cash flow forecasts, have a mitigating effect on the market reaction to GCOs. This contributes to the literature of the informativeness of cash flow forecasts and credit ratings. Potentially, the issuance of a GCO prior to changes in credit ratings and analyst recommendations might also affect the market reaction to credit ratings and analyst recommendations. While credit rating agencies and equity analysts might want to be aware of the implications of their signals regarding financially distressed firms, this might be particularly interesting for regulators because it indicates how regulatory changes regarding one information intermediary also indirectly affect the importance of the signals of other information intermediaries.

The remainder of this chapter proceeds as follows. Section 5.2 provides the relevant background and develops the hypotheses before the research design is explained in section 5.3. The results are presented in section 5.4 and section 5.5 concludes.

5.2 Background & Hypotheses Development

5.2.1 The Value of the Auditor's GCO Report

Auditors provide investors with independent assurance that the financial statements presented conform with all regulatory requirements (Healy and Palepu 2001). Part of the auditor's attestation is to evaluate the going-concern assumption that the audited company will continue to operate in the foreseeable future, usually the next twelve months preceding fiscal year end (AICPA 1988). If this assumption is violated, auditors are required to issue a going-concern opinion (GCO). The audit opinion reflects private information of the firm's financial status by independent professional specialists and is therefore valuable to investors.

While early studies examining investors' reactions to GCOs do not find any market reactions by stockholders (e.g., Chow and Rice 1982; Dodd et al. 1984), more recent studies show that GCOs are associated with negative market reactions (e.g., Menon and Williams 2010). Some studies argue that these negative stock market reactions do not occur in relation to anticipated GCOs but only as a result of the issuance of unexpected GCOs (e.g., Loudder et al. 1992; Fleak and Wilson 1994; Jones 1996). Other studies also found large negative abnormal returns in the weeks preceding

the issuance of GCOs (e.g., Chow and Rice 1982) and a downward drift in the year following the GCO (Kausar, Taffler, and Tan 2009).

A possible explanation for the mixed and limited results regarding stock market reactions to GCOs is that the presumably private information communicated via GCOs has already been communicated to investors through other channels (e.g., Blay and Geiger 2001). This information can be communicated by the firms themselves, for example in forms of early GCO disclosures, or by other information intermediaries.⁷⁸ If the information disclosed in the GCO report has already been communicated to market participants, it is uncertain to what degree GCOs provide additional value to market participants.

5.2.2 Information Intermediaries

There are two important information intermediaries who provide information regarding firms' financial performance that is relevant for equity investors: credit rating agencies and equity analysts. Existing literature documents that these intermediaries are important for dispersing information throughout capital markets (Lang and Lundholm 1996). Analysts' ability to incorporate value relevant information in their recommendations allows them to affect security prices which shows that investors value their assessment (e.g., Lys and Sohn 1990; Schipper 1991; Francis and Soffer 1997). Likewise, credit rating agencies provide relevant information to markets, which plays a significant role in investment decisions (e.g., Hunt 2002). Additionally, credit rating agencies as well as equity analysts function as an effective governance mechanism. Their monitoring limits opportunistic behavior by management, reduces the information asymmetry between a firm's management and its external stakeholders, and promotes effective decision making by management (e.g., Chung and Jo 1996; Doukas, Kim, and Pantzalis 2005; Boot et al. 2006). Yet, the objectives of credit rating agencies and equity analysts differ, as does the nature of the information they provide to the market. As a result, I separately consider the effect of each of these signals on the market reaction to GCOs.

Credit Rating Agencies

Credit rating agencies (CRAs) are information intermediaries that communicate a firm's financial status to investors. They focus on the firm's creditworthiness by assessing its ability and willingness to meet its financial obligations according to the terms of those obligations (Standard & Poor's 2003). This assessment results from an in-depth analysis by specialized staff with extensive experience and expertise. CRAs employ a mix of highly sophisticated, proprietary models and qualitative judgment of financial and non-

⁷⁸ Citron, Taffler and Uang (2008) explain early going-concern disclosures as disclosures by the companies themselves once the preliminary results of the audit engagement indicate that the company will receive a GCO. These disclosures precede the annual report release date which is commonly the date at which the GCO is publicly available.

financial, quantitative and qualitative data. Besides publicly available information about the rated firm and its industry, most CRAs include proprietary firm information in their analyses. The CRA's overall conclusion regarding the firm's creditworthiness is then summarized in the credit rating, i.e. a condensed score ranging from AAA to D (Standard & Poor's 2013c).⁷⁹ Once issued, credit ratings are monitored and reevaluated by the credit rating agency on an intermittent basis (Standard & Poor's 2013c). Any time CRAs become aware of events that likely impact the long-term creditworthiness of the rated entity, they are likely to adapt the credit rating (Standard & Poor's 2013c).

The information conveyed via credit rating changes is highly valued by equity market participants. Ederington and Yawitz (1987) report that bond ratings provide additional information to the equity market above and beyond a set of accounting variables. Several other studies provide evidence of negative abnormal stock returns in response to bond rating downgrades, suggesting that the private information contained in credit ratings is useful to equity investors (e.g., Holthausen and Leftwich 1986; Hsueh and Liu 1992; Hull et al. 2004; Norden and Weber 2004). Furthermore, firms receiving upgrades outperform firms receiving downgrades in the year following the rating change and current rating changes predict changes in future firm profitability (Dichev and Piotroski 2001).

Prior literature combining credit ratings and going-concern opinions is limited. There have been a few papers since the recent financial crisis that address the relation between GCOs and credit ratings from a business perspective. Lammers (2013), for example, argues that credit rating agencies and auditors are both gatekeepers providing important information to security markets and his direct comparison of those two measures implies that they potentially function as substitutes. Moreover, a potential convergence of audit and credit rating practices has been discussed in recent years (e.g., Hu 2011). Yet, these papers are normative in nature and do not empirically analyze associations between those two signals of financial performance. Feldmann and Read (2013) are amongst the first to empirically link credit ratings and GCOs. They examine whether credit ratings inform the auditor's GCO for companies facing imminent bankruptcy and find that the probability of auditors issuing GCOs to soon to be bankrupt companies increases with decreasing credit ratings. In chapter 3 of this dissertation, I also examine the association between GCOs and credit ratings and show that there is a strong association between worse credit ratings and the probability of firms to receive a GCO. I find and report that the probability to receive a GCO is significantly higher for firms experiencing more severe and more recent credit rating downgrades. Moreover, credit ratings seem to function as a warning signal to auditors, as the results coincide with more conservative reporting behavior by auditors rather than

⁷⁹ Please see Figure 2.3 for a complete rating scale and its interpretations.

reduced audit reporting misclassifications, as shown in Chapter 4. While these studies consider the associations between GCOs and credit ratings, they do not consider how this association impacts investor reactions.

There are several theoretical arguments why investors might react differently to GCOs that have been preceded by credit rating downgrades compared to GCOs that have not been preceded by such a signal. First, while audit reports are issued annually, after fiscal year end, credit rating changes can occur any time during the year. A GCO following a recent credit rating downgrade might hence convey less information to investors, because part of the information contained in the GCO might have already been communicated to investors via the credit rating downgrade. Moreover, credit rating agencies consider credit rating changes carefully since reversals of credit ratings are often associated with high reputational losses (Löffler 2005). Credit rating downgrades can thus be considered credible signals to markets as they are only issued when credit rating agencies are fairly certain that they do not need to reverse them later. This is another argument why markets might react less to GCOs that are preceded by credit rating downgrades. Furthermore, credit rating agencies also have access to proprietary firm information.^{80 81} One can therefore expect that there is a mitigated market reaction to GCOs that have been preceded by credit rating downgrades because part of the private information that is indirectly communicated to markets via the GCO is already conveyed by the change in credit rating.

Yet, there are also some reasons why investors might value auditors' GCOs irrespective of prior credit rating downgrades. One reason is that investors might have trouble interpreting credit rating downgrades because they are measured on an ordinal scale. While a lower grade credit rating implies that the probability of default is larger compared to a company rated with a higher grade credit rating, Standard & Poor's does not attach numeric likelihood probabilities to the individual ratings. Consequently, it might not be clear what each individual credit rating implies for the future viability of the firm, unless a credit rating is extremely low. The GCO is straightforward as it

⁸⁰ While companies are not obliged to provide this information to credit rating agencies, not disclosing the requested information to credit rating agencies might result in lower credit ratings. Companies thus have incentives to provide credit rating agencies with proprietary information.

⁸¹ Credit rating agencies used to be exempt from Regulation Fair Disclosure during most part of the sample period (until October 3rd, 2010) but lost their exemption status as a result of the recent financial crisis (www.sec.gov). Although they lost the official exemption status, it is likely that credit rating agencies still obtain proprietary firm information due to several reasons: First, Reg FD refers to information that is material information for trading purposes and it is not clear to what degree the information provided to credit rating agencies falls into this category. Secondly, credit rating agencies might not fall into the category of covered persons. Prior to 2006, credit rating agencies were considered investment advisers under the Investment Advisors Act of 1940. Yet, all credit rating agencies have shed their investment advisor status since the adoption of the Credit Rating Agency Reform Act in 2006 (Kanter, Fernicola, and Goldstein 2010). Lastly, Reg FD explicitly does not apply to any parties who agree to keep all information confidential (www.sec.gov) and credit rating agencies might just sign confidentiality agreements and still be able to obtain proprietary information.

implies that the company may not survive the next fiscal year and is therefore likely to have value to investors irrespective of preceding credit rating downgrades. Additionally, investors are aware that credit rating agencies are allowed to use proprietary firm information, but since credit rating agencies use proprietary models, it might be ambiguous whether any private information is incorporated in the credit rating and if so, what kind of private information that is. Moreover, credit rating agencies are not legally liable for the credit ratings they provide as they are protected by the First Amendment right to free speech (Frost 2007). On the contrary, auditors can be held liable for the GCOs they issue, which may make a GCO a more credible signal than a credit rating downgrade.

Combining these arguments, it is not clear whether and how markets will react to GCOs conditional on preceding credit rating downgrades, which is why I posit the following non-directional hypothesis:

H1: The market reaction to going-concern opinions will be conditional on preceding credit rating downgrades.

The previous discussion focuses on the differences between the auditor's GCO and credit ratings. However, there are also differences regarding the informativeness of credit ratings, which arguably may affect the market reaction to a subsequent GCO. Specifically, I test for the severity of credit rating downgrades and expect the market reaction to GCOs to attenuate with increasing downgrade severity. Likewise, I consider the timing of downgrades. Downgrades occurring closer to the fiscal year end might be perceived as stronger signals by investors and a gradual decline over a longer time horizon might not be as noticeable or as memorable to investors. If there has been a recent signal by credit rating agencies that the firm's financial situation is deteriorating, it is likely that the GCO is less of a surprise to investors.

Equity Analysts

Equity analysts are also information intermediaries that provide investors with information regarding a firm's future value. They initiate and conduct research regarding specific firms and industries in order to provide markets with investment advice. They specialize in developing firm- and industry-specific knowledge, enabling them to assess the quality of firms' reported numbers in order to detect patterns and trends indicating firms' future prospects and ultimately help to value firms.⁸² The results of their analyses are then summarized in their investment recommendations, which are usually classified into several categories, including 'buy', 'hold' or 'sell' (Ramnath,

⁸² Prior to 2000, equity analysts were allowed to obtain proprietary firm information from the firms they covered. However, since the introduction of Regulation Fair Disclosure, which is aimed at prohibiting selective disclosure of material non-public information, equity analysts are no longer allowed to obtain such proprietary information (www.sec.gov).

Rock, and Shane 2008).⁸³ Recommendations are not issued at specific times during the year, but throughout the year with different analysts issuing and updating their recommendations at different points in time.⁸⁴

Analyst recommendations are valuable to investors because they are often not able or willing to produce their own valuations and predictions due to lack of resources, skills or time (DeBondt and Thaler 1990; Beaver 2002). The value of investment recommendations is also reflected in market reactions which are favorable (unfavorable) for recommendation upgrades (downgrades) (e.g., Elton, Gruber, and Grossman 1986; Stickel 1995; Womack 1996; Mokoaleli-Mokoteli, Taffler, and Argrawal 2009). Studies examining the difference in market reactions to buy and sell recommendations show that the effect of 'buy' recommendations is stronger and incorporated by markets immediately, while markets underreact to sell recommendations (Mokoaleli-Mokoteli et al. 2009; Barber et al. 2010).⁸⁵

Prior literature examining the relationship between GCOs and analyst recommendations is scarce. Peixinho and Taffler (2011) explore whether analysts recognize firm's going-concern problems prior to the issuance of the GCO and report adequately to investors. They report that analysts are reluctant to provide investors with negative news but find that analysts downgrade their investment recommendations more aggressively prior to GCOs and are more likely to cease coverage of firms with GCOs (Peixinho and Taffler 2011). Focusing on a sample of GCO firms between 1995 and 2005, Peixinho (2009) shows that firms with conforming analyst recommendations are more likely to have negative market reactions to GCOs compared to firms with nonconforming recommendations.⁸⁶ Yet, neither of these studies analyzes the incremental information the GCO has beyond the performance information communicated by analysts.

There are several arguments why analyst recommendations that precede a GCO might influence the incremental value of GCOs to investors. First, while GCOs are

⁸³ Analysts provide other types of reports and forecasts, such as earnings per share forecasts, and more recently they have extended their forecasts to a limited basis of estimates concerning amongst others, revenues, cash flows, flow of funds, EBITDA and long-term growth.

⁸⁴ Different studies report different statistics on analyst coverage. There is a general consensus that sell-side analyst coverage of U.S. traded firms significantly increased over the years and Hong, Lim and Stein (2000) for example document that analyst coverage was above 60% in 1996 already and has been rising since. Moreover, the analyst market is fairly competitive as there are over 350 sell-side investment firms in the U.S. that employ over 3000 analysts (e.g., Jegadeesh and Kim 2004; Doukas et al. 2005). I/B/E/S alone includes analyst forecasts from over 2700 brokerage firms regarding more than 24,000 different firms. However, these include all different kinds of forecasts and not just analysts' investment recommendations.

⁸⁵ This asymmetric reaction to good and bad news has not only been found with respect to analyst recommendations but also for other market signals like going-concern opinions (e.g., Kausar et al. 2009).

⁸⁶ Peixinho (2009) defines conforming analyst recommendations as the ones where the average recommendation is 'underperform' or 'sell' and 'nonconforming' when the analysts' recommendations fall into the categories 'strong buy', 'buy' or 'hold'. He does not find a significant effect for nonconforming firms.

issued only once a year, shortly after fiscal year end, analyst recommendations are issued and can be updated any time during the year. Downgrades in recommendations preceding GCOs might enable investors to retrieve relevant information regarding firms' performance from analyst recommendations. If this is the case, one would expect a muted or negligible market reaction to GCOs. Another factor that might cause a reduction in the market reaction to GCOs is related to the fact that firms are often covered by multiple independent equity analysts, potentially increasing the diversity and strength of negative signals to the market. When multiple independent professional parties arrive at the same conclusion about the firm, it is more likely to be a credible signal. Third, analysts do not have incentives to provide firms with negative recommendations so it is meaningful when they do (e.g., Mokoaleli-Mokoteli et al. 2009). They are also significantly more likely to give 'buy' rather than 'sell' recommendations (Womack 1996; Ho and Harris 1998; Barber et al. 2006) and studies show that analysts have the tendency to self-select firms they view favorably and cease coverage of firms they perceive to be underperforming (McNichols and O'Brien 1997). If analysts nevertheless decide to issue sell recommendations, this can be perceived as an informative signal by investors. GCOs following these signals might have little additional information for investors.

While the arguments presented so far support the expectation that GCOs have little to no incremental value above negative analyst recommendations to markets, there are other arguments in line with the notion that a GCO still has high incremental value to investors. A major difference between auditors and equity analysts is their information access. Equity analysts do not have access to proprietary firm information. Their recommendations are based on publicly available information combined with experience and expertise in the industry that helps them to interpret existing information. In contrast, auditors have in-depth knowledge of proprietary firm information, including notes of meetings and internal management forecasts. Furthermore, the GCO is a very strong signal because it conveys that the auditor believes that the company may not be able to survive the following fiscal year. Analyst recommendations have a different focus. They regard firms' value of equity, which is very much different from simply providing an indication of the likelihood of survival. When analysts' recommendations are in the categories 'underperform' or 'sell', this often means that the company is overvalued or that it is not a good investment decision at the time, it does not necessarily mean that the company will not recover at all. Additionally, markets tend to underreact to sell recommendations and a confirmation of the critical situation of the firm in form of a GCO will hence likely trigger an incremental market reaction to the GCO. One can therefore expect a negative market reaction to GCOs, even if they have been preceded by a downgrade in analyst recommendations. Another critical difference between analyst recommendations and the auditor's going-concern assessment is legal liability. While equity analysts can be sued for providing knowingly false recommendations, they are generally not legally liable for

the investment advice they provide. Auditors on the other hand are legally liable and one can thus consider GCOs as a more credible signal. Hence, it is reasonable to expect an incremental market reaction to GCOs even when following prior downgrades in investment recommendations.

Considering these arguments simultaneously, it is not clear how markets will react to GCOs conditional on preceding downgrades in analyst recommendations. I therefore posit the following empirical hypothesis:

H2: The market reaction to going-concern opinions is conditional on preceding downgrades of equity analysts' investment recommendations.

As in the case of credit rating downgrades, I expect that the severity and timing of downgrades in analyst recommendations might be relevant factors in determining whether and how strongly markets react to GCOs preceded by downgrades in analyst recommendations. I expect that GCOs are less of a surprise to markets if they are preceded by more recent and more severe downgrades in recommendations, hence resulting in a mitigated effect of the market reaction to GCOs.

5.3 Research Design

5.3.1 Sample

The sample used in this study consists of all U.S. publicly listed companies that are included in Compustat for which audit opinions are available in Audit Analytics. The initial sample thus consists of 104,607 firm-year observations between 1999 and 2012. Table 5.1 outlines the complete sample selection procedure. I focus on first-time GCOs, since the market reaction to repeat GCOs is likely to be structurally different.⁸⁷ Next, I exclude observations for which I lack necessary financial information in Compustat and Audit Analytics. Merging this dataset to CRSP to obtain relevant return information results in a sample of 50,838 firm-year observations. Limiting the sample to firms with available analyst recommendations in Thomson's Institutional Brokers' Estimate System (I/B/E/S), reduces the sample to 36,388 firm-year observations. The sample is further restricted to firms with S&P long-term issuer credit ratings available in Compustat which yields a final sample of 12,674 firm-year observations with 105 first-time GCOs.

⁸⁷ This approach is consistent with other studies in the auditing literature, such as Jones (1996); Herbohn, Rangunathan, and Garsden (2007); Blay and Geiger (2001); and Kaplan, Mowchan and Weisbrod (2014), and is commonly used since the GCO is the first notification from auditors to investors that the assessed firm might not be able to continue as going concern in the future. Investors are likely to have different expectations with respect to repeat GCOs, which is why they are excluded from the analyses.

TABLE 5.1
Sample Selection

Sample Selection	
Initial sample	104,607
Less non-first time GCOs	-7,542
Less observations without required financial data	-30,711
Less all observations without return data	-15,516
Basic sample for analyses	50,838
Less observations not covered by analysts	-9,784
Sample with analyst coverage	41,054
Less observations with credit rating information	-28,195
Final sample with credit rating and analyst information	12,859

This table outlines the sample selection procedure which is based on all firms in Compustat with available audit opinions in Audit Analytics between 1999 and 2012. Required financial data refers to necessary control variables from the Compustat dataset and required return data refers to control variable from CRSP. Analyst coverage is obtained from I/B/E/S and the credit ratings used are the ones from Standard & Poor's, available in Compustat.

5.3.2 Empirical Model

In order to assess the hypotheses regarding the market reaction of investors to a GCO conditional on credit rating changes or changes in analyst recommendations, I follow prior literature that examines market reactions to GCOs (Menon and Williams 2010; Kaplan et al. 2014) and use the following OLS model:⁸⁸

$$\begin{aligned}
 CSAR = \alpha + \beta_1 \ln MVE + \beta_2 EBIT + \beta_3 \Delta INCOME + \beta_4 CFOPS + \beta_5 ZMIJ + \beta_6 EXITV \\
 + \beta_7 RET + \beta_8 STDRET + \beta_9 LATEFILER + \beta_{10} BIGN + \beta_{11} GCO + \\
 \beta_{12} SIGNAL + \beta_{13} GCO \times SIGNAL + YEAR + INDUSTRY + \varepsilon \quad (1)
 \end{aligned}$$

The event date of interest is the disclosure date of the GCO, which coincides with the filing date of the annual report. The dependent variable *CSAR* is the three-day [-1;+1] cumulative size-adjusted abnormal return surrounding the event date.⁸⁹ The variables of interest are *GCO*, *SIGNAL* and the interaction of these two. *GCO* is a dichotomous

⁸⁸ All standard errors are clustered by firm and month-year combination to control for heteroskedasticity and potential correlation within clusters (Petersen 2009; Gow et al. 2010).

⁸⁹ I follow prior literature that analyses market reaction to GCOs (e.g., Menon and Williams 2010) and compute cumulative returns as the sum of daily excess returns over the return of the corresponding size-decile portfolio return on that day from CRSP because prior literature has shown a significant relationship between firm size and market returns (e.g., Banz 1981). All analyses are also conducted based on cumulative abnormal return over the market portfolio. The results are robust.

variable identifying those firms to whom auditors issued a GCO. I expect *GCO* to have a negative coefficient. *SIGNAL* represents the proxies for credit rating changes and changes in mean analyst recommendations and I do not have expectations for the main effect of *SIGNAL*.

Multiple proxies are used to examine the effect of credit rating changes. First, I include a dichotomous variable to control for the fact that a credit rating has been downgraded in the three or twelve months prior to the auditor's signature date (*D_CR_DWN_M3* and *D_CR_DWN_M12*). Next, I control for the severity of the downgrade by including ordinal variables that are increasing with the number of notches that a credit rating has been downgraded (*CR_DWN_M3* and *CR_DWN_M12*).⁹⁰ The effect of downgrade timing is analyzed by including an ordinal variable, *CR_DWN_TIME*, that measures how many months ago the most recent downgrade occurred. Observations with more recent credit rating downgrades are coded with higher values. If markets react less strongly to GCOs conditional on previous credit rating changes, this leads to a positive coefficient for the interaction of GCOs with these variables of interest.⁹¹

Analyst recommendations are obtained from I/B/E/S and are classified into (1) 'Strong Buy', (2) 'Buy', (3) 'Hold', (4) 'Underperform' and (5) 'Sell', with lower numeric values representing higher recommendations.⁹² As in the credit rating analyses, I first include a dichotomous variable indicating whether the mean recommendation has become worse over the three or twelve months preceding the signature date, i.e. *D_REC_DWN_M3* and *D_REC_DWN_M12*. Next, I include continuous variables capturing the degree by how much the mean recommendation is lower at the signature date compared to three (twelve) months ago, (*REC_DWN_M3* (*REC_DWN_M12*)), with higher values indicating more severe downgrades. I also include a measure of the time that has passed since the mean analyst recommendation has last been downgraded to consider whether the timing of changes in analyst recommendations matters. I therefore include a variable *REC_DWN_TIME* that is an inverse number of the months since the last analyst downgrade. If markets anticipate GCOs based on the information conveyed in changes of analyst recommendations, this results in positive coefficients for the interaction of GCO with these variables of interest.

The remaining control variables capture aspects of the firm's financial performance that might also drive the market reaction in the event window. I include

⁹⁰ Figure 2.3 includes the complete rating scale of Standard & Poor's credit ratings with their complete definitions and explanations. The variables of interest are defined in such a way that higher values are associated with deteriorating firm performance.

⁹¹ I rescale all variables of interest so that a positive interaction coefficient between GCO and the proxy of the signal can be interpreted as mitigating market reaction to GCOs that have been preceded by such signals.

⁹² I obtain the mean analyst recommendation from the I/B/E/S Summary Recommendations file, which is the average recommendation of all analysts who issued a recommendation for that particular firm.

these controls to make sure that I indeed pick up the effect of the market reaction to GCOs and not to other information that is disclosed simultaneously. The size of the firm is controlled for by including *lnMVE*, the natural logarithm of the market value of equity, measured at the fiscal year end for which the audit report is issued. Firm size is included to control for the information environment of the firm and the ability of companies to recoup their losses. *EBIT* is the industry adjusted earnings before interest and taxes scaled by total assets and *ΔINCOME* measures the change in net income over the fiscal year, scaled by total assets. *CFOPS* is the cash flow from operations scaled by total assets and *ZMIJ* is Zmijewski's (1984) bankruptcy score.⁹³ *EBIT*, *ΔINCOME*, *CFOPS* and *ZMIJ* are included to control for firms' financial performance. Moreover, I follow Kaplan, Mowchan and Weisbrod (2014) and include annual returns (*RET*) and the standard deviation of daily returns (*STDRET*) over the year being audited to control for risk. Additionally, I include the indicator variables *BIGN* and *LATEFILER*. *BIGN* indicates whether the company has been audited by one of the Big4(5) and *LATEFILER* is an indication variable equal to one if companies are late in filing their 10-K more than five days after the SEC specified filing date. Alford, Jones and Zmijewski (1994) explain that late filers are typically poorer performers and one has to control for late filings because it is potentially an indication to markets that a firm is performing poorly or even that the audit process was prolonged due to possible issues within the firm. This might cause markets to anticipate a GCO.

Besides these general control variables, some of the models include additional controls relating to specific variables of interest in the model. I control for the number of analyst recommendations, *REC_NUM*, that are being provided as it might matter how many analysts arrive at the current conclusion regarding the investment value of a firm. Moreover, I include *REC_MEAN*, the mean analyst recommendation outstanding at the signature date, as a control because it likely matters to investors what the level of the currently outstanding mean recommendation is.

5.4 Results

5.4.1 Descriptive Statistics

Table 5.2 presents the descriptive statistics of the sample of all firms with all available information partitioned into GCO and non-GCO firms. All continuous variables are winsorized at the 1st and 99th percentile to eliminate the effects of outliers. On average, the sample firms are very large with a mean market value of equity of \$9.7 billion and \$330 million for the non-GCO and GCO sample, respectively. A potential reason is the

⁹³ Zmijewski (1984) defines the bankruptcy score as $-4.803 - 3.599 \text{ ROA} + 5.406 \text{ LEVERAGE} - 0.1 \text{ CURRENT RATIO}$. This is based on a sample of financially distressed firms and is designed to account for oversampling of distressed firms and the fact that financially distressed firms often lack financial information.

TABLE 5.2
Descriptive Statistics by Opinion Type

Variables	GCO=0 (N=12,754)			GCO=1 (N=105)		
	Mean	Median	Std Dev	Mean	Median	Std Dev
<u>Dependent Variables</u>						
CSAR***	0.0001	0.0004	0.0515	-0.0608	-0.0517	0.1499
<u>Control Variables</u>						
MVE***	9698	2393	25805	330	104	795
lnMVE***	7.80	7.78	1.63	4.75	4.66	1.35
EBIT	1.24	0.74	2.48	1.35	0.89	2.82
ΔINCOME***	0.00	0.00	0.11	-0.16	-0.11	0.25
CFOPS***	0.09	0.09	0.07	-0.03	0.00	0.16
ZMIJ***	-3.22	-3.37	1.26	-0.88	-1.16	1.96
EXITV***	0.11	0.02	0.18	0.21	0	0.53
RET***	0.03	0.09	0.51	-1.25	-1.37	0.86
STDRET***	0.03	0.02	0.02	0.07	0.06	0.03
BIGN***	96.93%			97.14%		
LATEFILER***	5.94%			40.00%		
<u>Variables of Interest</u>						
D_CR_DWN_M12***	13.85%			75.51%		
CR_DWN_M12***	0.21	0	0.67	3.16	2.5	3.58
D_CR_DWN_M3***	4.11%			42.72%		
CR_DWN_M3***	0.06	0	0.36	1.47	0	2.60
CR_DWN_TME***	3.12	0	7.22	16.24	21	9.87
D_REC_DWN_M12***	49.92%			68.29%		
REC_DWN_M12***	0.19	0	0.31	0.58	0.48	0.59
D_REC_DWN_M3	43.29%			42.68%		
REC_DWN_M3***	0.09	0	0.17	0.18	0	0.33
REC_DWN_TIME	6.52	8	6.38	6.79	8.5	6.03

This table presents the descriptive statistics of the main variables. The table includes all firms that have available data on Compustat and CRSP from 1999 to 2012 that have available audit opinions in Audit Analytics and have outstanding credit ratings by Standard & Poor's and analyst recommendations. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 5.

high correlation between analyst coverage and issuance of credit ratings and size. The three day size-adjusted cumulative abnormal return surrounding the 10-K filing date is on average zero for non-GCO firms and clearly negative (-0.0608) for firms receiving a GCO.⁹⁴ Overall, the control variables indicate that firms receiving GCOs exhibit signals of financial distress, as is to be expected. *AINCOME*, *CFOPS* and *RET* are on average negative for firms receiving a GCO. Moreover, the returns of GCO firms exhibit a higher standard deviation and 40% of GCO firms file their 10-Ks late, as opposed to only 5.94% of the non-GCO sample. 75.51% (42.72%) of firms with a GCO were downgraded by S&P in the twelve (three) months prior to the auditor's signature date, while only 13.85% (4.11%) of non-GCO companies received a downgrade in the same time period. The mean analyst recommendation was downgraded in the last twelve months for 68.29% of the GCO sample and only 49.92% of the non-GCO sample, but there is not a significant difference in the percentage of firms who received more negative analyst recommendations in the last three months.

The correlations depicted in Table 5.3 are also mostly in line with my expectations. However, I expected better firm performance to be negatively correlated with lower analysts' recommendations and these correlations are fairly low. Overall, the descriptive statistics provide a first indication that credit rating downgrades are indeed positively related to GCOs while the associations for changes in mean analyst recommendations vs. GCOs are less clear.

5.4.2 Regression Results

Credit Rating Downgrades

The results concerning the incremental market reaction to GCOs conditional on credit rating downgrades (H1) can be found in Table 5.4. All columns show a negative and significant coefficient for GCO, implying that firms with GCOs have significantly lower market reactions.⁹⁵ Column (1) addresses the effect of a credit rating downgrade

⁹⁴ In untabulated tests I examine the differences between the GCO firms in the sample and the GCO firms that are eliminated as they are not covered by analysts and credit rating agencies. The firms with GCOs that are eliminated have on average cumulative abnormal size-adjusted returns of -3.62% in the three-day event window surrounding the 10-K filing date, which is statistically different from the sample of firms with GCOs that are covered by credit rating agencies and equity analysts at the 5% level. Prior literature considering a sample comparable to the one used in this study (Kaplan et al. 2014) reports an average three-day size adjusted return in response to GCOs of about -4.7%. Furthermore, these eliminated GCO firms are on average significantly smaller (*lnAT*= of 69.9 million), have lower cash flows from operations (*CFOPS* of -0.3728), a more negative change in net income (*AINCOME* of -0.213) and are less likely to be audited by one of the Big 4 (5) auditors (*BIGN* of 61.21%). All other control variables are not significantly different between the two groups at a 10% level, two-sided.

⁹⁵ In control regressions (not tabulated for brevity) I examine the market reaction to GCOs, once for the overall sample not restricted by analyst and credit rating agency coverage (i.e. the market), and once for the final sample. In the non-restricted sample, I find a negative coefficient of 0.028. This is lower compared to

TABLE 5.3
Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) CSAR		0.006	-0.002	0.044	0.050	-0.020	-0.004	0.053	-0.032	-0.010	-0.015	-0.050	-0.030	-0.009	-0.008	-0.032	-0.027	-0.016	-0.018	-0.023
(2) LnMVE	0.015		0.056	0.082	0.318	-0.442	0.145	0.192	-0.491	-0.094	0.159	-0.131	-0.120	-0.158	-0.154	0.129	0.059	0.001	-0.087	0.085
(3) EBIT	0.001	-0.034		0.023	0.076	-0.041	-0.052	-0.009	0.060	0.008	0.018	0.001	-0.045	-0.051	-0.042	0.008	0.004	0.010	0.007	0.006
(4) ΔINCOME	0.057	0.087	0.006		0.132	-0.168	0.038	0.309	-0.087	-0.030	0.005	-0.093	-0.155	-0.181	-0.166	-0.015	-0.023	-0.105	-0.135	-0.019
(5) CFOPS	0.059	0.303	-0.005	0.101	-0.333	0.199	0.159	-0.210	-0.078	0.061	-0.111	-0.123	-0.194	-0.186	0.056	0.036	0.029	-0.011	0.047	
(6) ZMIJ	-0.037	-0.463	0.113	-0.225	-0.309	-0.624	-0.145	0.251	0.078	-0.077	0.110	0.119	0.197	0.193	-0.040	-0.018	0.015	0.057	-0.034	
(7) EXITV	-0.017	-0.040	-0.047	-0.039	0.004	-0.332	0.026	-0.020	-0.037	0.044	-0.047	-0.030	-0.066	-0.070	-0.070	0.024	0.024	-0.008	-0.015	0.026
(8) RET	0.073	0.269	0.009	0.349	0.202	-0.218	-0.130	-0.241	-0.015	0.022	-0.123	-0.188	-0.175	-0.162	-0.073	-0.089	-0.216	-0.262	-0.065	
(9) STDRET	-0.065	-0.487	0.034	-0.141	-0.263	0.356	0.112	-0.379	0.064	-0.083	0.127	0.127	0.127	0.177	0.185	-0.018	0.018	0.038	0.102	-0.018
(10) LATEFILER	-0.015	-0.097	0.035	-0.024	-0.078	0.091	-0.010	-0.024	0.063	-0.031	0.127	0.127	0.048	0.055	0.062	-0.004	0.007	0.000	0.017	-0.006
(11) BIG	-0.014	0.162	0.011	-0.008	0.046	-0.073	0.020	0.025	-0.075	-0.031	0.001	-0.008	-0.021	-0.011	0.042	0.036	0.011	0.004	0.004	0.022
(12) GCO	-0.103	-0.166	0.004	-0.119	-0.154	0.164	0.050	-0.218	0.225	0.127	0.001	0.169	0.158	0.152	-0.001	0.011	0.031	0.058	0.002	
(13) D_CR_DWN_M3	-0.028	-0.137	-0.025	-0.156	-0.124	0.133	0.077	-0.256	0.174	0.048	-0.008	0.169	0.521	0.543	0.027	0.044	0.069	0.105	0.015	
(14) D_CR_DWN_M12	-0.015	-0.181	-0.017	-0.157	-0.195	0.200	0.048	-0.233	0.244	0.055	-0.021	0.158	0.521	0.926	-0.017	-0.006	0.046	0.081	-0.019	
(15) CR_DWN_TIME	-0.018	-0.177	-0.014	-0.154	-0.182	0.194	0.042	-0.234	0.234	0.063	-0.012	0.161	0.607	0.937	-0.013	-0.001	0.039	0.074	-0.016	
(16) D_REC_DWN_M3	-0.033	0.131	0.009	-0.017	0.043	-0.042	0.008	-0.077	-0.021	-0.004	0.042	-0.001	0.027	-0.017	-0.008	0.949	0.341	0.342	0.628	
(17) REC_DWN_M3	-0.031	-0.078	0.005	-0.036	-0.016	0.031	0.027	-0.115	0.073	0.028	0.013	0.043	0.073	0.023	0.032	0.610	0.365	0.395	0.630	
(18) D_REC_DWN_M12	-0.014	-0.003	0.012	-0.101	0.020	0.018	0.011	-0.227	0.051	0.000	0.011	0.031	0.069	0.046	0.049	0.341	0.297	0.926	0.282	
(19) REC_DWN_M12	-0.007	-0.194	0.003	-0.143	-0.074	0.122	0.036	-0.316	0.192	0.043	-0.002	0.103	0.142	0.120	0.126	0.252	0.423	0.631	0.285	
(20) REC_DWN_TIME	-0.019	0.053	-0.005	-0.017	0.027	-0.028	0.011	-0.068	-0.014	0.006	0.015	0.004	0.022	-0.012	-0.006	0.637	0.455	0.298	0.240	

This table presents the results of the correlations between the control variables and variables of interest. The white area in the lower left part represents the Pearson correlation and the grey-shaded upper right part of the table reflects the Spearman rank correlations. The correlations are based on a sample of firms with available Compustat and CRSP data between 1999 to 2012 that have audit opinions available in Audit Analytics, outstanding credit ratings from Standard & Poor's and are covered by equity analysts. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 5. Bold values indicate correlations that are statistically significant at 5% (two-tailed).

TABLE 5.4
Effects of Preceding Credit Rating Downgrades on Market Reactions to GCOs

Variables	Dependent Variable: CSAR				
	Proxy for the Information Signal:				
	D_CR_DWN_M3	CR_DWN_M3	D_CR_DWN_M12	CR_DWN_M12	CR_DWN_TIME
GCO	-0.0778*** (0.0148)	-0.0574*** (0.0133)	-0.0862*** (0.0153)	-0.0596*** (0.0158)	-0.1050*** (0.0166)
SIGNAL	-0.0025 (0.0048)	-0.0024 (0.0020)	0.0028 (0.0019)	0.0003 (0.0009)	0.0001 (0.0001)
GCO x SIGNAL	0.0748*** (0.0286)	0.0093* (0.0047)	0.0519** (0.0216)	0.0040 ^b (0.0029)	0.0034*** (0.0010)
lnMVE	-0.0012** (0.0005)	-0.0012** (0.0005)	-0.0009* (0.0005)	-0.0009* (0.0005)	-0.0011** (0.0005)
EBIT	0.0271** (0.0106)	0.0266** (0.0105)	0.0233** (0.0113)	0.0213* (0.0111)	0.0272** (0.0109)
ΔINCOME	0.0097 (0.0090)	0.0089 (0.0090)	0.0109 (0.0095)	0.0101 (0.0094)	0.0112 (0.0090)
CFOPS	0.0088 (0.0145)	0.0101 (0.0149)	0.0139 (0.0158)	0.0148 (0.0161)	0.0067 (0.0140)
ZMIJ	-0.0002 (0.0008)	-0.0002 (0.0008)	-0.0005 (0.0009)	-0.0005 (0.0009)	-0.0002 (0.0008)
EXITV	-0.0004 (0.0043)	-0.0004 (0.0042)	-0.0005 (0.0047)	-0.0008 (0.0046)	0.0002 (0.0045)
RET	0.0033 (0.0020)	0.0031 (0.0020)	0.0039* (0.0021)	0.0037* (0.0022)	0.0032 (0.0020)
STDRET	-0.0930 (0.0946)	-0.0898 (0.0934)	-0.0301 (0.0861)	-0.0223 (0.0855)	-0.1106 (0.0918)
LATEFILER	-0.0010 (0.0028)	-0.0008 (0.0029)	-0.0003 (0.0030)	-0.0004 (0.0030)	-0.0012 (0.0027)
BIGN	-0.0047 (0.0038)	-0.0045 (0.0038)	-0.0043 (0.0039)	-0.0043 (0.0039)	-0.0047 (0.0036)
Constant	-0.4291** (0.1789)	-0.4215** (0.1769)	-0.0155* (0.0091)	-0.0153* (0.0093)	-0.4322** (0.1822)
Year Dummies	Included	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included	Included
Observations	12,674	12,674	12,106	12,106	12,859
Adj. R ²	0.023	0.0204	0.0195	0.0183	0.0236

This table presents the results of the regression analyzing whether the market reaction to GCOs is mitigated depending on preceding information signals by credit rating agencies, namely credit rating downgrades. The sample includes all firms with available Compustat and CRSP data from 1999 to 2012 that have audit opinions available in Audit Analytics, have outstanding credit ratings by Standard & Poor's and are covered by analysts in I/B/E/S. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 5. Standard errors are clustered by two-digit SIC code and month-year identifier and are reported in parentheses below the coefficients. ^b, *, **, *** indicate statistical significance at the 20%, 10%, 5% and 1% levels respectively (two-tailed).

prior literature which show negative coefficients between 0.0483 (Menon and Williams 2010) and 0.0552 (Kaplan et al. 2014). The control regression within the sample yields a negative coefficient of 0.0466. This means that the market reaction to firms with going-concern opinions is on average 4.66% lower than the market reaction to annual reports of firms for which auditors do not question the going-concern assumption. The signs (magnitudes) of the remaining control variables of the in-sample control regression are the same as (similar to) the ones reported in Tables 5.4-5.7.

in the previous three months to the market reaction of the GCO and shows that the main effect of a credit rating downgrade is not significant. The interaction term is positive and significant. This means that markets react less strongly to GCOs preceded by credit rating changes in the last three months. Column (2) focuses on downgrade severity in the last three months. Again, there is a negative and significant market reaction to the GCO but the main effect of the downgrade variable is not significant. The positive and significant interaction term implies that a one notch downgrade will on average mitigate the negative market reaction to a GCO by 0.93% (significant at 10%, two-sided). In columns (3) and (4), I repeat the analyses based on downgrades in the last twelve months to see whether investors perceive a gradual decline in credit quality differently. I still find positive interaction effects for the downgrade dummy as well as for downgrade severity in the last twelve months but at lower significance levels.⁹⁶ I therefore conclude that credit rating downgrades in more recent months are perceived as stronger signals by investors. The finding that more recent downgrades are more informative to investors is also confirmed by the positive and significant interaction effect of *GCO* and *CR_DWN_TIME*.

Based on the coefficients in Table 5.4, credit rating downgrades need to be five notches or more in order for GCOs not to have any incremental market reaction above a previous credit rating downgrade.⁹⁷ It thus seems that credit ratings convey part of the information that is communicated via GCOs and investors react less strongly to GCOs if the preceding credit rating downgrade was less ambiguous, i.e. more severe. However, cases in which credit ratings are downgraded by more than 5 notches, and hence completely offset the market reaction to GCOs are very rare. Less than 1.3% of the sample are downgraded by more than 5 notches. I accept H1 because credit rating downgrades preceding GCOs have a mitigating effect on the market reaction to GCOs but I conclude that GCOs still convey additional information to investors beyond the information communicated previously by signals from credit rating agencies.

Analyst Recommendation Downgrades

Table 5.5 presents the results of examining the impact of a preceding downgrade in analyst recommendations on the market reaction to GCOs (H2). Across all columns in Table 5.5, there is a negative and significant coefficient of *GCO* of around 5.0% to 6.5%, confirming earlier findings that firms with GCOs have on average lower market reactions compared to firms without GCOs. The interaction effect of *GCO* and *D_REC_DWN_M3* as depicted in column (1) is not significant, implying that the market

⁹⁶ The interactions of *GCO* and downgrade severity over the last twelve months are only significant at 10% significance level (one-sided).

⁹⁷ This is determined based on the coefficients of -0.0574 for *GCO* and 0.0093 for the interaction effect. I test the net effect of *GCO* and *CR_DWN_M3* for different values of downgrade severity by means of F-tests. The net effect is negative and statistically different from zero for downgrades of up to 4 notches. If the downgrade is as strong as 5 notches, the net effect is not statistically different from zero anymore.

TABLE 5.5

Effects of Preceding Downgrades in Analyst Recommendations on Market Reactions to GCOs

Variables	Dependent Variable: CSAR				
	Proxy for the Information Signal:				
	D_REC_DWN_ M3	REC_DWN_ M3	D_REC_DWN_M 12	REC_DWN_M 12	REC_DWN_TIM E
GCO	-0.0558*** (0.0188)	-0.0654*** (0.0170)	-0.0593** (0.0251)	-0.0626*** (0.0186)	-0.0531** (0.0260)
SIGNAL	-0.0032*** (0.0008)	-0.0095*** (0.0033)	-0.0004 (0.0011)	0.0022 (0.0023)	-0.0001** (0.0001)
GCO x SIGNAL	-0.0014 (0.0246)	0.0523 (0.0486)	0.0066 (0.0286)	0.0137 (0.0242)	-0.0003 (0.0030)
lnMVE	-0.0012* (0.0007)	-0.0013* (0.0007)	-0.0015** (0.0007)	-0.0015** (0.0007)	-0.0012* (0.0007)
EBIT	0.0290** (0.0121)	0.0289** (0.0122)	0.0315** (0.0147)	0.0307** (0.0146)	0.0304** (0.0122)
ΔINCOME	0.0121 (0.0103)	0.0123 (0.0101)	0.0087 (0.0103)	0.0093 (0.0100)	0.0088 (0.0101)
CFOPS	0.0095 (0.0166)	0.0098 (0.0166)	0.0114 (0.0167)	0.0116 (0.0168)	0.0048 (0.0162)
ZMIJ	-0.0001 (0.0008)	-0.0001 (0.0008)	-0.0000 (0.0008)	-0.0000 (0.0008)	0.0003 (0.0008)
EXITV	0.0006 (0.0050)	0.0006 (0.0049)	0.0007 (0.0047)	0.0010 (0.0046)	0.0002 (0.0050)
RET	0.0036* (0.0021)	0.0037* (0.0021)	0.0050** (0.0023)	0.0054** (0.0023)	0.0037* (0.0021)
STDRET	-0.0706 (0.0932)	-0.0694 (0.0919)	-0.0887 (0.1060)	-0.0951 (0.1045)	-0.0930 (0.0988)
LATEFILER	-0.0001 (0.0029)	-0.0001 (0.0029)	0.0008 (0.0030)	0.0008 (0.0030)	-0.0009 (0.0030)
BIGN	-0.0061* (0.0037)	-0.0061* (0.0036)	-0.0075* (0.0042)	-0.0074* (0.0042)	-0.0061 (0.0038)
REC_MEAN	0.0018* (0.0010)	0.0019* (0.0010)	0.0016 (0.0011)	0.0009 (0.0011)	0.0021** (0.0010)
REC_NUM	0.0001 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)
Constant	0.0361*** (0.0137)	0.0358*** (0.0136)	-0.5132** (0.2511)	-0.4977** (0.2492)	-0.4941** (0.2101)
Year Dummies	Included	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included	Included
Observations	12,079	12,079	11,829	11,829	12,087
Adj. R ²	0.0221	0.0227	0.0238	0.0241	0.0204

TABLE 5.5 – continued

This table presents the results of the regression analyzing whether the market reaction to GCOs is mitigated depending on preceding information signals by equity analysts, namely downgrades in mean investment recommendations. The sample includes all firms with available Compustat and CRSP data from 1999 to 2012 that have audit opinions available in Audit Analytics, have outstanding credit ratings by Standard & Poor's and are covered by analysts in I/B/E/S. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 5. Standard errors are clustered by two-digit SIC code and month-year identifier and are reported in parentheses below the coefficients. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

reaction to GCOs does not differ for firms that have received negative analyst recommendations in the last three months. The interaction effect in column (2) shows that the severity of preceding recommendation downgrades does not seem to influence the market reaction to GCOs either. Potentially, investors are more interested in changes in the performance of the firm over the last year and not over the last quarter. I therefore consider the effect of downgrades in analyst recommendations over the last twelve months but fail to find significant coefficients for the interaction effects, as shown in columns (3) and (4). I re-test the effect of timing in the regression presented in the last column where I interact the GCO with *REC_DWN_TIME*, indicating the length of the period since the last downgrade of analysts investment recommendations. I do not find any significant interaction effects either.

Although I do not find significant coefficients for the interaction effects, there is a negative significant coefficient of the main effect of a downgrade in analyst recommendations in the last three months (columns (1) and (2)). A possible explanation of the negative and significant main effect is that investors underreacted to the initial downgrade in analyst recommendations and the release of the annual report might confirm the information content of the downgrade which makes investors realize that they have initially underreacted to the analysts' recommendations, causing them to react again at the 10-K filing date.⁹⁸ This explanation is in line with the negative and significant coefficient of a continuous timing variable of the downgrade in the last column: The more recent analysts downgraded their investment recommendations, the stronger is the delayed negative market reaction.

Based on these findings it seems that analyst recommendations do not have information value to investors with respect to potentially approaching GCOs Hypothesis 2 can thus not be accepted which is in line with the argumentation that GCOs are valued by investors and that they have incremental value over analysts' investment recommendations.

⁹⁸ This explanation would be consistent with prior literature that shows that markets react slowly to negative analyst recommendations (e.g., Mokoaleli-Mokoteli et al. 2009).

5.4.3 Additional Analyses

Extreme Changes in Investment Recommendations and Analyst Coverage Cessation

While I find that credit rating agencies are information intermediaries that provide investors with some information that is also contained in GCOs, I do not find such an effect for downgrades in mean analyst recommendations. One potential explanation for the lack of findings is that changes in analyst recommendations are less credible or too noisy with regard to firms' financial viability. A sell recommendation communicates to investors that the company is currently overvalued and that investors can reap a profit by selling the firm's shares. However, it does not necessarily mean that the company is performing poorly or will not survive the next fiscal year. The change in mean recommendations, as considered in the previous analyses, might hence not be a clear enough signal of approaching financial difficulties to investors. I therefore try to identify situations with clearer signals and observe whether this affects the previous results.

First, I identify cases in which the mean analyst recommendations have been downgraded from 'strong buy', 'buy' or 'hold' recommendations to 'underperform' or 'sell' within the last three (twelve) months before the auditor's signature date, indicated as *CHG_SELL_M3* (*CHG_SELL_M12*). Since previous literature has shown that analysts are reluctant to provide underperform and sell recommendations (e.g., McNichols and O'Brien 1997; Barber et al. 2006), I consider this a less ambiguous signal of deteriorating firm performance and expect to find a significant reduction in the market reaction to GCOs that occur after these downgrades. Secondly, I consider analyst coverage cessation. Peixinho and Taffler (2011) examine a sample of GCO firms and provide evidence that equity analysts are reluctant to provide negative recommendations and rather stop covering firms in anticipation of GCOs. Investors might be aware of this and might therefore consider coverage cessation as a signal of approaching financial difficulties at a firm. I thus include *STOP_M3* (*STOP_M12*) to indicate whether firms without investment recommendations at the signature date had analyst recommendations outstanding three (twelve) months ago. If investors interpret this as a prediction of an approaching GCO, this will result in a positive and significant interaction effect.

Table 5.6 shows the results of these additional tests. Overall, there is still a significant negative market reaction to the GCO itself. Moreover, one can see that the interaction terms of *GCO* and *CHG_SELL_M3* are highly significant and positive. Yet, one needs to be careful with the interpretation of these interaction coefficients because only 3% of firms that were downgraded from 'strong buy', 'buy' or 'hold' recommendations to 'underperform' or 'sell' in the last three months also received a GCO. The second column depicts results regarding a change to sell recommendations

TABLE 5.6*Effects of Extreme Changes of Investor Recommendations on Market Reactions to GCOs*

Variables	Dependent Variable: CSAR			
	Proxy for the Information Signal:			
	CHG_SELL_M3	CHG_SELL_M12	STOP_M3	STOP_M12
GCO	-0.0699*** (0.0140)	-0.0769*** (0.0138)	-0.0479*** (0.0132)	-0.0568*** (0.0125)
SIGNAL	-0.0082*** (0.0031)	-0.0025 (0.0027)	-0.0000 (0.0044)	-0.0111*** (0.0033)
GCO x SIGNAL	0.1364*** (0.0384)	0.0866** (0.0432)	-0.0519 (0.0422)	0.0442 (0.0386)
lnMVE	-0.0012* (0.0007)	-0.0013* (0.0007)	-0.0014** (0.0006)	-0.0014** (0.0006)
EBIT	0.0295** (0.0116)	0.0296** (0.0117)	0.0274** (0.0109)	0.0273** (0.0109)
ΔINCOME	0.0086 (0.0097)	0.0094 (0.0096)	0.0101 (0.0090)	0.0099 (0.0091)
CFOPS	0.0070 (0.0160)	0.0059 (0.0160)	0.0082 (0.0143)	0.0079 (0.0142)
ZMIJ	0.0002 (0.0008)	0.0002 (0.0008)	-0.0001 (0.0008)	-0.0000 (0.0008)
EXITV	0.0020 (0.0047)	0.0016 (0.0048)	0.0008 (0.0045)	0.0006 (0.0046)
RET	0.0037* (0.0021)	0.0038* (0.0021)	0.0031 (0.0020)	0.0030 (0.0020)
STDRET	-0.0807 (0.0934)	-0.0855 (0.0940)	-0.1000 (0.0920)	-0.0975 (0.0916)
LATEFILER	-0.0005 (0.0029)	-0.0002 (0.0029)	-0.0010 (0.0028)	-0.0010 (0.0028)
BIGN	-0.0054 (0.0035)	-0.0053 (0.0035)	-0.0049 (0.0037)	-0.0046 (0.0037)
REC_MEAN	0.0019** (0.0009)	0.0015 (0.0010)		
REC_NUM	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
Constant	-0.4687** (0.1958)	-0.4679** (0.1965)	-0.4330** (0.1827)	-0.4292** (0.1819)
Year Dummies	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included
Observations	12,355	12,355	12,859	12,859
Adj. R ²	0.0247	0.0236	0.0206	0.0217

This table presents the results of the regression analyzing whether the market reaction to GCOs is mitigated depending on preceding extreme information signals by equity analysts, namely changes to sell recommendations and analyst coverage cessation. The sample includes all firms with available Compustat and CRSP data from 1999 to 2012 with audit opinions available in Audit Analytics, outstanding credit ratings by Standard & Poor's and analyst coverage in I/B/E/S. Continuous variables are winsorized at the 1st and 99th

(continued)

TABLE 5.6 – continued

percentile. Variable definitions are provided in Appendix 5. Standard errors are clustered by two-digit SIC code and month-year identifier and are reported in parentheses below the coefficients. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

over the last twelve months and again there is a negative significant main effect for GCO and a positive and significant interaction effect. While the effect is not as strong as for a change to a sell recommendation in the last three months, it is based on more observations and seems economically more sensible.

Column (3) and (4) of Table 5.6 consider analyst coverage cessation. The significant negative main effect for *GCO* persists and there is very weak evidence that analyst recommendation cessation is an indicator of an approaching GCO for investors: The interaction effect of GCO and analyst coverage cessation is significant at a one-sided 10% level if analysts stopped providing forecasts within the last three months. However, analyst cessation in the previous twelve months is not significant. I therefore conclude that analyst investment recommendations do not function as an information signal of approaching financial difficulties and that the auditor's GCO is a valuable signal to market participants.

Analysts' Cash Flow Forecasts

The previous analyses reveal that auditors' GCOs are important signals to equity investors regarding a firm's financial performance and that markets value this signal irrespective of changes in analysts' investment recommendations. Yet, I find some evidence that credit ratings convey part of the information contained in GCOs. (Standard & Poor's 2012a) state that "the core underlying concept of a credit rating is determined by the ability to generate cash". If investors value the assessment of a firm's ability to generate future cash flows, analysts' cash flow forecasts might be another measure that could provide additional information to investors that would otherwise be communicated via GCOs and might consequently affect how much value GCOs have to investors.

Analysts' cash flow forecasts are available since 1993 and are made for a growing and economically significant proportion of firms (e.g., Givoly et al. 2009). By 2008, 56.4% of firms that were covered by analysts also received at least one cash flow forecast (Call et al. 2013). Cash flow forecasts provide information regarding firm's liquidity and solvency and therefore help investors to assess firm viability (DeFond and Hung 2003). Early studies considering cash flow forecasts examine the types of firms for which cash flow forecasts are issued and have shown that analysts provide cash flow forecasts predominantly for firms that have, amongst other characteristics, poor

financial health (DeFond and Hung 2003).⁹⁹ More recent studies examine the value of cash flow forecasts to investors and find that cash flow forecasts are more than just a trivial adjustment of other existing forecasts and actually provide incremental information to investors (Call et al. 2013). Moreover, Call et al. (2013) analyze the value of cash flow forecasts to investors and find that investors indeed react to revisions of cash flow forecasts.

As analysts' cash flow forecasts are directly related to a firm's liquidity and solvency, which are also main concerns in the going-concern decision (e.g., Zmijewski 1984; Altman 1968), investors might obtain information via cash flow forecast revisions that they otherwise would have gained via the issuance of a GCO. In line with the previous analyses, I therefore test the market reactions to GCOs conditional on preceding cash flow forecast revisions. More particularly, I consider downward revisions in cash flow forecasts. First, I consider the amount by which cash flow forecasts have been revised downwards over the last three months prior to the signature date, measured by *CF_DWN_M3*. Secondly, I consider cash flow forecasts at the beginning of the fiscal year and measure the downward change until the auditor's signature date, i.e. *CF_DWN_M12*. Besides this, I also consider a severe revision in cash flow forecasts, namely when analysts issued positive cash flow forecasts three (twelve) months ago and have revised their forecasts to negative ones by the auditor's signature date, measured by *CF_NEG_M3* (*CF_NEG_M12*).

Table 5.7 shows the results regarding cash flow forecast revisions. In line with my previous analyses I consistently find a negative coefficient for GCOs. I find a positive interaction effect for GCO and downward revisions, both over a three month and a twelve month window (see columns (1) and (2)). While the coefficients of the interaction terms regarding a three month window are only statistically significant at a one-sided 10% level, there is some evidence of statistical significance regarding revisions in the last twelve months.¹⁰⁰ The remainder of the table addresses the question whether market reactions to GCOs are less pronounced if analysts have previously revised their cash flow forecasts from positive to negative ones. The interaction effects of *GCO* and *CF_NEG_M3* as well as *GCO* and *CF_NEG_M12* are positive and significant. Interestingly, the effect of the cash flow revisions is stronger when they occur over a twelve months period, and the interaction effect also seems to be larger than the negative market reaction to the GCO. However, when testing the net effect of the market reaction to GCOs conditional on a change from a positive to a negative cash flow forecast, I find that the market reaction is statistically not different from zero. This

⁹⁹ DeFond and Hung (2003) investigate the type of firms for which analysts are more likely to provide cash flow forecasts and find that analysts "tend to forecasts cash flows for firms with (1) large accruals, (2) more heterogeneous accounting choices relative to their industry peers, (3) high earnings volatility, (4) high capital intensity, and (5) poor financial health."

¹⁰⁰ The p-value of the interaction term in column (1) of Table 5.7 is 12.67%.

TABLE 5.7*Effects of Extreme Changes of Cash Flow Forecasts on Market Reactions to GCOs*

Variables	Dependent Variable: CSAR			
	Proxy for the Information Signal:			
	CF_DWN_M3	CF_DWN_M12	CF_NEG_M3	CF_NEG_M12
GCO	-0.0442** (0.0190)	-0.0579** (0.0290)	-0.0404** (0.0196)	-0.0630* (0.0332)
SIGNAL	-0.0004 (0.0005)	0.0001 (0.0001)	0.0047 (0.0076)	-0.0003 (0.0062)
GCO x SIGNAL	0.0275 (0.0180)	0.0241* (0.0125)	0.0461* (0.0256)	0.1119** (0.0535)
lnMVE	-0.0016** (0.0007)	-0.0020** (0.0008)	-0.0016** (0.0007)	-0.0020** (0.0008)
EBIT	0.0256* (0.0154)	0.0319* (0.0167)	0.0257* (0.0154)	0.0316* (0.0166)
ΔINCOME	0.0191 (0.0120)	0.0219 (0.0135)	0.0192 (0.0120)	0.0211 (0.0131)
CFOPS	0.0201 (0.0170)	0.0118 (0.0196)	0.0207 (0.0166)	0.0120 (0.0195)
ZMIJ	0.0002 (0.0008)	-0.0007 (0.0008)	0.0002 (0.0008)	-0.0007 (0.0009)
EXITV	0.0002 (0.0046)	0.0004 (0.0050)	0.0000 (0.0046)	0.0007 (0.0049)
RET	0.0038 (0.0023)	0.0040 (0.0026)	0.0039* (0.0024)	0.0040 (0.0026)
STDRET	-0.1204 (0.1155)	-0.1104 (0.1214)	-0.1253 (0.1159)	-0.1098 (0.1201)
LATEFILER	-0.0015 (0.0030)	-0.0021 (0.0029)	-0.0015 (0.0030)	-0.0020 (0.0029)
BIGN	-0.0027 (0.0043)	-0.0007 (0.0054)	-0.0027 (0.0043)	-0.0006 (0.0054)
CF_MEAN	-0.0005* (0.0003)	-0.0002 (0.0003)	-0.0005* (0.0003)	-0.0003 (0.0003)
Constant	-0.0004 (0.0089)	-0.0064 (0.0089)	-0.0004 (0.0089)	-0.0069 (0.0089)
Year Dummies	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included
Observations	9,054	7,919	9,054	7,919
Adj. R ²	0.019	0.0237	0.0188	0.0259

This table presents the results of the regression analyzing whether the market reaction to GCOs is mitigated depending on preceding information signals by equity analysts regarding firms' liquidity and solvency, namely changes in cash flow forecasts. The sample includes all firms with available Compustat and CRSP data from 1999 to 2012 with available audit opinions in Audit Analytics, outstanding credit ratings by Standard & Poor's and analyst coverage in I/B/E/S. Continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in Appendix 5. Standard errors are clustered by two-digit SIC code and month-year identifier and are reported in parentheses below the coefficients. *, **, *** indicate statistical significance at the 10%, 5% and 1% levels respectively (two-tailed).

confirms prior findings that GCOs are valuable signals to investors except in those extreme cases where financial difficulties are expressed with little ambiguity by other market participants and are fairly straightforward to interpret.

5.4.4 Sensitivity Analyses

Sample Selection

The sample used in the main analyses is based on all U.S. firms between 1999 and 2012 that are covered by analysts and credit rating agencies. I run several robustness checks with alternative sample specifications.¹⁰¹ Because the descriptive statistics show that the sample of firms with and without GCOs are structurally different, I adapt the sample to make those two groups more comparable. I take two different approaches. First, I restrict the sample to firms that are considered financially distressed, i.e. those with negative net income or negative operating cash flow (e.g., Reynolds and Francis 2000; DeFond et al. 2002).¹⁰² I find that all results are robust.

Furthermore, I find positive and significant interaction terms of GCOs and analyst coverage cessation (significant at the one-sided 10% level). This is in line with the findings of Peixinho and Taffler (2011) and provides weak evidence that analyst coverage cessation of a financially distressed firm indeed communicates at least part of the information that is also contained in an auditor's GCO. Secondly, I employ a propensity score matching technique to obtain a control sample of firms that show very similar characteristics to the firms that received a GCO. To match the firms, I use standard controls from the auditing literature and match based on the nearest propensity score without replacement with a maximum distance of 1%.¹⁰³ This yields successful matches in 70% of the cases. I find that the results hold with respect to credit rating downgrades in the three months prior to the signature date, a change in analyst recommendations from 'strong buy', 'buy' or 'hold' to 'underperform' or 'sell' recommendations and a downward revision of cash flow forecasts over the time span of the last twelve months. For the remaining tests, I lose statistical significance which is most likely due to a lack of statistical power but the main inferences do not change. These findings confirm the prior results that the negative market reaction to GCOs is

¹⁰¹ Results are not reported for brevity reasons and available upon request from the author.

¹⁰² Existing literature regarding going-concern opinions often focuses on financially distressed firms with the argument that the going-concern opinion is only relevant for distressed firms (Reynolds and Francis 2000; DeFond et al. 2002). This restriction can impose a sample selection bias. I therefore choose to run the main analyses on the complete sample of firms, irrespective of their financial distress status.

¹⁰³ Specifically, I match on several factors regarding the firm's financial situation, namely size (logarithm of total assets and logarithm of market value of equity), leverage, the change in leverage, cash flow from operations, the firms beta, annual return, the standard deviation of annual return and firm age. Moreover, I ensure that firms are matched on whether they had previous year losses and whether they are audited by one of the Big 4 (Big 5) auditors. Lastly, I also include a bankruptcy score in the match procedure, i.e. the Zmijewski (1984) or the Altman (1968) Z-Score. I obtain similar matches and the outcomes of the analyses are not dependent on the choice of bankruptcy score in the matching procedure.

only mitigated by signals from other information intermediaries when these signals are very strong.

Lastly, I eliminate the sample restriction that firms need to be covered by analysts and credit rating agencies and repeat the analyses on a credit rating and an analyst recommendation sample separately. This increases my number of firms with GCOs in the samples, especially for the sample covered by equity analysts.¹⁰⁴ The results with respect to credit rating changes do not change. Regarding the impact of analysts, the results with respect to investment recommendations lose statistical significance, but the results regarding cash flow forecasts gain substantial statistical significance. This supports the argumentation that investors value information that is directly related to the liquidity and solvency of the firm.

Alternative Return Windows

Besides the impact of the sample itself, I also investigate whether the results are robust to alternative specifications of the dependent variable. Considering cumulative abnormal returns relative to the market instead of size-adjusted cumulative abnormal returns does not affect the results. Furthermore, I examine an alternative 5-day window surrounding the 10-K filing date measured from $[-2; +2]$ as well as the 3-day window starting with the 10-K filing date $[0; +2]$. All tests are quantitatively similar and while I lose some statistical significance with respect to credit rating downgrades, the overall conclusions remain the same both for the five-day as well as the alternative three-day windows.

5.5 Summary and Conclusion

In the past, questions have been raised as to whether auditors should be required to issue going-concern assessments because investors are potentially able to arrive at adequate going-concern assessments using other sources of information. This study considers signals by other information intermediaries as sources of information regarding a firm's likelihood to continue as a going-concern. I provide evidence on the relevance of audit reports modified for going-concern to securities markets, beyond other publicly available signals concerning a firm's financial health. Prior literature has argued that one would not expect to find market reactions to expected going-concern modifications (e.g., Blay and Geiger 2001). I show that investors react negatively to GCOs even if there is some indication of future viability concerns raised by other information intermediaries, such as credit rating downgrades and downgrades in analysts' investment recommendations. Only in situations where these information signals preceding the GCO leave little ambiguity regarding approaching financial difficulties, I observe that the market reaction to the GCO is not statistically different from zero.

¹⁰⁴ The credit rating sample now has 118 GCOs while the analyst sample has 533 GCOs which represents 1.67% of all firms (i.e. 3.31% of financially distressed firms).

Specifically, I find that credit rating downgrades preceding the GCO mitigate the negative market reaction to a GCO, and that this effect is stronger the more recent and more severe the preceding credit rating downgrade has been. In addition, I document that changes in analysts' investment recommendations only mitigate the market reactions to GCOs when these are severe changes from buy to sell recommendations. The results with respect to analysts' cash flow forecasts are similar to those of credit ratings, as downward revisions preceding GCOs are mitigating the market reaction to a GCO. Markets do not react to GCOs in cases where severe cash flow forecast revisions from positive forecasts at the beginning of the fiscal year to negative forecasts at fiscal year-end preceded the GCO. Overall, I show that GCOs are incrementally informative and have value over and above other similar signals regarding firms' future viability.

These results contribute to the debate on the usefulness of auditor's going concern assessments as I show that GCOs indeed have incremental value above information provided by other information intermediaries. This is relevant for investors, practitioners as well as standard-setters and regulators because it adds to the discussion on the value of the GCO to investors. Recently, changes to the audit report format have been proposed in order to make the GCO report more informative and that it needs to contain an explicit statement as to whether material uncertainties in relation to the going-concern assumption have been identified (IAASB). My findings are consistent with the notion that GCO information is relevant to be communicated by auditors and could be considered in decisions how to change the audit report. Furthermore, I contribute to the existing literature on the information value of equity analysts and credit ratings by considering their information value for distressed firms to investors. This is also interesting for credit rating agencies, equity analysts and regulators because distressed firms are structurally different from healthy firms and it is necessary to understand how reports by credit rating agencies or equity analysts affect investors of distressed firms.

Appendix 5

Variable Definitions

Variable	Description
<u>Dependent Variables</u>	
CSAR	Size-adjusted cumulative abnormal return surrounding the [-1;+1] day window surrounding the 10-K issuance date;
<u>Control Variables</u>	
BIGN	An indicator variable equal to 1 when the firm is audited by one of the Big 4 (5) auditors (0 otherwise);
CFOPS	Cash flow from operations scaled by total assets as of fiscal year-end;
EBIT	Earnings before interest and taxes scaled by total assets as of fiscal year-end, less the industry mean;
EXITV	Exit Value as measured by Berger et al. (1996) scaled by market value of equity at fiscal year-end;
ΔINCOME	Change in net income scaled by total assets as of fiscal year-end;
LATEFILER	An indicator variable equal to 1 if the 10-K report is filed more than 5 days after the filing date specified by the SEC (0 otherwise);
lnMVE	Natural logarithm of the firm's market value of equity at fiscal year-end, measured in millions;
RET	Market-adjusted buy and hold abnormal returns over the year being audited;
STDRET	Standard deviation of daily returns over the fiscal year being audited;
ZMIJ	Zmijewski's (1984) bankruptcy score, with higher values indicating a higher likelihood of financial distress;
REC_MEAN	The average analysts' investment recommendations at the time of the auditor's signature date;
REC_NUM	The number of analyst recommendations outstanding at the last available point in time before the auditor's signature date;
CF_MEAN	The mean analyst cash flow forecast at the time of the auditor's signature date;

(continued)

Appendix 5 – continued

Variable	Description
<u>Variables of Interest</u>	
GCO	An indicator variable equal to 1 if an auditor issues a first-time going-concern opinion (0 otherwise);
D_CR_DWN_M3	An indicator variable equal to 1 if Standard & Poor's has downgraded the credit rating of the audited company within the last three months prior to the auditor's signature date (0 otherwise);
CR_DWN_M3	An ordinal variable indicating by how many notches Standard & Poor's has downgraded the credit rating of the audited company within the last three months prior to the auditor's signature date, with higher values indicating more severe downgrades;
D_CR_DWN_M12	An indicator variable equal to 1 if Standard & Poor's has downgraded the credit rating of the audited company within the last twelve months prior to the auditor's signature date (0 otherwise);
CR_DWN_M12	An ordinal variable indicating by how many notches Standard & Poor's has downgraded the credit rating of the audited company within the last twelve months prior to the auditor's signature date, with higher values indicating more severe downgrades;
CR_DWN_TIME	An ordinal variable indicating how many months ago the last credit rating downgrade by Standard & Poor's has occurred, rescaled so that higher values indicate more recent downgrades;
D_REC_DWN_M3	An indicator variable equal to 1 if the mean equity analyst recommendation has been downgraded within the last three months prior to the auditor's signature date (0 otherwise);
REC_DWN_M3	A continuous variable indicating by how much the mean analyst recommendation has been downgraded in the three months prior to the auditor's signature date, with higher values indicating more severe downgrades;
D_REC_DWN_M12	An indicator variable equal to 1 if the mean equity analyst recommendation has been downgraded within the last twelve months prior to the auditor's signature date (0 otherwise);
REC_DWN_M12	A continuous variable indicating by how much the mean analyst recommendation has been downgraded in the twelve months prior to the auditor's signature date, with higher values indicating more severe downgrades;

(continued)

Appendix 5 – continued

Variable	Description
REC_DWN_TIME	An ordinal variable indicating how many months ago equity analysts last downgraded the mean investment recommendation, rescaled so that higher values indicate more recent downgrades;
CHG_SELL_M3	An indicator variable equal to 1 if the mean analyst recommendations have been downgraded from ‘strong buy’, ‘buy’ or ‘hold’ to ‘underperform’ or ‘sell’ within the last three months before the auditor’s signature date (otherwise 0);
CHG_SELL_M12	An indicator variable equal to 1 if the mean analyst recommendations have been downgraded from ‘strong buy’, ‘buy’ or ‘hold’ to ‘underperform’ or ‘sell’ within the last twelve months before the auditor’s signature date (otherwise 0);
STOP_M3	An indicator variable equal to 1 if a company received analyst investment recommendations three months ago, but is not covered by analysts anymore at the auditor’s signature date;
STOP_M12	An indicator variable equal to 1 if a company received analyst investment recommendations twelve months ago, but is not covered by analysts anymore at the auditor’s signature date;
CF_DWN_M3	A continuous variable indicating by how much the mean cash flow forecast has been downgraded in the three months prior to the auditor’s signature date, with higher values indicating more severe downgrades;
CF_DWN_M12	A continuous variable indicating by how much the mean cash flow forecast has been downgraded in the twelve months prior to the auditor’s signature date, with higher values indicating more severe downgrades;
CF_NEG_M3	An indicator variable equal to 1 if a company received positive cash flow forecasts three months ago and analysts reversed this to negative cash flow forecasts outstanding at the auditor’s signature date;
CF_NEG_M12	An indicator variable equal to 1 if a company received positive cash flow forecasts twelve months ago and analysts reversed this to negative cash flow forecasts outstanding at the auditor’s signature date.

Chapter 6

Conclusion

Auditors are critical information intermediaries in financial markets. They ensure investors that the financial statements presented by firm's management reflect the underlying firm situation and their going-concern opinion provides an independent assessment that the company is likely to continue to operate in the near future. The effective functioning of auditors, especially with respect to the audit report and its going-concern opinion has been questioned in the past. It has been debated whether the GCO is valuable at all and whether it has relevance to investors. This criticism is based on the facts that auditor's GCO assessments are frequently identified as incorrect *ex post* and the assumption that investors can derive similar or the same information that is provided in the GCO from other sources that are as accurate but potentially even timelier. This dissertation contributes to this discussion by analyzing how signals by other information intermediaries are related to the auditor's decision to issue GCOs and auditor reporting misclassification rates, and whether markets indeed value GCOs when similar information has previously been communicated via these signals by other information intermediaries.

6.1 Summary of the Results

Chapter 3 establishes the association between credit ratings and going-concern opinions. Both credit ratings and the auditor's GCO are based on firm fundamental factors concerning the financial viability of a firm. Credit rating agencies and auditors both have access to firms proprietary information and are therefore able to indirectly communicate information to investors that otherwise would be unknown. Yet, the scope and focus of their assessments differ. While audit engagements encompass the testing whether the financial statements presented are in line with the underlying firm information, their focus is considerably broader than the examination of the probability and likelihood that companies can and will repay their obligations, which is what credit rating agencies focus on. One can therefore assume that credit rating agencies and auditors are likely to request different private information of their clients. This difference in focus and potential use of information may make credit ratings informative to auditors. Besides the difference in focus, credit rating agencies also have extensive experience and expertise and cover large proportions of the market which allows them to use industry wide information to compare firms and establish credit ratings. This might help auditors in their assessments. Moreover, because credit ratings are also used as part of investment regulations and debt covenants, changes in credit ratings might trigger consequences for the firm and may thus be an important factor to consider in the auditor's going-concern decision. Based on these arguments I predict that worse credit ratings and credit rating downgrades are positively associated with the auditor's probability to issue GCOs. I find results consistent with this argumentation and additionally show that these associations are stronger for more recent and more severe downgrades. Auditor specialists have been shown to be more likely to issue GCOs for the same level of risk of clients, which is often interpreted as audit quality. I test whether the association between credit rating information and the probability to issue GCOs differs for auditor specialists and non-specialists. I find some evidence that the association between credit rating levels and GCOs is weaker for auditor specialists which is consistent with specialists having superior experience and expertise and therefore relying less on external sources during their assessment process.

Given this evidence, the question arises whether auditors indeed obtain incremental information from signals by third-party specialists like credit ratings that helps them to reduce their reporting misclassifications. Given auditors' incentives to minimize reporting errors due to their costs, one would expect them to use credit ratings in their assessment if credit ratings indeed contain incremental information that reduces the ambiguity surrounding the auditor's GCO or provides additional information to auditors. Alternatively, credit rating agencies and auditors might arrive at the same conclusion independently. If auditors then observe credit rating downgrades that confirm their own assessment, this might raise their suspicion that the company in question may not survive the next fiscal year. This could be particularly the case when credit rating downgrades trigger operational or financing changes in organizations, such

as covenant violations, which potentially impact (re)financing decisions. An independent assessment confirming the auditor's suspicion potentially also changes auditor's expected payoff structure regarding the decision whether to issue a GCO. If credit rating agencies downgrade a company that is in financial distress, auditors do not issue a GCO and the company later files for bankruptcy, potential litigation concerns increase for auditors. This is particularly so, because investors will be dissatisfied with auditors for not having issued a GCO even after the credit rating downgrade. Based on these arguments, auditors might therefore issue more GCOs after credit ratings have been downgraded. This increase in issuance of GCOs would be reflected in more Type I and less Type II errors.

The findings in Chapter 4 are consistent with the explanation that auditors' going-concern reporting behavior becomes more conservative after credit ratings have been downgraded. Especially more severe and more recent credit rating downgrades are positively associated with the probability of Type I errors. For credit ratings of two or more notches, there is a negative association between downgrades and Type II errors. This result is more pronounced when controlling for litigation risk, which supports the notion that auditors become more conservative as the threat of litigation increases if they were to fail to issue a GCO after a credit rating has been downgraded. Chapter 4 also addresses the argument that non-specialized auditors potentially provide lower quality audits. If non-specialist auditors indeed invest less resources in a particular industry and have less experience and expertise, they are, on average, more likely to have higher reporting error rates. Hence, they might find credit ratings and the information therein incrementally useful in their assessment. I test this hypothesis and find weak evidence that non-specialist auditors have lower Type II error rates. Overall, these results imply that credit ratings function as external warning signals that increase auditor conservatism.

Besides auditors who observe credit ratings and might be influenced in their decisions, investors are also aware of changes in credit ratings. Prior literature shows that markets value changes in credit ratings, which is reflected in changes in stock prices and trading volume (e.g., Hull et al. 2004; Norden and Weber 2004; Hite and Warga 1997). Prior auditing literature argues that the going-concern opinion is only relevant to investors if it provides new information. Given that GCOs are issued on an annual basis only and that investors can derive information from other sources, like the annual report itself, it has been argued that the GCO is not relevant to investors. Some studies show that markets only react to the unexpected component of GCOs (e.g., Loudder et al. 1992; Fleak and Wilson 1994; Jones 1996). Taking these argumentations, and the findings from Chapter 3 and 4 together, I examine how markets react to GCOs that have been preceded by signals from other information intermediaries regarding a firm's financial health, such as credit rating agencies. Chapter 5 therefore considers signals by two important information intermediaries, namely credit rating agencies and

equity analysts, and how their signals concerning firms' future viability are related to market reactions to GCOs.

The results of the analyses in Chapter 5 show that downgrades of signals of deteriorating firm performance directly related to a firm's liquidity and solvency, such as credit rating downgrades and downgrades in analysts' cash flow forecasts, mitigate market reactions to GCOs. As expected, this mitigating effect is more pronounced the stronger the downgrade is and the more recent it occurs to the auditor's signature date, which is in line with the argument that GCOs are less foreseen. While there is a mitigating effect, the results further reveal that market reactions to GCOs are only negligible when the preceding downgrades in credit ratings, cash flow forecasts or analyst investment recommendations leave little to no ambiguity that a GCO is to be expected. Since these drastic revisions are very rare, it can be concluded that investors overall value GCOs above and beyond the information provided by other information intermediaries.

6.2 Limitations and Future Research

Although considerable attention has been devoted to the empirical research design, there are some limitations inherent in the studies conducted. Since all studies consider credit ratings and changes therein, there are some common limitations. First of all, the samples are limited to companies that are covered by Standard & Poor's (and equity analysts for Chapter 5). The descriptive statistics of all three studies indicate that the samples are significantly different compared to the overall population of firms. One therefore has to be careful in drawing inferences from the findings represented to other settings. As the restriction to be covered by Standard & Poor's results in a sample of larger firms that are mostly audited by larger auditors, the generalizability of the results to smaller and especially local auditors is limited. Further, I focus on credit ratings from Standard & Poor's only. This limits the sample because there is a small share of the market that is covered by other credit rating agencies but not by S&P, and it prevents me from accounting for differences in split ratings and potential timing differences in credit rating changes. Including at least the other two major credit rating agencies, Moody's and Fitch, would provide a more complete picture. However, it would also increase the complexity of the analyses because one would have to account for the effects among credit ratings from different rating agencies.

Similar to other studies in this field of research, I also face an endogeneity concern because I cannot disentangle whether auditors derive information from credit rating agencies or whether both parties use the same underlying firm information and publish it at different points in time. While I try to alleviate this concern by controlling for firm fundamentals, I cannot eliminate it. The part of the analysis concerning differences between auditor specialists and non-specialists mitigates this concern partly because one should not find a difference between specialists and non-specialists if GCOs are simply

based on information that is standardized across clients and engagements. Part of the problem of not being able to disentangle the effects is that credit rating agencies were not required to disclose detailed descriptions of the rating process or the factors that they incorporate in the rating process. In order to mitigate this concern, future research could evaluate Standard & Poor's corporate methodology (published in November 2013) which has been published as a result of recent regulatory changes and provides a more detailed description concerning the information that is used during the rating process (Standard & Poor's 2013a).

Another limitation of this dissertation which is also a future research opportunity relates to the sample period. The sample period is chosen based on the data availability of audit opinions in Audit Analytics, yet it might be interesting to extend the sample period for several reasons. Prior to 2000, equity analysts had access to proprietary firm information. This allowed them to provide investors with detailed investment advice. As a result of Regulation Fair Disclosure which became effective in October 2000 companies were not allowed to provide proprietary information to information intermediaries that might use them for trading purposes (www.sec.gov). Credit rating agencies, however, were exempted from this regulation and were still allowed to use proprietary information as part of their assessment until 2010. However, in 2010, this regulation has been changed and credit rating agencies potentially have more restricted information access now.¹⁰⁵ Extending the sample period to before 2000 and into the future would therefore allow to further investigate whether the private information component of the performance signals of information intermediaries is the driver of the results of my studies. This would be particularly interesting with respect to Chapter 5 where I analyze the incremental value of GCOs in addition to downgrades by both credit rating agencies and equity analysts.

The conclusions regarding the auditor specialization analyses in Chapter 3 and 4 need to be considered carefully because the computation for the auditor industry portfolios is restricted to listed companies. Publicly listed companies are potentially only a small portion of all clients in that industry which is why one needs to be careful to generalize the results. Generally, it would also be interesting to extend the study to other countries and regulatory regimes. Auditor litigation concerns for example, might affect auditors' reporting behavior and how likely they are to use signals from other information intermediaries to corroborate their own findings. Additionally, the results might differ for shareholder vs. stakeholder oriented countries as the roles of auditors, credit rating agencies and equity analysts and their interdependencies are different in different regulatory regimes.

¹⁰⁵ It is not sure whether credit rating agencies indeed have restricted information access because there are several ways to circumvent the regulation and still obtain proprietary information legally.

6.3 Contributions and Implications

The three empirical studies conducted as part of this dissertation contribute to the academic literature and have implications for auditors, firms' stakeholders as well as regulators. First of all, I extend existing literature concerning going-concern opinions and credit ratings as I establish a link between these two. Moreover, I contribute to the literature on going-concern misclassifications as I provide evidence in line with the argument that auditors alter their going-concern reporting decisions in response to credit rating changes, which are also signals by independent, specialized parties that provide indications regarding a firm's future viability. This also contributes to the finance literature which examines the relevance of credit ratings to various market participants. Chapter 5 supplements the literature on the relevance of going-concern opinions to stock market investors as I provide evidence that the stock market values going-concern assessments beyond the information that is provided by other information intermediaries.

The results reported also have implications for auditors and the audit profession. Particularly, the results in Chapter 5 indicate that investors perceive the auditor's going-concern opinion as useful and value the professional assessment. Even while other studies show that the financial information on which the audit opinion is based are informative enough and argue that investors only react to the unexpected component of GCOs, I find that the cases in which the market reaction to GCOs is nullified is extremely rare. It is important that auditors are aware of this and understand the relevance of GCOs not only to firms but also to investors and be cautious in their assessments. Chapters 3 and 4 also speak to this as there is some evidence consistent with the notion that auditors tend to become more conservative in response to credit ratings. Given that this results in more Type I and less Type II errors, auditors need to consider whether credit rating downgrades of financially distressed firms create situations that are potentially prone for auditor reporting errors. Increasing the awareness that this might be the case could help auditors to adjust their behavior and provide more accurate assessments. Moreover, Chapter 4 might increase awareness of non-specialized auditors that they could derive information from other information intermediaries which might help them in closing the performance gap to specialized auditors. Yet, they need to be careful not to become too conservative.

Finally, the findings of this dissertation may also have regulatory implications. Regulators are usually concerned with the functioning of entire markets and this thesis contributes to several ongoing discussions that are relevant for capital markets. First, the auditor's going-concern opinion has been criticized for its standardized wording, binary nature and lack of timeliness. Recently, it has been proposed to change the format of the audit report, e.g. by the IAASB, to improve audit reporting. The request has been made to include an explicit statement as to whether material uncertainties in relation to the GCO have been identified. Opponents have argued that it is not necessary to provide

GCOs as investors can derive the same information from other sources. Chapter 5 of this study shows that market participants value the GCO in its current form. Moreover, it indicates that although other information intermediaries provide indications regarding firms' financial status that are more differentiated (i.e. at least on an ordinal scale), investors seem to derive value exactly from the binary statement contained in the GCO. While this does not mean that regulators should not extend the information provided by auditors, it means that the binary assessment is valued and suggests that it would be best continued to exist in this unambiguous nature. Secondly, the results imply that auditors are particularly prone to making reporting errors when other information intermediaries also attest to a deteriorating firm performance. Potentially, regulators are interested in increasing awareness of these situations, which might help to reduce audit reporting error rates. At the same time, regulators could also provide more specific guidelines regarding credit ratings and their changes as there seems to be a strong correlation between credit rating downgrades and issuance of GCOs which seems to result in more conservative reporting behavior by auditors. Given the public demand to regulate credit rating agencies more strictly and replace them in statutory references, policy makers might find the results of this dissertation interesting because speculative grade credit ratings could potentially be supplemented with the auditor's GCO, which is also perceived as relevant by market participants beyond the information contained in credit ratings. Overall, this dissertation provides evidence that there is clearly an association between auditors' GCO reports and the signals provided by other information intermediaries, but especially credit ratings. It is recommended to policy makers to be aware that regulatory changes in one domain do not only affect that particular group of information intermediaries but also indirectly affect multiple other market participants and the need to carefully consider the overall effect on all stakeholders.

References

- Ai, C., and E. C. Norton. 2003. Interaction terms in logit and probit models. *Economics Letters* 80: 123–129.
- Alford, A. W., J. J. Jones, and M. E. Zmijewski. 1994. Extension and violations of the statutory SEC Form 10-K filing requirements. *Journal of Accounting and Economics* 17 (1): 229–254.
- Altman, E. 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance* 23 (September): 589–609.
- American Institute of Certified Public Accountants. 1972. *Responsibilities and Functions of the Independent Auditor*. SAS No. 1. AU Section 110. New York, NY: AICPA.
- . 1988. *The Auditor's Consideration of an Entity's Ability to Continue as a Going Concern*. Statement on Auditing Standards No. 59. New York, NY: AICPA.
- . 1993. *Codification of Statements on Auditing Standards*. New York, NY: AICPA.
- . 1994. *Using the Work of a Specialist*. SAS No. 73. New York, NY: AICPA.
- . 2010. *Confidential Client Information*. Code of Professional Conduct, Section 301. New York, NY: AICPA.
- Anderson, R. C., S. A. Mansi, and D. M. Reeb. 2004. Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics* 37 (3): 315–342.
- Ashbaugh-Skaife, H., D. W. Collins, and R. LaFond. 2006. The effects of corporate governance on firms' credit ratings. *Journal of Accounting and Economics* 42 (1–2): 203–243.
- Baker, H., and S. Mansi. 2002. Assessing credit rating agencies by bond issuers and institutional investors. *Journal of Business Finance & Accounting* 29 (9): 1367–1398.
- Bannier, C. E., and C. W. Hirsch. 2010. The economic function of credit rating agencies – What does the watchlist tell us? *Journal of Banking & Finance* 34 (12): 3037–3049.
- Banz, R. 1981. The relationship between return and market value of common stocks. *Journal of Financial Economics* 9 (1): 3–18.
- Barber, B., R. Lehavy, and B. Trueman. 2010. Ratings changes, ratings levels, and the predictive value of analysts' recommendations. *Financial Management* 39 (2): 533–553.

- Barber, B. M., R. Lehavy, M. McNichols, and B. Trueman. 2006. Buys, holds, and sells: The distribution of investment banks' stock ratings and the implications for the profitability of analysts' recommendations. *Journal of Accounting and Economics* 41 (1-2): 87–117.
- Beales, R., and P. Davies. 2007. How S and P Put the Triple into CPDO. *Financial Times* (May 17): 13.
- Beaver, W. 2002. Perspectives on recent capital market research. *The Accounting Review* 77 (2): 453–474.
- Behn, B., S. Kaplan, and K. Krumwiede. 2001. Further evidence on the auditor's going-concern report: The influence of management plans. *Auditing: A Journal of Practice & Theory* 20 (1).
- Bell, T., and R. Tabor. 1991. Empirical analysis of audit uncertainty qualifications. *Journal of Accounting Research* 29 (2): 350–370.
- Bell, TB, and AM Wright, eds. 1995. *Auditing Practice, Research and Education: A Productive Collaboration*. American Institute of Certified Public Accountants in Cooperation with the Auditing Section of the American Accounting Association.
- Bellovary, J., D. Giacomino, and M. Akers. 2006. Weighing the public interest. *CPA Journal* 43 (59): 24–25.
- Beneish, M., and E. Press. 1993. Costs of technical violation of accounting-based debt covenants. *The Accounting Review* 68 (2): 233–257.
- Bhojraj, S., and P. Sengupta. 2003. Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors. *The Journal of Business* 76 (3): 455–475.
- Blay, A., and M. Geiger. 2001. Market expectations for first-time going-concern recipients. *Journal of Accounting, Auditing & Finance* 16 (3): 209–226.
- . 2013. Auditor fees and auditor independence: Evidence from going concern reporting decisions. *Contemporary Accounting Research* 30 (2): 579–606.
- Blay, A., M. Geiger, and D. North. 2011. The auditor's going-concern opinion as a communication of risk. *Auditing: A Journal of Practice & Theory* 30 (2): 77–102.
- Bonner, S. 1990. Experience effects in auditing: The role of task-specific knowledge. *The Accounting Review* 65 (1): 72–92.
- Boot, A., T. T. Milbourn, and A. Schmeits. 2006. Credit ratings as coordination mechanisms. *Review of Financial Studies* 19 (1): 81–118.
- Bowen, R., X. Chen, and Q. Cheng. 2008. Analyst coverage and the cost of raising equity capital: Evidence from underpricing of seasoned equity offerings. *Contemporary Accounting Research* 25 (3): 657–700.
- Brandon, D., A. Crabtree, and J. Maher. 2004. Nonaudit fees, auditor independence, and bond ratings. *Auditing: A Journal of Practice & Theory* 23 (2): 89–103.

- Brown, C., and I. Solomon. 1991. Configural information processing in auditing: The role of domain-specific knowledge. *The Accounting Review* 66 (1): 100–119.
- Bruynseels, L., W. R. Knechel, and M. Willekens. 2011. Auditor differentiation, mitigating management actions, and audit-reporting accuracy for distressed firms. *Auditing: A Journal of Practice & Theory* 30 (1): 1–20.
- Cahan, S., D. Jeter, and V. Naiker. 2011. Are all industry specialist auditors the same? *Auditing: A Journal of Practice & Theory* 30 (4): 191–222.
- Call, A., S. Chen, and Y. Tong. 2013. Are analysts' cash flow forecasts naïve extensions of their own earnings forecasts? *Contemporary Accounting Research* 30 (2): 438–465.
- Callaghan, J., M. Parkash, and R. Singhal. 2009. Going-concern audit opinions and the provision of nonaudit services: Implications for auditor independence of bankrupt firms. *Auditing: A Journal of Practice & Theory* 28 (1): 153–169.
- Cantor, R., and F. Packer. 1996. Determinants and impact of sovereign credit ratings. *The Journal of Fixed Income* 6 (3): 76–91.
- Carcello, J., and A. Nagy. 2004. Client size, auditor specialization and fraudulent financial reporting. *Managerial Auditing Journal* 19 (5): 651–668.
- Carcello, J., and T. Neal. 2003. Audit committee characteristics and auditor dismissals following “new” going-concern reports. *The Accounting Review* 78 (1): 95–117.
- Carcello, J., and Z. Palmrose. 1994. Auditor litigation and modified reporting on bankrupt clients. *Journal of Accounting Research* 32 (Supplement): 1–30.
- Carcello, J. V., A. Vanstraelen, and M. Willenborg. 2009. Rules rather than discretion in audit standards: Going-concern opinions in Belgium. *The Accounting Review* 84 (5): 1395–1428.
- Carson, E., N. L. Fargher, M. Geiger, C. S. Lennox, K. Raghunandan, and M. Willekens. 2013. Audit reporting for going-concern uncertainty: A research synthesis. *Auditing: A Journal of Practice & Theory* 32 (Supplement 1): 353–384.
- Chen, K., and B. Church. 1992. Default on debt obligations and the issuance of going-concern opinions. *Auditing: A Journal of Practice & Theory* 11 (2): 30–49.
- . 1996. Going concern opinions and the market's reaction to bankruptcy filings. *The Accounting Review* 71 (1): 117–128.
- Cheng, M., and M. Neamtiu. 2009. An empirical analysis of changes in credit rating properties: Timeliness, accuracy and volatility. *Journal of Accounting and Economics* 47 (1-2): 108–130.
- Chow, C., and S. Rice. 1982. Qualified audit opinions and auditor switching. *The Accounting Review* 57 (2): 326–335.
- Chung, K., and H. Jo. 1996. The impact of security analysts' monitoring and marketing functions on the market value of firms. *Journal of Financial and Quantitative Analysis* 31 (4): 493–512.

- Citron, D. B., R. J. Taffler, and J.-Y. Uang. 2008. Delays in reporting price-sensitive information: The case of going concern. *Journal of Accounting and Public Policy* 27 (1): 19–37.
- Covitz, D., and P. Harrison. 2003. *Testing Conflicts of Interest at Bond Rating Agencies with Market Anticipation: Evidence that Reputation Incentives Dominate*. Working Paper, Federal Reserve Board.
- DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3 (3): 183–199.
- DeBondt, W., and R. Thaler. 1990. Do security analysts overreact? *The American Economic Review* 80 (2): 52–57.
- DeFond, M., J. Francis, and X. Hu. 2011. *The Geography of SEC Enforcement and Auditor Reporting for Financially Distressed Clients*. Working Paper, The University of Southern California, The University of Missouri, and The University of Oregon.
- DeFond, M. L., and M. Hung. 2003. An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics* 35 (1): 73–100.
- DeFond, M., K. Raghunandan, and K. Subramanyam. 2002. Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research* 40 (4): 1247–1274.
- Dhaliwal, D., C. Hogan, R. Trezevant, and M. Wilkins. 2011. Internal control disclosures, monitoring, and the cost of debt. *The Accounting Review* 86 (4): 1131–1156.
- Dichev, I., and J. Piotroski. 2001. The long-run stock returns following bond ratings changes. *The Journal of Finance* 56 (1): 173–203.
- Dodd, P., N. Dopuch, R. Holthausen, and R. Leftwich. 1984. Qualified audit opinions and stock prices: Information content, announcement dates, and concurrent disclosures. *Journal of Accounting and Economics* 6 (1): 3–38.
- Dodd-Frank. 2010. *Dodd-Frank Wall Street Reform and Consumer Protection Act*. Washington, DC: Government Printing Office.
- Dopuch, N., R. Holthausen, and R. Leftwich. 1987. Predicting audit qualifications with financial and market variables. *The Accounting Review* 62 (3): 431–454.
- Doukas, J., C. Kim, and C. Pantzalis. 2005. The two faces of analyst coverage. *Financial Management* 34 (2): 99–125.
- Dunn, K., and B. Mayhew. 2004. Audit firm industry specialization and client disclosure quality. *Review of Accounting Studies* 9 (1): 35–58.
- Ederington, L., and J. Goh. 1998. Bond rating agencies and stock analysts: Who knows what when? *The Journal of Financial and Quantitative Analysis* 33 (4): 569–585.
- Ederington, L. H., and J. B. Yawitz. 1987. The Bond Rating Process. In *Handbook of Financial Markets and Institutions*, ed. E. Altman. 6th ed. New York: John Wiley & Sons.

- Eichenseher, J., and P. Danos. 1981. The analysis of industry-specific auditor concentration: Towards an explanatory model. *The Accounting Review* LVI (3): 479–492.
- Elayan, F. a., B. a. Maris, and P. J. Young. 1996. The effect of commercial paper rating changes and credit-watch placement on common stock prices. *The Financial Review* 31 (1): 149–167.
- Elbannan, M. a. 2009. Quality of internal control over financial reporting, corporate governance and credit ratings. *International Journal of Disclosure and Governance* 6 (2): 127–149.
- El-Gazzar, S., K. Chung, and R. Jacob. 2011. Reporting of internal control weaknesses and debt rating changes. *International Advances in Economic Research* 17 (4): 421–435.
- Elton, E., M. Gruber, and S. Grossman. 1986. Discrete expectational data and portfolio performance. *The Journal of Finance* 41: 699–713.
- Fargher, N., and L. Jiang. 2008. Changes in the audit environment and auditors' propensity to issue going-concern opinions. *Auditing: A Journal of Practice & Theory* 27 (2): 55–77.
- Faulkender, M., and M. Petersen. 2006. Does the source of capital affect capital structure? *Review of Financial Studies* 19 (1): 45–79.
- Feldmann, D., and W. J. Read. 2013. Going-concern audit opinions for bankrupt companies – Impact of credit rating. *Managerial Auditing Journal* 28 (4): 345–363.
- Ferguson, A., J. R. Francis, and D. J. Stokes. 2003. The effects of firm-wide and office-level industry expertise on audit pricing. *The Accounting Review* 78 (2): 429–448.
- Fleak, S., and E. Wilson. 1994. The incremental information content of the going-concern audit opinion. *Journal of Accounting, Auditing & Finance* 9 (1): 149–166.
- Francis, J., K. Reichelt, and D. Wang. 2005. The pricing of national and city-specific reputations for industry expertise in the U.S. audit market. *The Accounting Review* 80 (1): 113–136.
- Francis, J., and L. Soffer. 1997. The relative informativeness of analysts' stock recommendations and earnings forecast revisions. *Journal of Accounting Research* 35 (2): 193–211.
- Frost, C. 2007. Credit rating agencies in capital markets: A review of research evidence on selected criticisms of the agencies. *Journal of Accounting, Auditing & Finance* 22 (3): 469–492.
- Geiger, M. A., K. Raghunandan, and D. V. Rama. 1998. Costs associated with going-concern modified audit opinions: An analysis of auditor changes, subsequent audit opinions, and client failures. *Advances in Accounting* 16 (1): 117–139.

- Geiger, M. a., K. Raghunandan, and D. V. Rama. 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* 25 (3): 332–353.
- Geiger, M., and K. Raghunandan. 2002. Auditor tenure and audit reporting failures. *Auditing: A Journal of Practice & Theory* 21 (1): 67–78.
- Geiger, M., and D. Rama. 2003. Audit fees, nonaudit fees, and auditor reporting on stressed companies. *Auditing: A Journal of Practice & Theory* 22 (2): 53–69.
- . 2006. Audit firm size and going-concern reporting accuracy. *Accounting Horizons* 20 (1): 1–17.
- Givoly, D., C. Hayn, and R. Lehavy. 2009. The quality of analysts' cash flow forecasts. *The Accounting Review* 84 (6): 1877–1911.
- Goh, J., and L. Ederington. 1993. Is a bond rating downgrade bad news, good news, or no news for stockholders? *The Journal of Finance* 48 (5): 2001–2008.
- Gow, I., G. Ormazabal, and D. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.
- Gramling, A., J. Krishnan, and Y. Zhang. 2011. Are PCAOB-identified audit deficiencies associated with a change in reporting decisions of triennially inspected audit firms? *Auditing: A Journal of Practice & Theory* 30 (3): 59–79.
- Greene, W. 2010. Testing hypotheses about interaction terms in nonlinear models. *Economics Letters* 107 (2): 291–296.
- Gul, F. a., and J. Goodwin. 2010. Short-term debt maturity structures, credit ratings, and the pricing of audit services. *The Accounting Review* 85 (3): 877–909.
- Güttler, A., and M. Wahrenburg. 2007. The adjustment of credit ratings in advance of defaults. *Journal of Banking & Finance* 31 (3): 751–767.
- Hammersley, J., L. Myers, and J. Zhou. 2012. The failure to remediate previously disclosed material weaknesses in internal controls. *Auditing: A Journal of Practice & Theory* 31 (2): 73–111.
- Hand, J., R. Holthausen, and R. Leftwich. 1992. The effect of bond rating agency announcements on bond and stock prices. *The Journal of Finance* 47 (2): 733–752.
- Healy, P., and K. Palepu. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics* 31 (1): 405–440.
- Herbohn, K., V. Ragunathan, and R. Garsden. 2007. The horse has bolted: Revisiting the market reaction to going concern modifications of audit reports. *Accounting & Finance* 47 (3): 473–493.
- Hite, G., and A. Warga. 1997. The effect of bond-rating changes on bond price performance. *Financial Analysts Journal* 53 (3): 35–51.

- Ho, M., and R. Harris. 1998. Market reactions to messages from brokerage ratings systems. *Financial Analysts Journal* 54 (1): 49–57.
- Hogan, C., and D. Jeter. 1999. Industry specialization by auditors. *Auditing: A Journal of Practice & Theory* 18 (1): 1–17.
- Holthausen, R., and R. Leftwich. 1986. The effect of bond rating changes on common stock prices. *Journal of Financial Economics* 17 (1): 57–89.
- Hong, H., T. Lim, and J. Stein. 2000. Bad news travels slowly: Size, analyst coverage, and the profitability of momentum strategies. *The Journal of Finance* 55 (1): 265–295.
- Hsueh, L., and Y. Liu. 1992. Market anticipation and the effect of bond rating changes on common stock prices. *Journal of Business Research* 24 (3): 225–239.
- Hu, S. 2011. Convergence of audit and credit rating practices: Going concern ratings. *International Journal of Disclosure and Governance* 8 (4): 323–338.
- Hull, J., M. Predescu, and A. White. 2004. The relationship between credit default swap spreads, bond yields, and credit rating announcements. *Journal of Banking & Finance* 28 (11): 2789–2811.
- Hunt, I. 2002. *Testimony Concerning the Role of Credit Rating Agencies in the US Securities Markets*. Before the Senate Committee on Governmental Affairs.
- Hwang, M. I., and J. W. Lin. 1999. Information dimension, information overload and decision quality. *Journal of Information Science* 25 (3): 213–218.
- Jegadeesh, N., and J. Kim. 2004. Analyzing the analysts: When do recommendations add value? *The Journal of Finance* 59 (3): 1083–1124.
- Jiang, J. 2008. Beating earnings benchmarks and the cost of debt. *The Accounting Review* 83 (2): 377–416.
- Jones, F. 1996. The information content of the auditor's going concern evaluation. *Journal of Accounting and Public Policy* 15 (1): 1–2.
- Jorion, P., Z. Liu, and C. Shi. 2005. Informational effects of regulation FD: Evidence from rating agencies. *Journal of Financial Economics* 76 (2): 309–330.
- Judge, G., R. Hill, W. Griffiths, H. Lutkepohl, and L. TC. 1988. *Introduction to the Theory and Practice of Econometrics*. New York, USA: John Wiley & Sons.
- Jung, B., N. Soderstrom, and Y. S. Yang. 2013. Earnings smoothing activities of firms to nanage credit ratings. *Contemporary Accounting Research* 30 (2): 645–676.
- Kanter, S. J., G. A. Femicola, and J. B. Goldstein. 2010. SEC issues final rule release: Removal from Regulation FD of the exemption for credit rating agencies. *Skadden* (October 1): 1–2.
- Kaplan, S., M. Mowchan, and E. Weisbrod. 2014. *Does Institutional Investor Behavior Influence the Market Reaction to Going Concern Audit Reports?* Working Paper, Arizona State University, and The University of Miami.

- Kausar, A., R. Taffler, and C. Tan. 2009. The going-concern market anomaly. *Journal of Accounting Research* 47 (1): 213–239.
- Kolasinski, A. C. 2009. Subsidiary debt, capital structure and internal capital markets. *Journal of Financial Economics* 94 (2): 327–343.
- Kolasinski, A., and A. Siegel. 2010. *On the Economic Meaning of Interaction Term Coefficients in Non-Linear Binary Response Regression Models*. Working Paper, Texas A&M, and the University of Washington.
- Krishnan, J. 1997. Litigation risk and auditor resignations. *The Accounting Review* 72 (4): 539–560.
- Lammers, E. 2013. Early warning for business failure. *Kredit & Rating Praxis* (June 24).
- Lang, M., and R. Lundholm. 1996. Corporate disclosure policy and analyst behavior. *The Accounting Review* 71 (4): 467–492.
- Lennox, C. 1999. The accuracy and incremental information content of audit reports in predicting bankruptcy. *Journal of Business Finance & Accounting* 26 (5-6): 757–778.
- Li, C. 2009. Does client importance affect auditor independence at the office level? Empirical evidence from going-concern opinions. *Contemporary Accounting Research* 26 (1): 201–230.
- Lim, C., and H. Tan. 2008. Non-audit service fees and audit quality: The impact of auditor specialization. *Journal of Accounting Research* 46 (1): 199–246.
- Lindberg, D., and M. Maletta. 2003. An examination of memory conjunction errors in multiple client audit environments. *Auditing: A Journal of Practice & Theory* 22 (1): 127–141.
- Livingston, M., A. Naranjo, M. Nimalendran, and L. Zhou. 2011. *Public and Non-Public Information in Credit Ratings*. Working Paper, The University of Florida, and Northern Illinois University.
- Löffler, G. 2005. Avoiding the rating bounce: Why rating agencies are slow to react to new information. *Journal of Economic Behavior & Organization* 56 (3): 365–381.
- Loudder, M., I. Khurana, R. Sawyers, C. Cordery, C. Johnson, J. Lowe, and R. Wunderle. 1992. The information content of audit qualifications. *Auditing: A Journal of Practice & Theory* 11 (1): 69–82.
- Lucchetti, A. 2008. At request of bond issuers or bankers, credit-rating firms switch analysts. *Wall Street Journal* (May 23): 733–752.
- Lys, T., and S. Sohn. 1990. The association between revisions of financial analysts' earnings forecasts and security-price changes. *Journal of Accounting and Economics* 13 (4): 341–363.
- Malmendier, U., and G. Tate. 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics* 89 (1): 20–43.

- Matsumura, E., K. Subramanyam, and R. R. Tucker. 1997. Strategic auditor behavior and going-concern decisions. *Journal of Business Finance & Accounting* 24 (6): 727–758.
- McKeown, J., J. Mutchler, and W. Hopwood. 1991. Towards an explanation of auditor failure to modify the audit opinions of bankrupt companies. *Auditing: A Journal of Practice & Theory* 10: 1–13.
- McNichols, M., and P. O'Brien. 1997. Self-selection and analyst coverage. *Journal of Accounting Research* 35: 167–199.
- Menon, K., and D. Williams. 2010. Investor reaction to going concern audit reports. *The Accounting Review* 85 (6): 2075–2105.
- Minutti-Mezza, M. 2013. Does auditor industry specialization improve audit quality? *Journal of Accounting Research* (forthcoming).
- Mokoaleli-Mokoteli, T., R. Taffler, and V. Argrawal. 2009. Behavioural bias and conflicts of interest in analyst stock recommendations. *Journal of Business Finance & Accounting* 36 (3-4): 384–418.
- Mutchler, J. 1984. Auditors' perceptions of the going-concern opinion decision. *Auditing: A Journal of Practice & Theory* 3 (2): 17–29.
- Mutchler, J., W. Hopwood, and J. McKeown. 1997. The influence of contrary information and mitigating factors on audit opinion decisions on bankrupt companies. *Journal of Accounting Research*: 295–310.
- Myers, L., J. Schmidt, and M. Wilkins. 2008. Have auditors become too conservative? Evidence from going-concern opinions. *Review of Quantitative Finance & Accounting* (forthcoming).
- Neal, T., and R. J. Riley. 2004. Auditor industry specialist research design. *Auditing: A Journal of Practice & Theory* 23 (2): 169–177.
- Norden, L., and M. Weber. 2004. Informational efficiency of credit default swap and stock markets: The impact of credit rating announcements. *Journal of Banking & Finance* 28 (11): 2813–2843.
- Numan, W., and M. Willekens. 2012. An empirical test of spatial competition in the audit market. *Journal of Accounting and Economics* 53 (1-2): 450–465.
- Obstfeld, M., and A. Taylor. 2003. Globalization and capital markets. In *Globalization in Historical Perspective*, I:121–188. University of Chicago Press.
- Owhoso, V., W. F. Messier, and J. G. Lynch. 2002. Error detection by industry-specialized teams during sequential audit review. *Journal of Accounting Research* 40 (3): 883–900.
- Partnoy, F. 1999. The siskel and ebert of financial markets: Two thumbs down for the credit rating agencies. *The Wash. ulq* 77: 619.
- Peixinho, R. 2009. *How do analysts deal with bad news? Going-concern opinions and analyst behaviour*. Working Paper. The University of Edinburgh.

- Peixinho, R., and R. Taffler. 2011. *Do analysts know but not say? The case of going-concern opinions*. Working Paper. CEFAGE-UE Working papers.
- Petersen, M. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1): 435–480.
- Poon, W. P. H., and D. A. Evans. 2013. Regulation Fair Disclosure's effect on the information content of bond rating changes. *European Financial Management* 19 (4): 775–800.
- Public Company Accounting Oversight Board. 2011. *PCAOB Discussed Changes to the Auditor's Reporting Model in Preparation for Concept Release*. Washington, D.C.
- Radley, H., and C. Marrison. 2003. A risky new role for the rating agencies. *Financial Times* (December 5).
- Ramnath, S., S. Rock, and P. Shane. 2008. The financial analyst forecasting literature: A taxonomy with suggestions for further research. *International Journal of Forecasting* 24 (1): 34–75.
- Reichelt, K., and D. Wang. 2010. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48 (3): 647–686.
- Reynolds, J., and J. Francis. 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30 (3): 375–400.
- Robinson, D. 2008. Auditor independence and auditor-provided tax service: Evidence from going-concern audit opinions prior to bankruptcy filings. *Auditing: A Journal of Practice & Theory* 27 (2): 31–54.
- Roxburgh, C., S. Lund, and J. Piotrowski. 2011. Mapping global capital markets. *McKinsey Global Institute*.
- Schipper, K. 1991. Analysts' forecasts. *Accounting Horizons* 5: 105–121.
- Securities and Exchange Commission. 2000. *Selective Disclosure and Insider Trading*. Release 33-7881. Washington D.C.:SEC.
- . 2003. *Strengthening the Commission's Requirements Regarding Auditor Independence*. Release 33-8183. Washington D.C.: SEC.
- . 2012. *Credit Ratings Standardization Study*. Washington D.C.: SEC.
- Simnett, R. 1996. The effect of information selection, information processing and task complexity on predictive accuracy of auditors. *Accounting, Organizations and Society* 21 (7): 699–719.
- Solomon, I., M. Shields, and O. Whittington. 1999. What do industry-specialist auditors know? *Journal of Accounting Research* 37 (1): 191–208.
- Standard & Poor's. 2003. *S&P Corporate Ratings Criteria*. New York: McGraw Hill.

-
- . 2012a. *Credit Ratings Definitions and Frequently Asked Questions*. New York: McGraw Hill.
- . 2012b. *2011 Annual U.S. Corporate Default Study and Rating Transition*. New York: McGraw Hill.
- . 2013a. *Corporate Methodology*. New York: McGraw Hill.
- . 2013b. *Credit Ratings Guide*. New York: McGraw Hill.
- . 2013c. *Standard & Poor's Rating Definitions*. New York: McGraw Hill.
- Stickel, S. 1995. The anatomy of the performance of buy and sell recommendations. *Financial Analysts Journal* 51 (5): 25–39.
- Sufi, A. 2009. The real effects of debt certification: Evidence from the introduction of bank loan ratings. *Review of Financial Studies* 22 (4): 1659–1691.
- Sylla, R. 2001. A historical primer on the business of credit rating. In *The Role of Credit Reporting Systems in the International Economy*. Washington DC: The World Bank.
- Vanstraelen, A. 2003. Going-concern opinions, auditor switching, and the self-fulfilling prophecy effect examined in the regulatory context of Belgium. *Journal of Accounting, Auditing & Finance* 18 (2): 231–254.
- Watts, R., and J. Zimmerman. 1983. Agency problems, auditing, and the theory of the firm: Some evidence. *Journal of Law and Economics* 26 (3): 613–633.
- White, L. 2009. A brief history of credit rating agencies: How financial regulation entrenched this industry's role in the subprime mortgage debacle of 2007–2008. *Mercatus on Policy* 59.
- White, L. 2013. Credit Rating Agencies: An Overview. *Annu. Rev. Financ. Econ.* 5 (1): 93–122.
- Womack, K. 1996. Do brokerage analysts' recommendations have investment value? *The Journal of Finance* 51 (1): 137–167.
- Wyatt, E. 2002. Credit rating agencies waited months to voice doubts about Enron. *New York Times* (February 8).
- Ziebart, D., and S. Reiter. 1992. Bond ratings, bond yields and financial information. *Contemporary Accounting Research* 9 (1): 252–282.
- Zmijewski, M. 1984. Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research* 22 (1984): 59–82.

Valorization

Capital markets are the foundation of today's economies. In order for firms to produce goods and services that are valuable to society, these firms need funding. This can be acquired at capital markets, where investors choose firms to invest in, hoping that they will receive a return on their investments. Yet, investors need credible information about firms in order to understand the business concepts and associated risks of the firms they would like to invest in. As investors often lose money if they have invested in firms that file for bankruptcy, a particularly important question is whether a firm is likely to continue as a going-concern, i.e. whether it is likely to operate in the foreseeable future and survive the next fiscal year. Firms who would like to acquire financing therefore have incentives to publish information about their past performance as well as the prospects of their firm in order to convince investors that their firm is a good investment. Yet, firms are unwilling to disclose information that could harm their competitive position. Moreover, there are some challenges for investors to evaluate the publicly disclosed information. First, firms have incentives to present themselves favorably and it is thus questionable whether investors can trust the presented information. Secondly, even if the information itself is trustworthy, investors often lack the necessary time and skills to evaluate the information.

In order to address the first issue, regulators have stipulated rules to ensure that the information provided by firms is credible. One of these rules is that auditors need to attest whether the information presented in the annual financial report is reflective of the underlying firm situation and whether the company is likely to continue to operate in the foreseeable future. If the firm is unlikely to survive the next fiscal year, auditors are required to issue a going-concern opinion (GCO). The challenge for firms to communicate their quality without losing their competitive advantage is remediated by other third party information intermediaries. While firms are hesitant to disclose sensitive information publicly, they are often willing to provide access to information intermediaries, like credit rating agencies, who can then publish a summary assessment of the firm's quality to investors without releasing the underlying proprietary information directly. Given the reputation of the information intermediary and the assessment of the firm, investors thereby acquire credible information about a firm's prospects. Besides information intermediaries with access to proprietary information, other information intermediaries exist, such as equity analysts, that do not have access to proprietary information, but their experience and expertise as well as their coverage of entire industries, allows them to provide investors with an expert opinion regarding the future prospects of a firm. Information intermediaries also solve the issue that

investors lack time and skills to evaluate firms themselves as investors can incorporate the professional assessment of these information intermediaries in their decision.

The information intermediaries that are examined in detail in this dissertation are mainly auditors and credit rating agencies. Auditors are required to provide investors with an annual assessment whether the assumption that the assessed firm is likely to be able to continue to operate in the next fiscal year is viable. If the auditor believes that this assumption is violated, they issue a going-concern opinion. Besides the going-concern opinion that provides an assessment regarding the firm's future health, other information intermediaries exist that also provides signals regarding a firm's health. Credit rating agencies for example, evaluate the likelihood that a firm is able and willing to repay its debt in accordance with the terms of this debt. Their assessment is summarized and communicated via a credit rating. If a firm is unlikely to survive the next fiscal year, it is also unlikely that the firm will be able to repay all its debt and the credit rating is most likely downgraded. Besides auditors and credit rating agencies, one chapter of this dissertation additionally considers another type of information intermediaries, namely equity analysts. Equity analysts also gather and analyze information about a firm and communicate their assessment about the prospects of the firm via investment recommendations, earnings forecasts and target price forecasts. If a firm's performance is deteriorating, analysts usually communicate this via negative investment recommendations or downward revisions of forecasts.

To date, extensive research exists that analyses how different information intermediaries and their signals directly impact the behavior by stakeholders internal or external to firms. Questions that are frequently addressed are for example, how information is disseminated by firms themselves and how investors, i.e. shareholders and creditors, react to such information. Another question that has been examined in depth in the academic literature is how market participants react to information that is provided by information intermediaries. However, questions that have not been examined extensively and that are therefore addressed in this dissertation are what the effect is that information intermediaries have on each other and whether and how investors react to these interactions.

The results of this dissertation imply that auditors incorporate credit ratings by professional credit rating agencies into their assessment whether the firm will continue to operate in the foreseeable future and alter their behavior to issue going-concern opinions in response to recent credit rating downgrades. This finding is examined in more detail in a later chapter of the dissertation and the results seem to be driven by the fact that auditors become more conservative as a result of a recent credit rating downgrade. This seems only natural because a more conservative assessment reduces the likelihood of potential lawsuits against the auditor. While credit ratings overall seem to increase auditor conservatism and do not necessarily improve the auditor's

assessment, auditors without expertise in their client's industry seem to benefit from credit rating changes as they are less likely to misjudge whether the firm is likely to continue operating beyond the next fiscal year when a credit rating change precedes. Besides considering the impact of these information intermediaries on each other, this dissertation also examines whether investors' reaction to the auditor's assessment is different depending on preceding signals by other information intermediaries. The results suggest that equity investors continue to value the auditor's assessment regarding a firm's future viability, even if it is preceded by signals from other information intermediaries like credit rating agencies and equity analysts that provide similar information. Only when these other signals are without ambiguity that a firm is unlikely to survive the next fiscal year, is the auditor's assessment not valued anymore.

These findings do not only provide an academic contribution, but they are moreover relevant for multiple public debates and therefore also to regulators. First, the auditor's report has been criticized for its lack of timeliness because it is only published on an annual basis. Opponents have argued that there are more timely indicators and that the auditor's assessment regarding the viability of firms is therefore redundant. Yet, the findings of this dissertation show that investors value the information provided by the auditor even if other professional information intermediaries, like credit rating agencies and equity analysts, provide more timely signals regarding a firm's future viability. This is interesting for regulators because it clearly shows that the auditor's opinion is not redundant and regulators might want to consider this in future regulatory changes.

Secondly, the auditor's assessment whether the company is likely to survive the next fiscal year has been criticized for its binary nature and its standardized wording. The findings of this dissertation show that investors value specifically this assessment. While there are other indications about a firm's future prospects that are not of binary nature, investors seem to derive value from the auditor's assessment because of its binary nature and standardized wording as exactly this seems to reduce ambiguity. This is also relevant for regulators with respect to the current debate regarding whether and how to restructure the auditor's report. Based on requests from stakeholders, particularly investors and financial statement analysts, to improve the informativeness of the auditor's report, the International Auditing and Assurance Standard Board (IAASB) is currently considering to restructure the auditor's report. More particularly, investors and financial statement users argue that the auditor's report is the only means by which auditors can communicate information about a firm to the public and therefore it would be helpful if the auditor's report would have more information. While the findings of this dissertation do not provide an assessment regarding whether the audit report should include more information or not, the findings show that it is important to maintain the clear format of the auditor's opinion regarding the future viability of a

firm. This confirms the decision of the IAASB to add additional information to the auditor's report but to keep the unambiguous nature of the going-concern opinion.

Another public debate that is currently taking place is the role of credit ratings. Until the recent financial crisis, credit ratings were considered important information tools regarding firms' creditworthiness. They were not only used as guide concerning which firms to invest in by investors, but they were also incorporated in several capital market regulations. While an extensive stream of literature examines the role of credit ratings to investors and to firms, few research exists so far that considers the role of credit ratings for other information intermediaries, such as auditors. Given the auditor's litigation concerns and the fact that the assessment whether the firm is viable in the near future are often difficult, it seems only likely that auditors use other available information in their assessments. The findings of this dissertation show a clear association between credit rating changes and auditor's assessment regarding the future viability of those firms. This is important to consider for regulators as well, as it shows that changes to regulations of credit ratings might also indirectly affect auditors' actions. It is particularly important to understand that recent credit rating downgrades seem to increase auditor conservatism. Regulatory changes applicable to credit rating agencies to adapt credit ratings more quickly or to provide more conservative ratings, would likely result in auditors becoming more conservative overall as the findings of this dissertation imply. This is critical as this dissertation suggests that auditors occasionally become too conservative and regulators might want to consider the trade-off between more timely and more conservative credit ratings on the one hand and a side effect of more volatile ratings and potentially too conservative audit reports on the other hand.

Besides the implications for regulators, the findings of this dissertation are also relevant for auditors. This dissertation shows a strong association between credit rating downgrades and an auditor's propensity to issue going-concern opinions. It is important for auditors to understand how their decision is being affected by credit rating agencies and how credit rating agencies arrive at their rating. This is particularly relevant in light of the finding that auditors become more careful but not necessarily better in a going-concern assessment that follows a credit rating downgrade. The additional analyses with respect to auditors without expertise in their client's industry might be interesting and helpful for these auditors because it seems as if these auditor can derive additional information from credit rating changes and therefore improve their likelihood to give an assessment that is *ex post* identified as correct. Auditors should be aware of how their judgment is influenced by other information intermediaries in order to ensure that their decision regarding the assessment of the firm's future viability is indeed a conscious and hopefully optimal one.

Moreover, the findings are relevant to credit rating agencies themselves as it is important that they do not only understand the direct effects that their credit rating actions and reports have but also the indirect implications that their actions have on the end consumer of their reports via other market participants. Previous research has shown that investors react to changes in credit ratings immediately. Additionally, this dissertation implies that audit reports are also affected by credit rating changes. This means that investors are affected by credit rating changes directly but also indirectly via audit reports. Credit rating agencies need to be aware of these implications in order to ensure that their rating actions have indeed the intended consequences.

Last but not least, this dissertation might be useful to the users of audit reports and credit ratings. Clearly, there are implications for equity investors that decide whether they want to invest in a firm or not. For them it is relevant to be informed if a firm cannot continue to operate. It might therefore be interesting to understand how the auditor's decision whether to issue a going-concern opinion or not is influenced by actions from credit rating agencies. This is potentially particularly important in situations in which an auditor might be too conservative because investors might end up withdrawing their investments at a loss while it might not have been necessary (yet). Other users of audit reports such as a firm's creditors, employees, customers or suppliers might also find this interesting and relevant.

The increased awareness amongst all stakeholders – including regulators, auditors, credit rating agencies, and investors– to understand the indirect effects that signals by different information intermediaries have on each other might help to improve stakeholder actions and could thereby make capital markets overall more efficient.

Curriculum Vitae

Nadine Funcke was born on May 10th, 1987 in Aachen, Germany. After obtaining her Abitur in 2006, she started studying International Business at Maastricht University with a major in Accounting and a minor in Finance. In 2009 she obtained the Bachelor of Science degree and in 2010 her Master of Science (cum laude), both in International Business from the School of Business and Economics at Maastricht University. Her master thesis was part of the AIM excellent master thesis series and she received the Top 3% Award, Class of 2010. During her studies, she also developed an interest for teaching and obtained a tutor position in the department of Accounting and Information

Management, where she taught introductory and intermediate courses in Finance and Accounting. In 2010, Nadine joined the PhD program in the department of Accounting and Information Management at the Graduate School of Business and Economics at Maastricht University. During the PhD program, Nadine had the opportunity to spend several months at the Fisher School of Accounting at the University of Florida, where she got to work closely with her co-supervisor Prof. Dr. W. Robert Knechel. Her research output has been presented at international conferences such as the EARNet Symposium 2013 in Trier, Germany; the EAA Annual Congress 2014 in Tallinn, Estonia; the International Symposium on Auditing Research 2014 in Maastricht, The Netherlands; and the 2015 Auditing Mid-Year Meeting of the American Accounting Association in Miami, Florida. Currently, Nadine is Assistant Professor of Accounting and Control at the Rotterdam School of Management, Erasmus University in the Netherlands. Her research focuses on auditing and financial accounting and she is particularly interested in the role of information intermediaries in capital markets.