ABSTRACT

Title of Dissertation: CREDIT RATING AGENCIES AS GATEKEEPERS FOR NON-GAAP DISCLOSURE IN THE DEBT MARKET

Lu Yan, Doctor of Philosophy, 2024

Dissertation directed by: Professor Michael Kimbrough, Department of Accounting and Information Assurance

To aid investors in assessing earnings persistence, managers often voluntarily provide non-GAAP disclosure, which excludes certain items they characterize as non-recurring from GAAP earnings. The quality of non-GAAP disclosures and their impact on the equity market have been well studied. By contrast, there is little evidence on the impact of these disclosures in the debt market. Credit rating agencies (CRAs) serve as gatekeepers in the debt market, playing an important role in evaluating creditworthiness by actively incorporating accounting information from corporate disclosure. Like shareholders, CRAs also seek to isolate the transitory component of GAAP earnings. For example, Moody's (2006) and Standard & Poor's (2008), the two largest rating agencies, state that they derive their credit ratings from adjusted accounting figures by excluding non-recurring items that do not reflect long-term credit risks. Thus, in this paper, I explore the possibility that managers' non-GAAP disclosures are relevant to CRAs. Consistent with CRAs' emphasis on long-horizon corporate performance, I

provide evidence that CRAs exhibit stronger responses to non-GAAP earnings than GAAP earnings. Using mediation analysis, I find that bondholders rely on CRAs to incorporate earnings information, and such reliance is notably greater for non-GAAP earnings than GAAP earnings. While CRAs do not specifically emphasize the direction of exclusions (i.e., gains or losses), they are attentive to identifying high-quality non-GAAP disclosure, as evidenced by the more positive associations observed between their credit ratings and high-quality non-GAAP earnings. I further find that non-GAAP earnings outperform GAAP earnings for non-GAAP reporters in their predictive power for long-term bankruptcy and default risks, validating CRAs' motivations to incorporate non-GAAP earnings when assigning credit ratings. Finally, managers appear to be aware of CRAs' utilization of their non-GAAP disclosure and are thus inclined to offer high-quality but conservative non-GAAP metrics to either achieve or maintain higher ratings when approaching rating upgrades or downgrades. My findings collectively suggest that CRAs view non-GAAP metrics as more relevant tools when evaluating borrowers' long-term performance and default risks, serving as key intermediaries between non-GAAP reporters and bondholders.

CREDIT RATING AGENCIES AS GATEKEEPERS FOR NON-GAAP DISCLOSURE IN THE DEBT MARKET

by

Lu Yan

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2024

Advisory Committee:
Professor, Michael Kimbrough, Chair
Professor, Rebecca Hann
Associate Professor, Nick Seybert
Associate Professor, Musa Subasi
Professor, Guido Kuersteiner

Dedication

I want to express my deepest gratitude to my parents, Qinglian Tang and Guoqiang Yan, for their unwavering love and encouragement all the time. I also thank my cousin Xinyu Xia and other family members for their continuous support. I am especially thankful for the loving companionship of my boyfriend, Shunjie Han, and my cats, Snowball, Mia, and Pipi, who have been my source of strength. I am grateful to my dear friends Xiaoxue Zhang, Bingyan Ai, Rui Chen, and Keke Mei, along with her cat Coco, for bringing laughter, inspiration, and support into my life.

Acknowledgements

I am deeply grateful to my dissertation committee chair, Michael Kimbrough, for his invaluable guidance, support, and encouragement throughout the journey of this dissertation. I am also thankful to the members of my dissertation committee – Rebecca Hann, Nick Seybert, Musa Subasi, and Guido Kuersteiner – as well as Mark Zakota, Laurel Mazur, and seminar participants at the University of Maryland, the University of Tulsa, Georgetown University, and NEOMA Business School for helpful comments. I thank Kurt H. Gee for providing the non-GAAP data used in Bentley et al. (2018). I am grateful for the financial support from the Robert H. Smith School of Business.

Table of Contents

Chapter 1: Introduction

Credit rating agencies (CRAs) are critical gatekeepers in the debt market. They conduct objective assessments for corporate disclosure, facilitate efficient capital allocation through risk evaluation, and contribute to market confidence and regulatory compliance, playing a key role in maintaining the stability of the financial system (Kliger and Sarig, 2000; Tang, 2009). Prior studies have examined the various factors integrated into CRAs' risk assessment models, and they document accounting numbers from financial statements as major inputs to these models (e.g., Ziebart and Reiter, 1992; Kraft, 2015; Akins, 2018). However, rather than relying on the raw accounting numbers, these agencies make adjustments and derive their credit ratings from the modified figures, excluding non-recurring items that introduce noise when assessing long-term performance and future credit risks (Moody's, 2006; Standard &Poor's, 2008). Despite these adjustments, CRAs encounter limitations in identifying non-recurring items from mandated disclosure. As stated by Moody's (2006), "*Financial statements generally do not contain enough information about unusual or non-recurring items to meet analysts' needs for information… accounting standards fail to require or permit companies to separately display on the face of the statements a sufficiently broad range of unusual or non-recurring item.*"

Although CRAs claim that financial statements following the Generally Accepted Accounting Principles (GAAP) lack adequate information about certain non-recurring items, managers' voluntary disclosure of non-GAAP information might uncover relevant details for rating agencies, particularly concerning excluded one-time items. This paper offers novel insights into the relevance of managers' non-GAAP disclosure for CRAs' credit rating assignments and explores whether CRAs play a more significant role as gatekeepers when dealing with non-GAAP information relative to GAAP information.

While CRAs are exposed to a wide set of timely and everyday information, they tend to focus on identifying signals that are indicative of long-term changes in firms' financial status and repayment ability to avoid costly and frequent rating changes or reversals (Cantor and Mann, 2003). CRAs choose to exclude non-recurring or one-time items as these are generally considered irrelevant to long-term persistent corporate performance. According to Standard & Poor's (2008), "*We typically make adjustments to a company's reported operating income and cashflow to remove items we consider nonrecurring and include those we consider recurring, so the historical financial ratios will be more indicative of future performance*." In line with this intuition, managers disclose adjusted earnings metrics (i.e., non-GAAP earnings) by excluding non-recurring items such as restructuring charges or acquisition costs, complementing GAAP earnings through the presentation of a more persistent and relevant figure for future core operating performance (Bhattacharya et al., 2003). While the mandated disclosure does not provide sufficient information regarding non-recurring items, non-

GAAP disclosure can serve as a valuable information source for CRAs, revealing managers' private information regarding non-recurring items. This study investigates this possibility by examining whether non-GAAP earnings, compared to GAAP earnings, are more relevant to CRAs' credit rating assignments.

Prior literature provides empirical evidence that managers' non-GAAP disclosure is informative to equity market participants (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003). However, ex-ante, the findings in these studies that equity market participants rely on non-GAAP disclosure cannot be readily generalized to the debt market because these two types of capital participants have different interests when making investment decisions. Despite CRAs stated practice of adjusting for non-recurring items, the conservatism literature suggests that debtholders are more conservative than shareholders due to the asymmetry in their payoff structures and priority of claims and, therefore, may be less willing to exclude losses from the earnings measures they use (Watts, 2003; Zhang, 2008; Kothari et al., 2010). Specifically, debtholders focus on the lower ends of earnings because, although they do not receive extra compensation if the firm's net assets exceed the value of debt, they are exposed to potential losses if the firm lacks sufficient net assets for debt repayment (Watts, 2003). Debtholders' heightened focus on lower payoffs leads to their conservatism, which is ultimately reflected in their timelier recognition of losses compared to gains. In contrast, shareholders usually benefit from a more balanced payoff structure, participating in the firm's profits through dividends and capital appreciation. Defond and Zhang (2014) add to this discussion by providing evidence that bondholders react more quickly to negative earnings news compared to shareholders. CRAs, serving as gatekeepers in the debt market, also exhibit conservatism when assigning bond ratings because of their regulatory responsibilities (Beaver et al., 2006). They prioritize factors such as the ability to meet debt obligations, stability of cash flows, and asset protection, which makes them particularly attentive to metrics like liquidity, solvency, and collateral. For example, managers typically exclude non-recurring items such as gains or losses on the sale of assets from the calculation of non-GAAP earnings (Bhattacharya et al., 2003), and equity market participants generally view these adjustments as appropriate because they effectively portray a more persistent earnings figure for their assessments of a firm's ongoing profitability (e.g., Doyle et al., 2003). But these non-recurring items could be important considerations for debtholders because they reflect a reduction in the value of a firm's assets and are relevant when evaluating collateral value, which ultimately affects the firm’s ability to repay debt obligations. Besides, previous literature documents that non-GAAP metrics are less justifiable and are presented opportunistically, for instance, to enable managers to meet or beat analyst forecasts (McVay, 2006). Since rating agencies have their own justifications when adjusting accounting numbers, they may choose not to incorporate managers’ non-GAAP information if they view it as a strategic move or if they have different exclusions due to potential conflicts of interest. Therefore, despite CRAs' interest in adjusting earnings numbers, it is an empirical question whether they consider managers' non-GAAP disclosure to be a useful input for their rating assignments.

I use a sample comprising 7,444 firm-quarter observations by 686 unique non-GAAP reporters from 2003 to 2020 and focus on Moody's and Standard & Poor's credit ratings. I find that there is a positive relationship between credit ratings and earnings, and the relationship is more pronounced when decomposing GAAP earnings into non-GAAP earnings and exclusions. This suggests that CRAs display stronger responses to non-GAAP earnings compared to GAAP earnings, exhibiting an inclination to incorporate more non-GAAP earnings information when assigning credit ratings to non-GAAP reporters. To further examine the role of CRAs as important gatekeepers in processing non-GAAP information in the debt market, I perform a mediation analysis using the framework proposed by Baron and Kenny (1986). Given that bondholders tend to be more conservative and cautious than shareholders (Zhang, 2008; Kothari et al., 2010) and that non-GAAP disclosure lacks regulation and standardization, I anticipate that the role of CRAs as gatekeepers will be more significant when assessing non-GAAP earnings as opposed to GAAP earnings. Consistent with Ziebart and Reiter (1992), the findings initially indicate that earnings generally influence bond pricing decisions both directly and indirectly through credit ratings. Nonetheless, this indirect effect of GAAP earnings through credit ratings accounts for only 31% of the total effect, while the indirect effect of non-GAAP earnings through credit ratings comprises a substantial 64% of the total effect. This supports my expectation that CRAs are important intermediaries for processing non-GAAP information in the debt market.

Managers can choose to exclude either transitory gains or losses from GAAP earnings to arrive at non-GAAP earnings, and they also have the discretion to define non-recurring items (e.g., restructuring, write-downs, gains or losses on the sale of assets) or non-operating items (e.g., depreciation, amortization, and stock compensation) (Bradshaw and Sloan, 2002; Black et al., 2018). This leads to variations in the nature and quality of exclusions. Therefore, I next examine which aspects or characteristics of non-GAAP components drive the incorporation of non-GAAP disclosure by CRAs in credit ratings. Following Chen et al. (2021), I use four different variables developed by prior research to capture the quality of non-GAAP metrics. I find that rating agencies, although not adjusting their utilization of non-GAAP information based on gain or loss exclusions, are concerned about the quality of exclusions and are capable of identifying high-quality non-GAAP disclosure by assigning higher ratings to high-quality non-GAAP reporters.

The main analysis shows that CRAs adjust their assessments based on non-GAAP disclosure. The justification for this reaction lies in the perceived relevance of non-GAAP information to borrowers' future risks, particularly in terms of their ability to fulfill debt repayment obligations. While prior research has documented non-GAAP earnings' predictive power for future operating outcomes (Bhattacharya et al., 2003; Leung and Veenman, 2018), it is unexplored whether non-GAAP earnings are also more indicative of future default risks. To provide further insights into this matter, I conduct an additional examination to assess whether non-GAAP metrics are indicative of future potential risks including bankruptcy and default risks. The results suggest that non-GAAP earnings are more predictive of both short-term and long-term bankruptcy and default risk events for non-GAAP reporters, whereas GAAP earnings are only indicative of short-term risks. The findings indicate that non-GAAP disclosure serves as an effective signal for future credit risks, outperforming GAAP earnings for non-GAAP borrowers as a predictive tool for long-horizon risk assessments.

Despite the critical roles played by CRAs as gatekeepers and information intermediaries, they received criticism for their failure to assess default risks during the 2007-2009 financial crisis. This failure led to a negative perception of their reliability and effectiveness in assessing and conveying credit information (DeHaan, 2017). Consistent with this notion, I find that bondholders' reliance on CRAs is more pronounced in the pre-crisis period, implying that credibility enhances the perceived reliability of rating agencies in financial markets.

Next, I examine whether managers are aware of CRAs' incorporation of their non-GAAP metrics and whether such awareness affects their subsequent non-GAAP disclosure decisions. Kisgen (2006) suggests that firms near a downgrade or upgrade will be incentivized to maintain or achieve a higher rating. Considering the significant impact of non-GAAP disclosure on debt market participants' risk perceptions, it is reasonable to anticipate that borrowers will be motivated to use non-GAAP metrics to achieve their desired credit ratings. In line with my expectation, the findings indicate that borrowers are aware of CRAs' incorporation of their non-GAAP metrics and tend to provide high-quality and low-prominence non-GAAP disclosure to either maintain or achieve higher ratings when they are approaching rating changes.

An alternative explanation for the relationship between credit ratings and non-GAAP disclosure is that unobservable firm characteristics could potentially influence both non-GAAP disclosure and credit ratings. To address this endogeneity concern, I further conduct a change analysis following Güntay and Hackbarth (2010) by constructing each variable as the differences in two consecutive quarters. The results from the change analysis still support my findings. Besides, my findings are robust to the use of the instrumental variable method, and the inclusion of past credit ratings as additional controls to avoid serial correlation in the regression residuals, and they are also robust in the subsample of firms that disclose special items in their financial statements.

This study makes several contributions. First, it contributes to our understanding of the rating agencies' adjustment of accounting figures. It is important to note that the current disclosure requirements under GAAP fail to meet the adjustment needs of credit analysts (Moody's, 2006; Standard & Poor's, 2008). Both managers and CRAs have implemented strategies to make their own adjustments to financial information by excluding non-recurring items over the years, yet there is little research examining whether these agencies utilize managers' private information from voluntary non-GAAP disclosure in their risk assessments and credit ratings assignments. This study fills the gap in the literature and provides the first empirical evidence that non-GAAP disclosure offers CRAs distinctive insights into non-recurring items, aiding in the evaluation of persistent components within earnings figures in the debt market.

Second, it provides additional evidence on the importance of CRAs as gatekeepers in the debt market. Previous studies have explored the direct and indirect impact of accounting information on bond pricing decisions through rating agencies (Ziebart and Reiter, 1992; Kraft, 2015). This paper adds to this literature stream by demonstrating that bond investors rely more on CRAs when confronted with more complex and unstandardized information. Since managers' non-GAAP disclosure is unregulated and unstandardized, bondholders may hesitate to accept it without reservations or skepticism. The absence of clear rules and consistency in non-GAAP reporting raises concerns about the reliability and comparability of such information, influencing bondholders to approach it cautiously. Consistent with bondholders' skepticism, this paper shows that bondholders do not directly incorporate non-GAAP earnings into their risk perceptions, as they do for GAAP earnings. Instead, they predominantly rely on CRAs for professional opinions on risk assessments that integrate non-GAAP metrics. The findings reinforce how CRAs play a crucial role as gatekeepers and information intermediaries in the debt market, particularly when it comes to handling intricate or complex information.

Last, it adds to the ongoing discussion surrounding the valuation impact of non-GAAP disclosure. Existing literature indicates that non-GAAP disclosure is relevant to core operating and is predictive of future operating outcomes (Bradshaw and Sloan,2002; Bhattacharya et al., 2003; Curtis et al., 2014). This study provides additional valuable insights into the use of non-GAAP disclosure in the estimation of short-term and long-term risks, which are relevant not only to debt market participants but also to regulators. My findings emphasize the necessity for regulators to focus on non-GAAP disclosure, as accurate assessments of these metrics are crucial for predicting future credit risks and thus ensuring the stability and integrity of financial markets.

Chapter 2: Literature Review

2.1 Credit Rating Agencies (CRAs)

Credit rating agencies (CRAs) function as gatekeepers in the financial markets due to their crucial role in evaluating default risks and assigning credit ratings to entities issuing debt (Lee and Schantl, 2019; Roychowdhury and Srinivasan, 2019). These assessments act as important benchmarks for investors, guiding their lending and pricing decisions through the provision of standardized measures of credit risk (Kisgen and Strahan 2010). Existing literature has broadly examined the inputs to CRAs' risk assessment models, including accounting numbers from financial statements (e.g., Ziebart and Reiter,1992; Kraft, 2015; Akins, 2018), financial statement recognitions (Basu and Naughton, 2020), qualitative attributes from disclosure (Bonsall and Miller, 2017), regulations (Jorion et al., 2005), corporate governance and innovations (Ashbaugh-Skaife et al., 2006; Griffin et al., 2018), and earnings management (Alissa et al., 2013; Liu et al., 2018). These rating agencies not only gather information from various sources but also play a monitoring role, continuously assessing and updating credit ratings based on changes in financial conditions or other relevant factors, which strengthens their position as gatekeepers between entities and investors (Lee and Schantl, 2019).

While credit ratings rely heavily on accounting figures, rating agencies refrain from using firms' raw accounting numbers. Instead, they make their own adjustments to "*… better reflect the underlying economics of transactions and events and to improve the comparability of financial statements. We compute credit-relevant ratios using adjusted data and base our debt ratings, in part, on those ratios*."(Moody's 2006). Standard & Poor's adopts similar strategies within their rating criteria, regularly applying quantitative adjustments to firms' reported financial figures to facilitate a more accurate interpretation of the underlying economic reality of specific circumstances or transactions (Standard & Poor’s, 2008).

One common component within the two largest rating agencies’ adjustment strategies is their treatment of non-recurring items. For example, as Moody’s (2006) further claims, *“… enables analysts to more accurately portray trends in the underlying recurring core business. Our key financial ratios will generally exclude the effects of unusual and non-recurring transactions that we identify*.” Moody’s (2006) captures non-recurring items from unusually large transactions creating substantial revenues or costs, unique transactions such as selling real estate, and transactions with items whose depreciation life is ending. These agencies find the need to make adjustments to financial figures based on their own observations for non-recurring items because current financial reporting under GAAP lacks sufficient information about unusual or one-time items to meet analysts' information requirements. Kraft (2015) provides empirical evidence that these adjusted figures are related to credit ratings beyond the scope of GAAP financial ratios. Yet, there is little research exploring the extent to which CRAs are exposed to and integrate managers’ voluntarily disclosed adjusted earnings figures excluding non-recurring items (i.e., non-GAAP earnings) as part of their information sources in the process of risk assessments.

2.2 Non-GAAP Disclosure in the Capital Market

Public companies in the United States must follow Generally Accepted Accounting Principles (GAAP) to report their financial statements. Non-GAAP financial measures, also known as pro forma measures, are adjusted numerical measures from GAAP measures. Managers often use non-GAAP earnings as an alternative method to report their financial numbers on top of GAAP earnings. In most cases, they exclude non-recurring items like restructuring charges, tax resolutions, and acquisitions from GAAP earnings to define non-GAAP earnings, which they believe reflect core earnings from operations (Black et al., 2018). Some managers also exclude recurring items such as depreciation, amortization, and stock compensation, and they state that these exclusions are non-operating or non-cash items (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003; Doyle et al., 2003; Black et al., 2018). The number of firms that report non-GAAP earnings in their earnings announcement has been increasing over the past two decades. However, there has been a long debate over the informativeness and opportunism of non-GAAP measures. Some researchers view non-GAAP measures as informative tools because they can switch investors' attention to the core performance (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003; Lougee and Marquardt, 2004). Prior literature also shows that non-GAAP disclosure is informative in the capital market because it leads to a reduction in bid-ask spreads (Huang and Skantz, 2016) and it is more predictive of future operating cash flows and operating earnings (Bhattacharya et al., 2003; Leung and Veenman, 2018), while others argue that non-GAAP measures are potential threats to GAAP-based rules because they are less justifiable and are presented opportunistically. For example, McVay (2006) finds that managers are more likely to exclude special items when it allows managers to meet or beat analyst forecasts.

In 2001, SEC expressed concerns over the uncertainty of non-GAAP earnings and provided "cautionary advice" to registrants who disclose non-GAAP earnings in their press release (SEC, 2001a; SEC, 2001b). In 2003, SEC implemented Regulation G to guide the use of non-GAAP earnings and improve the quality of information. Though Regulation G did not prevent more non-GAAP numbers from being reported (Bentley et al., 2018), existing studies generally find that the quality of non-GAAP disclosures increased subsequent to Regulation G (Kolev et al., 2008; Chen et al., 2021).

While a significant body of literature exists regarding the impact of non-GAAP disclosure on the equity market, there remains a dearth of knowledge concerning the influence of non-GAAP disclosure in the debt market. Previous studies have predominantly focused on various aspects of accounting information within the debt market, such as earnings news (Ziebart and Reiter, 1992; Easton et al., 2009), the quality of financial statements (Sengupta, 1998; Bharath et al., 2008; Franco et al., 2016; Akins, 2018), changes in financial statement recognition (Basu and Naughton, 2020), the readability of financial statements (Bonsall and Miller, 2017), the qualitative information in the conference calls and financial statements (Donovan et al., 2021), the mandate of risk factor disclosures (Chiu et al., 2018), and management forecasts (Shivakumar et al., 2011). Despite these efforts, there is limited evidence on the impact of non-GAAP disclosure in earnings announcements on the debt market. Thielemann et al. (2019) offer initial descriptive evidence on the correlations between non-GAAP disclosure and bond market consequences in the pre- and post-Regulation G periods, thereby proposing the need for future research to explore the relevance and significance of non-GAAP disclosure in the debt market. The nature of non-GAAP reporting grants it distinctive characteristics that may specifically appeal to CRAs. Considering that CRAs are concerned with non-recurring items and actively create their own adjusted earnings figures, the existence of non-GAAP reporting initiated by managers can serve as an additional relevant information source. These non-GAAP measures may potentially provide novel insights to debt market participants, enabling a deeper understanding of the borrower's future risk profile and facilitating more informed assessments by increasing information transparency and reducing estimation uncertainty.

Chapter 3: Hypotheses Development

Rating changes carry significant consequences for debt market participants, including both lenders and borrowers. To avoid costly and frequent rating changes or reversals, CRAs do not revise ratings for every piece of new information. Instead, they focus on identifying signals that suggest long-term shifts in the issuer's financial status and repayment ability to provide a comprehensive and forward-looking evaluation (Cantor and Mann, 2003). The fact that CRAs prioritize long-term risk assessments over short-term fluctuations emphasizes their recognition of the importance of identifying non-recurring items. However, under the current one-size-fits-all mechanism of the regulated rules under GAAP, credit analysts express concerns about the standards' failure to mandate or allow firms to separately present a comprehensive view of unusual or non-recurring items (Moody's, 2006). The presence of non-GAAP disclosure addresses this concern through voluntary disclosure by managers. Such non-GAAP disclosure could become a valuable information source for CRAs, offering insights into managers' private information about non-recurring items. Prior literature documents that, relative to GAAP earnings, non-GAAP earnings are more persistent and suggestive of future core operating performance (Bhattacharya et al., 2003; Leung and Veenman, 2018). This further aligns with CRAs' focus on long-term persistent financial figures in their assessment approach. As a result, CRAs may incorporate managers' disclosed non-GAAP information as inputs into their evaluation of borrowers' future potential default risks.

However, whether CRAs respond to non-GAAP disclosure depends upon their information requirements and their perceptions of the underlying motivations behind non-GAAP disclosure. According to Standard and Poor's (2008), "*We review each* *potential nonrecurring item, and determine whether to adjust for it. Our view of these items may differ from the company's view, as presented in financial statements or footnotes*." While previous studies show that equity market participants react positively to non-GAAP earnings (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003), debtholders and CRAs may not exhibit similar reactions by incorporating non-GAAP information into their risk perceptions because of their conservatism, which is reflected in their asymmetrical recognition of losses versus gains (Watts, 2003; Beaver et al., 2006; Defond and Zhang, 2014). As a consequence, they may be less willing to exclude losses from their earnings measures. Besides, although managers often exclude non-recurring items such as gains or losses from the sale of assets when reporting non-GAAP earnings, these adjusted items are important considerations for CRAs when assessing the potential default risks of borrowers. Changes in asset values, even temporary ones like asset sales, are critical for debtholders because assets not only generate cash flows but also serve as collateral, thereby reducing the risk of default. Additionally, given that managers have the discretion to use non-GAAP disclosure opportunistically to present a favorable portrayal of operating outcomes by excluding recurring losses from GAAP earnings to achieve a more profitable non-GAAP earnings figure, CRAs may disregard such information if their identified non-recurring items diverge from the exclusions made by managers. Despite the ongoing debate regarding the informativeness and opportunistic nature of non-GAAP disclosure, the introduction of Regulation G in 2003 aimed to regulate the use of non-GAAP earnings and mitigate the dissemination of misleading information. This regulatory framework imposed additional regulatory costs, motivating non-GAAP reporters to enhance the quality of exclusions and provide reliable and relevant information to investors (Chen, 2010; Huang and Skantz, 2016). Accordingly, I still hypothesize that non-GAAP earnings are useful tools for CRAs beyond GAAP earnings, providing relevant inputs for their financial analysis when assessing credit risks.

***H1**: There is a positive relationship between earnings and credit ratings, and the effect is stronger when decomposing earnings into non-GAAP earnings and exclusions.*

Previous studies on the equity market implications of non-GAAP disclosure indicate that shareholders are drawn to such disclosures and display stronger reactions to them (Bradshaw and Sloan, 2002; Bhattacharya et al., 2003; Lougee and Marquardt, 2004). However, bondholders may not perceive non-GAAP earnings as favorably as shareholders do since they are more conservative than shareholders. Prior literature suggests that bondholders exhibit a greater degree of conservatism compared to shareholders due to their fixed claim and limited profit potential (Zhang, 2008; Kothari et al., 2010), while shareholders, participating in the firm's potential for growth and profitability, are often more willing to embrace risks. Directly incorporating non-GAAP information into their investment decisions poses potential risks for bondholders due to its lack of standardization and regulatory oversight. Moreover, interpreting non-GAAP metrics requires careful and thorough identification of the exclusions, posing additional challenges for public bondholders. Hence, bondholders may not directly integrate non-GAAP earnings metrics into their pricing decisions.

Ziebart and Reiter (1992) use reported accounting numbers and demonstrate that these metrics can affect bond yields through CRAs indirectly. Building upon this mechanism and the complexities in interpreting non-GAAP information, I posit that, while bondholders may not directly use non-GAAP earnings, they rely on CRAs as important gatekeepers and information processors who are capable of handling intricate and non-standardized non-GAAP information, indirectly incorporating such financial data. Accordingly, I make the following hypotheses:

H2: *There is an indirect effect of earnings on bond spreads through credit rating agencies, and the indirect effect of earnings is more pronounced for non-GAAP earnings compared to GAAP earnings.*

Chapter 4: Research Design

4.1 Test of H1

I build upon previous literature to analyze the relationship between earnings and credit ratings (e.g., Lee, 2008; Bonsall and Miller, 2017; DeHaan, 2017). The models below are estimated at the firm-quarter level, incorporating industry and quarter fixed effects, and clustered by firm.

$$Rating_{i,t} = \alpha_0 + \boldsymbol{\alpha_1 GAAPEarn_{i,t-1}} + \alpha_2 Controls_{i,t-1}$$

$$+ Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \quad (1a)$$

$$Rating_{i,t} = \beta_0 + \boldsymbol{\beta_1 NGAAPEarn_{i,t-1}} + \boldsymbol{\beta_2 Exclusion_{i,t-1}}$$

$$+ \beta_3 Controls_{i,t-1} + Industry\ FE$$

$$+ Quarter\ FE + \varepsilon_{i,t} \quad (1b)$$

The dependent variable is $Rating_{i,t}$, which capture the average ratings of Moody's and Standard & Poor's ratings for an issuance. $Rating_{i,t}$ is calculated based on numerical values re-coded from letter grades. Specifically, following Toscano (2020), higher credit ratings are assigned with higher numerical values: C = C = 1, Ca = CC = 2, …, Aa1 = AA+ = 20, Aaa =AAA= 21. The variable of interest in equation (1a) is $GAAPEarn_{i,t-1}$, captured by income before extraordinary items divided by total assets. A positive relationship between $Ratings_{i,t}$ and $GAAPEarn_{i,t-1}$ ($\alpha_1 > 0$) would suggest that, consistent with existing literature (Ziebart and Reiter, 1992; Easton et al., 2009), earnings are positively priced by the bond market.

In order to examine the impact of non-GAAP disclosure on CRAs' risk assessments, I further decompose GAAP earnings into non-GAAP earnings and exclusions in equation (1b) following the approach of prior studies (e.g., Kolev et al., 2008; Leung and Veenman, 2018):

$$GAAPEarn_{i,t-1} \equiv NGAAPEarn_{i,t-1} + Exclusion_{i,t-1} \quad (1c)$$

$NGAAPEarn_{i,t-1}$ is captured by managers' reported non-GAAP earnings in earnings announcements (from Bentley et al., 2018) divided by total assets. As shown in equation (1c), when managers exclude loss (gain) items from GAAP earnings to calculate non-GAAP earnings, $Exclusion_{i,t-1}$, the difference between the two measures, will be negative (positive) with a magnitude equal to the loss (gain) item. This will result in higher (lower) non-GAAP earnings than GAAP earnings. A lower value of $Exclusion_{i,t-1}$ signals greater (lower) excluded losses (gains). In other words, loss (gain) exclusions will lead to a higher (lower) level of non-GAAP earnings compared to GAAP earnings, because specific losses (gains) are omitted from the determination of non-GAAP earnings while being included in GAAP earnings. In equation (1b), I expect $\beta_1 > 0$ to be consistent with my hypothesis that CRAs view non-GAAP earnings as more persistent and relevant tools when evaluating a borrower's long-term performance and future default risks in the process of assigning credit ratings.

In equation (1a) and (1b), I control for firm-specific and bond-specific determinants, including firm size ($Size_{i,t-1}$), book-to-market ratio ($BTM_{i,t-1}$), intangible assets ($Intangible_{i,t-1}$), return volatility ($ReturnVol_{i,t-1}$), earnings volatility ($EarnVol_{i,t-1}$), earnings surprise ($EarnSurp_{i,t-1}$), leverage ($Leverage_{i,t-1}$), sales growth ($SalesGrowth_{i,t-1}$), loss indicator ($Loss_{i,t-1}$), face value ($FaceValue_{i,t}$), maturity ($Maturity_{i,t}$), and collateral security ($Secured_{i,t}$). All variables are described in Appendix A.

4.2 Test of H2

H2 predicts that there is an indirect effect of earnings on bond spreads through CRAs. That is, credit ratings mediate the association between earnings and bond spreads. Ziebart and Reiter (1992) use a simultaneous equation system to investigate the influence of different financial information components on bond ratings and bond yields, but their focus is centered on the analysis of interdependencies among multiple variables within a system. However, this paper aims to examine the importance of the information processing and mediating role of CRAs. Hence, I conduct a mediation analysis following the approach outlined by Baron and Kenny (1986) to test H2. Baron and Kenny's method is specifically designed to explore and test the indirect effects of an independent variable on a dependent variable through a proposed mediator, making it a more fitting methodology for addressing the research question in this paper. The mediation analysis involves conducting three regressions: (1) establishing a relationship between earnings and bond spreads; (2) establishing a relationship between earnings and the mediating variable, $Rating_{i,t}$, as shown in equation (1a); and (3) showing that the relationship between earnings and bond spreads is attenuated after controlling for the mediating variable. To implement step (1) to (3), I further perform the following two models:

$$BondSpread_{i,t} = \gamma_0 + \boldsymbol{\gamma_1 GAAPEarn_{i,t-1}} + \gamma_2 Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \quad (2a)$$

$$BondSpread_{i,t} = \theta_0 + \boldsymbol{\theta_1 GAAPEarn_{i,t-1}} + \boldsymbol{\theta_2 Rating_{i,t}} + \theta_3 Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \tag{2b}$$

To mitigate the issue of confounding variables and enhance the validity of causal interpretations, I use structural equation modeling for the above regression framework (MacKinnon and Pirlott, 2015; Mehmetoglu, 2018). Partial (Full) mediation is affirmed when the impact of earnings on bond spreads is significantly attenuated (or reduced to zero) after accounting for the credit rating mediator. Similarly, I decompose GAAP earnings into non-GAAP earnings and exclusions in equation (2c) and (2d) to assess the role of CRAs in mediating the effect of non-GAAP disclosure on bond spreads.

$$BondSpread_{i,t} = \delta_0 + \boldsymbol{\delta_1 NGAAPEarn_{i,t-1}} + \boldsymbol{\delta_2 Exclusion_{i,t-1}} + \delta_3 Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \tag{2c}$$

$$BondSpread_{i,t} = \mu_0 + \boldsymbol{\mu_1 NGAAPEarn_{i,t-1}} + \boldsymbol{\mu_2 Exclusion_{i,t-1}} + \boldsymbol{\mu_3 Rating_{i,t}} + \mu_4 Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \tag{2d}$$

Figure 1 exhibits the indirect effects of two independent variables ($NGAAPEarn_{i,t-1}$ and $Exclusion_{i,t-1}$) through the credit rating mediator ($Rating_{i,t}$). Empirically, for example, the indirect effect of $NGAAPEarn_{i,t-1}$ on $BondSpread_{i,t}$ through $Rating_{i,t}$ can be calculated as $\beta_1 * \mu_3$. As recommended by Baron and Kenny (1986), I use Sobel test (Sobel, 1982; Sobel, 1986) to examine the statistical significance of the indirect effect. Other statistical methods, such as the bootstrapping test, are also used to test the null that $\beta_1 * \mu_3 = 0$ (Preacher and Hayes, 2004; Mehmetoglu, 2018).

Chapter 5: Sample and Descriptive Statistics

5.1 Sample

The sample contains corporate bond issues by non-financial firms with non-GAAP disclosure. The non-GAAP data is obtained from Bentley et al. (2018) between 2003 and 2020. I begin the sample period in 2003 in accordance with the implementation of Regulation G. I collect monthly corporate bond transaction data from the Financial Industry Regulatory Authority (FINRA)'s Trade Reporting and Compliance Engine (TRACE). Bond issue characteristics, including credit ratings, are obtained from Mergent Fixed Income Securities Database (FISD). Other firm-level financial data is collected from Compustat and the Institutional Brokers' Estimate System (I/B/E/S). In order to match the firm-quarter level data with monthly bond data, I keep the firm’s earliest bond observation following the earnings announcement date of the quarter. For firms with multiple bond issues, a random bond will be selected. Using monthly bond transaction data with current credit ratings, as opposed to the initial ratings used in previous studies, allows me to capture more timely reactions from the CRAs in response to earnings information. After the matching procedure and the removal of observations with missing values, the final sample consists of 7,444 firm-quarter observations by 686 unique non-GAAP reporting firms from 2003 to 2020.

5.2 Descriptive Statistics

Table 1 summarizes the descriptive statistics for variables used in this paper. The average credit rating ($Rating_{i,t}$) is 12.53. The mean (median) of bond spreads ($BondSpread_{i,t}$) is 1.091 (0.916), which is aligned with the descriptives reported in prior research (e.g., Güntay and Hackbarth, 2010). The mean value of non-GAAP earnings (mean $NGAAPEarn_{i,t-1}$ = 0.017) is greater than that of GAAP earnings (mean $GAAPEarn_{i,t-1}$ = 0.011), and the mean value of exclusions ($Exclusion_{i,t-1}$) is -0.006. In this sample, 77.9% of non-GAAP reporters exhibit greater non-GAAP earnings compared to GAAP earnings (mean $NG>GAAP_{i,t-1}$ = 0.779), indicating that a majority of firms exclude loss items from GAAP earnings to calculate non-GAAP earnings. In terms of the non-GAAP quality indicators, the descriptive statistics suggest that 81.6% of firm-quarter observations had transitory items (mean $Transitory_{i,t-1}$ = 0.816), 78.4% of observations excluded recurring items (mean $Recurring_{i,t-1}$ = 0.784), 10.2% of observations converted GAAP losses into non-GAAP gains (mean $LossConvert_{i,t-1}$ = 0.102), and 84.7% of observations had non-GAAP earnings higher than I/B/E/S street earnings (mean $ExceedIBES_{i,t-1}$ = 0.847). Table 1 also shows that 18.6% of observations presented non-GAAP earnings before GAAP earnings in earnings announcements (mean $First_{i,t-1}$ = 0.186).

Correlations are presented in Table 2. Both GAAP earnings ($GAAPEarn_{i,t-1}$) and non-GAAP earnings ($NGAAPEarn_{i,t-1}$) are positively correlated with credit ratings ($Rating_{i,t}$) and negatively correlated with bond spreads ($BondSpread_{i,t}$), consistent with the expectation that earnings are positively priced by bond market participants (Easton et al., 2009). Besides, bond spreads ($BondSpread_{i,t}$) and credit ratings ($Rating_{i,t}$) are negatively correlated, consistent with the inverse relationship where higher-rated bonds with lower default risks tend to have lower spreads.

Chapter 6: Results of Hypotheses Tests

6.1 Result of Testing H1

Table 3 reports the result of testing H1. Column (1) examines the impact of GAAP earnings on ratings. I find that GAAP earnings are positively associated with credit ratings ($p < 0.01$), consistent with the findings in existing literature that bond market participants integrate accounting information into their risk assessments for pricing decisions (e.g., Ziebart and Reiter, 1992; Easton et al., 2009). Column (2) presents the impact of the decomposed earnings metrics, $NGAAPEarn_{i,t-1}$ and $Exclusion_{i,t-1}$. In column (2), the coefficient on $NGAAPEarn_{i,t-1}$ is also significantly positive ($p < 0.01$). Comparing column (1) and column (2), the results suggest that a one-standard-deviation increase in GAAP earnings is associated with a 17.66% increase in the magnitude of a rating upgrade to the next higher level, while a one-standard-deviation increase in non-GAAP earnings contributes to a larger increase of 63.08% in the magnitude of a rating upgrade. This supports my hypothesis that CRAs exhibit stronger responses to non-GAAP earnings than GAAP earnings, indicating a tendency to incorporate more non-GAAP earnings information when assigning credit ratings. This implies a possibility that non-GAAP earnings contain persistent and relevant information for credit agencies' risk assessment models. Besides, the coefficient on $Exclusion_{i,t-1}$ is statistically insignificant, suggesting that rating agencies generally view non-GAAP exclusions as irrelevant to long-term default risks.

6.2 Result of Testing H2

Table 4 exhibits the mediation analysis for the role of CRAs in processing earnings information in the debt market. Column (1) through column (3) in Panel A examine how the effect of GAAP earnings on bond spreads is mediated by credit ratings. In column (1), the total effect of GAAP earnings is demonstrated by a significantly negative coefficient on $GAAPEarn_{i,t-1}$ ($p < 0.01$). This is consistent with prior research (e.g., Easton et al., 2009) that GAAP earnings provide relevant information for corporate performance and are valued by bondholders, and bondholders therefore demand lower yields for borrowers with higher GAAP earnings. However, column (2) shows that this effect is reduced ($p < 0.01$) after controlling for $Rating_{i,t}$. Combining the results from column (2) to column (3), the indirect effects of GAAP earnings through $Rating_{i,t}$ can be calculated as $\alpha_1 * \theta_2$. The Sobel test statistics reveal that, in the relationship between GAAP earnings and bond spreads, credit ratings can serve as a partial mediator ($\alpha_1 * \theta_2$ = -1.564, Sobel t = -3.207, $p < 0.01$)[1]. Despite employing different methods, my findings align with those of Ziebart and Reiter (1992), who document both the direct and indirect effects of accounting information on bond pricing decisions.

Panel B examines the role of CRAs in mediating the effect of non-GAAP components on bond spreads. In column (4), I find that the coefficient on $NGAAPEarn_{i,t-1}$ is significantly negative ($p < 0.01$), indicating that higher non-GAAP earnings also lead to a lower cost of issuing bonds. Additionally, there is a significant negative relationship between $Exclusion_{i,t-1}$ and $BondSpread_{i,t}$ ($p < 0.05$). This implies that greater excluded losses (or lower excluded gains) are associated with higher bond spreads, which is consistent with the findings in Curtis et al. (2014) that firms exclude gains primarily to inform capital market participants. While column (4) reports significant negative total effects of non-GAAP earnings and exclusions on bond spreads, column (5) shows that the effect of non-GAAP earnings is significantly mitigated, though not for exclusions, after controlling for credit ratings. Combining the results from column (5) to column (6), the indirect effects of non-GAAP earnings through credit ratings can be calculated as $\beta_1 * \mu_3$. The indirect effects of exclusions through credit ratings can be calculated as $\beta_2 * \mu_3$. By performing the Sobel test

[1] In untabulated analysis, I test the statistical significance of the indirect effect using alternative methods including bootstrapping standard errors (Preacher and Hayes, 2004; Mehmetoglu, 2018). All findings remain robust to different statistical methods.

statistics, I identify a significant mediating role of credit ratings in the relationship between non-GAAP earnings and bond spreads ($\beta_1 * \mu_3$ = -11.08, Sobel t = -4.377, $p < 0.01$). This indirect effect of non-GAAP earnings through credit ratings accounts for roughly 64% of the total effect (indirect effect/total effect = -11.08/-17.44), whereas the indirect effect of GAAP earnings through credit ratings represents only 31% (indirect effect/total effect = -1.564/-4.991). This supports my hypothesis that the indirect effect of earnings is more pronounced for non-GAAP earnings compared to GAAP earnings. Given that non-GAAP earnings lack regulation and standardization, and that bondholders tend to be conservative and cautious, this emphasizes the importance for professional institutions (i.e., CRAs) to incorporate and process non-GAAP information in their risk models.

Overall, the results in Table 4 highlight CRAs as key gatekeepers and information intermediaries between non-GAAP reporters and bondholders, exerting considerable influence in the information processing through which non-GAAP disclosure affects bond spreads.

Chapter 7: Additional Analyses

7.1 The Quality of Non-GAAP Disclosure

Prior studies show that investors are less likely to be misled by non-GAAP reporting, particularly in the post-Regulation G time period (Chen, 2010; Huang and Skantz, 2016). If CRAs are sophisticated enough to discern the relevant information embedded in non-GAAP reporting, it is reasonable to expect that they can also assess the quality of non-GAAP earnings and subsequently adjust their risk perceptions. Accordingly, I further examine whether credit ratings are affected by the quality of non-GAAP disclosure.

Following Chen et al. (2021), I use four variables developed by prior research to capture the quality of non-GAAP disclosure: $Transitory_{i,t-1}$, $Recurring_{i,t-1}$, $LossConvert_{i,t-1}$, and $ExceedIBES_{i,t-1}$. The four quality measures are independent of each other. $Transitory_{i,t-1}$ is an indicator that equals one if a borrower's GAAP EPS (epsfiq from Compustat) is different from operating EPS (oepsxq from Compustat), and zero otherwise. Previous studies have documented that non-GAAP earnings that exclude transitory items exhibit a higher level of quality by illustrating their greater predictability of future operating cash flows and operating earnings, which is attributed to the fact that those transitory items are noisy in information content (Doyle et al., 2003; Kolev et al., 2008). Therefore, a higher value of $Transitory_{i,t-1}$ signals a higher level of quality in non-GAAP disclosure. $Recurring_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP EPS is different from operating EPS (oepsxq from Compustat). A higher value of $Recurring_{i,t-1}$ denotes a lower level of quality in non-GAAP disclosure because recurring-item exclusions are persistent and such adjustments can mislead investors about future operating outcomes (e.g., Doyle et al., 2003; Kolev et al., 2008; Bentley et al., 2018; Black et al., 2018). $LossConvert_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP EPS is positive and GAAP EPS is negative, capturing instances where the borrower's non-GAAP earnings effectively transform a reported GAAP loss into an adjusted non-GAAP gain. A higher value of $LossConvert_{i,t-1}$ indicates a higher level of quality in non-GAAP disclosure as Leung and Veenman (2018) provide empirical evidence that non-GAAP earnings from GAAP-loss firms are particularly informative about forecasting and valuation. $ExceedIBES_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP EPS exceeds I/B/E/S actual street EPS, which represents analysts' consensus EPS after eliminating noisy information. Bentley et al. (2018) compare firms' non-GAAP EPS and I/B/E/S actual street EPS and find that exclusions from I/B/E/S are of higher quality. Hence, a higher value of $ExceedIBES_{i,t-1}$ indicates an increased disparity between the two adjusted figures, implying a lower level of quality in non-GAAP disclosure.

Table 5 reports the results of re-estimating equations (1b) and (2c) by interacting non-GAAP components with the quality measures of non-GAAP disclosure. In column (1), I find significant and positive coefficients on the interaction terms $NGAAPEarn_{i,t-1}$ * $Transitory_{i,t-1}$ ($p < 0.01$) and $NGAAPEarn_{i,t-1}$ * $LossCovert_{i,t-1}$ ($p < 0.1$), and I also find significant and negative coefficients on the interaction term $NGAAPEarn_{i,t-1}$ * $Recurring_{i,t-1}$ ($p < 0.01$). These findings suggest that credit ratings increase with high-quality non-GAAP disclosure and decrease with low-quality non-GAAP disclosure, which is in line with the prediction that CRAs possess the ability to discern the quality of exclusions and would offer higher (lower) credit ratings when the quality of non-GAAP disclosure is higher (lower). Furthermore, in line with the main analysis, column (2) indicates a lack of a significant relationship between bond spreads and the interaction terms involving different non-GAAP quality measures. This reinforces the main findings that bondholders do not independently incorporate non-GAAP information; instead, they depend on CRAs as gatekeepers and information processors to integrate non-GAAP information into their risk perceptions.

7.2 Gain Versus Loss Exclusions

When managers exercise discretion to exclude items from GAAP earnings, they have the option to exclude either transitory gains or losses related to various events such as restructuring charges, tax resolutions, and asset disposals. Empirical evidence derived from hand-collected data by Bentley et al. (2018) indicates that a substantial majority, over 70%, of non-GAAP firms predominantly exclude losses from their GAAP earnings, resulting in higher non-GAAP earnings figures. Curtis et al. (2014) highlight that non-GAAP earnings that exclude transitory gains (i.e., GAAP earnings greater than non-GAAP earnings) are used to inform investors about sustainable earnings rather than to intentionally mislead them. In contrast, excluded losses are frequently perceived as associated with opportunistic practices, such as inflating earnings, smoothing earnings, and meeting earnings benchmarks (Doyle et al., 2003; Kolev et al., 2008). Considering the distinct nature of excluded losses and gains, I extend the analysis by interacting non-GAAP components with an indicator $NG>GAAP_{i,t-1}$, which equals one if the borrower excludes losses from GAAP earnings to attain higher non-GAAP earnings and zero if the borrower excludes gains and achieve lower non-GAAP earnings.

Table 6 reports the results of the differential impacts of excluded gains and losses. I find an insignificant coefficient on the interaction term $NGAAPEarn_{i,t-1} * NG>GAAP_{i,t-1}$, indicating that CRAs do not explicitly differentiate between loss exclusions and gain exclusions when incorporating non-GAAP information from borrowers. Tables 5 and 6 jointly suggest that, rather than focusing on the direction of exclusions, CRAs are more concerned about the quality of exclusions.

7.3 Predictability of Non-GAAP Earnings for Credit Risks

As discussed previously, CRAs will react to non-GAAP disclosure if they perceive it to contain relevant information regarding borrowers' future risks, particularly their ability to fulfill debt repayment obligations. Although existing literature has demonstrated that non-GAAP earnings are more predictive of future operating outcomes (Bhattacharya et al., 2003; Leung and Veenman, 2018), it remains an unexplored question whether non-GAAP earnings are also more indicative of future default risks. Debt market participants and equity market participants often have different strategies and considerations when assessing a firm because their priorities and risk tolerances differ. CRAs play an important role in these assessments by identifying signals indicative of long-term shifts in the issuer's financial status and repayment ability (Cantor and Mann, 2003). Consistent with this notion, if CRAs incorporate non-GAAP information in their risk assessments, their action can be justified if non-GAAP information is found to be indicative of future default risks. Therefore, in this section, I examine the relevance of non-GAAP disclosure to bankruptcy and default risks using data from Capital IQ.

Table 7 reports the results of examining the predictability of non-GAAP disclosure for short-term and long-term potential risks using logistic regressions. The dependent variables are the indicators of bankruptcy and default risk events in the next quarter t ($Risk_{i,t}$), in the next two quarters from quarter t to t+1 ($Risk_{i,(t,t+1)}$), in the next three quarters from quarter t to t+2 ($Risk_{i,(t,t+2)}$), and in the next four quarters from quarter t to t+3 ($Risk_{i,(t,t+3)}$). In column (1), I expand the sample to include both GAAP-only reporters and non-GAAP reporters. Comparing column (1) and column (2), I find that GAAP earnings can predict short-term risks, but this predictive power does not exist for non-GAAP reporters. Following the breakdown of GAAP earnings into non-GAAP components for non-GAAP reporters in column (3), I find that only non-GAAP earnings, as opposed to GAAP earnings, are associated with short-term bankruptcy and default risks for non-GAAP reporters. Column (3) through column (9) present the impact on longer-horizon risks. The coefficients on non-GAAP earnings are significantly negative across all columns, indicating that higher non-GAAP earnings are related to a reduced likelihood of future long-term bankruptcy and default risk events. However, such an effect is not observed for GAAP earnings. The results imply that non-GAAP disclosure does serve as a signal for both short-term and long-term future bankruptcy or default risks, proving to be a more effective predictive tool than GAAP earnings for non-GAAP reporters. It provides additional justification for rating agencies' incorporation of non-GAAP earnings when assessing borrowers' long-term credit risks before assigning ratings, reinforcing the rationale for considering non-GAAP metrics in the evaluation process.

7.4 The Impact of Financial Crisis

The main analysis highlights the role of CRAs as important intermediaries that analyze and convey credit information, exerting a significant influence on shaping bondholders' risk perceptions and affecting their pricing decisions in the financial market. However, CRAs encountered significant criticism for their failure in assessing default risks during the 2007-2009 financial crisis. DeHaan (2017) examines loan contracts and provides empirical evidence that private debt market participants reduced their reliance on credit ratings following the crisis. Likewise, bondholders should decrease their reliance on CRAs to incorporate non-GAAP earnings if CRAs are considered less reliable. To test this possibility, I re-perform the mediation analysis by partitioning the sample into the pre-crisis and post-crisis periods.

Table 8 presents the mediation analysis using partitioned samples. I find that the indirect effect of non-GAAP earnings through credit ratings is more significant in the pre-crisis period, suggesting that credibility enhances the perceived utility and influence of CRAs in the financial markets.

7.5 Non-GAAP Disclosure Near Rating Upgrades or Downgrades

If managers are aware of CRAs' incorporation of their non-GAAP metrics, what actions might they take in response? He (2018) finds that firms exhibit a commitment to maintaining or enhancing disclosure transparency in pursuit of a desired credit rating using voluntary disclosure regarding product and business expansion (PBE) plans. A favorable credit rating is important for firms as it facilitates access to cost-effective capital, enhances investor confidence, improves negotiating power, and positively influences market perception, ultimately contributing to overall financial health and competitiveness. Since non-GAAP disclosure can effectively influence debt market participants' risk perceptions and pricing decisions, it is reasonable to anticipate that firms will be incentivized to utilize non-GAAP metrics to achieve their desired credit ratings. Prior studies have provided additional evidence on how firms strategically use non-GAAP disclosure in response to changes in corporate operating actions and consequences such as clawback adoptions or covenant violations (Christensen et al., 2019; Kyung et al 2019). Hence, in this section, I examine whether managers alter their non-GAAP disclosure decisions when they are motivated to maintain or achieve desired credit ratings.

Following the methodology by Kisgen (2006) and He (2018), I identify borrowers with incentives to achieve desired credit ratings as those positioned in either the upper or lower bound within each category. For instance, consider Moody's rating scale, which consists of nine categories: Aaa, Aa, A, Baa, Ba, B, Caa, Ca, and C. Within each major rating category from Aa to Caa, there are three numerical modifiers providing additional granularity for rating specifications (e.g., Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3, B1, B2, B3, Caa1, Caa2, Caa3). According to Kisgen (2006), firms near a downgrade to another major rating category (e.g., from Aa3 to A1 or A3 to Baa1) will then have an incentive to *maintain* a higher rating. Firms near an upgrade to another major rating category (e.g., from A1 to Aa3 or Ba1 to Baa3) will then have an incentive to *achieve* a higher rating. Consistent with this methodology, I identify borrowers near an upgrade if their Moody's rating has a "1" (e.g., Aa1, A1, Baa1, …, Caa1) or Standard & Poor's rating has a "+" (e.g., AA+, A+, BBB+, …, CCC+) and borrowers near a downgrade if their Moody's rating has a "3" (e.g., Aa3, A3, Baa3, …, Caa3) or Standard & Poor's rating has a "-" (e.g., AA-, A-, BBB-, …, CCC-). A thorough depiction of this methodology is presented in Appendix B.

Table 9 presents how firms change their non-GAAP disclosure decisions when they are near rating changes. $RatingUp_{i,t-1}$ ($RatingDown_{i,t-1}$) is an indicator that equals one if the borrower is near rating upgrades (downgrades). $RatingChg_{i,t-1}$ is an indicator that equals one if either $RatingUp_{i,t-1}$ or $RatingDown_{i,t-1}$ equals one. Column (1) and (3) indicate that borrowers close to rating downgrades are more likely to disclose high-quality non-GAAP metrics in the subsequent quarter by excluding fewer recurring items and aligning with I/B/E/S actual street EPS without exceeding it. Column (3) further shows that borrowers nearing rating upgrades are also more likely to present high-quality non-GAAP reporting, disclosing non-GAAP earnings lower than analysts' adjusted earnings. In columns (5) and (6), I analyze how managers position their non-GAAP earnings in the earnings announcements when approaching rating changes. Prior research shows that managers strategically give non-GAAP earnings greater prominence to influence investors' perception of corporate performance (Elliott, 2006; Allee et al., 2007; Marques, 2010). However, this practice could attract additional scrutiny from regulators, the media, or analysts. I use an indicator $First_{i,t}$ to capture whether borrowers' non-GAAP metrics are presented before GAAP metrics in earnings announcement. Column (5) shows that non-GAAP borrowers tend to "hide" their non-GAAP earnings when they are near rating upgrades, potentially driven by a desire to present a more conservative financial picture to align with rating agencies' expectations or to avoid potential regulatory scrutiny. Collectively, Table 9 demonstrates that borrowers are aware of CRAs' incorporation of non-GAAP information and are thus inclined to offer high-quality and low-prominence non-GAAP metrics to either maintain or achieve higher ratings when approaching rating changes.

Chapter 8: Robustness Tests

8.1 Change Analysis

In the main tests, I use level analysis to examine the relationship between non-GAAP disclosure and credit ratings, providing insights from the cross-sectional differences. In this section, I further apply change analysis to capture the dynamic relationships and to address the endogeneity concern arising from unobservable firm characteristics which potentially influence both non-GAAP disclosure and credit ratings. Following Güntay and Hackbarth (2010), I construct each variable as the differences in two consecutive quarters. The models are shown below:

$$\Delta Rating_{i,t} = \alpha_0 + \boldsymbol{\alpha_1 \Delta GAAPEarn_{i,t-1}} + \alpha_2 \Delta Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \tag{3a}$$

$$\Delta Rating_{i,t} = \beta_0 + \boldsymbol{\beta_1 \Delta NGAAPEarn_{i,t-1}} + \boldsymbol{\beta_2 \Delta Exclusion_{i,t-1}} + \beta_3 \Delta Controls_{i,t-1} + Industry\ FE + Quarter\ FE + \varepsilon_{i,t} \tag{3b}$$

Table 10 displays the estimation results of equations (3a) and (3b). Consistent with the main analysis, the coefficient of $\Delta NGAAPEarn_{i,t-1}$ on $\Delta Rating_{i,t}$ is more significant and positive ($p < 0.01$) than the coefficient of $\Delta GAAPEarn_{i,t-1}$. This reinforces my findings that CRAs exhibit heightened reactions to non-GAAP earnings in contrast to

GAAP earnings, indicating an increased emphasis on non-GAAP earnings information in the credit rating assignment process.

8.2 Instrumental Variable Method

The instrumental variable (IV) method is an additional tool for establishing causal inference, effectively alleviating issues related to confounding variables and measurement errors. To bolster the robustness of the information mediating role of CRAs, I further use IV estimation to examine H2, which assesses the indirect effect of non-GAAP earnings through credit ratings.

In contrast to the mediation analysis within Baron and Kenny's framework that provides examinations of the degree of mediation, IV estimation only assumes full mediation (Otter et al., 2018). This stems from its use of instruments, which must be associated with the endogenous variable and only indirectly associated with the outcome variable through the endogenous variable. In this paper, credit ratings can be viewed as an endogenous variable because unobserved factors may influence both credit ratings and bond spreads simultaneously. The use of the IV method in this mechanism involves viewing non-GAAP earnings as instruments, impacting bond spreads only through its influence on credit ratings. Specifically, in the first-stage regression, credit ratings are regressed against non-GAAP earnings and controls. In the second-stage regression, bond spreads are regressed on the predicted values of credit ratings from the first-stage regression and controls. The unreported results for the twostage least squares estimation (2SLS) regressions indicate a significant negative relationship between the predicted values of credit ratings and bond spreads ($p < 0.01$). The Cragg-Donald Wald F statistics (Cragg and Donald, 1993) and Stock-Yogo test (Stock and Yogo, 2005) show that non-GAAP earnings serve as strong instruments for credit ratings, suggesting that non-GAAP earnings affect bond spreads mainly through credit ratings.

8.3 Controlling for Past Ratings

As credit ratings frequently demonstrate persistence over time, with current ratings often influenced by previous ones, failure to control for past credit ratings may result in autocorrelation or serial correlation in the regression residuals, violating the assumption of independence. In this section, I further control for past credit ratings in the main analysis. My results are robust to the inclusion of past ratings.

8.4 Subsample with Special Items

If managers exclude items to achieve non-GAAP earnings when the firm does not have any special items in their financial statement, there is a greater likelihood they may be using discretionary adjustments to present a more favorable picture of the firm's financial performance. To mitigate the potential impact of managers' aggressive opportunistic behaviors, I re-run the regressions using a subsample comprising only those firms that disclose special items in their financial statements. The untabulated results suggest that CRAs' incorporation of non-GAAP earnings is more pronounced within this specific subsample, which is aligned with the idea that CRAs selectively recognize non-GAAP earnings that are pertinent and informative for their risk assessments.

Chapter 9: Conclusions

This study explores how credit rating agencies (CRAs) incorporate managers' voluntary non-GAAP disclosure in their risk assessments and credit rating assignments. These credit ratings, which integrate corporate financial data (Ziebart and Reiter, 1992; Kraft, 2015; Akins, 2018), offer investors important insights into the potential risks associated with investing in these securities. However, CRAs do not derive their ratings solely from raw accounting data. Instead, they adjust these figures to ensure a more persistent and forward-looking risk evaluation, often by excluding non-recurring items (Moody's, 2006; Standard & Poor's, 2008). Given that managers' non-GAAP disclosure contains detailed information about non-recurring items, this paper offers innovative insights into the importance of such disclosure for CRAs' credit rating assignments. I find evidence that CRAs exhibit stronger responses to non-GAAP earnings compared to GAAP earnings, suggesting that they are inclined to incorporate more non-GAAP earnings information when assigning credit ratings. This finding further indicates that managers' non-GAAP disclosure provides more persistent earnings figures and necessary information regarding non-recurring items, which are relevant for CRAs' adjustments when evaluating borrowers' long-term potential risks. This paper also provides empirical evidence on the role of CRAs as important gatekeepers between non-GAAP borrowers and investors. Using a mediation analysis proposed by Baron and Kenny (1986), I find that bondholders exhibit heightened dependence on CRAs for interpreting non-GAAP earnings compared to GAAP earnings. This tendency may stem from the unstandardized, unregulated, and complex nature of non-GAAP disclosure, coupled with the cautiousness and conservatism of debtholders.

In additional analyses, I further find that while rating agencies do not adjust their incorporation of non-GAAP information based on managers' gain or loss exclusions, they prioritize the quality of these exclusions. They demonstrate the ability to recognize high-quality non-GAAP disclosure by assigning higher ratings to these borrowers. These findings reveal the importance of having professional agencies (i.e., CRAs) as information intermediaries in processing intricate non-GAAP disclosure. I also provide justifications for CRAs' incorporation of non-GAAP information by assessing whether non-GAAP metrics are indicative of future potential risks including bankruptcy and default risks. The results suggest that non-GAAP disclosure effectively signals future credit risks, outperforming GAAP earnings for non-GAAP borrowers as a predictive tool for long-horizon risk assessments. Using the 2007-2009 financial crisis as a reference point, I find that bondholders' reliance on CRAs is more significant in the pre-crisis period, implying that the credibility of credit rating agencies amplifies their perceived significance and impact in financial markets. Finally, this study provides the first empirical evidence that borrowers are aware of CRAs' incorporation of their non-GAAP metrics, and they tend to provide high-quality and low-prominence non-GAAP disclosure to either maintain or achieve higher ratings as they approach rating changes.

This study contributes to the literature by establishing a connection between CRAs' adjustments and managers' non-GAAP disclosure, focusing particularly on their shared emphasis on non-recurring items. The finding not only uncovers an important input into rating agencies' risk assessment models (i.e., non-GAAP disclosure) but also holds specific interest for capital market participants and regulators, because it highlights non-GAAP disclosure as useful predictive tools for assessing long-term credit risks.

Appendices

Appendix A: Variable Definitions

Variable Name	Description
Panel A: Variables of Interest	
$Rating_{i,t}$	Average credit rating, calculated as the average of Moody's (*RATING_M*) and Standard & Poor's *(RATING_SP*) ratings for the issuance (from Mergent FISD), where *RATING_M* and *RATING_SP* are the numbers mapped from ratings (e.g., C = C = 1, Ca = CC = 2, …, Aa1 = AA+ = 20, Aaa =AAA= 21).
$RatingDisp_{i,t}$	Splits in the corporate credit ratings, calculated as the absolute value of the difference between Moody's (*RATING_M*) and Standard & Poor's (*RATING_SP*) ratings.
$GAAPEarn_{i,t-1}$	GAAP earnings, income before extraordinary items divided by lagged total assets.
$NGAAPEarn_{i,t-1}$	Non-GAAP earnings, calculated as non-GAAP diluted EPS (from Bentley et al., 2018) multiplied by the number of diluted shares outstanding and divided by total assets.
$Exclusion_{i,t-1}$	Non-GAAP exclusions, calculated as the difference between GAAP earnings and non-GAAP earnings divided by total assets.
$BondSpread_{i,t}$	Excess of the yield-to-maturity of the corporate bond (from FINRA's TRACE) over the interest rate on a treasury of same (remaining) maturity (from FRED).
$Transitory_{i,t-1}$	Indicator that equals one if firm i's GAAP EPS (epsfiq from Compustat) is different from operating EPS (oepsxq from Compustat), and zero otherwise.
$Recurring_{i,t-1}$	Indicator that equals one if firm i's non-GAAP EPS is different from operating EPS (oepsxq from Compustat), and zero otherwise.
$LossConvert_{i,t-1}$	Indicator that equals one if firm i's non-GAAP EPS is positive and GAAP EPS (epsfiq from Compustat) is negative, and zero otherwise.
$ExceedIBES_{i,t-1}$	Indicator that equals one if firm i's non-GAAP EPS exceeds I/B/E/S actual street EPS, and zero otherwise.
$NG{>}GAAP_{i,t-1}$	Indicator that equals one if firm i's non-GAAP EPS exceeds GAAP EPS, and zero otherwise.
$Risk_{i,t}$	Indicator that equals one if firm i has bankruptcy and default events (from Capital IQ) in next quarter t, and zero otherwise.
$Risk_{i,(t,t+1)}$	Indicator that equals one if firm i has bankruptcy and default events (from Capital IQ) in the next two quarters from quarter t to t+1, and zero otherwise.
$Risk_{i,(t,t+2)}$	Indicator that equals one if firm i has bankruptcy and default events (from Capital IQ) in the next three quarters from quarter t to t+2, and zero otherwise.
$Risk_{i,(t,t+3)}$	Indicator that equals one if firm i has bankruptcy and default events (from Capital IQ) in the next four quarters from quarter t to t+3, and zero otherwise.
$First_{i,t}$	Indicator that equals one if firm i's non-GAAP metrics are presented before GAAP metrics in earnings announcements, and zero otherwise.
$RatingUp_{i,t-1}$	Indicator that equals one if Moody's rating has a "1" (e.g., Aa1, A1, Baa1, …, Caa1) or Standard & Poor's rating has a "+" (e.g., AA+, A+, BBB+, …, CCC+), and zero otherwise.
$RatingDown_{i,t-1}$	Indicator that equals one if Moody's rating has a "3" (e.g., Aa3, A3, Baa3, …, Caa3) or Standard & Poor's rating has a "-" (e.g., AA-, A-, BBB-, …, CCC-), and zero otherwise.
$RatingChg_{i,t-1}$	Indicator that equals one if either $RatingUp_{i,t-1}$ or $RatingDown_{i,t-1}$ equals one, and zero otherwise.

Panel B: Control variables

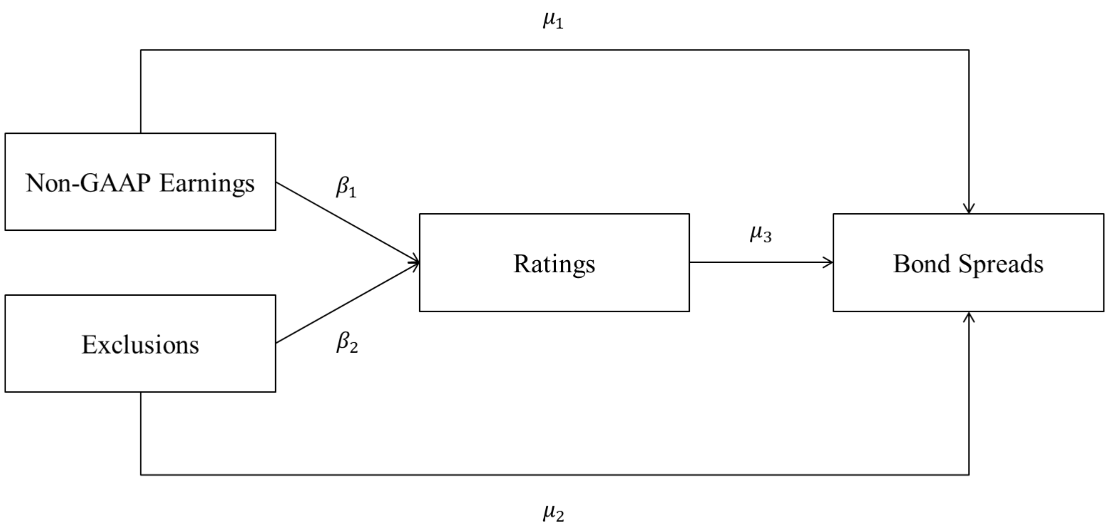
$Size_{i,t-1}$	The logarithm of total assets.
$BTM_{i,t-1}$	The book value of equity scaled by the market value of equity.
$Intangible_{i,t-1}$	Intangible assets scaled by lagged total assets.
$ReturnVol_{i,t-1}$	The standard deviation of firm i's daily stock during the fiscal quarter.
$EarnVol_{i,t-1}$	The standard deviation of firm i's income before extraordinary items divided by lagged total assets over the past four fiscal quarters.
$EarnSurp_{i,t-1}$	Earnings surprise, calculated as actual EPS from I/B/E/S less the median analyst forecast scaled by stock price.
$Leverage_{i,t-1}$	Leverage, calculated as total liabilities scaled by lagged total assets.
$SalesGrowth_{i,t-1}$	Seasonal sales growth, calculated as the difference between sales in quarter t-1 and sales in quarter t-5, scaled by sales in quarter t-5.
$Loss_{i,t-1}$	Indicator that equals one if firm i reports negative earnings for the fiscal quarter, and zero otherwise.
$FaceValue_{i,t}$	The logarithm of the face value of the bond in millions of dollars.
$Maturity_{i,t}$	Bond maturity, defined as the logarithm of years between bond issue date and final maturity.
$Secured_{i,t}$	Indicator that equals one if the bond is secured by collateral, and zero otherwise.

Appendix B: Identification for Approaching Rating Changes

Moody's Rating	Standard & Poor's Rating	Near Rating Changes
Aaa	AAA	
Aa1	AA+	Near Upgrade
Aa2	AA	
Aa3	AA-	Near Downgrade
A1	A+	Near Upgrade
A2	A	
A3	A-	Near Downgrade
Baa1	BBB+	Near Upgrade
Baa2	BBB	
Baa3	BBB-	Near Downgrade
Ba1	BB+	Near Upgrade
Ba2	BB	
Ba3	BB-	Near Downgrade
B1	B+	Near Upgrade
B2	B	
B3	B-	Near Downgrade
Caa1	CCC+	Near Upgrade
Caa2	CCC	
Caa3	CCC-	Near Downgrade
Ca	CC	
C	C	

Figures

Figure 1 Mediation Analysis



	Mediator *Rating$_{i,t}$*
Independent Variable 1 *NGAAPEarn$_{i,t-1}$*	$\beta_1 * \mu_3$
Independent Variable 2 *Exclusion$_{i,t-1}$*	$\beta_2 * \mu_3$

Tables

Table 1 Descriptive Statistics

Table 1 reports descriptive statistics for the main variables. All variables are defined in Appendix A.

Variables	N	Mean	Std	P25	P50	P75
Panel A: Variables of Interest						
$Rating_{i,t}$	7,444	12.53	3.290	10.50	13.00	15.00
$GAAPEarn_{i,t-1}$	7,444	0.011	0.028	0.004	0.012	0.021
$NGAAPEarn_{i,t-1}$	7,444	0.017	0.014	0.008	0.014	0.024
$Exclusion_{i,t-1}$	7,444	-0.006	0.024	-0.006	-0.002	0.000
$BondSpread_{i,t}$	7,444	1.091	0.602	0.825	0.916	1.760
$Transitory_{i,t-1}$	7,444	0.816	0.387	1.000	1.000	1.000
$Recurring_{i,t-1}$	7,444	0.784	0.412	1.000	1.000	1.000
$LossConvert_{i,t-1}$	7,444	0.102	0.302	0.000	0.000	0.000
$ExceedIBES_{i,t-1}$	7,444	0.847	0.360	1.000	1.000	1.000
$NG{>}GAAP_{i,t-1}$	7,444	0.779	0.415	1.000	1.000	1.000
$First_{i,t-1}$	7,444	0.186	0.389	0.000	0.000	0.000
$RatingUp_{i,t-1}$	7,444	0.078	0.268	0.000	0.000	0.000
$RatingDown_{i,t-1}$	7,444	0.098	0.298	0.000	0.000	0.000
$RatingChg_{i,t-1}$	7,444	0.147	0.354	0.000	0.000	0.000
$Risk_{i,t}$	2,569	0.302	0.459	0.000	0.000	1.000
$Risk_{i,(t,t+1)}$	2,569	0.476	0.500	0.000	0.000	1.000
$Risk_{i,(t,t+2)}$	2,569	0.585	0.493	0.000	1.000	1.000
$Risk_{i,(t,t+3)}$	2,569	0.652	0.476	0.000	1.000	1.000
Panel B: Control Variables						
$Size_{i,t-1}$	7,444	9.268	1.312	8.372	9.179	10.18
$BTM_{i,t-1}$	7,444	0.461	0.335	0.228	0.393	0.611
$Intangible_{i,t-1}$	7,444	0.254	0.221	0.062	0.203	0.402
$ReturnVol_{i,t-1}$	7,444	0.019	0.011	0.012	0.016	0.023
$EarnVol_{i,t-1}$	7,444	0.012	0.015	0.003	0.006	0.013
$EarnSurp_{i,t-1}$	7,444	0.002	0.005	0.000	0.001	0.002
$Leverage_{i,t-1}$	7,444	0.643	0.161	0.533	0.635	0.745
$SalesGrowth_{i,t-1}$	7,444	5.924	20.52	-2.932	3.683	10.95
$Loss_{i,t-1}$	7,444	0.154	0.361	0.000	0.000	0.000
$FaceValue_{i,t}$	7,444	5.896	0.712	5.521	5.858	6.263
$Maturity_{i,t}$	7,444	2.865	0.551	2.398	2.775	3.434
$Secured_{i,t}$	7,444	0.058	0.233	0.000	0.000	0.000

Table 2 Correlations

Table 2 presents the correlation metrics. Pearson correlation coefficients for variables of interest in the main analysis are reported below the diagonal. All variables defined in Appendix A. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)
(1) $Rating_{i,t}$	1.000				
(2) $GAAPEarn_{i,t-1}$	0.323***	1.000			
(3) $NGAAPEarn_{i,t-1}$	0.477***	0.493***	1.000		
(4) $Exclusion_{i,t-1}$	0.150***	0.916***	0.103***	1.000	
(5) $BondSpread_{i,t}$	-0.670***	-0.342***	-0.347***	-0.232***	1.000

Table 3 Credit Ratings and Earnings

Table 3 reports the results of H1, which tests the relationship between credit ratings and GAAP earnings, non-GAAP earnings, and exclusions. Column (1) presents the effect of GAAP earnings ($GAAPEarn_{i,t-1}$) on credit ratings ($Rating_{i,t}$). Column (2) presents the effect of the decomposed non-GAAP earnings metrics following the equation: $GAAPEarn_{i,t-1} \equiv NGAAPEarn_{i,t-1} + Exclusion_{i,t-1}$. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
Variables	$Rating_{i,t}$	$Rating_{i,t}$
$GAAPEarn_{i,t-1}$	6.307***	
	(3.464)	
$NGAAPEarn_{i,t-1}$		45.60***
		(5.232)
$Exclusion_{i,t-1}$		-1.733
		(-1.368)
Observations	7,444	7,444
Controls	Y	Y
Quarter FE	Y	Y
Industry FE	Y	Y
R^2	0.700	0.720
Adjusted R^2	0.695	0.714

Table 4 Mediation Analysis

Table 4 reports the results of H2, which tests the significance of the indirect effect of earnings on bond spreads through credit ratings. Panel A (B) presents the total effect, direct effect, indirect effect, and Sobel test statistics of the indirect effect of GAAP earnings (non-GAAP earnings and exclusions) on bond spreads. The decomposition of GAAP earnings follows the equation: $GAAPEarn_{i,t-1} \equiv NGAAPEarn_{i,t-1} + Exclusion_{i,t-1}$. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Panel A: GAAP Earnings			Panel B: Non-GAAP Earnings and Exclusions		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	$BondSpread_{i,t}$	$BondSpread_{i,t}$	$Rating_{i,t}$	$BondSpread_{i,t}$	$BondSpread_{i,t}$	$Rating_{i,t}$
$GAAPEarn_{i,t-1}$	γ_1 -4.991***	θ_1 -3.427***	α_1 6.307***			
	(-3.508)	(-2.607)	(3.464)			
$NGAAPEarn_{i,t-1}$				δ_1 -17.44***	μ_1 -6.357*	β_1 45.60***
				(-3.962)	(-1.725)	(5.232)
$Exclusion_{i,t-1}$				δ_2 -2.444**	μ_2 -2.865**	β_2 -1.733
				(-1.967)	(-2.439)	(-1.368)
$Rating_{i,t}$		θ_2 -0.248***			μ_3 -0.243***	
		(-7.989)			(-7.749)	
Mediation Analysis through $Rating_{i,t}$:						
Total effect of earnings			γ_1 -4.991***			δ_1 -17.44***
Direct effect of earnings			θ_1 -3.427***			μ_1 -6.357*
Indirect effect of earnings			$\alpha_1 * \theta_2$ -1.564***			$\beta_1 * \mu_3$ -11.08***
(Sobel test statistics)			(-3.207)			(-4.377)

Table 4
(continued)

Total effect of exclusions						δ_2 -2.444**
Direct effect of exclusions						μ_2 -2.865**
Indirect effect of exclusions						$\beta_2 * \mu_3$ 0.421
(Sobel test statistics)						(1.360)
Observations	7,444	7,444	7,444	7,444	7,444	7,444
Controls	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
R^2	0.662	0.693	0.700	0.666	0.693	0.720
Adjusted R^2	0.656	0.687	0.695	0.659	0.687	0.714

Table 5 The Quality of Non-GAAP Disclosure

Table 5 presents the impact of the quality non-GAAP disclosure on credit ratings and bond spreads. The models include four independent quality measures following Chen et al. (2021): $Transitory_{i,t-1}$, $Recurring_{i,t-1}$, $LossConvert_{i,t-1}$, and $ExceedIBES_{i,t-1}$. $Transitory_{i,t-1}$ denotes non-GAAP borrowers with transitory items. It is an indicator that equals one if a borrower's GAAP earnings are different from operating earnings. $Recurring_{i,t-1}$ captures recurring-item exclusions and equals one if a borrower's non-GAAP earnings are different from operating earnings. $LossConvert_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP earnings are positive and GAAP earnings are negative, capturing instances where the borrower's non-GAAP earnings effectively transform a reported GAAP loss into an adjusted gain. $ExceedIBES_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP earnings exceed I/B/E/S actual street earnings. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	Quality indicator (Prediction)	(1) $Rating_{i,t}$	(2) $BondSpread_{i,t}$
$NGAAPEarn_{i,t-1}$		42.145**	-11.761
		(2.581)	(-1.129)
$NGAAPEarn_{i,t-1}$ * $Transitory_{i,t-1}$	Higher quality (+)	16.109***	-5.938
		(2.733)	(-1.503)
$NGAAPEarn_{i,t-1}$ * $Recurring_{i,t-1}$	Lower quality (-)	-26.496***	-2.281
		(-3.072)	(-0.427)
$NGAAPEarn_{i,t-1}$ * $LossConvert_{i,t-1}$	Higher quality (+)	17.797*	-10.242
		(1.882)	(-1.154)
$NGAAPEarn_{i,t-1}$ * $ExceedIBES_{i,t-1}$	Lower quality (-)	-3.712	2.903
		(-0.300)	(0.339)
$Exclusion_{i,t-1}$		-5.265	-3.437
		(-1.049)	(-0.927)
$Exclusion_{i,t-1}$ * $Transitory_{i,t-1}$		0.069	-1.112
		(0.017)	(-0.312)

Table 5
(continued)

Exclusion$_{i,t-1}$ * *Recurring*$_{i,t-1}$	5.730	-1.023
	(1.363)	(-0.395)
Exclusion$_{i,t-1}$ * *LossConvert*$_{i,t-1}$	-4.023	-0.317
	(-1.220)	(-0.100)
Exclusion$_{i,t-1}$ * *ExceedIBES*$_{i,t-1}$	-5.437**	1.377
	(-2.171)	(0.593)
Transitory$_{i,t-1}$	-0.404***	0.116
	(-2.853)	(1.040)
Recurring$_{i,t-1}$	0.044	0.174
	(0.242)	(1.423)
LossConvert$_{i,t-1}$	-0.575***	-0.034
	(-2.762)	(-0.199)
ExceedIBES$_{i,t-1}$	0.163	-0.223
	(0.486)	(-0.896)
Observations	7,444	7,444
Controls	Y	Y
Quarter FE	Y	Y
Industry FE	Y	Y
R^2	0.733	0.668
Adjusted R^2	0.728	0.661

Table 6 Gain Versus Loss Exclusions

Table 6 reports the influences of gain and loss exclusions on credit ratings and bond spreads. $NG>GAAP_{i,t-1}$ is used to capture excluded gains or losses. It is an indicator that equals one if a borrower excludes losses from GAAP earnings to achieve higher non-GAAP earnings. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1) $Rating_{i,t}$	(2) $BondSpread_{i,t}$
$NGAAPEarn_{i,t-1}$	46.731***	-17.905***
	(5.299)	(-3.299)
$NGAAPEarn_{i,t-1}$ * $NG>GAAP_{i,t-1}$	-0.855	0.766
	(-0.113)	(0.164)
$Exclusion_{i,t-1}$	-2.034	1.728
	(-0.724)	(0.530)
$Exclusion_{i,t-1}$ * $NG>GAAP_{i,t-1}$	-0.538	-5.263
	(-0.172)	(-1.189)
Observations	7,444	7,444
Controls	Y	Y
Quarter FE	Y	Y
Industry FE	Y	Y
R^2	0.720	0.666
Adjusted R^2	0.715	0.659

Table 7 Predictability of Non-GAAP Earnings for Credit Risks

Table 7 reports the results of testing the predictive power of GAAP earnings and non-GAAP earnings for short-term and long-term potential risks. The dependent variables are the indicators of bankruptcy and default risk events in the next quarter t ($Risk_{i,t}$), in the next two quarters from quarter t to t+1 ($Risk_{i,(t,t+1)}$), in the next three quarters from quarter t to t+2 ($Risk_{i,(t,t+2)}$), and in the next four quarters from quarter t to t+3 ($Risk_{i,(t,t+3)}$). In column (1), the sample is expanded to include both GAAP-only reporters and non-GAAP reporters. Column (2) through column (9) cover non-GAAP reporters. All variables are defined in Appendix A. The corresponding standard errors are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variables	$Risk_{i,t}$	$Risk_{i,t}$	$Risk_{i,t}$	$Risk_{i,(t,t+1)}$	$Risk_{i,(t,t+1)}$	$Risk_{i,(t,t+2)}$	$Risk_{i,(t,t+2)}$	$Risk_{i,(t,t+3)}$	$Risk_{i,(t,t+3)}$
$GAAPEarn_{i,t-1}$	-4.364***	-0.807		0.524		0.556		0.960	
	(1.490)	(1.858)		(1.708)		(1.647)		(1.659)	
$NGAAPEarn_{i,t-1}$			-9.776**		-8.416*		-12.39***		-10.79**
			(4.929)		(4.393)		(4.458)		(4.476)
$Exclusion_{i,t-1}$			0.390		1.862		2.410		2.643
			(2.025)		(1.878)		(1.831)		(1.832)
Sample	GAAP + non-GAAP	non-GAAP	non-GAAP	non-GAAP	non-GAAP	non-GAAP	non-GAAP	non-GAAP	non-GAAP
Observations	12,844	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.128	0.065	0.066	0.095	0.096	0.128	0.131	0.161	0.163

Table 8 The Impact of Financial Crisis

Table 8 reports the mediation analyses in the pre-crisis (2003-2007) and post-crisis (2010-2014) periods. Panel A (B) presents the total effect, direct effect, indirect effect, and Sobel test statistics of the indirect effect of non-GAAP earnings and exclusions on bond spreads in the pre-crisis (post-crisis) periods. The decomposition of GAAP earnings follows the equation: $GAAPEarn_{i,t-1} \equiv NGAAPEarn_{i,t-1} + Exclusion_{i,t-1}$. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Panel A: Pre-Crisis (2003-2007)			Panel B: Post-Crisis (2010-2014)		
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	$BondSpread_{i,t}$	$BondSpread_{i,t}$	$Rating_{i,t}$	$BondSpread_{i,t}$	$BondSpread_{i,t}$	$Rating_{i,t}$
$NGAAPEarn_{i,t-1}$	δ_1 -20.84***	μ_1 -5.397	β_1 48.54***	δ_1 -12.65***	μ_1 -5.511	β_1 33.35***
	(-2.752)	(-0.910)	(3.793)	(-2.665)	(-1.264)	(3.046)
$Exclusion_{i,t-1}$	δ_2 0.931	μ_2 0.201	β_2 -2.295	δ_2 -4.414**	μ_2 -4.844***	β_2 -2.009
	(0.446)	(0.109)	(-0.552)	(-2.449)	(-2.985)	(-0.929)
$Rating_{i,t}$		μ_3 -0.318***			μ_3 -0.214***	
		(-7.447)			(-6.112)	
Mediation Analysis through $Rating_{i,t}$:						
Total effect of earnings			δ_1 -20.84***			δ_1 -12.65***
Direct effect of earnings			μ_1 -5.397			μ_1 -5.511
Indirect effect of earnings			$\beta_1 * \mu_3$ -15.44***			$\beta_1 * \mu_3$ -7.137***
(Sobel test statistics)			(-3.552)			(-4.377)

Table 8
(continued)

Total effect of exclusions			δ_2	0.931			δ_2	-4.414**
Direct effect of exclusions			μ_2	0.201			μ_2	-4.844***
Indirect effect of exclusions			$\beta_2 * \mu_3$	0.730			$\beta_2 * \mu_3$	0.430
(Sobel test statistics)				(0.578)				(0.934)
Observations	808	808		808	2,442	2,442		2,442
Controls	Y	Y		Y	Y	Y		Y
Quarter FE	Y	Y		Y	Y	Y		Y
Industry FE	Y	Y		Y	Y	Y		Y
R^2	0.713	0.799		0.791	0.589	0.612		0.760
Adjusted R^2	0.683	0.778		0.769	0.575	0.599		0.752

Table 9 Non-GAAP Disclosure Near Rating Upgrades or Downgrades

Table 9 reports the results of testing borrowers' non-GAAP disclosure choice when they are near rating upgrades or downgrades, where they are motivated to maintain or achieve desired credit ratings. Borrowers near an upgrade are identified if their Moody's ratings include "1" (e.g., Aa1, A1, Baa1, …, Caa1) or Standard & Poor's ratings include "+" (e.g., AA+, A+, BBB+, …, CCC+). Borrowers near a downgrade are identified if their Moody's ratings include "3" (e.g., Aa3, A3, Baa3, …, Caa3) or Standard & Poor's ratings include "-" (e.g., AA-, A-, BBB-, …, CCC-). A detailed description of the methodology is presented in Appendix B. The dependent variables are non-GAAP related measures that captures opportunistic behaviors. $Recurring_{i,t-1}$ captures recurring-item exclusions and equals one if a borrower's non-GAAP earnings are different from operating earnings. $ExceedIBES_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP earnings exceed I/B/E/S actual street earnings. $First_{i,t-1}$ is an indicator that equals one if a borrower's non-GAAP metrics are presented before GAAP metrics in earnings announcement. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding standard errors are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	$Recurring_{i,t}$	$Recurring_{i,t}$	$ExceedIBES_{i,t}$	$ExceedIBES_{i,t}$	$First_{i,t}$	$First_{i,t}$
$RatingUp_{i,t-1}$	-0.0342		-4.551***		-0.503**	
	(0.177)		(0.217)		(0.205)	
$RatingDown_{i,t-1}$	-0.359**		-4.237***		-0.114	
	(0.174)		(0.179)		(0.198)	
$RatingChg_{i,t-1}$		-0.252		-5.149***		-0.240
		(0.196)		(0.178)		(0.219)
Observations	5,452	5,452	5,044	5,044	3,108	3,108
Controls	Y	Y	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.156	0.156	0.557	0.576	0.126	0.125

Table 10 Change Analysis

Table 10 reports the results of the change analysis. All variables are defined in Appendix A. Standard errors are clustered by firm. The corresponding t-statistics are reported in the parentheses below each coefficient. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1) $\Delta Rating_{i,t}$	(2) $\Delta Rating_{i,t}$
$\Delta GAAPEarn_{i,t-1}$	0.195	
	(1.386)	
$\Delta NGAAPEarn_{i,t-1}$		1.014***
		(3.197)
$\Delta Exclusion_{i,t-1}$		0.139
		(0.947)
Observations	7,102	7,102
Controls	Y	Y
Quarter FE	Y	Y
Industry FE	Y	Y
R^2	0.062	0.055
Adjusted R^2	0.045	0.037

Reference

Akins, B. (2018). Financial Reporting Quality and Uncertainty About Credit Risk Among Ratings Agencies. *The Accounting Review*, *93*(4), 1-22.

Allee, K. D., Bhattacharya, N., Black, E. L., & Christensen, T. E. (2007). Pro Forma Disclosure and Investor Sophistication: External Validation of Experimental Evidence Using Archival Data. *Accounting, Organizations and Society*, *32*(3), 201-222.

Alissa, W., Bonsall Iv, S. B., Koharki, K., & Penn Jr, M. W. (2013). Firms' Use of Accounting Discretion to Influence Their Credit Ratings. *Journal of Accounting and Economics*, *55*(2-3), 129-147.

Ashbaugh-Skaife, H., Collins, D. W., & LaFond, R. (2006). The Effects of Corporate Governance on Firms' Credit Ratings. *Journal of Accounting and Economics*, *42*(1-2), 203-243.

Baron, R. M., & Kenny, D. A. (1986). The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173.

Basu, R., & Naughton, J. P. (2020). The Real Effects of Financial Statement Recognition: Evidence from Corporate Credit Ratings. *Management Science*, *66*(4), 1672-1691.

Beaver, W. H., Shakespeare, C., & Soliman, M. T. (2006). Differential Properties in the Ratings of Certified Versus Non-Certified Bond-Rating Agencies. *Journal of Accounting and Economics*, *42*(3), 303-334.

Bentley, J. W., Christensen, T. E., Gee, K. H., & Whipple, B. C. (2018). Disentangling Managers' and Analysts' Non-GAAP Reporting. *Journal of Accounting Research*, *56*(4), 1039-1081.

Bharath, S. T., Sunder, J., & Sunder, S. V. (2008). Accounting Quality and Debt Contracting. *The Accounting Review*, *83*(1), 1-28.

Bhattacharya, N., Black, E. L., Christensen, T. E., & Larson, C. R. (2003). Assessing the Relative Informativeness and Permanence of Pro Forma Earnings and GAAP Operating Earnings. *Journal of Accounting and Economics*, *36*(1-3), 285-319.

Black, D. E., Christensen, T. E., Ciesielski, J. T., & Whipple, B. C. (2018). Non-GAAP Reporting: Evidence from Academia and Current Practice. *Journal of Business Finance & Accounting*, *45*(3-4), 259-294.

Bonsall, S. B., & Miller, B. P. (2017). The Impact of Narrative Disclosure Readability on Bond Ratings and the Cost of Debt. *Review of Accounting Studies*, *22*, 608-643.

Bradshaw, M. T., & Sloan, R. G. (2002). GAAP Versus the Street: An Empirical Assessment of Two Alternative Definitions of Earnings. *Journal of Accounting Research*, *40*(1), 41-66.

Cantor, R., & Mann, C. (2003). Measuring the Performance of Corporate Bond Ratings. *Special Comment*, *April*.

Chen, C. Y. (2010). Do Analysts and Investors Fully Understand the Persistence of the Items Excluded from Street Earnings?. *Review of Accounting Studies*, *15*, 32-69.

Chen, J. V., Gee, K. H., & Neilson, J. J. (2021). Disclosure Prominence and the Quality of Non-GAAP Earnings. *Journal of Accounting Research*, *59*(1), 163-213.

Chiu, T. T., Guan, Y., & Kim, J. B. (2018). The Effect of Risk Factor Disclosures on the Pricing of Credit Default Swaps. *Contemporary Accounting Research*, *35*(4), 2191-2224.

Christensen, T. E., Pei, H., Pierce, S. R., & Tan, L. (2019). Non-GAAP Reporting Following Debt Covenant Violations. *Review of Accounting Studies*, *24*, 629-664.

Cragg, J. G., & Donald, S. G. (1993). Testing Identifiability and Specification in Instrumental Variable Models. *Econometric Theory*, *9*(2), 222-240.

Curtis, A. B., McVay, S. E., & Whipple, B. C. (2014). The Disclosure of Non-GAAP Earnings Information in the Presence of Transitory Gains. *The Accounting Review*, *89*(3), 933-958.

Defond, M. L., & Zhang, J. (2014). The Timeliness of the Bond Market Reaction to Bad Earnings News. *Contemporary Accounting Research*, *31*(3), 911-936.

DeHaan, E. (2017). The Financial Crisis and Corporate Credit Ratings. *The Accounting Review*, *92*(4), 161-189.

Donovan, J., Jennings, J., Koharki, K., & Lee, J. (2021). Measuring Credit Risk Using Qualitative Disclosure. *Review of Accounting Studies*, *26*, 815-863.

Doyle, J. T., Lundholm, R. J., & Soliman, M. T. (2003). The Predictive Value of Expenses Excluded From Pro Forma Earnings. *Review of Accounting Studies*, *8*, 145-174.

Easton, P. D., Monahan, S. J., & Vasvari, F. P. (2009). Initial Evidence on the Role of Accounting Earnings in the Bond Market. *Journal of Accounting Research*, *47*(3), 721-766.

Elliott, W. B. (2006). Are Investors Influenced by Pro Forma Emphasis and Reconciliations in Earnings Announcements?. *The Accounting Review*, *81*(1), 113-133.

Franco, F., Urcan, O., & Vasvari, F. P. (2016). Corporate Diversification and the Cost of Debt: The Role of Segment Disclosures. *The Accounting Review*, *91*(4), 1139-1165.

Griffin, P. A., Hong, H. A., & Ryou, J. W. (2018). Corporate Innovative Efficiency: Evidence of Effects on Credit Ratings. *Journal of Corporate Finance*, *51*, 352-373.

Güntay, L., & Hackbarth, D. (2010). Corporate Bond Credit Spreads and Forecast Dispersion. *Journal of Banking & Finance*, *34*(10), 2328-2345.

He, G. (2018). Credit Ratings and Managerial Voluntary Disclosures. *Financial Review*, *53*(2), 337-378.

Huang, Q., & Skantz, T. R. (2016). The Informativeness of Pro Forma and Street Earnings: An Examination of Information Asymmetry Around Earnings Announcements. *Review of Accounting Studies*, *21*, 198-250.

Jorion, P., Liu, Z., & Shi, C. (2005). Informational Effects of Regulation FD: Evidence from Rating Agencies. *Journal Of Financial Economics*, *76*(2), 309-330.

Kisgen, D. J. (2006). Credit Ratings and Capital Structure. *The Journal of Finance*, *61*(3), 1035-1072.

Kisgen, D. J., & Strahan, P. E. (2010). Do Regulations Based on Credit Ratings Affect a Firm's Cost of Capital?. *The Review of Financial Studies*, *23*(12), 4324-4347.

Kliger, D., & Sarig, O. (2000). The Information Value of Bond Ratings. *The Journal of Finance*, *55*(6), 2879-2902.

Kolev, K., Marquardt, C. A., & McVay, S. E. (2008). SEC Scrutiny and the Evolution of Non-GAAP Reporting. *The Accounting Review*, *83*(1), 157-184.

Kothari, S. P., Ramanna, K., & Skinner, D. J. (2010). Implications for GAAP from an Analysis of Positive Research in Accounting. *Journal of Accounting and Economics*, *50*(2-3), 246-286.

Kraft, P. (2015). Rating Agency Adjustments to GAAP Financial Statements and Their Effect on Ratings and Credit Spreads. *The Accounting Review*, *90*(2), 641-674.

Kyung, H., Lee, H., & Marquardt, C. (2019). The Effect of Voluntary Clawback Adoption on Non-GAAP Reporting. *Journal of Accounting and Economics*, *67*(1), 175-201.

Lee, Y. J. (2008). The Effects of Employee Stock Options on Credit Ratings. *The Accounting Review*, *83*(5), 1273-1314.

Lee, K., & Schantl, S. F. (2019). Financial Reporting and Credit Ratings: on the Effects of Competition in the Rating Industry and Rating Agencies' Gatekeeper Role. *Journal of Accounting Research*, *57*(2), 545-600.

Leung, E., & Veenman, D. (2018). Non-GAAP Earnings Disclosure in Loss Firms. *Journal of Accounting Research*, *56*(4), 1083-1137.

Liu, A. Z., Subramanyam, K. R., Zhang, J., & Shi, C. (2018). Do Firms Manage Earnings to Influence Credit Ratings? Evidence from Negative Credit Watch Resolutions. *The Accounting Review*, *93*(3), 267-298.

Lougee, B. A., & Marquardt, C. A. (2004). Earnings Informativeness and Strategic Disclosure: An Empirical Examination of "Pro Forma" Earnings. *The Accounting Review*, *79*(3), 769-795.

Marques, A. (2006). SEC Interventions and the Frequency and Usefulness of Non-GAAP Financial Measures. *Review of Accounting Studies*, *11*, 549-574.

MacKinnon, D. P., & Pirlott, A. G. (2015). Statistical Approaches for Enhancing Causal Interpretation of the M to Y Relation in Mediation Analysis. *Personality and Social Psychology Review*, *19*(1), 30-43.

McVay, S. E. (2006). Earnings Management Using Classification Shifting: An Examination of Core Earnings and Special Items. *The Accounting Review*, *81*(3), 501-531.

Mehmetoglu, M. (2018). Medsem: A Stata Package for Statistical Mediation Analysis. *International Journal of Computational Economics and Econometrics*, *8*(1), 63-78.

Moody's. (2006). *Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations – Part I*.

Otter, T., Pachali, M. J., Mayer, S., & Landwehr, J. R. (2018). Causal Inference Using Mediation Analysis or Instrumental Variables–Full Mediation in the Absence of Conditional Independence. *Marketing: ZFP–Journal of Research and Management*, *40*(2), 41-57.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS Procedures for Estimating Indirect Effects in Simple Mediation Models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731.

Roychowdhury, S., & Srinivasan, S. (2019). The Role of Gatekeepers in Capital Markets. *Journal of Accounting Research*, *57*(2), 295-322.

Securities and Exchange Commission (SEC) (2001a). *SEC Cautions Companies, Alerts Investors to Potential Dangers of "Pro Forma" Financials.* Press Release 2001-144, December 4, 2001.

Securities and Exchange Commission (SEC) (2001b). *Cautionary Advice Regarding the Use of "Pro Forma" Financial Information in Earnings Releases*. Washington, DC: SEC Release Nos. 33-8039, 34-45124, FR-59.

Sengupta, P. (1998). Corporate Disclosure Quality and the Cost of Debt. *The Accounting review*, 459-474.

Shivakumar, L., Urcan, O., Vasvari, F. P., & Zhang, L. (2011). The Debt Market Relevance of Management Earnings Forecasts: Evidence from Before and During the Credit Crisis. *Review of Accounting Studies, 16*, 464-486.

Sobel, M. E. (1982). Asymptotic Intervals for Indirect Effects in Structural Equations Models. S. Leinhart. *Sociological Methodology*, 290-312.

Sobel, M. E. (1986). Some New Results on Indirect Effects and Their Standard Errors in Covariance Structure Models. *Sociological methodology*, *16*, 159-186.

Standard & Poor's. (2008). *Corporate Ratings Criteria*.

Stock, J., & Yogo, M. (2005). Testing for Weak Instruments in Linear IV Regression. In D. W. K. Andrews (Ed*.), Identification and Inference for Econometric Models* (pp. 80–108). Cambridge University Press.

Tang, T. T. (2009). Information Asymmetry and Firms' Credit Market Access: Evidence from Moody's Credit Rating Format Refinement. *Journal of Financial Economics*, *93*(2), 325-351.

Thielemann, F., Dinh, T., & Kang, H. (2019). Non-GAAP Reporting and Debt Market Outcomes: Evidence from Regulation G. *Schmalenbach Business Review*, *71*, 169-203.

Toscano, F. (2020). Does the Dodd-Frank Act Reduce the Conflict of Interests of Credit Rating Agencies?. *Journal of Corporate Finance*, *62*, 101595.

Watts, R. L. (2003). Conservatism in Accounting Part I: Explanations and Implications. *Accounting Horizons*, *17*(3), 207-221.

Zhang, J. (2008). The Contracting Benefits of Accounting Conservatism to Lenders and Borrowers. *Journal of Accounting and Economics*, *45*(1), 27-54.

Ziebart, D. A., & Reiter, S. A. (1992). Bond Ratings, Bond Yields and Financial Information. *Contemporary Accounting Research*, *9*(1), 252-282.