

Essays on the Usefulness of Non-GAAP Earnings

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Abstract

Voluntary disclosure of adjusted earnings metrics; i.e., so-called non-GAAP earnings, is subject to ongoing controversy. In fact, critics allege that management uses these earnings metrics to portray an overly optimistic view of company performance whereas proponents argue that, relative to GAAP earnings, they are more indicative of recurring and/or operating performance. Hence, the usefulness of these earnings measures is ultimately an empirical question. Against this background, the three essays of this dissertation project explore the usefulness of a) management-provided non-GAAP earnings disclosure (*Essays I & II*) and b) Standard & Poor's (S&P) so-called Core Earnings metric, as a similarly adjusted but more credible, yet also standardised non-GAAP earnings measure (*Essay III*).

In particular, *Essays I & II* offer a new perspective on Regulation G (RegG), which the Securities and Exchange Commission (SEC) introduced in 2003 to protect investors from the potentially misleading character of non-GAAP disclosures. While *Essay I* provides evidence supportive of the regulation's benefit, *Essay II* documents that it also enabled new opportunistic behaviour as an unintended consequence. Specifically, *Essay I* extends prior non-GAAP literature's exclusive focus on the equity markets by showing that the regulation alleviated the credibility problem of non-GAAP earnings to the point that bond investors incorporate them into their credit risk assessment. In contrast, *Essay II* explores the proliferation and motives underlying a self-devised strategy of regulatory avoidance, thereby contributing to the nascent literature on post-regulation opportunism and unintended consequences. Finally, *Essay III* compares the ability of S&P's Core Earnings metric to predict future operating cash flow against that of GAAP earnings. An in this setting novel out-of-sample estimation approach is applied, which yields no significant difference in predictive ability.

In terms of practical relevance, the results from this dissertation project speak to a broad audience. First, securities regulators interested in learning more on the benefits and drawbacks of potential non-GAAP regulation may be interested. Second, the findings may inform managers who contemplate their non-GAAP disclosure decisions. Finally, accounting standard setters, who deliberate to augment the income statement with a measure of operating performance that is conceptually similar to S&P's Core Earnings, might derive additional insight.

Zusammenfassung

Die freiwillige Publizität sogenannter Alternativer Performance Kennzahlen (APKs) wird fortlaufend kontrovers diskutiert. Gegenstand der Diskussion ist der mögliche Missbrauch von APKs aufgrund der Tatsache, dass diese relativ zu den nach gängigen Rechnungslegungsvorschriften (GAAP) fest definierten Kennzahlen um bestimmte Aufwands- oder Ertragspositionen bereinigt sind. So argumentieren Kritiker, dass Manager APKs nutzen, um ein überaus optimistisches Bild der unternehmerischen Performance zu zeichnen. Befürworter vertreten hingegen die Sichtweise, APKs beschreiben die wiederkehrende und/oder operative Performance besser als entsprechende GAAP-Kennzahlen. Die Feststellung der Nützlichkeit von APKs ist somit eine empirische Frage. In diesem Kontext widmen sich die drei Aufsätze dieses Dissertationsprojekts der Nützlichkeit von a) durch das Management verbreiteten Ergebniskennzahlen (*Aufsätze I & II*) und b) den von Standard & Poor's (S&P) bereitgestellten, sogenannten Core Earnings als eine auf ähnliche Art und Weise berechnete, allerdings glaubwürdigere, aber auch standardisierte APK (*Aufsatz III*).

Konkret fokussieren sich *Aufsätze I & II* auf die Erforschung von Regulation G (RegG), welche die amerikanische Börsenaufsicht (SEC) zum Schutz der Investoren vor potenziell irreführenden APKs im Jahr 2003 eingeführt hatte. *Aufsatz I* erweitert dabei den Eigenkapitalmarktfokus der bestehenden Literatur durch den Befund, dass RegG die Glaubwürdigkeit von APKs soweit zu verbessern mag, dass diese nun entsprechend in der Kreditrisikoeinschätzung von Anleihenhändlern reflektiert sind. Im Gegensatz dazu dokumentiert *Aufsatz II* die Entstehung neuer, opportunistisch motivierter APK-Berichterstattung als unbeabsichtigte Folge des regulatorischen Eingriffs. Abschliessend vergleicht *Aufsatz III* die Genauigkeit von Cashflow Vorhersagen anhand des GAAP-Ergebnisses mit Prognosen, die auf S&P's Core Earnings basieren. Dabei wird ein in diesem Zusammenhang neues "Out-Of-Sample" Schätzverfahren angewendet, welches kein unterschiedlich gut ausgeprägtes Prognoseverhalten feststellen kann.

Die Resultate des Dissertationsprojektes sind für verschiedene Adressaten von praktischer Bedeutung. Erstens informieren sie Aufsichtsbehörden in Bezug auf die Kosten-/Nutzen Abwägung von APK Regulierung. Zweitens können sie Manager bezüglich ihrer Entscheidungen zur Publizität von APKs unterstützen. Drittens liefern sie einen Erkenntnisgewinn für standardsetzende Rechnungslegungsgremien in Bezug auf die mögliche Erweiterung der Gewinn- und Verlustrechnung um einen zu den S&P Core Earnings konzeptionell ähnlichen Indikator für die operative Performance.

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Abbreviations

APKs	Alternative Performance Kennzahlen
APMs	Alternative Performance Measures
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht
BIS	Bank for International Settlements
C&DIs	Compliance & Disclosure Interpretations
CAD	Canadian Dollar
CDS	Credit Default Swap(s)
CESR	Committee of European Securities Regulators
CRSP	The Center for Research in Security Prices
CSA	Canadian Securities Administrators
Diff.	Difference
e.g.	Exempli Gratia
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation
EPS	Earnings per Share
ESMA	European Securities and Markets Authority
EU	European Union
FASB	Financial Accounting Standards Board
FAS	Financial Accounting Standard
FE	Fixed Effects
GAAP	Generally Accepted Accounting Principles
i.e.	Id Est
I/B/E/S	Institutional Brokers' Estimate System

IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
IMR	Inverse Mills Ratio
Insig.	Insignificant
KPIs	Key Performance Indicators
Max	Maximum
Mergent FISD	Mergent Fixed Income Securities Database
Min	Minimum
n.a.	Not Applicable
OLS	Ordinary Least Squares
PPE	Property, Plant and Equipment
Q1/2/3/4	First, Second, Third or Fourth Quarter
R&D	Research & Development
RegG	Regulation G
S&P	Standard & Poor's
Sd	Standard Deviation
SEC	Securities and Exchange Commission
SIC	Standard Industry Classification
SOX	Sarbanes-Oxley Act
U.S.	United States
USD	United States Dollar
WpHG	Wertpapierhandelsgesetz

1. Introduction

The ability to attract and retain capital from outside investors is a key determinant of firms' competitive position. Yet, the separation of ownership and control, which characterises contemporary corporations, inevitably introduces information asymmetry between managers and investors. Hence, problems commonly associated with information asymmetry, like adverse selection according to Akerlof (1970) and moral hazard may arise in this context. Because these problems act as impediments to efficient capital allocation management has incentives to signal the firm's "true performance" to investors and investors have an incentive to obtain an unbiased and independently verified view on firm performance.¹ Thus, the need for financial reporting and disclosures originates from information asymmetry and its associated agency problems (Healy & Palepu, 2001).

Management satisfies bespoke need for financial reporting through the provision of mandatory and audited financial statements according to Generally Accepted Accounting Principles (GAAP) on the one hand as well as additional voluntary but typically unaudited disclosures on the other hand. A specific type within firms' voluntary disclosure repertoire – and the heart of this dissertation project - are adjusted earnings metrics or so-called non-GAAP earnings. While management typically cites investors' improved understanding of operating results and the associated ability to forecast earnings and cash flows more accurately as the purpose of their non-GAAP earnings disclosure (*informative perspective*), these measures may also be used to overstate performance and mislead investors (*opportunistic perspective*). Hence, the actual usefulness of management-provided non-GAAP earnings is ex ante unclear and therefore subject to empirical research. While the consensus seems to be that both; i.e., opportunistic as well as informative motives for non-GAAP earnings disclosure persist (e.g. Lougee & Marquardt, 2004; Curtis, McVay & Whipple, 2013) the potentially grave consequences of misleading non-GAAP earnings cause ongoing controversy around these measures.

In fact, the credibility problems typically associated with voluntary disclosures are aggravated in the case of non-GAAP earnings. For instance, in a critical statement former SEC chair Mary Jo White alleged, that non-GAAP earnings substitute rather than

¹ Jensen & Meckling (1976) are the first to develop a comprehensive theory on the ownership structure of the firm. Among others things they elaborate upon how information asymmetries and related problems provide a rationale for the voluntary supply of accounting reports to investors.

complement GAAP earnings and as a result may unduly become the main message of performance communicated to investors (White, 2016). Further, this problem may compound due to business media or analyst reports only referencing management communicated non-GAAP, but not GAAP results (Sherman & Young, 2018). In line with these concerns, research finds that the presentation of non-GAAP earnings particularly affects the judgement of smaller retail investors who lack the ability and/or resources to properly scrutinise and fully understand them (Allee, Bhattacharya, Black & Christensen, 2007; Bhattacharya, Black, Christensen & Mergenthaler, 2007). Even worse, ordinary investors' limited ability to assess non-GAAP earnings disclosures, is exploited by more professional types (Christensen, Drake & Thornock, 2014). As a result, non-GAAP disclosure is perhaps the only form of voluntary disclosure that, with the adoption of Regulation G (RegG) in 2003, has become subject to specific regulation (Cazier, Christensen, Merkley & Treu, 2017). Yet, despite a temporary drop in the frequency of non-GAAP disclosures (Marques, 2006; Entwistle, Feltham & Mbagwu, 2006) the proliferation of these measures quickly rebounded (Black, Black, Christensen & Heninger, 2012; Brown, Christensen, Elliott & Mergenthaler, 2012) so that by now they are commonplace in the capital markets (Audit Analytics, 2015; Black, Christensen, Ciesielski & Whipple, 2018).

In fact, non-GAAP disclosure has become so common, that three interrelated trends are observable. First, academics exhibit renewed interest in the area. This is particularly true with respect to research on the impact of regulation and the documentation of post-regulation opportunism (e.g. Baumker, Biggs, McVay & Pierce, 2013; Guest, Kothari & Pozen, 2018; Shiah-Hou & Teng, 2016). Second, regulators in the United States (U.S.) and elsewhere tighten enforcement and take a fresh look at potential new regulatory initiatives.² Third, both the International Accounting Standards Board (IASB) with its "Primary Financial Statements" project as well as the Financial Accounting Standards Board (FASB) with its projects on the "Disaggregation of Performance Information" and "Structure of the Performance Statement" have begun to ask, what the proliferation of non-GAAP earnings means with respect to the usefulness of GAAP financial statements.

² For instance, Ernst & Young (2017) show that with respect to comment letters sent to registrants, non-GAAP financial measures were indeed the SEC's top enforcement priority for the year ended in June 2017. Further, former SEC chair White contemplated the need for additional regulation (Michaels & Rapoport, 2016) and internationally securities regulators have recently introduced rules similar to the SEC's RegG (e.g. the European Securities and Markets Authority (ESMA) in 2015 or the Canadian Securities Administrators (CSA) in 2016).

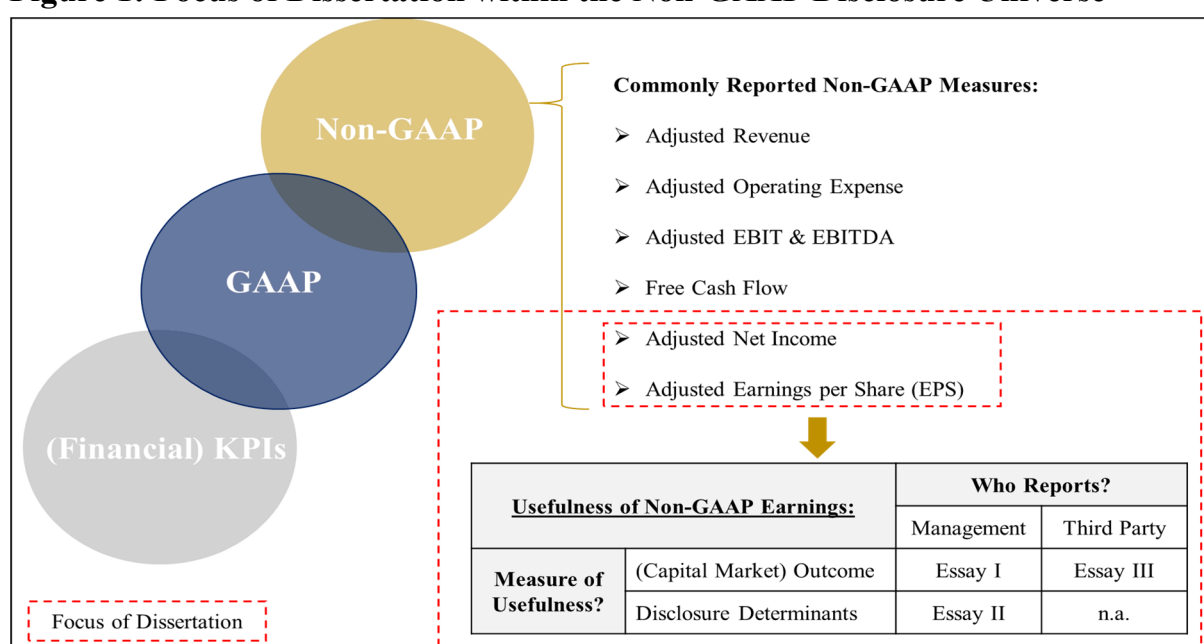
Thus, research on the usefulness of non-GAAP earnings disclosures is more needed than ever and may do its part to guide potential regulatory as well as standard-setting efforts. This dissertation project answers to bespoke need by studying a) the consequences of the interaction between management-provided non-GAAP earnings disclosure and earlier non-GAAP regulation (RegG) and b) the usefulness of Standard & Poor's (S&P) so-called Core Earnings as a third party-provided and therefore more credible, but also standardised non-GAAP earnings measure. Results from this thesis contribute broadly to the empirical disclosure literature and have several practical implications.

The introduction proceeds as follows. Section 1.1 shows how the dissertation project connects with non-GAAP disclosures in a more general context and how its constituent essays interrelate (Figure 1). An overview table on all essays rounds off the section (Table 1) before sub-sections 1.1.1 to 1.1.3 offer a more detailed account on each individual essay. Thereafter, section 1.2 presents a discussion of the dissertation project's contribution to academic literature (1.2.1) and practice (1.2.2). Finally, section 1.3 holds separate overview tables for each of the constituent essays, providing further information such as e.g. publication status and conference appearances.

1.1 Three Essays on Non-GAAP Earnings Disclosure

This dissertation project consists of three interrelated essays, which all study the usefulness of non-GAAP earnings, but differ by the specific setting employed. Figure 1 illustrates the focus of this dissertation within the wider non-GAAP disclosure universe.

Figure 1: Focus of Dissertation within the Non-GAAP Disclosure Universe



Notes: Figure 1 was adapted from Golden (2017).

Specifically, it reflects three criteria that enable a precise categorisation of the individual essays: Type of non-GAAP measure examined, who reports it and main measure of non-GAAP usefulness.

As for the type of non-GAAP measure, all three essays follow the majority of the extant literature by only focusing on the role of adjusted earnings measures; i.e., either adjusted net income or earnings per share (EPS) amounts. Thus, by definition a plethora of other non-GAAP measures like e.g. adjusted revenue, adjusted operating expense or adjusted EBIT / EBITDA³ are outside of the scope of this dissertation project. The same applies to all other financial and non-financial key performance indicators (KPIs), which, although not defined by GAAP, do not meet the strict definition of a non-GAAP measure. In fact, for the purpose of this dissertation project non-GAAP measures shall be only those, that align with the SEC's definition of a "*numerical measure of a registrant's future or historical performance, financial position or cash flows that either excludes or includes amounts that are included or excluded in the most directly comparable GAAP measure*" (SEC, 2002). Hence, GAAP always serves as the reference point to determine the classification of a particular measure as either non-GAAP or KPI. To clarify the definition, consider the case of "sales per square meter", a performance metric of popular use in the retail industry. Because GAAP does not define the calculation of square meters, the measure is not considered GAAP. However, it is also not a non-GAAP measure as long as the sales figure used to calculate the performance metric does not include or exclude amounts excluded or included in the most comparable GAAP measure, that is, sales. As a result it would be classified a (financial) KPI. This changes though once sales are presented on an adjusted basis e.g. for currency fluctuations or shop openings and closings; i.e., adjusted sales per square meter is a non-GAAP metric.⁴

Further, the three essays of this dissertation project differ according to who reports the non-GAAP earnings figure in question. While *Essays I & II* focus on management-reported non-GAAP earnings, *Essay III* investigates a third-party-

³ In a strict sense, EBIT and EBITDA are already non-GAAP measures. Yet due to their well-defined nature and resulting comparability they are less likely to mislead investors than other (more firm-specific) non-GAAP measures (Hitz, 2010).

⁴ Note that in Figure 1 the circles partly overlap, although a specific measure, if not GAAP, can only be identified as either non-GAAP or KPI but not both. Nevertheless, the overlapping parts serve to illustrate that some ratio metrics consist of inputs from both; i.e., a GAAP as well as a non-GAAP or KPI measure. For instance, adjusted earnings is a pure non-GAAP measure just like sales is a pure GAAP measure. Yet, their combination to calculate an adjusted margin consist of both a GAAP and a non-GAAP measure, although in totality adjusted margin is a non-GAAP measure because it contains a sub-component (adjusted earnings) that makes exclusions / inclusions relative to a comparable GAAP figure.

provided adjusted earnings figure. Although the vast majority of literature focuses on management-reported non-GAAP earnings, third-party-provided adjusted earnings metrics like e.g. I/B/E/S's analyst earnings also fit the non-GAAP definition provided. Beyond analyst earnings, this also applies to S&P's so-called "Core Earnings" metric – an earnings figure, that relies on a standardised methodology to adjust for certain items included or excluded in GAAP earnings – that is operationalised for the purpose of the third essay of this dissertation project.

Finally, the constituent essays differ by the approach of how usefulness is inferred from non-GAAP earnings disclosures. As the actual usefulness of non-GAAP earnings is unobservable, researchers typically, either study the determinants for non-GAAP earnings disclosure (e.g. Isidro & Marques, 2015; Lougee & Marquardt, 2004),⁵ or their (capital market) outcomes (e.g. Entwistle, Feltham & Mbagwu, 2010; Malone, Tarca & Wee, 2016; Zhang & Zheng, 2011). Both the determinants as well as the (market) outcomes would then be attributed towards non-GAAP earnings disclosure being either consistent with informative; i.e., useful, or opportunistic motivations. For instance, non-GAAP earnings disclosed when GAAP earnings fall short of analyst expectations might rather be perceived as opportunistically motivated. Similarly, non-GAAP earnings that are particularly value relevant or positively affect the outcome and properties of analyst forecasts might be viewed as informative; i.e., useful to their recipients.

Given these criteria, *Essays I & III* clearly fall within the category of (capital market) outcome-oriented studies. Specifically, the first essay explores the role of manager-reported non-GAAP earnings for debt market participants and outcomes before and after the adoption of RegG. With similar outcome-orientation, the third essay compares the predictive ability of S&P Core Earnings with respect to future cash flows relative to that of GAAP earnings. By contrast, the second essay explores the prevalence and motivations underlying a self-devised strategy of opportunistic non-GAAP earnings disclosure; i.e., it studies disclosure determinants. Table 1 provides an overview on all three constituent essays of this dissertation project; thereafter a separate and individual introduction to each of them follows.

⁵ Of course, this applies to manager-reported non-GAAP earnings only. In fact, it is only these non-GAAP earnings measures, for which it is ex ante unclear whether their disclosure is rather consistent with opportunistic or informative motivations. By contrast, the motivation of third-party information intermediaries is to inform. Hence, Figure 1 features "not applicable (n.a.)" in the respective box of the two by two matrix.

Table 1: Overview of Dissertation Project

	Essays on the Usefulness of Non-GAAP Earnings		
	Essay I	Essay II	Essay III
Title	The Debt Market Relevance of Non-GAAP Earnings Disclosures	Prevalence and Determinants of “Implicit Non-GAAP Reporting” around Regulation G	The Predictive Ability of S&P’s Core Earnings: An In-Sample Out-Of-Sample Estimation Approach
Research Question(s)	Is non-GAAP earnings disclosure after the adoption of RegG associated with improved credit ratings and bond spreads?	How is “implicit non-GAAP reporting” related to the adoption of RegG? What type of firm does it and for which reasons?	Are S&P Core Earnings a better predictor of future cash flows than GAAP earnings?
Methodology	Empirical-Archival: Two-stage Heckman (1979) approach.	Explorative: Descriptive analyses and Probit regressions; no explicit hypothesis developed.	Empirical-Archival: OLS-based in-sample and out-of-sample forecasting.
Main Result(s)	Regulation of non-GAAP earnings disclosure is associated with reduced bond spreads but not improved credit ratings.	For some firms “implicit non-GAAP reporting” constitutes a strategy to avoid RegG for presumably opportunistic motivations.	S&P Core Earnings are a better predictor in the in-sample setting but do not provide superior forecast accuracy in the more relevant out-of-sample setting.
Overall Conclusion	<ul style="list-style-type: none"> ▪ Regulation can help to overcome the credibility problem associated with management-provided non-GAAP earnings disclosure, yet it also creates new opportunistic behaviour (unintended consequences). ▪ S&P Core Earnings do not seem to be a particularly useful alternative to communicate operating performance effectively. 		

1.1.1 Essay I: The Debt Market Relevance of Non-GAAP Earnings Disclosures

Accounting plays a key role in facilitating capital allocation and monitoring management performance. Because most firms rely on some sort of debt financing, their accounting, but in particular also their voluntary disclosures, are likely to reflect the special information needs of these capital providers. Yet, while there are multiple studies on the link between voluntary disclosure and cost of capital in the equity markets (e.g. Botosan, 1997; 2006; Lambert, Leuz & Verrecchia, 2007; 2012), only few studies (e.g. Shivakumar, Urcan, Vasvari & Zhang, 2011) have taken on a dedicated debt market perspective. However, to the best of our knowledge, no study has addressed the debt market relevance of non-GAAP earnings, as a special type of voluntary disclosure. This is intriguing as there are several indications that creditors and rating agencies use similar non-GAAP measures in covenants (Li, 2010; Cascino et al., 2014) and for credit risk

assessment (e.g., S&P Global Rating, 2013a; 2013b). Thus, we ask whether the adoption of RegG in 2003 has helped to overcome the credibility issue associated with management-provided non-GAAP earnings disclosure, to the point that these measures are relevant to debt market participants and outcomes.

Specifically, we rely on hand-collected, quarterly non-GAAP earnings data for a subset of 199 S&P 500 firms to study the association between non-GAAP earnings disclosure with long-term issuer credit ratings and bond spreads. We document that after RegG the disclosure of non-GAAP earnings is associated with an economically relevant reduction in bond spreads but do not find any association with respect to credit ratings. Thus, we provide first evidence that bond investors but not rating agencies consider non-GAAP earnings as part of their credit risk assessment. Specifically, our study contributes to prior literature by connecting the research on voluntary non-GAAP earnings disclosure to debt market research in accounting. In practical terms, the results stress that regulation can enhance the credibility of management disclosures. Thus, the study does not only speak to the SEC and other securities regulators but also to the management of a firm.

1.1.2 Essay II: Prevalence and Determinants of “Implicit Non-GAAP Reporting” around Regulation G

Whenever a certain regulation comes to life so does the incentive to circumnavigate it. Hence, also RegG is potentially subject to evasive behaviour. In fact, although prior literature has shown, that the GAAP to non-GAAP reconciliation required by RegG may be useful to market participants and some firms (Aubert & Grudnitski, 2014; Elliott, 2006; Malone et al., 2016; Zhang & Zheng, 2011) others may wish to avoid the transparency associated with it. For instance, the reconciliation helps to identify managers that opportunistically tailor their non-GAAP earnings to beat analyst forecasts (Doyle, Jennings & Soliman, 2013). Thus, these managers have a powerful incentive to avoid the requirements of RegG.

Based on the idea of such evasive behaviour, we develop a strategy, which allows firms to disclose non-GAAP earnings while at the same time skipping the reconciliation required by RegG. Specifically, we refer to this strategy as “implicit non-GAAP reporting” which we determine if firms report adjustments to GAAP earnings, so-called non-GAAP adjustments, but do neither state any adjusted earnings figure nor provide any reconciliation. We empirically explore three different questions regarding this concept of regulatory avoidance: How is “implicit non-GAAP reporting” related to the

adoption of RegG? What type of firm reports implicit non-GAAP measures and what are the motives for “implicit non-GAAP reporting” post-RegG?

We find that “implicit non-GAAP reporting” spikes around the adoption of RegG but, at reduced levels, has also existed before. Further, for the post-RegG time-period we document that the prevalence of “implicit non-GAAP reporting” stands at much more elevated levels among firms, which only started to report non-GAAP earnings after RegG (starters) than among those, which continued to disclose non-GAAP earnings throughout the regulatory intervention (continuers). Finally, only for starters the disclosure of “implicit non-GAAP earnings” is associated with presumably opportunistic motivations to beat analyst earnings forecast and GAAP losses. Overall, the results point towards the conclusion that many firms use “implicit non-GAAP reporting” to avoid RegG and that the regulation unintendedly initiated opportunistic behaviour among starter firms. Thus, the paper contributes to the scarce literature on unintended consequences of RegG as well as post-regulation opportunism. In practical terms, it speaks to security regulators highlighting the need for better enforcement.

1.1.3 Essay III: The Predictive Ability of S&P’s Core Earnings: An In-Sample Out-Of-Sample Estimation Approach

A key characteristic of decision-useful accounting information is its predictive value (FASB, 2010; IASB, 2015). However, GAAP earnings may be subject to earnings management, extreme standardisation, the mandatory inclusion of non-recurring items or for other reasons might not constitute an appropriate basis for prediction. In theory, management-provided non-GAAP earnings could alleviate some of these drawbacks but at the expense of introducing a severe credibility problem; i.e., they may also not serve as a better predictor of future performance. In 2002, S&P used its status as an impartial organisation to combine the advantages of both earnings metrics by releasing so-called “S&P Core Earnings”, its own adjusted earnings metric. To the extent that Core Earnings are indeed successful at removing non-recurring items, they should be a better predictor of future operating performance.

In this paper, I empirically evaluate how Core Earnings perform against this expectation. In particular, I compare the respective ability of GAAP and Core Earnings to forecast future operating cash flow. However, I complement the in-sample analysis also used by prior literature with the use of an, in this setting, novel out-of-sample estimation approach that enables me to compare actual forecast accuracy. While in the in-sample analysis, I find the explanatory power of Core Earnings to be superior to the one of GAAP earnings, this advantage does not translate into better forecast accuracy in

the out-of-sample setting; i.e., the more relevant case. The result illustrates that, at least in the case of S&P Core Earnings, standardised adjustments to earnings numbers do not yield a more useful earnings figure. Thus, the finding contributes to research on S&P Core Earnings as well as the wider non-GAAP earnings literature that relies on third-party-provided non-GAAP earnings. In practical terms, it speaks to standard setters who ponder the introduction of a similarly standardised earnings figure onto the face of the income statement.

1.2 Contribution

This dissertation project contributes to the empirical voluntary disclosure literature by advancing the understanding of the role of non-GAAP earnings disclosures to different stakeholders and within different settings. Specifically, it shows that regulation may improve the credibility of management-provided non-GAAP earnings disclosures to the point that they become relevant to creditors. (*Essay I*). Yet, it also documents that new opportunistic behaviour arises as some firms seek to avoid the requirements of the regulatory intervention (*Essay II*). Finally, it uses S&P Core Earnings as an example to demonstrate that, in terms of predictive ability, credible but standardised measures of operating performance do not exhibit any meaningful improvement over GAAP earnings (*Essay III*). In addition to the academic audience, the findings' practical relevance speaks to regulators, standard setters and preparers of financial information.

1.2.1 Contribution to Academic Literature

The voluntary disclosure of management-provided non-GAAP earnings suffers from a delicate credibility issue. As a result, it has been subject to specific regulation since the SEC adopted RegG in 2003. *Essays I & II* both address RegG from different perspectives. In fact, while *Essay I* studies the economic consequences of the interaction between regulation and non-GAAP earnings disclosure, *Essay II* focuses on understanding the determinants, including unintended effects of the regulation itself, that drive the decision to disclose non-GAAP earnings in a distinctly opportunistic manner.

Specifically, *Essay I* contributes to a) the literature on non-GAAP earnings disclosure and b) the literature on debt market research in accounting. In fact, the study creates a first nexus between the two literature streams, showing that after all bond investors incorporate non-GAAP earnings disclosures into their credit risk assessment while rating agencies do not. Thus, the study advances a field of research that since

Altman (1968) has related accounting information to measures of credit quality. But has only recently started to focus on the role of GAAP earnings to debt market participants (Jiang, 2008; Callen, Livnat & Segal, 2009; Easton, Monahan & Vasvari, 2009) and is still in its infancy with regard to the role of earnings-related voluntary disclosures like non-GAAP earnings or earnings forecasts (Shivakumar et al., 2011).

Essay II documents the systematic avoidance of RegG's reconciliation requirement for presumably opportunistic motivations in a way that is consistent with the regulatory intervention generating unintended consequences. Thus, within the literature on non-GAAP earnings disclosure, the research contributes towards the advancement of the still scarce yet emerging literature stream on unintended consequences of RegG as well as post-regulation opportunism (e.g. Baumker et al., 2013; Guest et al., 2018; Shiah-Hou & Teng, 2016). Its key distinguishing feature relative to prior literature is that its proxy of "implicit non-GAAP disclosure" captures a reporting strategy interpretable as outright regulatory avoidance rather than only potentially misleading but not explicitly banned non-GAAP reporting behaviour.

Finally, *Essay III* investigates the predictive ability of S&P Core Earnings as a, relative to management-provided non-GAAP earnings disclosures, more credible yet also more standardised measure of performance. Unlike prior literature, it complements the standard in-sample estimation approach by an in this setting novel out-of-sample estimation approach. The results reconcile divergent findings for in-sample predictive ability versus value relevance in prior literature but also stress that, in terms of forecast accuracy, S&P Core Earnings are not significantly better than GAAP earnings. Thus, the essay not only contributes to scarce prior literature on S&P Core Earnings (Albring, Cabán-García & Reck, 2010; Robinson, Dawkins, Wintoki & Dugan, 2008; Wieland, Dawkins & Dugan, 2013; 2014) but, in a wider sense also to other non-GAAP literature which studies third-party-provided non-GAAP earnings; i.e., typically I/B/E/S-provided analyst earnings (e.g. Heflin & Hsu, 2008; Kolev, Marquardt & McVay, 2008).

1.2.2 Contribution to Practice

The findings from this dissertation project also have various practical implications. *Essay I* documents a novel and specific benefit of RegG and therefore speaks directly to the SEC's goal of more "accurate security pricing" in general rather than just an improvement in equity pricing. Correspondingly, also other securities regulators who ponder to emulate U.S. style non-GAAP regulation may consider the result from *Essay I*, when analysing the expected benefits of a proposed regulatory intervention. In addition, managers may be interested because the findings suggests that,

on average, more credible non-GAAP earnings disclosure will be reflected favourably in firms' bond spreads. Thus, they might have an incentive to step up non-GAAP earnings disclosure prior to new debt issuances.

Likewise, the primary target audience to the results from *Essay II* are securities regulators. Specifically the findings show to the SEC that certain firms have avoided the regulation for presumably opportunistic motivations. Hence, enforcement action might need to be increased, in order to identify and rein in such patterns of opportunistic disclosure. In addition, the results warn other regulators who have more recently introduced a rule with a similar reconciliation requirement. Thus, in particular European securities regulator ESMA might watch closely.

The practical relevance of *Essay III* relates primarily to accounting standard setters' recent effort to redesign the income statement. Both the IASB and FASB have early-stage projects ("Primary Financial Statements" and "Structure of the Performance Statement", respectively) which, shall address the concern identified by the IASB Chairman that sometimes "...the financial statements depict performance in an insufficiently clear manner" (Hoogervorst, 2016). One solution proposed is the introduction of some sort of board-defined measure of operating profit onto the face of the income statement. Given the inherent similarity of S&P Core Earnings to such a standardised performance measure, the results from *Essay III* suggest that, at least in terms of predictive ability with respect to future cash flows, the introduction of such a measure is not worth the effort. Thus, the implications of *Essay III* also relate to the broader discussion on the declining usefulness of GAAP earnings that has recently spread beyond academia to the media as well as users of financial statements (e.g. The Economist, 2017; Oakmark Funds Commentary, 2018).

1.3 Essay Overview

1.3.1 Overview Essay I

Essay I	
Title	The Debt Market Relevance of Non-GAAP Earnings Disclosures
Authors	Felix Thielemann, Tami Dinh, Helen Kang
Abstract	We exploit the introduction of Regulation G (RegG) by the U.S. Securities and Exchange Commission (SEC) in 2003 to examine the role of non-GAAP reporting for debt market participants and outcomes. Specifically, we focus on a subset of 199 S&P 500 firms to analyse the association of non-GAAP earnings disclosure with long-term issuer credit ratings and bond spreads. We find that post-RegG, non-GAAP disclosure is associated with an economically relevant reduction in bond spreads but do not document any improvement in credit ratings. Thus, we provide first evidence that bond investors, but not rating agencies, seem to incorporate non-GAAP earnings disclosure into their credit risk assessment. In practical terms, our results demonstrate that the SEC's goal of more accurate security pricing extends to the bond markets, which, to date, is an under-researched area in the context of non-GAAP regulation.
Keywords	non-GAAP earnings, credit ratings, bond spreads, Regulation G
JEL Classification	G12, G24, M41, M48
Publication Status	<ul style="list-style-type: none"> ▪ Accepted at ACA Working Paper Series ▪ Published in Schmalenbach Business Review (2019), 71(2), 169-203.
Conference Presentations	<ol style="list-style-type: none"> 1. 05/2017: EAA Annual Congress, Valencia, Spain 2. 06/2017: VHB Annual Meeting, St. Gallen, Switzerland 3. 07/2017: XIII International Accounting Research Symposium, Madrid, Spain 4. 09/2017: CARF Luzern 2017, Lucerne, Switzerland <ul style="list-style-type: none"> ➤ Winner of Best Paper Award 5. 01/2018: IAS Mid-Year Meeting, Long Beach, USA 6. 02/2018: Swiss Accounting Alpine Research Camp (SARAC), Champéry, Switzerland 7. 05/2018: EAA Annual Congress, Milano, Italy 8. 08/2018: AAA Annual Meeting, Washington DC, USA

1.3.2 Overview Essay II

Essay II	
Title	Prevalence and Determinants of “Implicit Non-GAAP Reporting” around Regulation G
Authors	Felix Thielemann, Tami Dinh
Abstract	<p>We explore a self-devised strategy of opportunistic non-GAAP earnings disclosure pre and post the adoption of Regulation G (RegG). Specifically, we measure to what extent firms only disclose adjustments to GAAP earnings instead of entire adjusted earnings figures and thereby skip RegG’s reconciliation requirement. We refer to this reporting behaviour as “implicit non-GAAP reporting” and ask three different questions: How is “implicit non-GAAP reporting” related with the adoption of RegG? What type of firm reports implicit non-GAAP measures? What are the motives for “implicit non-GAAP reporting” post-RegG? Our analyses yield three key findings. First, the frequency of “implicit non-GAAP reporting” spikes after the regulatory intervention but to a lesser degree also existed before. Second, during the post-RegG time-period, the prevalence of “implicit non-GAAP reporting” is much higher among firms which only started to report non-GAAP earnings after RegG was enacted (starters) than among those, which continued to disclose non-GAAP earnings across the regulatory intervention (continuers). Third, we show that only for starters, “implicit non-GAAP reporting” is associated with presumably opportunistic motives of beating analyst earnings forecasts as well as experiencing GAAP losses. We conclude that, many but not all firms apply “implicit non-GAAP reporting” in order to avoid RegG’s reconciliation requirement, which, in case of starter firms, can be interpreted as an unintended consequence of the regulation itself.</p>
Keywords	non-GAAP earnings, Regulation G, safe harbour, implicit non-GAAP reporting
JEL Classification	M41, M48
Publication Status	<ul style="list-style-type: none"> ▪ Accepted at ACA Working Paper Series ▪ Revise & Resubmit at Advances in Accounting (2nd round). Preparing for resubmission.
Conference Presentations	<ul style="list-style-type: none"> ▪ 11/2018: Accepted for presentation at ACA Research Symposium, St. Gallen, Switzerland

1.3.3 Overview Essay III

Essay III	
Title	The Predictive Ability of S&P's Core Earnings: An In-Sample Out-Of-Sample Estimation Approach
Authors	Felix Thielemann
Abstract	This study examines the respective ability of GAAP earnings and Standard & Poor's (S&P) so-called Core Earnings to predict future operating cash flow. Particularly, a more realistic and relevant out-of-sample estimation approach complements the in-sample analysis commonly used in prior literature. In the in-sample setting, S&P's Core Earnings are more apt at predicting future cash flows. However, in the out-of-sample setting differences between GAAP earnings and Core Earnings vanish; i.e., both metrics are equally good or bad at predicting future cash flows. This result highlights the limited usefulness of earnings figures, which are adjusted according to a standardised methodology.
Keywords	S&P Core Earnings, predictive ability, non-GAAP / adjusted earnings
JEL Classification	G17, M41
Publication Status	<ul style="list-style-type: none"> ▪ Published in Management Accounting Quarterly (2018), 19(3), 20-27.
Conference Presentations	<ul style="list-style-type: none"> ▪ 11/2017: ACA Research Symposium, St. Gallen, Switzerland

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2. Essay I

The Debt Market Relevance of Non-GAAP Earnings Disclosures

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2.1 Abstract

We exploit the introduction of Regulation G (RegG) by the U.S. Securities and Exchange Commission (SEC) in 2003 to examine the role of non-GAAP reporting for debt market participants and outcomes. Specifically, we focus on a subset of 199 S&P 500 firms to analyse the association of non-GAAP earnings disclosure with long-term issuer credit ratings and bond spreads. We find that post-RegG, non-GAAP disclosure is associated with an economically relevant reduction in bond spreads but do not document any improvement in credit ratings. Thus, we provide first evidence that bond investors, but not rating agencies, seem to incorporate non-GAAP earnings disclosure into their credit risk assessment. In practical terms, our results demonstrate that the SEC's goal of more accurate security pricing extends to the bond markets, which, to date, is an under-researched area in the context of non-GAAP regulation.

Keywords: non-GAAP earnings, credit ratings, bond spreads, Regulation G

JEL Classification: G12, G24, M41, M48

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2.2 Introduction

Voluntary disclosure of adjusted earnings metrics, so-called “non-GAAP earnings”, has been researched for at least the last two decades (Black, Christensen, Ciesielski & Whipple, 2018). The focal point of this research area, as well as that of the ensuing public debate, has been on whether managers use non-GAAP earnings to convey information that is helpful to predict future earnings/cash flows (*informative perspective*) or whether they use non-GAAP earnings to whitewash company performance and mislead investors (*opportunistic perspective*). Concerns over opportunistic motivations eventually led to the introduction of Regulation G (RegG) by the U.S. Securities and Exchange Commission (SEC) in 2003. While RegG still allows firms to report non-GAAP measures⁶ on a voluntary basis, it requires a detailed reconciliation from the non-GAAP measure to the most comparable GAAP figure.

Prior literature on non-GAAP earnings disclosure around RegG has examined both the market reactions (e.g. Marques, 2006; Zhang & Zheng, 2011), as well as changes in the properties of non-GAAP earnings themselves (e.g. Entwistle, Feltham & Mbagwu, 2006). Yet, despite the SEC citing “more accurate pricing of securities” in general (and, therefore not only referring to shares) as a presumed benefit of the regulation (SEC, 2002a), to the best of our knowledge, no study has considered its potential implications in debt markets, with the extant literature focusing on equity market implications only.

We aim to fill this gap by drawing on recent literature, which suggests that non-GAAP earnings are relevant for debt market participants. For instance, creditors use non-GAAP earnings in financial covenants (Li, 2010; Cascino et al., 2014). Similar to the behaviour of managers in preparing public disclosures (i.e., press releases), they also often make income-increasing rather than conservative adjustments (Dyreg, Vashishtha & Weber, 2017). Further, it seems that the usage of non-GAAP earnings in covenants may also motivate managers to release similarly adjusted earnings numbers in public (Rainsbury, 2017). In addition, creditors rely on other earnings-related voluntary disclosures, such as management earnings forecasts (Shivakumar, Urcan, Vasvari & Zhang, 2011). Likewise, rating agencies base their judgement on adjusted earnings figures, rather than GAAP numbers (e.g., S&P Global Rating, 2013a; 2013b) and sometimes even rely on company-defined measures of profitability. For instance, in an update to the credit analysis of Siemens dated 22 August 2017, Moody’s explicitly

⁶ In this paper, we only focus on non-GAAP earnings as a specific subset of the non-GAAP universe although RegG applies to all different kinds of non-GAAP measures (refer to section 2.3 for further discussions).

cites company-defined measures of profit margin. Thus, rating agencies may also consider management provided non-GAAP earnings disclosed elsewhere. Although it is unclear exactly *how* these rating agencies process earnings and earnings-related disclosures, prior literature has shown that they *do* and that, sometimes, they can be fooled by firms trying to alter their perception of credit risk (e.g., Alissa, Bonsall, Koharki & Penn, 2013; Jung, Soderstrom & Yang, 2013; Bozanic & Kraft, 2017).

Yet, non-GAAP earnings are no ordinary form of voluntary disclosure as their credibility issue is particularly pronounced. In fact, critics have claimed that non-GAAP earnings do not complement but, rather, substitute GAAP earnings with the former becoming the main information to investors (White, 2016). This has caused non-GAAP earnings to be: a) the only specifically regulated form of voluntary disclosure, b) a popular subject of fierce debate, and c) a potential ground for litigation (Cazier, Christensen, Merkley & Treu, 2017). Hence, the presumed improvement in the credibility of non-GAAP earnings after the adoption of RegG provides a particularly interesting setting to evaluate their impact in debt markets.

Specifically, we examine whether the potential improvement in the credibility of non-GAAP earnings post-RegG is associated with improved credit ratings and lower bond spreads. Similar to the arguments Black, Christensen, Kiosse & Steffen (2017) made with respect to equity investors, we also do not expect that debt market participants naively use non-GAAP earnings as the sole input for valuation. Instead, we argue that, to the extent they are credible enough, debt market participants will consider these measures and the specific adjustments made. In other words, they will use non-GAAP earnings as one input factor of many to arrive at their own conclusion for the “correct” amount of core earnings. Specifically, we presume that equity analysts’ skill to use the GAAP to non-GAAP reconciliations for more accurate cash flow/earnings forecasts (Malone, Tarca & Wee, 2016) also extends to debt market participants. Such improved forecasts would result in a lower standard deviation (uncertainty) of estimated future cash flows/earnings, which, because creditors’ claims are fixed, should translate into a perceived higher probability of full repayment; i.e., lower credit risk. This in turn should be observable in improved credit ratings and lower bond spreads, even if the expected value of future cash flows remains unaffected.

Information on non-GAAP earnings is hand-collected from 4,059 press releases for a subset of 276 S&P 500 firms. Our final sample consists of 5,240 firm-quarters that pertain to 199 unique firms for credit ratings and a subset of 2,100 firm-quarters with available data on bond spreads. To counter potential self-selection issues associated with

the voluntary nature of non-GAAP earnings disclosure, we apply a two-stage Heckman (1979) approach. In the first stage, we model firms' propensity to disclose non-GAAP earnings while in the second stage, we test for the association of non-GAAP earnings disclosure post-RegG with credit ratings and bond spreads, respectively.

We find the expected negative association when bond spreads are used, but document no improvement for credit ratings. We attribute our finding to the fact that, unlike creditors, rating agencies have access to firms' management and internal documents. Hence, relative to bond investors, their demand for publicly available voluntary disclosures, such as non-GAAP earnings, would be lower. We further dissect our findings with respect to bond spreads and show that, in most specifications, the negative association, post-RegG, significantly dominates a positive baseline association between bond spreads and non-GAAP earnings disclosure in general. Thus, we conclude that post-RegG, bond investors, but not rating agencies, seem to incorporate voluntary non-GAAP earnings disclosures into their decision-making/credit risk assessment. Further, we show that this effect is driven by firms with relatively good ratings; i.e., those with a rating of A- or better. The result suggests that after the regulatory intervention, non-GAAP earnings only seem to be credible when firms are further away from default and, hence, have less incentive to report opportunistically.

Additional analyses suggest that our results on bond spreads are most likely to be attributable to a combination of improved reconciliation quality and an overall increase in the credibility of non-GAAP earnings disclosure post-RegG, rather than to the reconciliation quality and the associated improvement in cash flow forecasts alone. Finally, we rule out that our results are mechanical due to firms with lower (higher) creditworthiness self-selecting out of (into) the non-GAAP reporting sample post-RegG.

Our study contributes to prior literature in the following ways. First, while there is ample evidence on the link between voluntary disclosure and cost of capital (e.g., Botosan, 1997; 2006; Lambert, Leuz & Verrecchia, 2007; 2012; Barth, Konchitchki & Landsman, 2013), only few studies have focused specifically on the debt perspective. An exception is the study by Shivakumar et al. (2011) which finds that management earnings forecasts are relevant in debt markets. Our study extends their results to non-GAAP earnings, another form of voluntary earnings disclosure, which is distinctive due to its pronounced credibility issue and the resulting regulatory environment.

Further, creditors are typically more sophisticated than equity investors are and operate in less liquid markets (Ahmed, Kilic & Lobo, 2011). In addition, their payoff characteristics are fundamentally different from those of equity investors; i.e., they do

not have the same upside potential but still might lose everything in case of default. Thus, research on the relevance of accounting information in debt markets produces new insights, as pre-existing results from the equity markets cannot potentially be generalised (Dhaliwal, Gleason, Heitzman & Melendrez, 2008). For instance, to the extent that non-GAAP earnings do not cater to creditors' information needs since they are more interested in negative information rather than corporate growth stories, creditors might just choose to ignore them altogether. Our study, however, provides first evidence that publicly disclosed non-GAAP earnings, as a form of voluntary disclosure, matter for credit risk assessment. In fact, we show that, once the credibility of non-GAAP earnings improved post-RegG, they are negatively associated with firms' bond spreads. Our findings complement prior findings from the equity markets by showing that debt markets also care about information on non-GAAP earnings.

In practical terms, our results may inform the SEC in regard to its goal of more "accurate security pricing" in general, and further provide insights to regulators around the world who are considering an adoption of a U.S.-style non-GAAP earnings regulation. To date, many jurisdictions have not yet introduced a similar regulation or have done so only recently. For instance, in Europe, the "*Guidelines on Alternative Performance Measures (APMs)*" as directed by the European Securities and Markets Authority (ESMA) only became effective from 3 July 2016. Contrary to RegG in the U.S., these recent ESMA guidelines are not legally binding but all applicable financial market authorities, including the German regulator Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), have committed to incorporate them into their supervisory practice (European Parliament, 2010; ESMA, 2015; ESMA, 2015/1849 REV).

The remainder of the paper is organised as follows: section 2.3 provides the institutional background, section 2.4 presents a review of related literature and develops our hypothesis. Section 2.5 presents our research design whereas sections 2.6 and 2.7 present results and additional analyses, respectively. Finally, section 2.8 provides concluding remarks.

2.3 Institutional Background

The SEC defines non-GAAP financial measures as “*numerical measures of a registrant’s future or historical performance, financial position or cash flows that either excludes or includes amounts that are included or excluded in the most directly comparable GAAP measure*” (SEC, 2002a). In other words, non-GAAP measures are adjusted GAAP measures, not in line with financial accounting regulations, but subject to managerial discretion to exclude or include specific items. In particular, this definition subsumes non-GAAP earnings, which is the focus of our paper.

To the SEC, concerns about the potentially misleading characteristics of non-GAAP earnings seem to have outweighed their perceived benefits from early on. For example, in October 2000, the then SEC Chief Accountant Lynn E. Turner expressed his concerns by famously referring to non-GAAP earnings releases as “*Everything but Bad Stuff*” releases (Turner, 2000). In December 2001, the SEC also released a cautionary advice pointing out that the general anti-fraud provision of federal securities law (Rule 10b-5 of the Securities Exchange Act of 1934) would apply to non-GAAP measures it considered misleading (SEC, 2001). One month later, the SEC acted on its remarks and brought a cease-and-desist enforcement action against Trump Hotels & Casino Resorts Inc. The SEC specifically argued that the company had presented non-GAAP earnings, which included special gains, but excluded special charges, in its third quarter 1999 earnings release. In the absence of any proper labelling or disclosure, the SEC concluded that the impression of the company’s operating performance was misleading (SEC, 2002b).

The formal basis for a specific non-GAAP regulation followed later that year, when in July 2002 the Sarbanes-Oxley Act (SOX) was enacted. Preceded by a series of high-profile corporate bankruptcies and accounting scandals, SOX was directed at restoring trust in U.S. capital markets. As a result, it contained a wide range of different measures to improve the accuracy and reliability of corporate financial reporting, with the demand to curb the proliferation of misleading non-GAAP disclosures being one of them. The SEC implemented this requirement by issuing Regulation G (RegG), Item 10 (e) “*Use of non-GAAP financial measures in Commission filings*” of Regulation S-K, as well as its counterpart for small businesses according to Regulation S-B and Item 12 “*Disclosure of Results of Operations and Financial Condition*” of Form 8-K, all effective as of 28 March 2003. While these regulations still allow firms to report non-GAAP financial measures on a voluntary basis, they impose certain restrictions once they do. Although all of the SEC’s non-GAAP regulations have the intention to counter

potentially misleading aspects of non-GAAP reporting, RegG is special in that it is the only regulation which applies to public disclosures, such as press releases.⁷

Specifically, RegG consists of a general and a specific provision. The general provision requires that non-GAAP financial measures should not be “misleading”, whereas the specific provision demands a reconciliation between any non-GAAP measure reported and the most directly comparable GAAP measure. Further, it stipulates that the reconciliation should be by schedule or any other clearly understandable method and must be quantitative for historical measures. Such reconciliation implies higher quality of the disclosed non-GAAP measure, as it provides clear information to users regarding what the non-GAAP measure includes or not.

The first time the SEC formally charged a registrant firm based on RegG was against Safenet Inc. in 2009. Safenet Inc. had used improper adjustments to meet or exceed earnings targets between the third quarter of 2004 and the second quarter of 2005 (SEC, 2009). Since then, the SEC has expressed renewed interest with regard to the proliferation of potentially misleading non-GAAP measures. For instance, in 2010, it declared non-GAAP earnings a “*fraud risk factor*” (Leone, 2010) and initiated Compliance and Disclosure Interpretations (C&DIs)⁸, which were subsequently updated in 2011 and in 2016. By contrast, private securities litigation on the grounds of allegedly misleading non-GAAP earnings disclosure already occurred earlier. For instance, in 2005, Netflix was subject to a lawsuit (United States District Court for the Northern District of California - Secs. Litig., 2005 U.S. Dist. Lexis 30992), in which investors alleged that the company’s reconciliation from EBITDA to earnings according to GAAP was misleading.

Compared to the U.S., the European Union was much slower to regulate non-GAAP financial measures. Although the Committee of European Securities Regulators (CESR), the predecessor organisation of ESMA, issued “*Recommendations on Alternative Performance Measures*” in 2005, these were not binding by any means. Ten years lapsed until ESMA published its “*Guidelines on Alternative Performance Measures*” with an effective date of 3 July 2016. While ESMA’s guidelines are also not legally binding *per se*, they, unlike the prior CESR recommendations, are *de facto*

⁷ Unlike RegG, all other regulations listed above apply to SEC filings only or, as is the case for Item 12 of Form 8-K, demand a filing if a non-GAAP measure is publicly disclosed.

⁸ The C&DIs are provided in a question-and-answer format and cover a whole range of issues in relation to the regulatory framework applicable to non-GAAP financial measures. Examples include the clarification of what exactly constitutes a misleading non-GAAP measure, and to which GAAP measure a given non-GAAP measure should be reconciled.

binding since all applicable financial markets authorities have committed to incorporate them into their supervisory practice (European Parliament, 2010; ESMA, 2015; ESMA, 2015/1849 REV). In terms of the regulatory requirements, they are mostly similar to the applicable U.S. regulations, though ESMA's guidelines are more detail-oriented.⁹ On the other hand, ESMA's guidelines lack a general provision prohibiting "*misleading non-GAAP disclosures*". However, both the European guidelines and the U.S. regulations ask for a reconciliation between non-GAAP and GAAP measures. Finally, it should be noted that the ESMA guidelines apply at the supra national (i.e., EU) level only and that this does not imply the automatic absence of regulatory initiatives within individual member states.¹⁰ In other words, the ESMA guidelines provide a first comprehensive and consistent framework on how to deal with disclosure of non-GAAP measures in the EU.

2.4 Related Literature and Hypothesis Development

Voluntary disclosure is the result from a trade-off between the benefits of a reduction in information asymmetry and the costs of disclosure (Core, 2001). As for the benefits, there is a broad literature stream on the link between voluntary disclosure and cost of capital (e.g., Botosan, 1997; 2006; Lambert et al., 2007; 2012; Barth et al., 2013). If disclosures are improved, they can have a direct reducing effect on cost of capital since investors estimate future cash flows more accurately (Lambert et al. 2007).¹¹ In addition, disclosures may also indirectly affect management's decisions via a monitoring feature (Lambert et al., 2007). Better alignment of managers' and shareholders' interests through the stewardship function of disclosures results in higher expected future payoffs and lower cost of capital (Lambert et al., 2007; Core, Hail & Verdi, 2015). As for the costs, these might be associated with potential litigation or competitive disadvantages (Graham, Harvey & Rajgopal, 2005).

⁹ For instance, the ESMA guidelines define to what extent non-GAAP financial measures from prior reporting periods must be reported. Also, they specifically require the definition of non-GAAP financial measures to be consistent across time. By contrast, RegG only abstractly prohibits misleading non-GAAP disclosures through its general provision. A more specific definition of what exactly constitutes misleading non-GAAP measures came later, for the first time provided through the C&DIs in 2010.

¹⁰ For example, Aubert & Grudnitski (2014) point out that the French market regulator already mandated the simultaneous disclosure of GAAP and non-GAAP earnings back in 2003 and 2005, which may correspond to some form of reconciliation. Similarly, Hitz (2010) shows that, from 2004 onwards, the German securities act WpHG (Wertpapierhandelsgesetz) in Para. 20 a (1) already forbade misleading disclosures. However, he argues that due to the broad character of the rule as well as the alleged weakness in the enforcement of German securities laws, restrictions on non-GAAP disclosure are rather low.

¹¹ However, if the disclosed information is unfavourable, this may, in fact, reduce expected payoffs and, therefore, increase the cost of capital (Johnstone, 2015; 2016).

However, voluntary disclosures may not be credible; i.e., management might also have incentives to make misleading rather than informative disclosures. Non-GAAP earnings are a specific form of voluntary disclosure, plagued by a very distinct credibility issue, which is also the reason for their specific regulation. Thus, almost the entire non-GAAP literature tries to disentangle whether non-GAAP earnings are consistent with the motive to inform; i.e., help to predict future earnings and cash flows (*informative perspective*), or to mislead investors (*opportunistic perspective*). To that end, extant literature has studied the determinants¹² related to both the informative and opportunistic perspectives of reporting non-GAAP measures, as well as the market reactions towards them.

Overall, the consensus seems to be that both opportunistic as well as informative motives persist (e.g. Lougee & Marquardt, 2004; Curtis, McVay & Whipple, 2013). In terms of market reactions, results differ by type of investors. For example, both Allee, Bhattacharya, Black & Christensen (2007) and Bhattacharya, Black, Christensen & Mergenthaler (2007) find that less sophisticated individual investors mostly trade on non-GAAP information. By contrast, Christensen, Drake & Thornock (2014) show that some professional investors take short positions when firms report non-GAAP earnings, particularly when these adjustments are more aggressive, defined as excluding recurring line items such as stock-based compensation.

In addition, prior research has specifically examined the impact of RegG on non-GAAP reporting behaviour and market consequences. Early research shows that, post-RegG, the probability of non-GAAP earnings disclosure decreased and investors reacted more positively to their disclosure (Marques, 2006). In addition, the magnitude of income-increasing adjustments, as well as the emphasis placed on them, has also been reduced post-RegG (Entwistle et al., 2006). However, the decline in the reporting of non-GAAP earnings around the adoption of RegG was only temporary in nature (Black, Black, Christensen & Heninger, 2012 and Brown, Christensen, Elliott & Mergenthaler, 2012). Further, the regulatory intervention also had some unintended consequences. For

¹² Since the true motives underlying management's non-GAAP reporting choice are unobservable, determinants are typically classified into those that are perceived to be consistent with opportunistic motives versus those thought to be consistent with informative motives. For example, consistent with opportunistic benchmark-beating behaviour, Isidro & Marques (2015) find that managers use non-GAAP measures to meet or beat earnings benchmarks, which they would miss on a GAAP basis. On the other hand, consistent with the informative perspective, Lougee & Marquardt (2004) find that firms with less informative GAAP earnings are more likely to make up for it by reporting non-GAAP measures. However, a clear separation of opportunistic from informative behaviour remains difficult. In fact, Curtis et al. (2013) argue that only when firms have transitory gains, their reporting choice can clearly be tied to one of the two underlying motives; i.e., only in that case does the exclusion or inclusion of items speak to a different motive.

instance, Heflin & Hsu (2008) show that post-RegG, firms are less inclined to disclose non-GAAP earnings in the presence of special items and Kolev, Marquardt & McVay (2008) find that managers started to misclassify recurring expenses into special items. Until today, the growing proliferation of non-GAAP earnings fuels research that demonstrates that, even after the introduction of RegG, a certain degree of opportunism inherent to managers' non-GAAP disclosures prevails (refer to Black et al. (2017) with respect to the aggressiveness of non-GAAP earnings and Baumker, Biggs, McVay & Pierce (2013) with respect to non-disclosure in the presence of transitory gains).

Finally, a small stream of literature provides specific insights on the GAAP to non-GAAP reconciliation required by RegG. Experimental research by Elliott (2006) shows that even professional investors increase their stock investments in the presence of a quantitative reconciliation. Further, Malone et al. (2016) find that such reconciliation reduces analyst forecast error as well as analyst dispersion with regard to future earnings. Finally, Zhang & Zheng (2011) show that mispricing of stocks has diminished after the introduction of RegG.

However, all of these results relate to equity investors only. To the best of our knowledge, there is currently no study, which specifically examines the role of non-GAAP earnings from the perspective of debt market participants. Yet, there is plenty of evidence that debt market participants also use non-GAAP earnings. For instance, creditors base covenants on non-GAAP earnings (Li, 2010; Cascino et al., 2014), and more specifically, non-GAAP earnings used in covenants, like those disclosed in press releases, are often adjusted upward (Dyregang et al., 2017). This finding also aligns with the result from Rainsbury (2017) who shows that the usage of non-GAAP earnings in covenants may motivate managers to release similarly adjusted earnings numbers in public. Further, Young (2014) claims that rating agencies use non-GAAP information to evaluate solvency and liquidity, which also corresponds to Standard & Poor's (S&P) ratings methodology (S&P Global Rating, 2013a; 2013b).

Nevertheless, it remains unclear exactly how publicly disclosed non-GAAP earnings are incorporated into rating agencies' adjustment or bond investors' investment decisions. In order to assess credit risk, rating agencies and bond investors are generally interested in the probability distribution of firms' future cash flows (Ashbaugh-Skaife, Collins & LaFond, 2006). Thus, any metric or disclosure that improves the precision of cash flow forecasts is potentially of great interest to them. Since prior literature has shown that earnings generally is a good predictor of cash flows (e.g. Dechow, Kothari & Watts, 1998; Barth, Cram & Nelson, 2001), studies on the role of accounting in debt

markets typically investigate to what extent debt market participants react to GAAP earnings.

Similar to creditors, rating agencies scrutinise publicly disclosed earnings and earnings-related voluntary disclosures. In this process, they are sometimes misled by firms trying to alter their perception of credit risk. For example, Alissa et al. (2013) find that firms successfully use earnings management strategies as a tool to achieve a desired credit rating. In a similar vein, Jung et al. (2013) show that firms manage credit ratings by smoothing earnings. Finally, Bozanic & Kraft (2017) use textual analysis to find that credit ratings reflect earnings-related soft disclosures, which are publicly available.

As for creditors, extant literature concludes that GAAP earnings are relevant in patterns consistent with their special characteristics and payoff structures (e.g. Jiang, 2008; Callen, Livnat & Segal, 2009; Easton, Monahan & Vasvari, 2009; Edmonds, Edmonds & Maher, 2011). However, Shivakumar et al. (2011) point out that debt market research generally does not control for earnings-related voluntary disclosure released simultaneously with the earnings announcement. They investigate the relevance of management earnings forecasts to credit default swap (CDS) spreads and find that these disclosures indeed exhibit greater relevance than earnings alone. Non-GAAP earnings is another type of such earnings-related voluntary disclosure. Yet, unlike earnings forecasts, non-GAAP earnings are directed at past information and are often criticised as being a substitute rather than a complement to GAAP earnings (White, 2016). In other words, they feature a more severe credibility problem – the reason for their specific regulation.

Taken together, we propose that RegG has sufficiently reduced the credibility problem associated with non-GAAP earnings; i.e., to a point that, similar to other earnings-related voluntary disclosures (e.g. earnings forecasts, soft disclosures), they would be incorporated into credit risk assessment. This is consistent with placing our study on RegG within the framework of disclosure credibility developed by Mercer (2004). According to the framework, we can expect situational incentives and disclosure characteristics to have an impact on how investors perceive disclosure credibility. In our setting, the general provision of RegG changed firms' potential legal liability and by that their situational incentives to provide credible non-GAAP information, since they are now subject to SEC enforcement action, as well as to private securities litigation. By contrast, the specific provision (reconciliation) increases the amount of supporting information and inherent plausibility of non-GAAP earnings disclosure, both being disclosure characteristics as defined by Mercer (2004). Hence, consistent with the

framework, we can associate increased credibility of non-GAAP earnings disclosure with the introduction of RegG through the change in situational incentives and disclosure characteristics.

We caution though that we do not expect debt market participants to use reported non-GAAP earnings figures naively; i.e., as the sole or main input for valuation. Rather, we suggest that they are likely to consider non-GAAP earnings and the specific adjustments shown in the reconciliation as one input factor to arrive at their own conclusion for the “correct” amount of core earnings. In particular, we presume that equity analysts’ ability to use the GAAP to non-GAAP reconciliations for more accurate cash flow/earnings forecasts (Malone et al., 2016) also extends to debt market participants.

Hence, to the extent that rating agencies and bond investors, just like analysts, benefit from reconciled non-GAAP earnings, we expect that their forecast accuracy with respect to future cash flows/earnings will improve post-RegG. This is similar to the direct effect that improved disclosures have on the cost of capital, which decreases if the accuracy of investors’ estimates of future cash flows increases (Lambert et al. 2007). Thus, the enactment of RegG provides an interesting opportunity to examine the role of non-GAAP earnings for debt market participants. Given creditors’ fixed claims against companies’ assets, a lower standard deviation (uncertainty) of estimated future cash flows/earnings translates into a perceived higher probability of repayment; i.e., lower credit risk. Since firms’ credit ratings and bond spreads reflect credit risk, we posit that:

Hypothesis: After the adoption of Regulation G (RegG), the voluntary reporting of non-GAAP earnings is associated with better credit ratings and lower bond spreads.

2.5 Research Design

2.5.1 Sample

We focus on S&P 500 firms because data, especially on bond spreads and credit ratings, might be scarce for smaller firms. The sample period examined starts in Q1/1999 and ends in Q4/2005; i.e., it is set around the enactment of RegG in March 2003. We first use Compustat’s “Index Constituents” function to identify all S&P 500 firms as of December 1998. Since we want to track sample firms for a sufficient time before and after the regulatory change, we require all firms to be part of the S&P 500 for the whole sample period from January 1999 to December 2005.¹³ This reduces our sample to 337

¹³ This approach ensures that our results are not confounded, e.g., by more creditworthy firms entering the S&P 500 after the enactment of RegG. Nonetheless, we acknowledge that it may also introduce survivorship bias.

firms. Further, we drop all financial firms with SIC codes 6000 to 6999, reducing our sample by another 54. Finally, we eliminate seven firms whose headquarters are not located in the U.S. This is due to concerns about potential differences in the applicability and enforcement of RegG for non-U.S.-based firms. Thus, we arrive at an initial sample of 276 firms or $276 \times 28 = 7,728$ firm-quarters (refer to Table 2).

Table 2: Sample Selection

1st step: Selection at firm level:	
	# Firm-Quarters
Identify all S&P 500 firms as of December 1998	14,056
Firms must be part of the S&P 500 for the whole sample period	- 4,620
Remove financial firms	- 1,512
Remove foreign firms	- 196
	= 7,728
	(276 firms)

2nd step: Selection at firm-quarter level:	
	# Firm-Quarters
Remove if non-GAAP and Compustat data cannot be matched	- 1
Remove if information on calendar quarter is missing	- 2
Remove if calendar quarter is outside of Q1/99-Q4/05 period	- 88
Remove if press release date does not match with Compustat	- 206
Remove if no unique match between I/B/E/S and Compustat	- 237
Remove if neither data on bond spreads nor rating is available	- 529
Remove if data for bond features is missing	- 4
Remove missing data for controls in 1 st & 2 nd stage regressions	- 983
Remove data for firms with less than 20 quarterly observations	- 438
	= 5,240
Sample	(199 firms)

Thereof, firm-quarters with:	
Data on bond spreads	2,100
Reported non-GAAP earnings	1,417

Notes: Table 2 shows a detailed breakdown of our two-step sample selection process as well as the resulting final samples and sub-samples. We start with an initial sample of 14,056 observations that pertain to 502 firms instead of 500 because two firms that ceased to form part of the S&P 500 this month are still in the data. Next, we apply three further selection steps at the firm level thus narrowing down our sample to 7,728 firm-quarters that pertain to 276 unique firms. For these firms, we hand-collect non-GAAP information and then eliminate further observations, though this time we specify our requirements at the firm-quarter level. Specifically, we carry out the eight selection steps shown above and as the ninth and last step require that every sample firm must at least have 20 quarterly observations. Thus, we arrive at our final sample of 5,240 firm-quarters that pertain to 199 unique firms. Out of these, we have data on bond spreads for a subset of 2,100 firm-quarters and firms report non-GAAP earnings in 1,417 quarters.

Next, we merge information on firm fundamentals and credit ratings from Compustat with analyst data from I/B/E/S,¹⁴ bond market data from Mergent FISD as well as the Federal Reserve Bank of St. Louis from which we obtain the Treasury

¹⁴ Regarding I/B/E/S data, we retain only the most recent analyst forecasts. In cases where I/B/E/S shows two equally recent forecasts, we select the one with higher analyst coverage.

benchmark rates, equity market data from CRSP and our manually extracted non-GAAP information (see section 2.5.3). We lose one firm-quarter when matching our non-GAAP data with Compustat and delete two more for missing information on the Compustat calendar quarter. Further, 88 firm-quarters for which calendar quarter is outside of our observation period, but fiscal quarter is within, are removed. In addition, we remove 206 firm-quarters for which the date of the LexisNexis press release does not match Compustat's earnings announcement date. A further 237 firm-quarters are lost as a precautionary measure because, for these firms, a unique match between Compustat and I/B/E/S could not be established.¹⁵ In addition, we drop 529 observations for not having data on bond spreads or credit ratings and lose four more observations for which we have data on bond spreads but not for bond features. Finally, we remove 983 observations by requiring a balanced panel for our first and second stage regressions and another 438 firm-quarters because we require each sample firm to have at least 20 quarterly observations. The resulting final sample comprises 5,240 firm-quarters belonging to 199 unique firms. Out of these, 2,100 firm-quarters have data on bond spreads and firms report non-GAAP earnings in 1,417 firm-quarters.

2.5.2 Methodology

Consistent with prior literature (e.g., Barth, Ormazabal & Taylor, 2012), we use issuer credit ratings and bond spreads as proxies for credit risk, which is positively related with cost of debt.¹⁶ Although rating agencies have their own set of incentives that certainly does not perfectly align with those of bondholders, both are interested in assessing credit risk and therefore similar information. Specifically, we apply a two-stage Heckman (1979) approach, which enables us to control for potential confounding effects that originate from the self-selection inherent in firms' choice to report non-GAAP earnings or not. Hence, in the first stage, we implement a Probit regression of non-GAAP earnings on several variables that jointly determine non-GAAP earnings disclosure. In the second stage, we specify our relationship of interest between credit ratings or bond spreads on the one hand and the disclosure of non-GAAP earnings on the other hand. The link between both regressions is the so-called Inverse Mills Ratio (IMR), which we calculate from the results obtained in the first stage and insert as an

¹⁵ For some firms, Compustat and I/B/E/S tickers did not match. In these cases, we manually searched I/B/E/S via firm name and collected the corresponding I/B/E/S ticker. In some rare cases, more than one I/B/E/S ticker was available.

¹⁶ Credit default swap (CDS) spreads, which potentially is a "cleaner" measure for firms' cost of debt, were not yet widely available since the CDS market was still in its infancy during our sample period. Until 2004, CDS represented only a minor share of the global derivatives market (Bank for International Settlements (BIS), 2016) and data for academic research was typically obtained from private sources (e.g. Norden & Weber, 2004).

additional control variable into our second stage regression. Specifically, the IMR serves as an instrumental variable that mitigates endogeneity associated with the subset of variables that jointly determine non-GAAP disclosure and credit ratings or bond spreads, respectively.

With respect to our first-stage regression; i.e., the modelling of firms' decision to disclose non-GAAP earnings, we largely follow Isidro & Marquez (2015). Specifically, we regress *NonGAAP*, an indicator variable equal to one if non-GAAP earnings are disclosed in a given firm-quarter on several factors that are known to drive non-GAAP earnings disclosure. *Miss_Forecast* is a dummy variable equal to one, when firms miss analyst forecasts and zero otherwise. To the extent that strategic considerations drive non-GAAP earnings disclosure, we expect a positive coefficient. Further, special items in relation to total assets (*Special_Items*) as well as the standard deviation of return on assets (*SD_ROA*) are included. Again, we expect more special items as well as higher performance variability to be associated with increased non-GAAP earnings disclosure. We also use net property plant and equipment in relation to total assets as a proxy for the proportion of tangible assets on a firm's balance sheet (*Tangibility*).¹⁷ Further, we insert the natural logarithm of total assets as a proxy for firm size (*Size*), total long-term debt in relation to total assets (*Leverage*), as well as the number of analysts covering a firm (*Numest*). We also use industry fixed effects based on one-digit SIC codes to account for differing non-GAAP reporting practices across industries.

$$\begin{aligned}
 (I) \text{ Probit } (NonGAAP = 1)_{it} & \\
 &= \beta_1 Miss_Forecast_{it} + \beta_2 Special_Items_{it} + \beta_3 SD_ROA_{it} \\
 &+ \beta_4 Tangibility_{it} + \beta_5 Size_{it} + \beta_6 Leverage_{it} + \beta_7 Numest_{it} \\
 &+ Industry\ FEs + \varepsilon_{it}
 \end{aligned}$$

To test our hypothesis as to whether post-RegG, non-GAAP earnings disclosure and credit ratings/bond spreads are negatively associated, we estimate the OLS regression displayed in equation (II). Specifically, we run each regression twice. We first presume a contemporaneous association between dependent and independent variables. In addition, we use a one-quarter lead with respect to credit ratings/bond spreads (t+1). Further, we alternate between including firm fixed and industry fixed

¹⁷ Isidro & Marquez (2015) use intangible assets because these are known to be associated with increased non-GAAP disclosure (see also Lougee & Marquardt, 2004). However, we use tangibility instead and expect an opposite sign for the variable since in Compustat, the coverage for net PPE is much larger than for intangible assets.

effects (based on two-digit SIC codes). Finally, we employ heteroscedasticity-robust standard errors, which we cluster at the firm level.

$$\begin{aligned}
 (II) \text{ Credit Ratings / Bond Spreads}_{it(t+1)} &= \beta_1 \text{NonGAAP}_{it} + \beta_2 \text{Post_RegG}_t + \beta_3 \text{NonGAAP_Post_RegG}_{it} \\
 &+ \beta_4 \text{IMR}_{it} + \sum_{x=1}^5 \beta_x \text{Firm Level Controls}_{xit} \\
 &+ \sum_{j=1}^2 \beta_j \text{Bond Level Controls}_{jit} + \text{Firm/Industry FEs} + \varepsilon_{it}
 \end{aligned}$$

As for bond spreads, we obtain bond data, first by selecting all transactions of bonds issued during the sample period by our sample firms. We only keep bond transactions, which pertain to senior, USD denominated, fixed coupon, non-puttable and non-convertible bonds that do not have missing value of (transaction) flat price. Further, we assume that all bonds are redeemed at par and make corresponding adjustments in the data if there is missing information. Finally, we only retain bonds with call features, as we find that the overwhelming majority of outstanding bonds at the time exhibited such provision.

For the remaining bond transactions, we use Excel's "Yield" function to calculate the annualised yield to maturity as of the transaction date.¹⁸ That is, if a bond trades multiple times during the observation period, we obtain several yields to maturity per bond at different points in time. This sets us apart from some other studies, such as Florou & Kosi (2015) and Franco, Urcan & Vasvari (2016), which rely on offering yields and, as a result, are not able to detect changes in firms' cost of debt over time. Since we run our analyses at the firm-quarter level, we take the average of yield to maturity, coupon and maturity so that, for every firm-quarter (for which we have data) only one observation remains. This approximation is possible because our group of bonds is homogeneous in the sense that we retain only those with similar features. Barth et al. (2012) employ a similar approach averaging bond spreads, maturity and coupon over different bonds weighted by bond price. To obtain bond spreads we subtract the annualised yield on 3-month Treasuries from the calculated yield to maturity.¹⁹ For

¹⁸ For illustration of Excel's Yield function, refer to Bodie, Kane & Marcus (2011, p.480). Note that by calculating yield to maturity, we assume that firms do not call bonds prior to maturity.

¹⁹ For the main analyses, we drop observations with negative spread, which mostly result from spikes in the risk-free Treasury rate in the third and fourth quarter of 2000. Our results, however, remain the same, when they are included for robustness checks. Further, we also a) construct yields on a semi-annual basis and b) use the yield from one-year constant maturity Treasuries to proxy for the risk-free rate. We find that our results remain the same.

ratings, we convert S&P long-term issuer credit ratings into numerical values ranging from 1-23, where a higher value corresponds to a worse credit rating. Correspondingly, we expect our coefficient of interest on *NonGAAP*Post_RegG* to have a negative sign suggesting that if a non-GAAP firm-quarter falls within the first quarter of 2003 or later, it is expected to improve credit ratings and reduce bond spreads.

Moreover, we control for several firm level variables based on Barth et al. (2012). In addition, we winsorize all continuous variables at the 1st and 99th percentile to ensure our results are not driven by outliers (refer to Appendix for a complete overview of all variables). We define *Size* as the natural logarithm of total assets and expect it to be associated with improved credit ratings and lower bond spreads while for *Leverage*, which we define as total long-term debt scaled by total assets, we expect the opposite. *Current_Assets* as a fraction of total assets proxies for firms' liquidity position and should therefore be associated with improved credit ratings and lower bond spreads. *SD_RET* measures the rolling standard deviation of monthly equity returns over the previous 60 months. Generally, higher equity market volatility proxies for increased asset volatility, which in turn increases the risk of firms falling short of their obligations. Thus, *SD_RET* should be associated with higher bond spreads and worsening credit ratings. Finally, higher return on assets (*ROA*) is associated with stronger performance and therefore lower bond spreads and improved credit ratings.

In addition to these firm level characteristics, we insert the same two bond-level controls as Barth et al. (2012). Specifically, we control for bond maturity (*Maturity*) and bond coupon (*Coupon*). To the extent that longer running bonds are riskier than shorter ones, *Maturity* should be associated with higher bond spreads. Since higher bond coupons (*Coupon*) signal higher risk, we therefore expect the same association with firms' bond spreads.

2.5.3 Data Collection on Non-GAAP Reporting and Reconciliation Quality

Information on non-GAAP reporting is hand-collected from the relevant press-releases available on the LexisNexis database. We focus on press releases since RegG explicitly applies to this type of medium and prior studies (e.g., Zhang & Zheng, 2011) have also focused on them. However, we acknowledge that, in the unlikely case that some firms issue non-GAAP earnings through other channels of communication than press releases, there may be a selection bias. We expand the keyword search employed by Zhang & Zheng (2011) and use the following keywords to search LexisNexis' PR Newswire and Businesswire functions: "pro forma", "pro-forma", "proforma", "adjusted", "recurring", "one time" and "one-time". To narrow down the search to our

sample, additional keywords used were company name and/or firm ticker. Following Zhang & Zheng (2011), we then collect several items relating to non-GAAP reporting. First, we had to determine whether a press release qualifies as non-GAAP reporting for our purpose. We only focus on non-GAAP earnings; i.e., we ignore adjusted sales or any other metrics whose impact might, but is not explicitly, translated into an adjusted net income or EPS figure.²⁰

Further, only adjustments or the aggregated adjusted income figure, that are either reported in absolute Dollar amounts or on an EPS basis, qualify as non-GAAP earnings disclosure. Thus, we count firms as non-GAAP reporters if they do not publish an adjusted income figure but, instead, state the amount of adjustments in absolute Dollar amounts or on a per share basis. The rationale behind this approach is that once adjustments are reported on an EPS basis or in absolute Dollar amounts, it is extremely easy for investors to infer total non-GAAP earnings. In addition, we only count adjusted profit figures as non-GAAP if they are presented with reasonable prominence. We expect this to be the case if the first reference to non-GAAP earnings/adjustments occurs on the first page of the respective press releases.²¹ The following statement by Avon in its Q4/2003 press release serves to illustrate our point:

“Avon said that earnings per share in the quarter rose 36%, to \$1.09 per diluted share, versus \$0.80 per diluted share in the fourth quarter of 2002. As previously announced, earnings in the quarter included a benefit of \$0.06 per share from a tax audit settlement.”

According to our approach, this clearly counts as non-GAAP reporting because investors can easily infer that the adjusted earnings Avon is hinting at must be \$1.03 per diluted share, despite the fact that the press release does not explicitly present this number. By contrast, in Q1/2002 Avon claims that:

“For the first quarter, excluding non-recurring tax-related items in both periods, cash flow was \$10 million lower than last year’s performance...”

²⁰ A common example of an adjustment that would not qualify as non-GAAP reporting in our paper is adjusted sales (growth rate). For instance, in Q2/1999, Avery Dennison adjusts its sales for currency effects but does not present an adjusted net income or EPS figure. Hence, it does not qualify as a non-GAAP earnings disclosure for the purpose of our paper.

²¹ While Curtis et al. (2013) also require a prominent presentation, they apply slightly stricter rules since they only count firms as non-GAAP reporters if non-GAAP measures are stated within the first ten lines of any press release. An analysis of a sub-sample of firms shows that if firms state non-GAAP earnings on the first page of a press release, they also typically do this within the first ten lines.

We do not consider this non-GAAP reporting as the adjustments refer to cash flows and not earnings, though they might also affect earnings. In addition, this statement was buried on the second page of the press release, as opposed to the first statement, which was prominently presented in the second paragraph on the first page. Finally, following Zhang & Zheng (2011) and Lougee & Marquardt (2004), we ignore press releases if: (a) non-GAAP earnings only relate to retrospective effects of initial public offerings, mergers and acquisitions; (b) they do not pertain to the current quarter, e.g., if a current quarter is compared with a prior quarter in which non-GAAP adjustments were being made; or, (c) they purely reflect a change in accounting method, tax status or capital structure.

Conditional on a firm releasing non-GAAP earnings, we record its relative emphasis to GAAP numbers and use the Zhang & Zheng (2011) methodology to measure reconciliation quality between non-GAAP and GAAP earnings, assigning a reconciliation score that ranges from 0 to 4, with 4 representing the highest level of quality. Table 3 outlines the methodology that underlies the reconciliation score.

Table 3: Reconciliation Scores according to Zhang & Zheng (2011)

Score	Description
0	No disclosure of account names or magnitudes.
1	Disclosure of account names only.
2	Disclosure of both account names and magnitudes.
3	Provision of both GAAP and non-GAAP income statements.
4	Provision of a reconciliation table between GAAP and non-GAAP earnings.

Notes: Table 3 presents the Zhang & Zheng (2011) methodology, which we follow to assign reconciliation scores.

2.6 Results

2.6.1 Descriptive Analyses

Panel A of Table 4 shows summary statistics of our fundamentals and ratings data. On average, our sample firms exhibit leverage ratios of 28.5%. That is, debt plays an important, but by no means an excessive role for sample firms' capital structures. Correspondingly, the mean and median rating is both around seven, which translates into a rating of A- on S&P's scale. Further, Table 5 contains a summary of the ratings distribution among sample firms and shows that only 10.9% of all ratings fall into the sub-investment grade category. Thus, overall, our sample firms exhibit a relatively high degree of creditworthiness.

Table 4: Summary Statistics

	Mean	Sd	Min	Max	p1	Median	p99
Panel A: Fundamentals & Rating							
Rating	7.286	2.767	1	20	1	7	15
Total Assets	16713.8	21566.8	651.0	195256	1252.1	9396.6	112327
Current_Assets	0.351	0.172	0.0290	0.889	0.0553	0.356	0.829
Leverage	0.285	0.132	0	0.806	0.00920	0.280	0.636
ROA	0.0150	0.0244	-0.419	0.376	-0.0471	0.0145	0.0666
SD_ROA	0.0106	0.0163	0.000225	0.194	0.000906	0.00632	0.0996
Tangibility	0.366	0.211	0.0201	0.935	0.0488	0.315	0.902
SD_RET	0.104	0.0395	0.0348	0.277	0.0490	0.0946	0.240
Special_Items	-0.00318	0.0192	-0.452	0.497	-0.0618	0	0.0151
Miss_Forecast	0.474	0.499	0	1	0	0	1
Numest	13.98	6.949	1	41	2	13	33
N	5,240						
Panel B: Bonds							
Spread	0.0271	0.0137	0.00000317	0.0873	0.000683	0.0297	0.0573
Maturity	15.15	12.05	3	100	4.900	10	65
Coupon	0.0682	0.0116	0.0313	0.105	0.0380	0.0688	0.0962
Notional	399369.5	244009.9	100000	2500000	100000	325000	1250000
N	2,100						
Panel C: Non-GAAP Variables							
# Adjustments	2.413	1.779	1	28	1	2	8
Rec_Score	3.048	1.052	0	4	1	4	4
Emphasis	0.417	0.493	0	1	0	0	1
Beat_GAAP	0.711	0.454	0	1	0	1	1
Beat_Analyst	0.518	0.500	0	1	0	1	1
N	1,417						

Notes: Table 4 presents summary statistics on fundamentals and ratings (Panel A), bond-related variables (Panel B) and non-GAAP variables (Panel C). Refer to the Appendix for exact variable definitions.

Table 5: Distribution of Ratings by Category

	Numeric Assignment	Absolute Frequency	Relative Frequency
AAA	1	145	2.77
AA+ to AA-	2 to 4	476	9.08
A+ to A-	5 to 7	2,293	43.76
BBB+ to BBB-	8 to 10	1,755	33.49
Sub-Investment Grade	< 10	571	10.90
Total		5,240	100

Notes: Table 5 shows a breakdown of all firm-quarters by rating class. The numeric assignment corresponds to the values contained in our "Rating" variable.

Panel B of Table 4 shows summary statistics on our subset of 2,100 observations with data on bond spreads. Consistent with the whole sample firms' strong financial position, the mean and median spread over Treasuries stand at 2.71% and 2.97%, respectively. Further, most bonds are relatively long-term obligations showing a median

maturity of 10 years and an upwardly skewed mean maturity of 15.15 years. Finally, the average coupon payment is 6.82% and the median issue size stands at USD 325 million, which also reflects the large size of the issuers.

Panel C of Table 4 displays descriptive statistics on non-GAAP-related variables. The figures only refer to the subset of 1,417 firm-quarters (approximately 27% of the cases), in which firms reported non-GAAP earnings. Conditional on engaging in non-GAAP reporting, firms reach a median of 2 adjustments whereby the dispersion towards the high-end is enormous. At the 99th percentile, the number of adjustments is 8 ranging to a maximum of 28. In 41.7% of the firm-quarters, non-GAAP earnings are more strongly emphasised (i.e., presented first) relative to GAAP earnings and, typically, reconciled in a “high-quality” manner, averaging a *Rec_Score* of 3.048. Further, in 71.1% of all cases, reported non-GAAP earnings are higher than corresponding GAAP earnings (*Beat_GAAP*) but beat analyst forecasted earnings (*Beat_Analyst*) only in 51.8% of the cases.

In line with expectations based on prior research and the requirements contained in RegG, the contrast between the pre-RegG and post-RegG periods is quite strong. Table 6 shows that the number of reported adjustments increased significantly from an average of 2.275 to 2.602, albeit, economically, this seems to be of limited relevance. Further, the quality with which these adjustments were presented (*Rec_Score*) improved significantly post-RegG. Yet, with an average score of 2.838, reconciliations for our sample firms were already of relatively high quality pre-RegG. The emphasis with which management presents non-GAAP earnings relative to GAAP results decreased significantly after the enactment of RegG. Pre-RegG, management emphasised non-GAAP earnings in 62.6% of all cases, *vis à vis*, post-RegG, the corresponding GAAP figure declines to 12.8%. Finally, the incidence of non-GAAP earnings beating GAAP (*Beat_GAAP*) decreases from 74.8% pre-RegG to 66% post-RegG. However, the opposite holds true for *Beat_Analyst*, which increases from 45.6% to 60.3% from pre- to post-RegG. That is, post-RegG, managers are more likely to beat analyst forecasted EPS.

Table 6: Change of Non-GAAP Reporting pre- and post-RegG

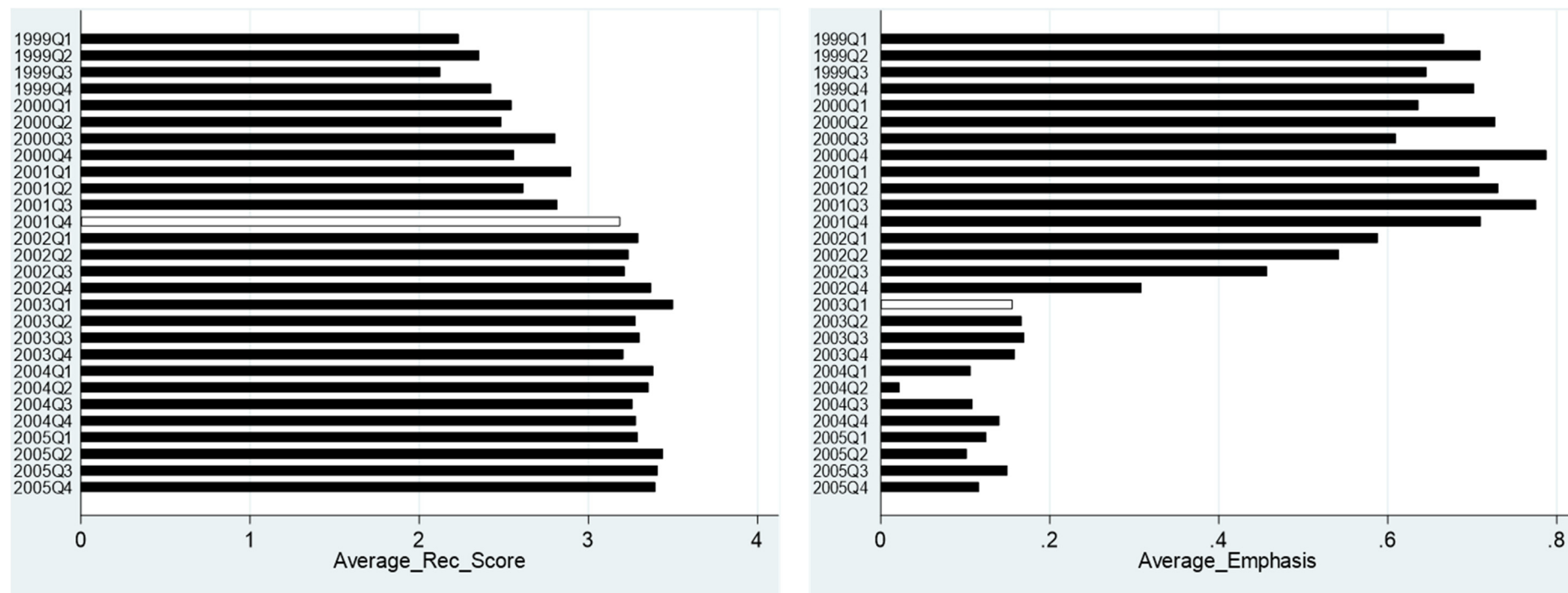
	Mean Pre-RegG	Mean Post-RegG	t
# Adjustments	2.275	2.602	-3.416***
Rec_Score	2.838	3.334	-9.026***
Emphasis	0.626	0.128	21.66***
Beat_GAAP	0.748	0.660	3.604***
Beat_Analyst	0.456	0.603	-5.520***
<i>N</i>	1,417		

Notes: Table 6 presents means of several non-GAAP variables before and after the enactment of RegG on 28 March 2003. The third column contains t-statistics and indicates whether the change in the means is significant at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ levels.

We augment our descriptive analysis on non-GAAP-related variables by examining their time series behaviour around the adoption of RegG. Figures 2, 3 and 4 show the evolution of the quarterly averages for the variables *Rec_Score* and *Emphasis* (Figure 2), *Beat_GAAP* and *Beat_Analyst* (Figure 3) as well as *# Adjustments* (Figure 4), respectively. For *Rec_Score*, we first observe an upward trend between the first quarter of 1999 to the fourth quarter of 2001. Then, concurrent with the SEC's first warning against misleading non-GAAP earnings disclosure in the fourth quarter of 2001 (highlighted in white), *Rec_Score* jumps to above 3 and remains relatively steady thereafter. Hence, it seems that, in terms of reconciliation quality, firms actually preempted the requirements of RegG. Moreover, *Emphasis* is on a steady downward trend from the third quarter of 2001 through to the fourth quarter of 2002. Then, following the adoption of RegG in the first quarter of 2003 (highlighted in white), *Emphasis* drops significantly and remains at lower levels until the end of our observation period. That is, despite the fact that a persistent downward trend was observable pre-RegG, firms responded to RegG by reducing the emphasis placed on non-GAAP earnings relative to GAAP earnings.

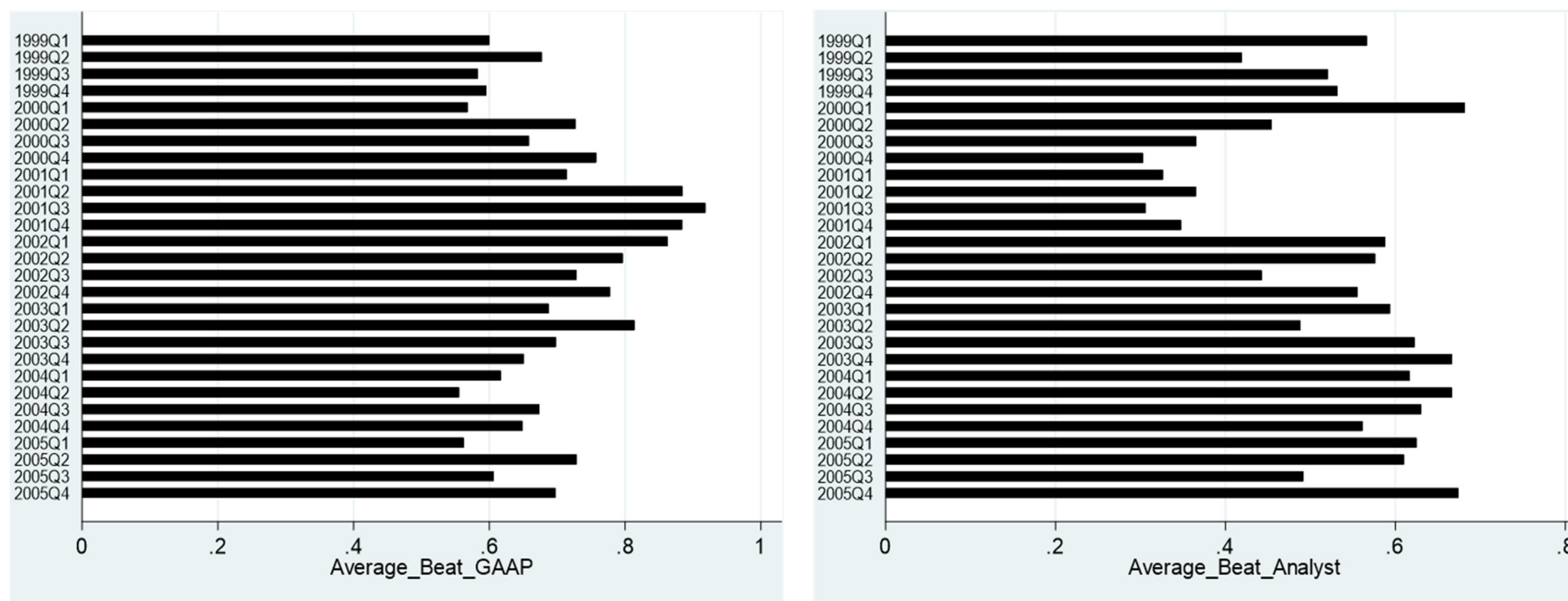
By contrast, with respect to the evolution of *Beat_GAAP* and *Beat_Analyst* displayed in Figure 3, we observe fluctuations but do not recognise any discernible pattern consistent with the SEC's regulatory intervention. Hence, it seems that firms' propensity to beat GAAP as well as analyst earnings was relatively unaffected by RegG. In addition, the number of non-GAAP adjustments (*# Adjustments*) displayed in Figure 4 was on a slight upward trend during our observation period but also does not exhibit a pattern related to the SEC's intervention.

Figure 2: Time Series Behaviour of Reconciliation Score (left) and Emphasis (right)

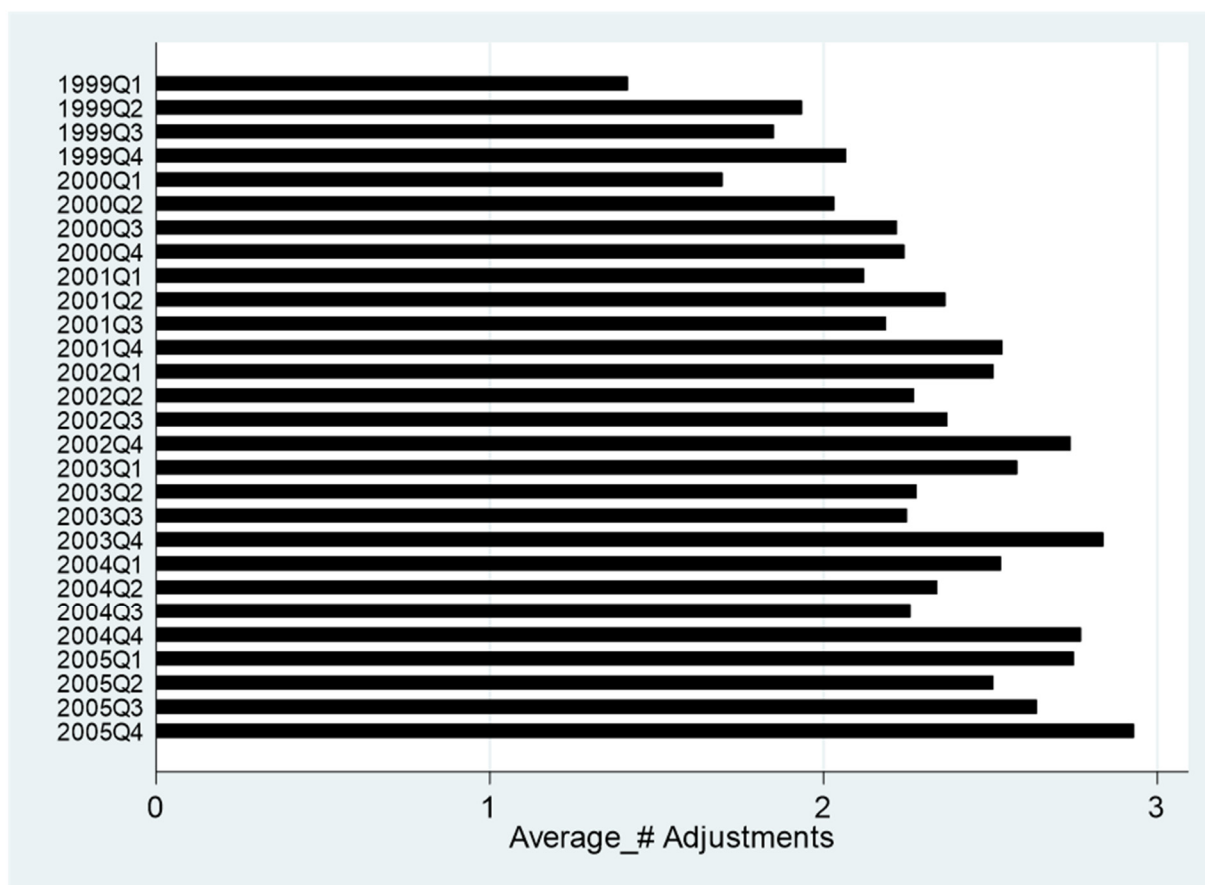


Notes: Figure 2 shows how the average reconciliation score (left side) and emphasis placed on non-GAAP relative to GAAP earnings (right side) evolved over time. As for the reconciliation score, one can see that it jumps to higher levels and remains relatively steady after the SEC's first official warning against misleading non-GAAP earnings disclosure during the fourth quarter of 2001 (highlighted in white). By contrast, the effect on Emphasis is most pronounced around the official adoption date of RegG during the first quarter of 2003 (highlighted in white).

Figure 3: Time Series Behaviour of Beat_GAAP (left) and Beat_Analyst (right)



Notes: Figure 3 shows how the proportion of GAAP-beating (left side) and analyst-beating non-GAAP earnings (right side) evolved over time. Unlike in Figure 2, we neither observe a clear pattern associated with the enactment of RegG in the first quarter of 2003, nor with the SEC's first warning during the fourth quarter of 2001.

Figure 4: Time Series Behaviour of # Adjustments

Notes: Figure 4 displays the evolution of the number of non-GAAP adjustments (# Adjustments) over time. While there seems to be a slight upward trend between the first quarter of 1999 to the fourth quarter of 2005, we do not observe any clear association, neither with respect to the SEC's remarks in the fourth quarter of 2001 nor with respect to the enactment of RegG in the first quarter of 2003.

Finally, Tables 7 and 8 present two-digit Pearson correlations between credit ratings/bond spreads with firm characteristics (Table 7), and with non-GAAP variables (Table 8). For the firm characteristics, the correlations presented in Table 7 range from a maximum of -0.62 between *Tangibility* and *Current_Assets* to a minimum of approximately zero between *Size* and *Special_Items*.

Interestingly, firms' non-GAAP disclosures (*NonGAAP*) correlate positively with credit ratings (*Rating*); i.e., firms that report non-GAAP earnings seem to exhibit worse credit ratings (Table 8). By contrast, there is no significant association between bond spreads (*Spreads*) and non-GAAP earnings disclosure (*NonGAAP*). In addition, reconciliation score (*Rec_Score*) is positively associated with *Rating* and *Spread*. This implies that a better reconciliation score goes hand-in-hand with worse credit rating and higher bond spreads, which is against our predictions. However, given the univariate nature of this analysis, this may well be attributable to omitted variables.

Table 7: Pearson Correlations: Credit Ratings/Bond Spreads & Firm Characteristics

	Rating	Spread	Size	Current_Assets	Leverage	ROA	SD_ROA	Tangibility	SD_RET	Special_Items	Miss_Forecast	Numest
Rating	1.00											
Spread	0.30***	1.00										
Size	-0.20***	-0.05**	1.00									
Current_Assets	-0.05***	-0.01	-0.31***	1.00								
Leverage	0.31***	0.06***	0.01	-0.41***	1.00							
ROA	-0.40***	-0.16***	-0.12***	0.25***	-0.24***	1.00						
SD_ROA	0.17***	0.13***	-0.09***	0.13***	0.02	-0.13***	1.00					
Tangibility	0.09***	0.05**	0.11***	-0.62***	0.24***	-0.13***	-0.09***	1.00				
SD_RET	0.18***	0.24***	-0.02*	0.13***	-0.08***	-0.04***	0.04***	-0.01	1.00			
Special_Items	-0.04***	-0.05**	-0.00	-0.06***	-0.01	0.50***	-0.27***	0.08***	-0.02*	1.00		
Miss_Forecast	0.05***	-0.01	0.05***	-0.05***	0.09***	-0.34***	0.07***	-0.03*	0.03**	-0.32***	1.00	
Numest	-0.14***	-0.06***	0.30***	0.18***	-0.32***	0.20***	0.14***	-0.09***	0.10***	-0.06***	-0.04***	1.00
N	5,240											

Notes: Table 7 contains Pearson correlations for firm characteristic variables, Rating and Spread. The asterisks indicate whether the correlations are significant at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ level.

Table 8: Pearson Correlations: Credit Ratings/Bond Spreads & Non-GAAP Reporting Variables

	Rating	Spread	NonGAAP	Emphasis	Rec_Score	# Adjustments	Beat_GAAP	Beat_Analyst
Rating	1.00							
Spread	0.30***	1.00						
NonGAAP	0.04***	0.03	1.00					
Emphasis	-0.14***	-0.16***	0.04	1.00				
Rec_Score	0.07***	0.13***	0.00	-0.01	1.00			
# Adjustments	0.11***	0.09**	0.03	-0.02	0.19***	1.00		
Beat_GAAP	0.04***	0.02	0.80***	0.16***	0.08***	0.01	1.00	
Beat_Analyst	0.03**	0.04*	0.66***	-0.13***	0.03	-0.01	0.51***	1.00
N	5,240							

Notes: Table 8 contains Pearson correlations between non-GAAP variables and Rating and Spread. The asterisks indicate whether the correlations are significant at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ level.

Further, we find the number of adjustments that firms make (*# Adjustments*) to be positively associated with reconciliation score. That is, the higher the number of adjustments, the more difficult it is for investors to understand their impact without a proper reconciliation. Thus, firms seem to answer the demand for better reconciliation when they make more adjustments. In addition, they are more prone to reconcile in a way consistent with RegG, when they beat GAAP earnings (*Beat_GAAP*) but not when they beat analysts' forecasts (*Beat_Analyst*). Nonetheless, worse credit ratings (i.e., higher *Rating*) is associated with both *Beat_GAAP* and *Beat_Analyst* and also bond spreads are weakly positively related to *Beat_Analyst*. Hence, it seems there is no debt market benefit from beating benchmarks on a non-GAAP basis.

2.6.2 Main Results

Table 9 displays the results for the first stage regression of non-GAAP earnings on several determinants for non-GAAP disclosure based on Isidro & Marquez (2015). Consistent with our expectations and opportunistic motives for non-GAAP disclosure, we find that firms' propensity to disclose non-GAAP earnings is positively associated with missing an earnings forecast (*Miss_Forecast*) and negatively associated with special items (*Special_Items*). Yet, because special items are on average negative, that is, costs (refer to Panel A of Table 4); this implies that firms are more likely to report non-GAAP earnings in the presence of special item costs, but less likely to do so in the presence of special item gains. Further, an increased standard deviation in the return on assets (*SD_ROA*), as well as higher debt (*Leverage*) and greater analyst following (*Numest*) are all associated with a higher propensity to disclose non-GAAP earnings. In addition, the positive coefficient on *Size* indicates that larger firms are more likely to report non-GAAP earnings. Finally, *Tangibility* negatively influences firms' likelihood to report non-GAAP earnings. This is consistent with our prediction that more tangible assets are inversely related to the amount of intangible assets and, as a consequence, also with the probability of non-GAAP earnings disclosure.

Table 9: Propensity of Non-GAAP Earnings Disclosure

Dep. Variable: NonGAAP	Pred.	Non-GAAP Propensity
Miss_Forecast	+	0.386*** (9.47)
Special_Items	-	-16.07*** (-7.66)
SD_ROA	+	3.258** (2.31)
Tangibility	-	-0.354*** (-2.87)
Size	/	0.0691*** (3.11)
Leverage	/	0.650*** (3.96)
Numest	+	0.00655* (1.91)
N		5,240
Pseudo R ²		0.064
Industry FE		Yes

Notes: Table 9 shows the results of our first-stage regression of non-GAAP earnings on a number of known determinants for non-GAAP disclosure. Our goal is to explain firms' non-GAAP disclosure decision and use the estimation results to calculate the Inverse Mills Ratio (IMR). According to the Heckman (1979) approach, the IMR is inserted into our main regressions on the second stage. Thus, we mitigate problems associated with firms self-selecting to disclose non-GAAP earnings or not. Asterisks indicate significance of the relationships at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ levels; t -statistics are in parentheses.

Table 10 reports results for our main regression models. Panel A of Table 10 shows the results for a contemporaneous association between non-GAAP disclosure and credit ratings and bond spreads, respectively. Panel B of Table 10 provides results for the same regressions using a one-quarter lead-specification for our dependent variables. Since we do not have observations for every firm-quarter, we lose more than just the first quarter observations in that process, reducing the number of observations displayed in Panel B of Table 10. Across both panels, columns (1) and (2) display the results for credit ratings while columns (3) and (4) show results for bond spreads.

We find that in both specifications, the coefficient on our variable of interest (*NonGAAP_Post-RegG*) exhibits the predicted negative association with respect to bond spreads but not with respect to credit ratings. Although *ex ante* we expect the same negative association for both, we suggest two explanations that may rationalise this finding. First, rating agencies have more thorough access to management than bond investors do. As a result, they have an informational advantage, which in turn makes them less reliant on publicly available disclosures like non-GAAP earnings. For instance, Jorion, Liu & Shi (2005) argue that rating agencies have access to internal

information such as budgets or forecasts, as well as advance notification of major corporate events. Yet, the quantitative impact of their informational advantage is *ex ante* unclear; i.e., they may just respond less severely to non-GAAP earnings or, as we find here, show no reaction at all. Second, ratings are sticky, meaning that they do not change very often, which suggests that any potential reaction is harder to detect.

Table 10: Main Findings

Panel A: Contemporaneous Specifications					
Dep. Variable:		(1)	(2)	(3)	(4)
Rating/Spread	Pred.	Rating	Rating	Spread	Spread
NonGAAP	/	0.0895 (1.22)	0.235 (1.47)	0.00338*** (2.64)	0.00292** (2.43)
Post_RegG	/	0.837*** (7.71)	0.888*** (7.39)	0.00872*** (9.30)	0.00848*** (13.06)
NonGAAP_Post-RegG	-	0.165 (1.37)	0.211 (0.90)	-0.00414** (-2.60)	-0.00358** (-2.43)
IMR	/	-0.269 (-1.29)	-1.939*** (-4.64)	-0.00123 (-0.43)	-0.00114 (-0.49)
Size	-	-0.609** (-2.59)	-0.592*** (-3.94)	0.000473 (0.16)	-0.000593 (-1.36)
Leverage	+	3.898*** (5.75)	6.650*** (5.35)	0.0256*** (2.77)	0.00897** (2.38)
Current_Assets	-	0.549 (0.64)	2.271* (1.96)	-0.0230*** (-2.73)	-0.000524 (-0.14)
SD_RET	+	9.477*** (3.16)	12.17*** (3.76)	0.278*** (4.60)	0.0788*** (6.93)
ROA	-	-8.170** (-2.55)	-56.00*** (-8.06)	-0.0993** (-2.31)	-0.115*** (-3.66)
Maturity	+			-0.0000505 (-0.50)	-0.0000880** (-2.14)
Coupon	+			0.341*** (3.03)	0.347*** (7.96)
N		5,240	5,240	2,100	2,100
Adjusted R ²		0.218	0.511	0.294	0.260
Firm FE		Yes	No	Yes	No
Industry FE		No	Yes	No	Yes
Joint Significance NonGAAP & NonGAAP_Post-RegG?		n.a.	n.a.	insig.	insig.

*Notes: Panel A of Table 10 reports the results of a multivariate OLS regression of rating and bond spreads on several explanatory variables. Our main interest lies on the coefficient of the NonGAAP_Post-RegG interaction term, which we predict to be negative; i.e., associated with an improved credit rating and lower bond spreads. In addition, the last column indicates whether the variables NonGAAP and NonGAAP_Post-RegG are jointly significant. The test is not applicable with respect to credit ratings (n.a.). Asterisks indicate significance of the relationships at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ levels; t-statistics are in parentheses.*

Panel B: Lead Specifications					
Dep. Variable:		(1)	(2)	(3)	(4)
Rating/Spread _{t+1}	Pred.	Rating _{t+1}	Rating _{t+1}	Spread _{t+1}	Spread _{t+1}
NonGAAP	/	0.125*	0.277*	0.00225**	0.00169
		(1.73)	(1.72)	(2.00)	(1.48)
Post_RegG	/	0.737***	0.792***	0.00287***	0.00305***
		(7.54)	(6.76)	(3.36)	(4.94)
NonGAAP_Post-RegG	-	0.183	0.202	-0.00416***	-0.00365***
		(1.58)	(0.85)	(-2.82)	(-2.67)
IMR	/	-0.264	-2.042***	0.00102	0.00112
		(-1.29)	(-4.77)	(0.41)	(0.50)
Size	-	-0.548**	-0.576***	0.000979	-0.000659
		(-2.41)	(-3.82)	(0.28)	(-1.39)
Leverage	+	3.832***	6.648***	0.0277**	0.00712*
		(6.32)	(5.43)	(2.51)	(1.70)
Current_Assets	-	0.362	2.332**	-0.0179**	0.00368
		(0.43)	(2.01)	(-2.05)	(0.91)
SD_RET	+	10.00***	12.00***	0.297***	0.0820***
		(3.33)	(3.69)	(4.02)	(6.63)
ROA	-	-10.39***	-58.79***	-0.0968**	-0.112***
		(-3.48)	(-8.33)	(-2.43)	(-3.28)
Maturity	+			-0.0000777	-0.0000801*
				(-0.79)	(-1.96)
Coupon	+			0.192	0.303***
				(1.53)	(6.20)
N		4,912	4,912	1,757	1,757
Adjusted R ²		0.217	0.515	0.277	0.229
Firm FE		Yes	No	Yes	No
Industry FE		No	Yes	No	Yes
Joint Significance Non-GAAP & NonGAAP Post-RegG?		n.a.	n.a.	*	**

Notes: Panel B of Table 10 reports the results of a multivariate OLS regression of rating and bond spreads in $t+1$ on several explanatory variables. Our main interest lies on the coefficient of the NonGAAP_Post-RegG interaction term, which we predict to be negative; i.e., associated with improved credit ratings and lower bond spreads. In addition, the last column indicates whether the variables NonGAAP and NonGAAP_Post-RegG are jointly significant. The test is not applicable with respect to credit ratings (n.a.). Asterisks indicate significance of the relationships at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ levels; t -statistics are in parentheses.

We further exploit our findings for bond spreads. We re-run our regressions using only a subset of our sample. Specifically, we split our sample into two roughly equal parts, one with firm-quarters that feature a rating of A- or better (approximately 56% of observations) and the other with the remaining observations (approximately 44%). On the one hand, we would expect non-GAAP earnings to be more relevant to bond investors when ratings are worse. That is, because of the optionality embedded in creditors' payoff structure, they tend to react more strongly to information when the option is closer to being out of the money; i.e., when firms are closer to default. On the other hand, however, firms' incentives for engaging in opportunistic non-GAAP

disclosure are greater when they are closer to default. Thus, investors might simply choose not to use these firms' non-GAAP disclosures.

Table 11 displays the results for A-Rated firm-quarters. We find that the coefficient on *NonGAAP_Post-RegG* is negative and highly significant across all specifications. In contrast, for non-A-Rated firms, the coefficient on *NonGAAP_Post-RegG* becomes insignificant (not tabulated). We interpret this finding as a sign that even after the regulatory intervention the disclosure of non-GAAP earnings only seems to be credible when firms, due to being further away from default, have less incentive to report opportunistically.

Table 11: Bond Spreads (A-Rated Only)

Dep. Variable:		(1)	(2)	(3)	(4)
Bond Spread _{t & t+1}	Pred.	Spread	Spread	Spread _{t+1}	Spread _{t+1}
NonGAAP	/	0.00413** (2.48)	0.00428** (2.64)	0.00353** (2.52)	0.00399** (2.27)
Post_RegG	/	0.00971*** (7.10)	0.0101*** (10.64)	0.00426*** (3.57)	0.00505*** (5.67)
NonGAAP_Post-RegG	-	-0.00568*** (-2.89)	-0.00644*** (-3.16)	-0.00623*** (-3.34)	-0.00807*** (-3.77)
IMR	/	0.00183 (0.55)	0.000115 (0.03)	0.00337 (1.07)	0.00341 (0.92)
Size	-	-0.00699* (-1.92)	0.000230 (0.38)	-0.0102** (-2.49)	-0.000125 (-0.19)
Leverage	+	0.000903 (0.08)	0.0121** (2.10)	-0.00282 (-0.22)	0.0127** (2.18)
Current_Assets	-	-0.00611 (-0.56)	0.00767 (1.48)	-0.00369 (-0.40)	0.0128** (2.30)
SD_RET	+	0.455*** (10.38)	0.0797*** (3.87)	0.536*** (10.72)	0.0835*** (3.68)
ROA	-	-0.00463 (-0.09)	-0.0220 (-0.53)	-0.0234 (-0.42)	-0.0149 (-0.30)
Maturity	+	-0.0000852 (-1.15)	-0.000117* (-1.93)	-0.0000921 (-1.10)	-0.000116 (-1.46)
Coupon	+	0.222** (2.39)	0.390*** (5.71)	0.0506 (0.39)	0.388*** (4.51)
N		1,024	1,024	848	848
Adjusted R ²		0.366	0.219	0.405	0.199
Firm FE		Yes	No	Yes	No
Industry FE		No	Yes	No	Yes
Joint Significance NonGAAP & NonGAAP Post-RegG?		insig.	insig.	*	***

*Notes: Table 11 reports the results for a split-sample of only A-Rated firm-quarters; i.e., quarters in which the corresponding firms exhibited a rating of A- or better. Specifically, we regress bond spreads in t and t+1 on several explanatory variables. Again, our main interest lies on the coefficient of the NonGAAP_Post-RegG interaction term, which we predict to be negative; i.e., associated with a reduction in bond spreads. In addition, the last column indicates whether the variables NonGAAP and NonGAAP_Post-RegG are jointly significant. Asterisks indicate significance of the relationships at the * p<0.1, ** p<0.05, *** p<0.01 levels; t-statistics are in parentheses.*

Interestingly, except for column (4) in Panel B of Table 10, Tables 10 and 11 also always show a positive baseline association between *NonGAAP* and credit spreads. Because this effect counteracts our predicted findings on *NonGAAP_Post-RegG*, we test for their relative importance. We report the results for the formal test of joint significance in the last row of each table – the test is not applicable to credit ratings because the effect of *NonGAAP_Post-RegG* is always insignificant. For bond spreads both Tables 10 and 11 show that the coefficients on *NonGAAP_Post-RegG* are always larger than the ones on *NonGAAP*. However, the result for the formal test of joint significance reveals that the negative effect on *NonGAAP_Post-RegG* is significantly larger than the positive effect on *NonGAAP*, only for the lead-specifications.

Further, we find this negative net effect of *NonGAAP_Post-RegG* and *NonGAAP* to be economically relevant. We illustrate this using the results from column (3) in Panel B of Table 10. The coefficients of 0.00225 and -0.00416 on *NonGAAP* and *NonGAAP_Post-RegG* respectively, add to -0.00191; i.e., non-GAAP disclosure is associated with a next quarter spread reduction of -0.00191. With respect to the average spread of 0.0271, this constitutes a reduction of $-0.00191/0.0271 = -0.0704$ (i.e., about 7.04%). Applying these figures to the average *Notional* of approximately USD 400 million, the reduction in spread translates into savings of USD 0.7631 million per annum. This amount is substantial, at least in relation to the minimal costs, which the SEC estimated for the implementation of RegG (refer to SEC, 2002a).

Finally, we note that most control variables have the predicted signs and are significant. As for ratings, larger (*Size*) and better performing firms (*ROA*) are associated with better ratings. In contrast, higher debt (*Leverage*) and equity market volatility (*SD_RET*) worsen credit ratings. As for bonds, the most consistent finding is that equity market volatility (*SD_RET*) is associated with higher bond spreads. Further, *ROA* mostly exerts a strong, negative influence on bond spreads whereas increased *Leverage* is associated with higher bond spreads. Beyond these variables, the significance of certain controls varies between the firm fixed effects and industry fixed effects specifications. For instance, in the lead-specifications, the coefficient on *Coupon* is only positive and significant in the industry fixed effects specification, whereas *Current_Assets* only ever becomes significant in the firm fixed effects specification. The only counter-intuitive sign is on *Maturity*, which in the industry fixed effects specification sometimes exerts a significantly negative influence, potentially attributable to correlated unobservable heterogeneity in firm characteristics.

Overall, we conclude that post-RegG, bond investors, but not rating agencies, seem to use non-GAAP earnings to assess firms' creditworthiness more accurately. Specifically, we document a marginal reduction of non-GAAP disclosure on bond spreads. The finding suggests that non-GAAP earnings and, in particular, the credibility of their disclosure is relevant for debt market participants.

2.7 Robustness & Additional Analyses

2.7.1 Variation of Cut-Off Point

Prior non-GAAP literature has used varying cut-off points to define the transition from the pre-RegG to the post-RegG period. For instance, Zhang & Zheng (2011) cut off in December 2001 because that is when the SEC first warned companies against the use of potentially misleading non-GAAP disclosures. Additionally, they show that their results hold when using the actual enactment quarter of RegG as the cut-off; i.e., the first quarter of 2003 as we do. Other studies, e.g., Black et al. (2012 & 2017) use the enactment of SOX in the second quarter of 2002 as the cut-off point. We do not believe that using SOX to define the pre-/post-RegG periods is suitable in our setting, as prior literature has already shown that reduced corporate opacity associated with SOX reduces firms' cost of debt (e.g. Andrade, Bernile & Hood, 2014). Thus, the impact of non-GAAP regulation could not be isolated from SOX.²²

When using the fourth quarter of 2001 as a cut-off point, we find that the coefficients on *NonGAAP_Post-RegG* become insignificant in every specification. This finding is particularly interesting because in our descriptive analysis (Figure 1), we find that the improvement in reconciliation score already occurred around that point in time. In fact, when it comes to reconciliation quality, it seems that firms pre-empted the regulatory intervention and yet, results for this cut-off are insignificant. Hence, reconciliation quality alone cannot drive our results. Rather, it seems that the combination of improved reconciliation quality and overall credibility of non-GAAP earnings post-RegG explains our findings.

2.7.2 Alternative Explanations

Moreover, we acknowledge that two alternative explanations might drive our results. After the enactment of the regulation, firms may self-select into and out of the non-GAAP reporting population. Hence, one potential alternative explanation could be that less creditworthy firms try to boost their performance via opportunistic non-GAAP

²² Nonetheless, we also re-run our analyses assigning all quarters after the second quarter of 2002 to the post-RegG period (untabulated). With respect to the overall sample, our results are weaker and do not hold in every specification. Yet, for the subset of A-rated firms, results remain constant and significant at the 5% level.

disclosure pre-RegG but stop after the enactment of the regulation, explaining our negative coefficient on *NonGAAP_Post-RegG*. Likewise, more creditworthy firms could start to report non-GAAP earnings only after the adoption of RegG. Again, this would also explain the negative coefficient on *NonGAAP_Post-RegG*.

To rule out these alternative explanations, we use Black et al.’s (2017) methodology to sub-divide our sample into those firms that reported non-GAAP earnings pre- and post-RegG (*continuers*), those that stopped post-RegG (*stoppers*), those that only started to report post- RegG (*starters*), and those that never reported non-GAAP earnings (*non-reporters*). We re-run our analyses only for *continuers* because this is the only group of non-GAAP reporting firms, which does not change their reporting decision pre- and post-RegG. Hence, results for this subset of firms are free of the potential self-selection concerns.

We assign firms into the four groups by requiring that, in order to qualify as a non-GAAP reporter in any of the two pre-/post-RegG sub-periods, firms have to disclose non-GAAP earnings in at least two quarters. Panel A of Table 12 presents the resulting breakdown of our 199 sample firms. We see that with 84 observations, the majority of firms are classified as *continuers*, followed by *non-reporters* (n = 45), *stoppers* (n = 42) and *starters* (n = 28), respectively. Panel B of Table 12 displays the corresponding results for our regression analyses based on *continuers* only. We still find the predicted negative and highly significant coefficient on *NonGAAP_Post-RegG* in the contemporaneous specifications (columns (1) and (2)) as well as the lead specifications (columns (3) and (4)). In fact, our results are even stronger since except for column (2), the joint effect of *NonGAAP* and *NonGAAP_Post-RegG* is significant. Thus, we can rule out that firms self-selecting into and out of the non-GAAP reporting sample drives our findings on non-GAAP earnings disclosure.

Table 12: Additional Analyses

Panel A: Breakdown of Firms by Reporting Decision			
	Reporting Post-RegG	No Reporting Post-RegG	Sum
Reporting Pre-RegG	Continuer (n = 84)	Stopper (n = 42)	126
No Reporting Pre-RegG	Starter (n = 28)	Non-Reporter (n = 45)	73
Total	112	87	199

Notes: Panel A of Table 12 shows a breakdown of our 199 sample firms into continuers, starters, stoppers and non-reporters. Specifically, we require that each company must report non-GAAP earnings in at least two firm-quarters in order to be considered a reporter or non-reporter during the respective sub-period.

Panel B: Bond Spreads (Continuers Only)

Dep. Variable:		(1)	(2)	(3)	(4)
Bond Spread _t & t+1	Pred.	Spread	Spread	Spread _{t+1}	Spread _{t+1}
NonGAAP	/	0.00423** (2.23)	0.00430** (2.58)	0.00420*** (2.81)	0.00436*** (2.98)
Post_RegG	/	0.0109*** (5.38)	0.00867*** (5.74)	0.00572*** (3.49)	0.00347** (2.54)
NonGAAP_Post-RegG	-	-0.00680*** (-2.97)	-0.00609*** (-2.97)	-0.00761*** (-3.54)	-0.00706*** (-3.52)
IMR	/	0.000874 (0.21)	-0.00345 (-0.96)	0.0000985 (0.02)	-0.00707* (-1.87)
Size	-	0.00142 (0.36)	-0.000156 (-0.17)	0.000942 (0.22)	-0.000624 (-0.65)
Leverage	+	0.0346*** (3.06)	0.00659 (0.63)	0.0353*** (3.01)	0.00449 (0.37)
Current_Assets	-	-0.0348** (-2.30)	0.00274 (0.33)	-0.0304* (-1.97)	0.0102 (1.02)
SD_RET	+	0.334*** (5.59)	0.119*** (4.13)	0.387*** (5.12)	0.128*** (3.51)
ROA	-	-0.0686 (-0.97)	-0.186*** (-3.10)	-0.0790 (-1.38)	-0.232*** (-4.11)
Maturity	+	-0.000123 (-0.67)	-0.0000770 (-0.78)	-0.000117 (-0.67)	-0.0000154 (-0.17)
Coupon	+	0.369** (2.50)	0.197** (2.20)	0.197 (1.17)	0.0369 (0.34)
N		787	787	652	652
Adjusted R ²		0.357	0.329	0.380	0.303
Firm FE		Yes	No	Yes	No
Industry FE		No	Yes	No	Yes
Joint Significance NonGAAP & NonGAAP_Post-RegG?		**	insig.	**	*

*Notes: Panel B of Table 12 reports the results for a robustness check in which we re-run our regressions for bond spreads from Table 10 but this time only for continuers. Thus, we attempt to rule out alternative explanations, which relate to firms' ability to self-select into (out of) the non-GAAP reporting sample after the adoption of RegG. Our main interest lies on the coefficient of the NonGAAP_Post-RegG interaction term, which we predict to be negative; i.e., associated with a reduction in bond spreads. In addition, the last column indicates whether the variables NonGAAP and NonGAAP_Post-RegG are jointly significant. Asterisks indicate significance of the relationships at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ levels; t -statistics are in parentheses.*

2.7.3 Minor Robustness Checks

We also re-run our analyses without the inclusion of IMR. We find that our results hold and, in absence of any theoretical reasons to suspect severe endogeneity, conclude that our main results are robust. Beyond the fact that such robustness checks are widely found in contemporary accounting literature (e.g. Baginski & Rakow, 2012), we believe that this approach is also consistent with the critical view of Larcker & Rusticus (2010). Further, we calibrate IMR based on the full sample of 5,240 observations but for

robustness checks of our bond spread analyses, also calibrate IMR only on the sample of 2,100 observations for which bond data is available. Our results remain unaffected.

We then proceed to augment our regressions by including lagged changes of our dependent variable, which we expect to subsume at least some of our results. Yet, we find that for the firm fixed effects specification, results hold though they are indeed slightly weaker; i.e., we lose one significance level in the contemporaneous as well as in the lead-specification. In addition, in the industry fixed effects specification, the coefficient on *NonGAAP_Post-RegG* turns insignificant.

Finally, we find that our results are immune to: a) variations in how bond spreads are calculated, in particular, when the calculation of yields are on a semi-annual rather than annual basis as well as the usage of one-year constant maturity Treasuries as a proxy for the risk-free rate; b) the inclusion of a proxy for institutional ownership in our first-stage regression though it reduces our sample size; and, c) the non-winsorization of continuous variables.

2.8 Conclusion

We exploit the introduction of RegG in 2003 to examine the role of voluntary non-GAAP earnings disclosure after the regulatory intervention for debt market participants and outcomes. We argue that the GAAP to non-GAAP reconciliation improves debt market participants' forecast accuracy with respect to future cash flows and, subsequently, non-GAAP disclosure may translate into improved credit ratings and a marginal reduction in bond spreads.

Our study focuses on a final sample of 199 firms, which formed part of the S&P 500 over the whole sample period. We document a reduction in bond spreads but no improvement with respect to credit ratings. We interpret this finding as evidence that bond investors, but not rating agencies, seem to incorporate voluntary non-GAAP earnings disclosures into their decision-making. Further, additional analyses point towards the conclusion that our results are attributable to a combination of improved reconciliation quality and the overall increase in the credibility of non-GAAP earnings disclosure post-RegG.

We contribute to prior literature by focusing on the debt market relevance of a specific and controversial type of voluntary disclosure. Non-GAAP earnings feature a distinct credibility issue and, as a result, have become subject to specific regulation. We exploit the enactment of RegG to extend non-GAAP research to the debt markets. In particular, our study creates a first nexus between research on the role of earnings and

earnings-related voluntary disclosure in debt markets on the one hand and non-GAAP research on the other hand.

In practical terms, our results speak to the SEC's goal of "more accurate security pricing". Our findings could inform regulators around the world who are weighing the costs and benefits associated with emulating U.S. style non-GAAP reporting regulation. More specifically, our findings might extend to European firms, which presumably improved their non-GAAP disclosure quality in response to the recently issued ESMA "*Guidelines on Alternative Performance Measures*". However, since we find that our results are not only attributable to an improvement in reconciliation quality, but rather to a combination of better reconciliations and higher overall credibility of post-RegG non-GAAP disclosures, future studies in the European context are encouraged to cross-validate our findings. Specifically, these studies may exploit the greater availability of debt market data, such as bond or CDS spreads, as well as the likely varying degree of enforcement of non-GAAP regulation across member states.

Finally, we would like to caution that, although we find that non-GAAP disclosure is associated with the beneficial effect of reduced bond spreads, our results should be viewed within the wider cost/benefit trade-off that underlies all voluntary disclosures. Hence, it may still not be optimal for firms to disclose non-GAAP earnings even if debt market benefits occur. In fact, we only show that post-RegG, non-GAAP earnings can be helpful to bond investors. We do not claim that management discloses non-GAAP earnings to speak to creditors' information needs in the first place. Therefore, further research on the motives for non-GAAP disclosure is certainly needed.

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2.10 Appendix

Table 13: Variable Definitions

Variable	Description
# Adjustments	Number of non-GAAP adjustments
Beat_Analyst	Dummy variable equal to one if non-GAAP earnings beat analyst forecasted earnings
Beat_GAAP	Dummy variable equal to one if non-GAAP earnings beat GAAP earnings
Coupon	Average coupon paid on bond issue
Current_Assets	Current assets in relation to total assets
Emphasis	Dummy variable equal to one if non-GAAP information is presented before GAAP information
Leverage	Long-term debt and current portion of long-term debt scaled by total assets
Maturity	Average maturity of outstanding bonds (in years)
Miss_Forecast	Dummy variable equal to one if GAAP earnings fall short of analyst forecasted GAAP earnings
NonGAAP	Dummy variable equal to one if non-GAAP earnings are reported
NonGAAP_Post-RegG	Interaction term between variables "NonGAAP" and "Post_RegG"
Notional	Average outstanding bond notional amount in thousand USD
Numest	# of analysts following a firm
Post_RegG	Dummy variable equal to one for all quarters after (and including) the first quarter of 2003; i.e., the quarter in which RegG was enacted
Rating	S&P rating converted into numerical scale: best rating (AAA) equal to 1 and worst rating (D) equal to 23
Rec_Score	Reconciliation score ranging from 0 (worst) to 4 (best)
ROA	Return on assets; i.e., net income scaled by total assets
SD ROA	Standard deviation of return on assets, calculated on a rolling basis over the last six quarters
SD_RET	Standard deviation of monthly equity returns, calculated on a rolling basis over the past 60 months
Size	Logarithm of total assets
Special_Items	Special items scaled by total assets
Spread	Excess of yield to maturity (annualised) over return of three month U.S. Treasuries (annualised)
Tangibility	Net PPE scaled by total assets
Total Assets	Total assets in million USD

3. Essay II

Prevalence and Determinants of “Implicit Non-GAAP Reporting” around Regulation G

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3.1 Abstract

We explore a self-devised strategy of opportunistic non-GAAP earnings disclosure pre and post the adoption of Regulation G (RegG). Specifically, we measure to what extent firms only disclose adjustments to GAAP earnings instead of entire adjusted earnings figures and thereby skip RegG's reconciliation requirement. We refer to this reporting behaviour as "implicit non-GAAP reporting" and ask three different questions: How is "implicit non-GAAP reporting" related to the adoption of RegG? What type of firm reports implicit non-GAAP measures? What are the motives for "implicit non-GAAP reporting" post-RegG? Our analyses yield three key findings. First, the frequency of "implicit non-GAAP reporting" spikes after the regulatory intervention but to a lesser degree also existed before. Second, during the post-RegG time-period, the prevalence of "implicit non-GAAP reporting" is much higher among firms which only started to report non-GAAP earnings after RegG was enacted (starters) than among those, which continued to disclose non-GAAP earnings across the regulatory intervention (continuers). Third, we show that only for starters, "implicit non-GAAP reporting" is associated with presumably opportunistic motives of beating analyst earnings forecasts as well as experiencing GAAP losses. We conclude that, many but not all firms apply "implicit non-GAAP reporting" in order to avoid RegG's reconciliation requirement, which, in case of starter firms, can be interpreted as an unintended consequence of the regulation itself.

Keywords: non-GAAP earnings, Regulation G, safe harbour, implicit non-GAAP reporting

JEL Classification: M41, M48

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3.2 Introduction

The Securities and Exchange Commission (SEC) has specifically regulated the voluntary disclosure of so-called non-GAAP financial measures²³ through the enactment of Regulation G (thereafter RegG) in 2003. While RegG still allows management to report non-GAAP financial measures, it strives to promote transparency. Specifically, it does so by mandating a detailed, quantitative and tabular GAAP to non-GAAP reconciliation whenever firms report non-GAAP earnings. Experimental research (Elliott, 2006) as well as archival research (Aubert & Grudnitski, 2014; Malone, Tarca & Wee, 2016 and Zhang & Zheng, 2011) has shown that bespoke reconciliations are useful to investors and analysts alike.²⁴ In particular, they may serve to identify managers that deliberately tailor their non-GAAP earnings to beat analyst forecasts (Doyle, Jennings & Soliman, 2013), for instance with the ultimate goal of boosting share price. Such opportunistic managers may wish to avoid the transparency invoked through the reconciliation and hence, may have a motive not to comply with RegG's reconciliation requirement.

We capitalise on this idea by documenting the use and motives of a specific self-devised strategy that enables firms to report non-GAAP earnings while avoiding the regulatory requirements. In particular, firms may claim to not having reported non-GAAP earnings while implicitly they do. Therefore, we refer to this strategy of regulatory avoidance as “implicit non-GAAP reporting”. Specifically, we infer “implicit non-GAAP reporting” if firms only disclose adjustments to GAAP earnings, so called non-GAAP adjustments, instead of entire adjusted earnings figures and by that skip the GAAP to non-GAAP reconciliation required by RegG. For instance, in its fourth quarter 2004 Kraft Foods Inc. reports implicit non-GAAP EPS of \$0.49 (Figure 5).

²³ Non-GAAP financial measures are also known by a variety of synonyms like e.g. pro-forma or alternative performance measures and are mostly earnings figures that have been adjusted by management. In fact, for the purpose of this paper “non-GAAP financial measures” exclusively refer to adjusted net income or earnings per share metrics. Section 3.3.1 contains a more precise definition of non-GAAP financial measures.

²⁴ Aubert & Grudnitski (2014) as well as Zhang & Zheng (2011) demonstrate that the provision of a GAAP to non-GAAP earnings reconciliation reduces mispricing in the European and U.S. equity markets, respectively. By contrast, Malone et al. (2016) focus on analysts and document that the reconciliation helps analysts to forecast earnings more accurately.

Figure 5: Kraft Foods Inc. Q4/2004

January 25, 2005 Tuesday 9:05 PM GMT

Kraft Foods Inc. Sees Improved Momentum; Reports 2004 Results and 2005 Outlook

LENGTH: 13521 words

DATELINE: NORTHFIELD, Ill. Jan. 25, 2005

Kraft Foods Inc. (NYSE:KFT):

- Good progress on Sustainable Growth Plan, led by innovative new products, strong revenue growth in North America and cost reduction initiatives
- Net revenues up 7.0% in the fourth quarter and 5.5% for the full year
- Fourth quarter diluted E.P.S. of \$0.37 (including \$0.12 in exit and implementation costs for the restructuring program and impairment charges)

In fact, the firm clearly suggests that investors view the charge of \$0.12 separately from its result of \$0.37 and effectively excludes it to arrive at bespoke implicit non-GAAP EPS of \$0.49. In addition, Kraft Foods does not provide any further reconciliation or disaggregation of the adjustments. Hence, investors are e.g. unclear about the type and quantity of impairment as opposed to restructuring. Further, this reporting behaviour is in contrast to the firm's previous assurance that it would stop presenting non-GAAP financial results (Figure 6):

Figure 6: Kraft Foods Inc. Q1/2003

April 15, 2003, Tuesday

Kraft Foods Inc. Reports First Quarter 2003 Results

LENGTH: 5045 words

DATELINE: NORTHFIELD, Ill., April 15, 2003, April 15, 2003

BODY: In accordance with Regulation G, which was recently issued by the SEC, Kraft Foods Inc. will not be presenting its financial results on a **pro forma** basis. Volume, a non-financial measure, is discussed in this release both on a reported basis as well as excluding divestitures in 2002 to provide consistency with past guidance.

Therefore, it seems that some firms use "implicit non-GAAP reporting" to disclose non-GAAP earnings while avoiding the transparency associated with RegG's reconciliation requirement. Consistent with this idea, we explore three different research questions regarding "implicit non-GAAP disclosure": How is "implicit non-GAAP reporting" related to the adoption of RegG? What type of firm reports implicit non-GAAP measures? What are the motives for "implicit non-GAAP reporting" post-RegG?

We structure our analyses around these questions and relate to prior non-GAAP literature in multiple ways. However, given that there is no priors on “implicit non-GAAP reporting”, we abstain from formulating specific ex ante expectations; i.e., the paper is explorative in nature.

Since we are interested in the role of “implicit non-GAAP reporting” as a potential tool of regulatory avoidance, our sample period is set around the enactment date of RegG in March 2003. Specifically, we hand-collect non-GAAP data including information on “implicit non-GAAP reporting” from earnings press releases using a sub-sample of 229 S&P 500 firms for the 1999 to 2005 time-period. With respect to our first question, we observe the evolution of “implicit non-GAAP reporting” before and after the adoption of RegG. We reason that to the extent “implicit non-GAAP reporting” is indeed a deliberate attempt to circumvent RegG’s reconciliation requirement, it should be positively associated with the enactment of the regulation. Consistent with that presumption, we find that “implicit non-GAAP reporting” spikes after the adoption of RegG and, relative to the pre-RegG time-period, remains at significantly higher levels after the regulatory intervention.

Because non-GAAP reporting remains a form of voluntary disclosure, firms’ decision to self-select into the group of non-GAAP reporters may simultaneously drive their decision to report non-GAAP earnings implicitly. Therefore, we apply methodology by Black, Christensen, Kiosse & Steffen (2017) to assign firms into those that only reported non-GAAP earnings before the regulation was enacted (stoppers), those that started to report only after the regulatory intervention (starters), those that continued throughout both time-periods (continuers) and those that never reported (non-reporters). Ultimately, we focus on 637 firm-quarters that pertain to starters and continuers after the regulatory intervention because it is only during this time-period that “implicit non-GAAP reporting” truly constitutes a tool of regulatory avoidance. As prior literature mentions that RegG might have acted as an unwanted safe harbour; i.e., as a catalyst rather than a deterrent to (opportunistic) non-GAAP disclosures (e.g. Black et al., 2017; Cazier, Christensen, Merkley & Treu, 2017), we reason that starters are less inclined than continuers to report non-GAAP earnings implicitly.²⁵ Interestingly and

²⁵ After all, it is exactly these firms that only felt encouraged enough to disclose non-GAAP earnings after the regulation was in place. Because by definition, a safe harbour requires that firms meticulously stick to the provisions explicitly required by the respective regulation, starters should reconcile their adjusted profit figures with particular diligence. Conversely, this implies that they are less likely to engage in “implicit non-GAAP reporting”.

contrary to our expectation, we find that the share of “implicit non-GAAP reporting” among starters is much higher than among continuers.

Next, we proceed to disentangle the motives that underlie starters’ and continuers’ differential propensity to disclose non-GAAP earnings implicitly. Specifically, we investigate to what extent starters’ and continuers’ choice to report non-GAAP earnings implicitly is associated with a) beating analyst forecast earnings on a non-GAAP basis and b) the experience of concurrent GAAP losses. We reason that both of these circumstances rather speak towards opportunistic motives and find that only for starters there is a significant and positive association between the decision to engage in “implicit non-GAAP reporting” and the beating of analyst earnings forecasts as well as the presence of concurrent GAAP losses. Taken together, we interpret our findings on starters as an unintended consequence of the regulatory intervention.

Thus, our results contribute to the emerging literature on unintended consequences of RegG (Kolev, Marquardt & McVay, 2008; Heflin & Hsu, 2008; Baumker, Biggs, McVay & Pierce, 2013; Black et al., 2017). However, unlike prior literature, our novel and self-devised concept of “implicit non-GAAP reporting” captures a form of incompliance with an explicitly regulated aspect of RegG; i.e., its reconciliation requirement. In contrast, prior literature examines non-GAAP reporting practices that might have been interpreted as opportunistic, but at least at the time of the respective observation period, were not explicitly regulated. For instance, this applies to the idea that excluding recurring items constitutes opportunistic behaviour, which Black et al. (2017) strongly draw on in their study covering the 2002 to 2013 period. However, the SEC confirmed this view only in 2010 when it published Compliance & Disclosure Interpretations (C&DIs). Hence, in absence of any regulatory guidance, managers would have had to judge by themselves. Undeniably, this is a difficult process, which could certainly have yielded different results across firms. In fact, the recent call by Black & Christensen (2018) for the SEC to change its stance on the exclusion of recurring expenses illustrates the difficulty and judgement involved in this issue.

Further, except for Black et al. (2017) our paper is the only one we are aware of that thoroughly examines firms that only started to report non-GAAP earnings after the regulatory intervention. This enables us to trace any observed behaviour directly to the regulatory intervention itself and ultimately to document potential unintended consequences. Finally, in practical terms our results may encourage regulators in jurisdictions, which only recently adopted comparable non-GAAP regulation, to stay vigilant and potentially tighten enforcement. In particular, this applies to the European

Securities and Markets Authority (ESMA) with its recently adopted “Guidelines on Alternative Performance Measures” effective as of July 2016. Contentwise and in particular with respect to the reconciliation requirement, ESMA guidelines resemble the U.S. rules. Yet, while the U.S. regulation is legally binding, ESMA guidelines are not binding per se but *de facto* binding as national financial market authorities are committed to incorporate them into their supervisory practice (European Parliament, 2010; ESMA, 2015; ESMA, 2015/1849 REV).

This paper proceeds with section 3.3 providing background on the institutional setting as well as details on “implicit non-GAAP reporting”. Section 3.4 contains related literature while section 3.5 introduces our data. Section 3.6 presents our analyses and section 3.7 concludes.

3.3 Institutional Background

3.3.1 Regulation of Non-GAAP Measures

Non-GAAP Reporting is understood as the reporting of “*numerical measures of a registrant’s future or historical performance, financial position or cash flows that either excludes or includes amounts that are included or excluded in the most directly comparable GAAP measure*” (SEC, 2002a). Thus, non-GAAP measures are adjusted for certain gains and losses at management’s discretion and therefore do not conform to financial accounting standards. In particular, this definition subsumes adjusted net income metrics; i.e., so-called non-GAAP earnings which are at the heart of this paper.

While proponents of non-GAAP earnings uphold that management uses them to strip out items that are non-recurring or otherwise deemed uninformative to investors (*informative perspective*), concerns over the potentially misleading character of non-GAAP measures have been voiced from early on (*opportunistic perspective*). For instance, in October 2000 Lynn E. Turner, the SEC Chief Accountant at the time, alluded to firms’ tendency to use non-GAAP measures in order to paint a more favourable picture of their earnings situation by referring to non-GAAP press releases as “*Everything but Bad Stuff*” releases (Turner, 2000). The SEC itself followed with a cautionary advice in December 2001. Specifically, it emphasised that non-GAAP measures considered misleading were subject to the general anti-fraud provision of federal securities law (SEC, 2001). It acted on its remarks about a month later, when it directed its first ever non-GAAP-related cease-and-desist enforcement action at Trump Hotels & Casino Resorts. Specifically, the company had disclosed a non-GAAP earnings figure, which on the one hand included income-increasing special items, but

on the other hand, excluded income-decreasing special items for its third quarter 1999 results. In the SEC's view, this created a misleading picture of operating performance (SEC, 2002b) and therefore warranted regulatory intervention.

Explicit non-GAAP regulation followed when Congress introduced a provision into the Sarbanes-Oxley Act (SOX) of July 2002. In fact, Section 401 (b) of the Sarbanes-Oxley Act granted the SEC no more than 180 days to develop regulation ensuring that a) non-GAAP measures are not misleading and b) they are reconciled to GAAP. The SEC decided to implement this requirement by creating RegG, Item 10 (e) of Regulation S-K, Item 10 of Regulation S-B and Item 12 of Form 8-K, with effective date 28 March 2003. While all of these regulations target the allegedly misleading character of non-GAAP financial measures, RegG is the only rule directed at public disclosures like e.g. press releases or announcements on company homepages.²⁶ Specifically, it consists of a general provision, which abstractly stipulates that non-GAAP measures must not be misleading and a specific provision, which requires non-GAAP measures to be reconciled to the most directly comparable GAAP financial measure. With respect to the specific provision, the SEC suggests the reconciliation be by schedule and requires that it must be quantitative for historic measures (SEC, 2002a).

After the regulatory intervention, the frequency of non-GAAP reporting (Marques, 2006) as well as the magnitude of the adjustments (Entwistle, Feltham & Mbagwu, 2006) initially decreased. However, in absence of SEC enforcement actions²⁷, the decline in the proliferation of non-GAAP financial measures was short-lived (Black, Black, Christensen & Heninger, 2012; Brown, Christensen, Elliott & Mergenthaler, 2012) and as of now non-GAAP earnings are pervasive. For instance, in the third quarter of 2015, 88 percent of S&P 500 firms reported at least one non-GAAP metric, while 72 percent disclosed an adjusted earnings per share (EPS) amount (Audit Analytics, 2015).

The increasing proliferation of misleading non-GAAP measures has also caused renewed concerns on the SEC's behalf. For example, in 2010, it labelled non-GAAP earnings a "*fraud risk factor*" (Leone, 2010) and started Compliance and Disclosure

²⁶ In contrast to RegG, the other regulations only apply to SEC filings or in the case of Item 12 of Form 8-K require a filing if there is a public disclosure of a non-GAAP measure. At least in the U.S. the predominant vehicle for public non-GAAP disclosures are press releases as U.S. rules ban the release of non-GAAP measures on the face of the financial statements as well as in the accompanying notes. Young (2014) discusses as to how this approach compares to the laxer rules under IFRS where non-GAAP earnings often feature within the financial statements.

²⁷ The first formal charge for a violation of RegG occurred against Safenet Inc. in 2009. Specifically, Safenet Inc. had made objectionable adjustments to meet or beat earnings targets from the third quarter 2004 to the second quarter 2005 (SEC, 2009).

Interpretations (C&DIs)²⁸, which it updated in 2011 and 2016. Also, former SEC chair Mary Jo White suggested that non-GAAP financial measures might need to be curbed by additional regulation (Michaels & Rapoport, 2016). However, currently the regulations enacted in 2003, together with the C&DIs, still form the backbone of contemporary U.S. non-GAAP regulation. Finally, also enforcement action is up. A recent report by Ernst & Young (2017) reveals that for the year ended in June 2017, non-GAAP financial measures were indeed the top priority of SEC comment letters.

3.3.2 Implicit Non-GAAP Reporting

Our construct of “implicit non-GAAP reporting” captures a reporting strategy according to which firms report adjustments to GAAP earnings but not the aggregated, adjusted earnings figures. At the same time, they do not reconcile to GAAP. Because the specific provision of RegG clearly stipulates that making adjustments that have the effect of including or excluding amounts is tantamount to outright exclusion or inclusion in combination with the presentation of a corresponding adjusted financial measure (SEC, 2002a), “implicit non-GAAP reporting” constitutes a violation of RegG’s specific provision. For instance, in the case of Kraft Foods’s fourth quarter 2004 press release (Figure 5) the company should have provided a reconciliation that clearly disaggregates the nature and quantitative impact of the impairment and restructuring costs it excluded to arrive at its implicit non-GAAP EPS figure of \$ 0.49 per fully diluted share.

Based on this insight, we operationalise the following criteria to infer “implicit non-GAAP reporting”: First, there is no disclosure of an explicit non-GAAP earnings figure but a discussion of adjustments on an EPS basis. Beyond the SEC’s definition of non-GAAP financial measures this condition is also in line with Curtis, McVay & Whipple (2013) who argue that the discussion of EPS adjustments constitutes non-GAAP reporting because it is a simple exercise for investors to infer non-GAAP earnings. Second, there is no quantitative reconciliation by schedule or tabular format; i.e., the disclosure is incompliant with RegG’s specific provision. Third, the discussion of bespoke EPS adjustments features reasonably prominently in the respective press release; i.e., firms indeed try to direct investors’ attention to the implicitly reported non-GAAP figure rather than “just discuss” some effects on an EPS basis. Specifically, we

²⁸ The C&DIs contain questions and answers covering the entire regulatory framework with respect to non-GAAP financial measures. For instance, they clarify what exactly defines a misleading non-GAAP measure, and to which GAAP items certain non-GAAP measures need to be reconciled.

infer “reasonable prominence” if the EPS effects are discussed within the first full page of the press release.²⁹

3.4 Related Literature and Research Questions

Since non-GAAP earnings are about the only form of specifically regulated voluntary disclosure, the adoption of RegG has provided and continues to provide a fruitful ground for research. However, often studies either document consequences consistent with the intentions of the regulatory intervention (e.g. Marques, 2006; Entwistle et al., 2006) or focus on opportunistic non-GAAP disclosures only during the post-RegG time-period (e.g. Guest, Kothari & Pozen, 2018; Shiah-Hou & Teng, 2016). By contrast, research that ties the documentation of opportunistic non-GAAP disclosures or other related and unwanted effects directly to the adoption of RegG itself is scarce. Hence, our understanding of RegG’s unintended consequences is currently incomplete. This specifically applies to the current absence of research on the incompliance with explicitly regulated aspects of RegG; i.e., the reconciliation requirement. We intend to fill this gap by comprehensively exploring the proliferation of “implicit non-GAAP reporting” as well as the motives that underlie it. For brevity, we limit our discussion of related literature to the modest number of studies that document different unintended effects of RegG.

Although they find plenty of evidence, which suggests that RegG helped to curb opportunistic non-GAAP disclosures³⁰ Heflin & Hsu (2008) as well as Kolev, Marquardt & McVay (2008) are also the first to document some unintended consequences. Specifically, Heflin & Hsu (2008) find that post-RegG firms are less likely to disclose non-GAAP earnings in the presence of special items. Based on the presumption that special items are uninformative to investors they conclude that RegG caused a reduction in firms’ willingness to report non-GAAP earnings when these would be informative. By contrast, Kolev et al. (2008) examine changes in the composition of special items around the adoption of RegG and conclude that the regulatory change prompted managers to start shifting more recurring expenses into special items. Hence,

²⁹ Curtis et al. (2013) also demand a prominent presentation for adjusted income figures to count as non-GAAP. Specifically, they require the presentation of non-GAAP measures within the first ten lines of any press release. As their requirement is slightly more stringent than ours is, we check a random sub-sample of our press releases and conclude that both conditions yield similar results. In other word, if firms present non-GAAP earnings on the first page of a press release, this typically also happens within the first ten lines.

³⁰ For instance, Heflin & Hsu (2008) show that the probability to disclose non-GAAP earnings in order to meet or beat analysts’ consensus earnings forecasts declined moderately after RegG. Likewise pointing towards a successful regulatory intervention, Kolev et al. (2008) document that those firms, which stopped to report non-GAAP earnings altogether post-RegG had less transitory exclusions before the enactment of the regulation.

they document a presumably unwanted interaction between non-GAAP and GAAP earnings. In addition, their finding casts doubt on whether firms' reduced likelihood to report non-GAAP earnings in the presence of special items as shown by Heflin & Hsu (2008) indeed constitutes a loss of informative non-GAAP disclosure.

Moreover, Black et al. (2012) as well as Brown et al. (2012) show that, except for a temporary decline around the passage of SOX and the enactment of RegG, the frequency of non-GAAP reporting quickly rebounded. Further, the growing proliferation of non-GAAP financial measures continued during the more recent 2009 to 2014 time-period (Black, Christensen, Ciesielski & Whipple, 2018). Indeed, such increasing proliferation in itself may constitute an unintended consequence of RegG as it has been suggested that firms could have interpreted RegG as a safe harbour rather than a deterrent to (opportunistic) non-GAAP disclosures (Black et al., 2017; Cazier et al., 2017). So far, Cazier et al. (2017) are the only ones to provide some evidence consistent with the safe harbour proposition. Specifically, they find that RegG reduced the differential propensity to disclose non-GAAP earnings between firms located in the Ninth Circuit, which before benefited from lower litigation risk,³¹ and those in the rest of the U.S. They interpret this finding as a decline in litigation risk attributable to RegG inducing a safe harbour on non-GAAP disclosures. However, although declining litigation risk is certainly in line with the legal shelter provided by a safe harbour, it is the result rather than the precondition to it. In fact, a safe harbour can only exist to the extent that firms meticulously comply with the requirements explicitly outlined in RegG.³² Our self-devised, regulatory avoidance strategy of "implicit non-GAAP reporting" represents the opposite of non-GAAP disclosures that are in line with the idea of a safe harbour.

Further, Black et al. (2017) examine firms' aggressiveness of non-GAAP earnings disclosures around the adoption of RegG. They define two proxies for aggressiveness; i.e., a) the exclusion of recurring items beyond analysts' exclusions and b) the beating of analyst benchmarks on a non-GAAP basis. One of their results is that firms that only started to report non-GAAP earnings after RegG (starters) are more inclined to exclude recurring expenses relative to those that stopped before RegG

³¹ The U.S. federal court system consists of 12 different circuits whereby each circuit corresponds to a certain geographical area. Cazier et al. (2017) argue that in 1999 judges in the Ninth Circuit had substantially raised the pleading standards for shareholder lawsuits thus lowering the litigation risk for Ninth Circuit firms (presumably also with respect to non-GAAP disclosures). Thus, they use Ninth Circuit firms as a treatment group and compare their non-GAAP reporting choices to firms in the rest of the U.S.

³² For instance, Black et al. (2017) even emphasise that "*as long as firms follow the guidelines outlined in RegG, they can avoid the threat of litigation and SEC sanctions related to non-GAAP disclosures*".

(stoppers). Clearly, this constitutes an unintended consequence of the regulation; i.e., firms that start to report non-GAAP after RegG are more opportunistic than the ones that stop. We draw on their approach to identify firms as starters, stoppers, non-reporters and continuers but, through our self-devised proxy of “implicit non-GAAP reporting”, focus on compliance with the explicitly regulated aspect of RegG; i.e., the reconciliation requirement. Thus, our work has a different scope but offers the advantage of a more explicit measure of opportunistic non-GAAP disclosure. In fact, “implicit non-GAAP reporting” violates the specific provision of RegG and firms were aware of it at the time. By contrast, this is not true with respect to the exclusion of recurring items as the SEC only expressed its concerns when it initiated its C&DIs in 2010. Further, unlike with respect to the reconciliation requirement, there is a debate on the SEC’s view on the exclusion of recurring items. In fact, Black & Christensen (2018) argue that the SEC should revise its stance and allow the exclusion of recurring items.

Finally, Baumker et al. (2013) examine the strategy of silence; i.e., to not disclose non-GAAP earnings in the presence of transitory gains. Specifically, they select firm-quarters with gains from litigation and insurance recoveries and analyse firms’ non-GAAP disclosure behaviour. They find that firms’ propensity to disclose non-GAAP earnings is higher if these gains come with concurrent losses. Speaking to unintended consequences of RegG, they also show that before the adoption of the regulation, managers were much more likely to report an EPS figure excluding these gains than after. We reason that “implicit non-GAAP reporting” relates to their findings because, for quarters with transitory gains, it may represent a middle ground between their strategy of silence on the one hand and fully transparent and RegG-compliant non-GAAP disclosure on the other.

Set against the background of the findings from related literature, we suggest that “implicit non-GAAP disclosure” may serve as a tool to avoid the requirements of RegG. Thus, several lines of enquiry are opened up: How is “implicit non-GAAP reporting” related to the adoption of RegG? What type of firm reports implicit non-GAAP measures? What are the motives for “implicit non-GAAP reporting” post-RegG? This paper is an attempt to address these questions in an explorative way.

3.5 Data

Our observation period is set around the enactment date of RegG in March 2003 and ranges from 1999 to 2005. Specifically, we start by identifying all S&P 500 firms as of December 1998 using Compustat’s “Index Constituents” function. We eliminate 165 firms (4,620 firm-quarters), which did not form part of the S&P 500 during the

whole sample period to arrive at a reduced sample of 337 firms.³³ Further, we drop 54 financial firms (1,512 firm-quarters) and, concerned about potential differences regarding the applicability and enforcement of RegG with respect to foreign entities, remove seven firms (196 firm-quarters) whose headquarters are located outside the U.S. Thus, we retain observations for 276 firms during the 28 quarters of the 1999 to 2005 time-period; i.e., $276 \times 28 = 7,728$ firm-quarters.

For these firms, we hand-collect information on non-GAAP reporting from press releases obtained via a keyword search of the LexisNexis PR Newswire and Businesswire functions.³⁴ Specifically, we expand the search string used by Zhang & Zheng (2011) and search for the words: “pro forma”, “pro-forma”, “proforma”, “adjusted”, “recurring”, “one time” and “one-time” combined with company name and/or firm ticker. After carefully reading each press release, we first determine whether it satisfies our requirements for non-GAAP reporting. In particular, we only take into account the reporting of adjusted non-GAAP earnings; i.e., we ignore other adjusted metrics like e.g. adjusted revenue or cash flows. To the extent an adjusted net income metric is presented, we require that it needs either be reported in Dollar amounts, on an EPS basis or implicitly. To capture “implicit non-GAAP reporting” we generate *Implicit*, an indicator variable, which we assign the value of one if we determine “implicit non-GAAP reporting” and zero otherwise. Finally, we align with the approach by Zhang & Zheng (2011) as well as Lougee & Marquardt (2004) and discard press releases, in which non-GAAP earnings (i) purely relate to the retroactive impact of initial public offerings, mergers and acquisitions; (ii) do not belong to the current quarter³⁵ or, (iii) solely display a change in accounting method, tax status or capital structure.

Next, we merge non-GAAP data with financial statement data from Compustat as well as analyst forecasts from I/B/E/S.³⁶ We lose three firm-quarters in this process and drop 88 observations for which calendar quarter is outside of our indicated

³³ Although a constant sample enables us to track firms’ non-GAAP reporting decisions across the adoption of RegG, we acknowledge that this requirement may also introduce some sort of survivorship bias into our analysis.

³⁴ Prior research like Bhattacharya, Black, Christensen & Mergenthaler (2007) or Zhang & Zheng (2011) has also looked at press releases as the primary conduit to communicate non-GAAP financial measures. Further, RegG only applies to non-GAAP financial measures disclosed in the public domain as e.g. press releases (compare section 3.3).

³⁵ This is often the case when firms compare a current quarter without non-GAAP adjustments to a prior quarter with non-GAAP adjustments.

³⁶ We always only retain the most recent analyst forecast. To the extent that there are two or more equally recent forecasts, we keep the one with the highest analyst coverage.

observation period.³⁷ Further, we eliminate 206 observations for which the date of the LexisNexis press release does not correspond to the Compustat earnings announcement date. We remove another 237 observations for which we could not establish a unique match between I/B/E/S and Compustat.³⁸ Finally, we lose 94 firm-quarters with negative common equity, 667 firm-quarters with missing information on any of our independent variables that serve as proxies to gauge the motives for “implicit non-GAAP reporting” (balanced panel, compare analyses in sections 3.6.2 and 3.6.3) and 448 firm-quarters because we require that each sample firm must have a minimum of 20 quarterly observations.³⁹ Thus, we arrive at an initial sample of 5,985 firm-quarters that pertain to 229 unique firms; Table 14 provides an overview of our sample selection procedures.

Table 14: Sample Selection

1st step: Selection at firm level:	
	# Firm-quarters
Identify all S&P 500 firms as of December 1998	14,056
Firms must be part of the S&P 500 for the whole sample period	- 4,620
Remove financial firms	- 1,512
Remove foreign firms	- 196
	= 7,728
	(276 firms)

2nd step: Selection at firm-quarter level:	
	# Firm-quarters
Remove if no match between non-GAAP and Compustat data	- 1
Remove if information on calendar quarter is missing	- 2
Remove if calendar quarter is outside of Q1/99-Q4/05 period	- 88
Remove if date on press release does not match with Compustat	- 206
Remove if no unique match between I/B/E/S and Compustat	- 237
Remove if common equity is negative	- 94
Remove if there is missing data (balanced panel)	- 667
Remove data for firms with less than 20 quarterly observations	- 448
Initial sample	= 5,985
	(229 firms)

³⁷ To ensure correct matching, we match hand-collected data from LexisNexis press releases to Compustat data based on fiscal quarters. However, because our time-period comprises only the calendar quarters from 1999 to 2005 we have to eliminate some observations for which calendar quarter is outside the observation period but fiscal quarter is within.

³⁸ Sometimes the tickers obtained from Compustat did not match I/B/E/S tickers. In these instances, we used “firm name” to carry out a manual search on I/B/E/S and collected the corresponding I/B/E/S ticker. However, in a few cases more than one I/B/E/S ticker appeared; i.e., the I/B/E/S ticker could not be uniquely identified. We dropped these 237 observations as a precautionary measure.

³⁹ If there are firms with very few observations the risk of misclassification is high. For instance, a firm with just two observations each before and after RegG, might be incorrectly classified as a non-reporter although it could actually have reported non-GAAP earnings in many other quarters.

We refer to this sample as “initial” because we use it in order to divide firms into starters, continuers, stoppers and non-reporters. However, our main analyses either relate to the 1,543 firm-quarters in which non-GAAP earnings are reported (section 3.6.1) or to the 637 firm-quarters, in which starters or continuers disclose non-GAAP earnings during the post-RegG time-period (sections 3.6.2 & 3.6.3). We assign the cut-off between the pre-/post-RegG periods as after the fourth quarter of 2002; i.e., for our analysis the first quarter of 2003 constitutes the first post-RegG quarter. In order to qualify as a non-GAAP reporter in any of the two sub-periods we demand that firms have to report non-GAAP earnings in at least two quarters of the respective pre-/post-RegG period.⁴⁰ Table 15 shows the resulting distribution of starter, continuer, stopper and non-reporter firms in total as well as for the individual sub-periods.

Table 15: Distribution of Firms by Group

	Panel A: Pre- & Post-RegG Period				
	Starters	Continuers	Stoppers	Non-Reporters	Total
# of firms	34	94	46	55	229
# of firm-quarters	888	2,477	1,199	1,421	5,985
# of firm-quarters with non-GAAP EPS	145	1,122	250	26	<i>1,543</i>
	Panel B: Pre-RegG Period				
# of firm-quarters	510	1,414	695	820	3,439
# of firm-quarters with non-GAAP EPS	17	613	232	19	881
	Panel C: Post-RegG Period				
# of firm-quarters	378	1,063	504	601	2,546
# of firm-quarters with non-GAAP EPS	128	509	18	7	662

*Notes: Table 15 contains a complete breakdown of all types of firms; i.e., starters, stoppers, continuers and non-reporters during the pre & post-RegG period (Panel A) as well as both sub-periods separately (Panel B & C). Specifically, the first row of Panel A shows the number of firms for each group whereas the second row contains the corresponding firm-quarters and the third row displays the number of firm-quarters with non-GAAP earnings reported. The same logic applies to the two rows within each sub-period (Panel B & C), except that they do not show the number of firms again because, by definition, it corresponds to the distribution displayed in Panel A. Further, the number of total non-GAAP quarters highlighted in italics (1,543) constitutes the basis for many of our descriptive statistics (Panel B of Table 16, Table 17 and Table 18) as well as our analysis in section 3.6.1. Finally, the sum of **128** and **509** firm-quarters (**637** in total) highlighted in **bold font** constitutes our final subject of analysis in sections 3.6.2. & 3.6.3.*

⁴⁰ Black et al. (2017) have a similar requirement in that they delete all firms, which reported non-GAAP earnings only once in either the pre- or post-RegG time-period. Further, they take the enactment of SOX in the second quarter of 2002 as the cut-off point rather than the actual enactment of RegG in the first quarter of 2003.

Panel A of Table 16 provides descriptive statistics on the characteristics of our sample firms while Panel B shows statistics on non-GAAP variables; i.e., only related to the 1,543 non-GAAP quarters. As for the firm characteristics, one can see that sample firms are large; i.e., the median firm has total assets of approximately 8.7 billion USD (*Total Assets* = 8,714). Median *Special_Items* are zero but on average they are slightly negative, meaning that if there are special items these tend to be costs. Further, sample firms achieve average returns on assets of approximately 1.5 percent (*ROA* = 0.0154). However, earnings variability; i.e., the standard deviation of return on assets is considerable and highly skewed. For instance, at the median level it is approximately 0.6 percent (*SD_ROA* = 0.0062) but the mean stands at roughly 1 percent (*SD_ROA* = 0.0102). In addition, firms have a mean share of tangible assets of 34.7 percent and, on average, exhibit moderate leverage ratios of 26.6 percent relative to total assets (long-term debt and current portion of long-term debt). Finally, 13.97 analysts cover the average sample firm, which in 46.6 and 11.8 percent of all quarters experiences a negative earnings surprise (decline of year over year quarterly earnings) and GAAP loss respectively.

As for the non-GAAP variables in Panel B of Table 16, one can see that once firms decide to report non-GAAP earnings they make on average 2.448 adjustments (*# Adjustments*). However, the range is huge reaching from a minimum of only one adjustment to a maximum of 28 so that the median of two adjustments provides a good indicator as towards a typical number of adjustments. Further, in 40.3 percent of all cases (*Emphasis* = 0.403) more emphasis is placed on non-GAAP relative to GAAP earnings. Moreover, “implicit non-GAAP” reporting is the favoured way of non-GAAP disclosure in 14.2 percent of all non-GAAP quarters (*Implicit* = 0.142). Finally, it is clearly visible that in most firm-quarters non-GAAP earnings exceed a number of earnings benchmarks. For instance, they beat GAAP earnings in 71.7 percent of all cases (*Beat_GAAP* = 0.717), exceed analyst forecast earnings in 51.7 percent of all cases (*Beat_Analyst* = 0.517) and even beat analyst forecast earnings in 25.1 percent of all cases when GAAP earnings fall short of analysts’ expectations (*Beat_Analyst_GAAP_Fail* = 0.251).

Table 16: Summary Statistics

	Mean	Sd	Min	Max	p1	Median	p99
Panel A: Firm Characteristics / Non-GAAP Determinants							
Total Assets	18051	42108	578	752223	951	8714	148252
Special Items	-0.0028	0.0171	-0.377	0.497	-0.0549	0	0.0150
ROA	0.0154	0.0224	-0.386	0.376	-0.0479	0.0144	0.0670
SD_ROA	0.0102	0.0147	0.0003	0.194	0.0008	0.0062	0.0757
Tangibility	0.347	0.213	0.0072	0.935	0.0409	0.298	0.899
Leverage	0.266	0.140	0	0.806	0	0.266	0.619
Numest	13.97	7.068	1	44	2	13	34
Neg. Earnings Surprise	0.466	0.499	0	1	0	0	1
Loss	0.118	0.322	0	1	0	0	1
N	5,985						
Panel B: Non-GAAP Variables							
# Adjustments	2.448	1.769	1	28	1	2	8
Emphasis	0.403	0.491	0	1	0	0	1
Implicit	0.142	0.349	0	1	0	0	1
Beat_GAAP	0.717	0.451	0	1	0	1	1
Beat_Analyst	0.517	0.500	0	1	0	1	1
Beat_Analyst_GAAP_Fail	0.251	0.434	0	1	0	0	1
N	1,543						

Notes: Table 16 displays descriptive statistics for our sample. While Panel A contains firm characteristic which are calculated based on all available firm-quarters, Panel B contains variables related to firms' non-GAAP disclosures. Thus, the calculation of statistics for Panel B is restricted to the sub-sample with non-GAAP earnings reported.

We proceed to examine Pearson correlations for our main variable *Implicit* with all of our variables presented in Table 16. Again, we sub-divide the analysis into firm characteristics (Table 17) and non-GAAP variables (Table 18). The first column of Table 17 contains all the correlations between *Implicit* and firm characteristics. First, “implicit non-GAAP reporting” seems unrelated to firm size (*Size*) and performance (*ROA*). However, it is negatively associated with performance variability (“*SD_ROA*”). Further, a higher analyst following as well negative earnings surprises seem to constrain firms’ tendency to report non-GAAP earnings implicitly. By contrast, special items (*Special Items*), the posting of quarterly losses (*Loss*), *Leverage* and *Tangibility* are all positively associated with *Implicit*. As for the non-GAAP variables presented in Table 18, *Implicit* is negatively associated with the number of non-GAAP adjustments firms make. This may signal that beyond being a tool of regulatory avoidance “implicit non-GAAP reporting” could simply be more convenient when the number of adjustments is low. Further, there is a negative association between *Implicit* and *Emphasis*. This is mechanical because under “implicit non-GAAP reporting” firms do not provide any

explicit non-GAAP earnings figure so that we code these press releases as not giving emphasis to non-GAAP over GAAP. Finally, *Implicit* is negatively associated with beating GAAP earnings (*Beat_GAAP*) but features a positive association with beating analyst earnings benchmarks (*Beat_Analyst*). This results in a weakly negative association between *Implicit* and the beating of analyst benchmarks when concurrent GAAP earnings fall short of analyst expectations (*Beat_Analyst_GAAP_Fail*).

Table 17: Correlation Matrix Firm Characteristics / Non-GAAP Determinants

	Implicit	Size	Special_Items	ROA	SD_ROA	Tangibility	Leverage	Numest	Neg_Earnings_Surprise	Loss
Implicit	1									
Size	-0.0000215	1								
Special_Items	0.0629**	0.0456*	1							
ROA	0.0146	-0.0483*	0.776***	1						
SD_ROA	-0.0590**	-0.140***	-0.369***	-0.386***	1					
Tangibility	0.0958***	0.223***	0.0830***	-0.0618**	-0.107***	1				
Leverage	0.0453*	0.163***	0.0131	-0.154***	-0.0598**	0.358***	1			
Numest	-0.0481*	0.265***	-0.0934***	0.0606**	0.171***	-0.203***	-0.345***	1		
Neg_Earnings_Surprise	-0.0480*	-0.0141	-0.0244	-0.0789***	0.0843***	0.0143	0.0174	-0.0204	1	
Loss	0.0559**	-0.0435*	-0.0726***	-0.187***	0.274***	0.0157	0.0556**	-0.0402	0.278***	1
N	1,543									

Notes: Table 17 provides Pearson correlations between our main variable of interest “Implicit” and several firm characteristics. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 18: Correlation Matrix Non-GAAP Variables

	Implicit	# Adjustments	Emphasis	Beat_GAAP	Beat_Analyst	Beat_Analyst_GAAP_Fail
Implicit	1					
# Adjustments	-0.0820***	1				
Emphasis	-0.327***	-0.0430*	1			
Beat_GAAP	-0.0947***	0.0193	0.168***	1		
Beat_Analyst	0.0696***	-0.0142	-0.132***	-0.0288	1	
Beat_Analyst_GAAP_Fail	-0.0431*	0.00696	0.0260	0.364***	0.560***	1
N	1,543					

Notes: Table 18 provides Pearson correlations between our main variable of interest “Implicit” and several non-GAAP variables. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

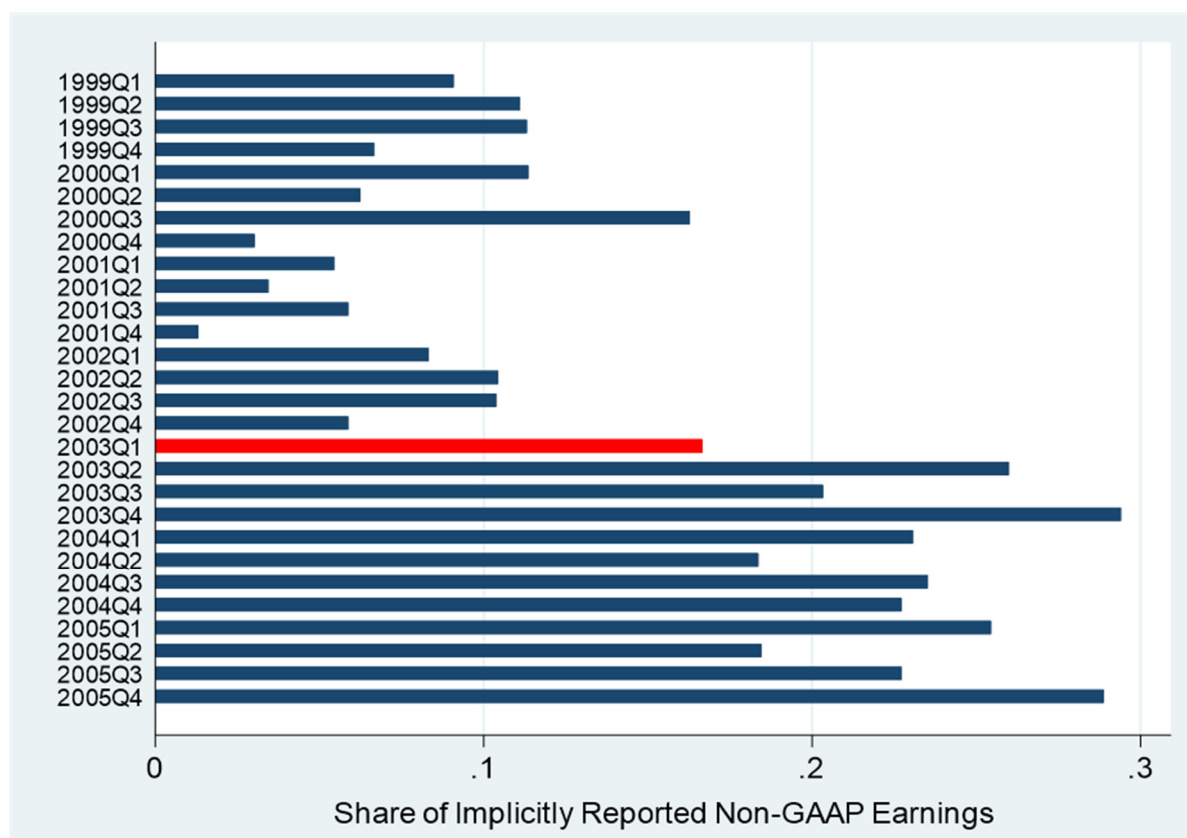
3.6 Analysis

We sub-divide our analyses on “implicit non-GAAP reporting” into three different sections. First, we provide descriptive evidence on the evolution of “implicit non-GAAP reporting” across the regulatory intervention in 2003 (section 3.6.1). Then, we proceed to focus on the post-RegG period because it is only during this time that “implicit non-GAAP reporting” indeed constituted a strategy of regulatory avoidance. Specifically, we analyse whether starters and continuers exhibit differing propensities to report non-GAAP earnings implicitly (section 3.6.2). Finally, section 3.6.3 investigates the motives that underlie “implicit non-GAAP reporting” during the post-RegG time-period and whether these differ between starter and continuer firms.

3.6.1 The Evolution of “Implicit Non-GAAP Reporting” across RegG

The evolution of the “implicit non-GAAP reporting” phenomenon across our sample period is captured by Figure 7.

Figure 7: Share of Implicit non-GAAP Reporting by Quarter



Notes: Figure 7 displays the share of implicitly reported non-GAAP earnings over time. Specifically, we obtain the share of implicitly reported non-GAAP earnings through dividing the quarterly number of “implicit non-GAAP observations” by the respective quarter’s total number of non-GAAP observations. For instance, in the first quarter 1999 the share of “implicit non-GAAP reporting” is around .1. This means that during that quarter around 10 percent of all non-GAAP earnings were reported implicitly.

Specifically, Figure 7 plots the share of implicitly reported non-GAAP earnings per quarter.⁴¹ We reason that to the extent firms indeed employ “implicit non-GAAP reporting” as a tool to avoid RegG’s specific requirement, the share of implicitly reported non-GAAP earnings is positively associated with the time of the regulatory intervention. Clearly, Figure 7 supports this argument as we see that “implicit non-GAAP reporting” spikes around the first quarter in 2003; i.e., the quarter of RegG’s enactment (highlighted in red). Further, it remains at consistently higher levels during the post-RegG period than before. However, Figure 7 also reveals that firms already reported non-GAAP earnings implicitly before the introduction of RegG.

We corroborate this finding through a t-test that compares the mean share of “implicit non-GAAP reporting” before and after RegG. As we can see from Table 19 during the pre- and post-RegG time-periods the share of “implicit non-GAAP reporting” stood at approximately 7.5 and 23 percent respectively, with the difference being significant at the one percent level. Overall, we conclude that the regulation cannot be the only reason behind firms’ decision to report non-GAAP earnings implicitly, but it certainly seems to have played a major role. In other words, at least some managers reacted to the regulation by using “implicit non-GAAP reporting” to avoid its specific requirement.

Table 19: Implicit Non-GAAP Reporting” Pre- / Post-RegG

	Pre-RegG	Post-RegG	t
Implicit	0.0749	0.231	-8.918***
N	1,543		

*Notes: Table 19 displays the mean share of “implicit non-GAAP reporting” during the pre- and post-RegG time-periods respectively. Pre-RegG the mean share of “implicit non-GAAP reporting” was approximately 7.5 percent whereas post-RegG the figure stood at roughly 23 percent. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*

3.6.2 “Implicit Non-GAAP Reporting” Post-RegG: Starters vs. Continuers

In this section, we turn to the post-RegG time-period because, by definition, “implicit non-GAAP reporting” only constituted a means of regulatory avoidance after the enactment of RegG. Hence, those firms, which reported non-GAAP earnings

⁴¹ To obtain the share of implicitly reported non-GAAP earnings we divide the quarterly number of “implicit non-GAAP observations” by the respective quarter’s total number of non-GAAP observations. Thus, Figure 7 takes into account all 1,543 firm-quarters (refer to Table 15) in which firms reported non-GAAP earnings.

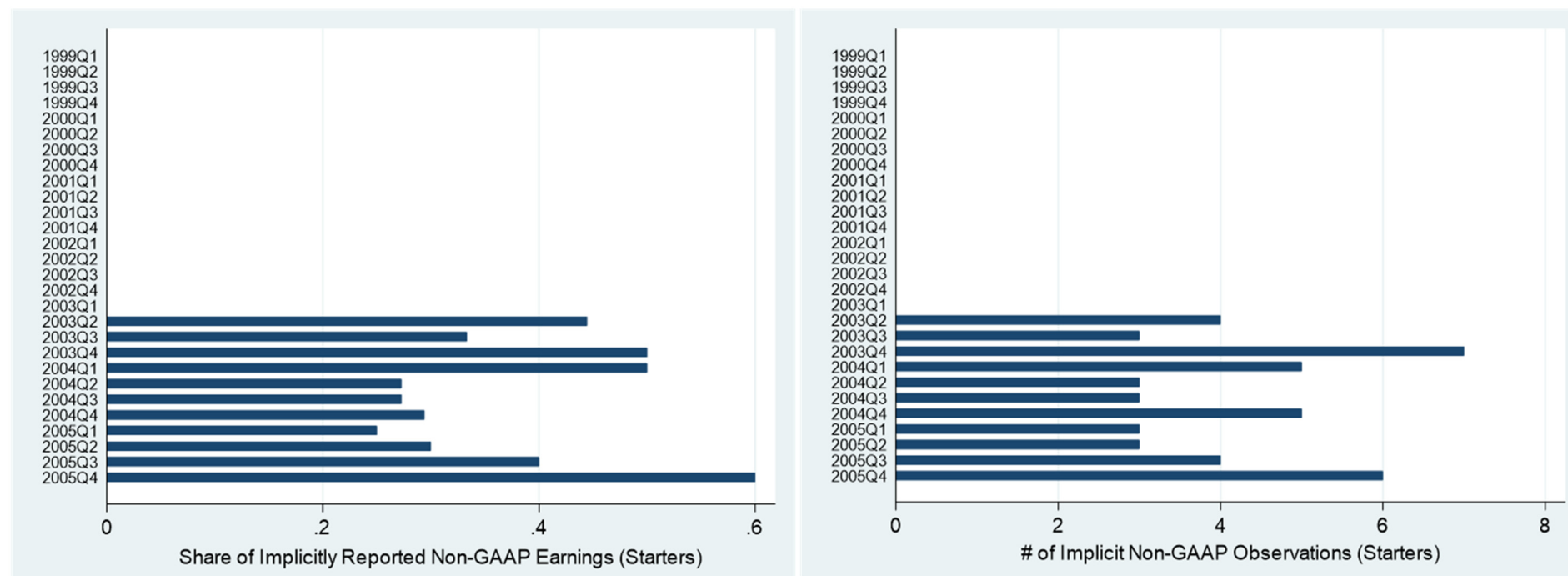
implicitly, could have potentially become the target of either SEC enforcement actions or private securities lawsuits. Thus, we explore which firms were willing to take the risk and dedicate this section towards that end.⁴²

Specifically, we compare the prevalence of implicitly reported non-GAAP earnings among starters and continuers. While we do not formulate any *ex ante* hypothesis, we reason that to the extent RegG indeed provided a safe harbour to non-GAAP reporting firms (Black et al., 2017; Cazier et al., 2017), starters are less inclined than continuer firms to report “implicit non-GAAP earnings”. After all, it is exactly these firms that only felt encouraged enough to disclose non-GAAP earnings once the regulation was in place. However, a safe harbour can only exist for those firms, which meticulously stick to the provisions explicitly required by the respective regulation. Thus, we suggest that starters are particularly careful when it comes to reconciling non-GAAP to GAAP earnings. Conversely, this implies that they are less likely to engage in “implicit non-GAAP reporting”.

We start by providing descriptive evidence on the evolution of the share of implicitly reported non-GAAP earnings for starters and continuers, with the results displayed in Figures 8 and 9 respectively. Contrary to our expectations, the share of implicitly reported non-GAAP earnings is much higher for starters than for continuers. In fact, starters report up to 60 percent of non-GAAP earnings implicitly (fourth quarter of 2005) whereas the maximum for continuers reaches about 25 percent only (first quarter of 2005). However, the absolute number of “implicit non-GAAP observations” is significantly lower for starters than continuers (right hand side of Figures 8 and 9). This is consistent with the fact that overall many more non-GAAP observations are attributable to continuers than starters (see also Table 15). Further, we use a t-test to compare the mean of “implicit non-GAAP reporting” for starters and continuers. Table 20 displays the results, which confirm our impression from the descriptive analysis. Specifically, they show that, on average, starters use “implicit non-GAAP reporting” in 35.9 percent of the cases whereas the comparable share for continuers only stands at 19.6 percent with the difference being significant at the one percent level.

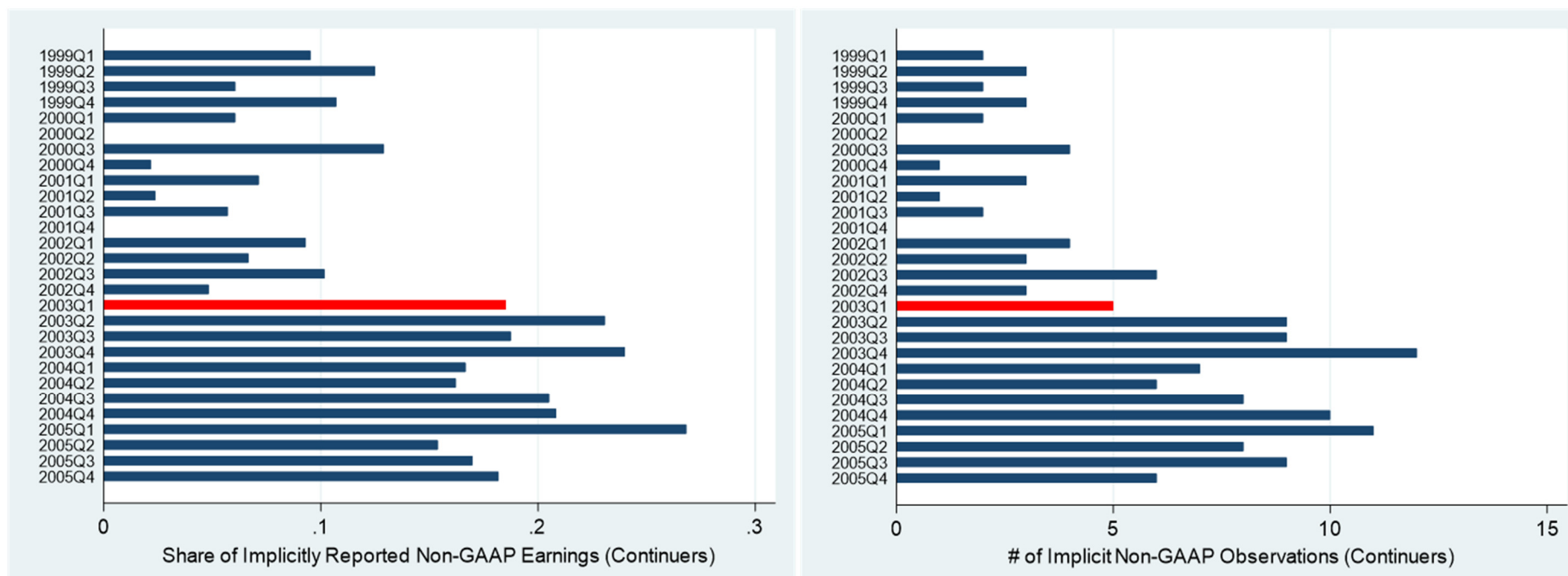
⁴² Although the SEC’s first, non-GAAP related enforcement action only occurred in 2009 (compare section 3.3.1) managers could not have known *ex ante* about the authority’s seemingly lax approach towards the enforcement of non-GAAP regulation. In addition, private securities litigation that alleged misleading non-GAAP disclosure already happened before. For instance, in 2005 investors filed a case against Netflix (United States District Court for the Northern District of California - Secs. Litig., 2005 U.S. Dist. Lexis 30992), claiming among other things that the company provided a misleading reconciliation from EBITDA to GAAP earnings. Despite the dismissal of the allegations, we conclude that even at the time managers most certainly had to weigh the potential cost of “implicit non-GAAP disclosure” against the benefits.

Figure 8: Starters’ “Implicit Non-GAAP Observations” by Quarter



Notes: Figure 8 displays starters’ share of implicitly reported non-GAAP earnings (left side) as well as their absolute number of implicitly reported non-GAAP earnings (right side) by quarter. The share of implicitly reported non-GAAP earnings ranges from slightly above 20 percent in the first quarter of 2005 to up to 60 percent in the fourth quarter of the same year. However, these proportions are calculated upon small base levels of non-GAAP reporting; i.e., the quarterly numbers of “implicit non-GAAP observations” only range between three and seven (right side). Finally, in the first quarter of 2003 there is no “implicit non-GAAP observation” attributable to starters.

Figure 9: Continuers’ “Implicit Non-GAAP Observations” by Quarter



Notes: Figure 9 displays continuers’ share of implicitly reported non-GAAP earnings (left side) as well as their absolute number of implicitly reported non-GAAP earnings (right side) by quarter. Again, the first quarter of 2003 marks the adoption of RegG and is highlighted in red. The graph shows that the use of “implicit non-GAAP earnings”, both as a share of all reported non-GAAP earnings (left side) and in absolute terms (right side), spikes around the regulatory intervention. Thereafter, it remains at significantly higher levels than during the pre-RegG period.

Table 20: “Implicit Non-GAAP Reporting” Post-RegG: Starters vs. Continuers

	Continuers	Starters	t
Implicit	0.196	0.359	-3.962***
N	637		

*Notes: Table 20 displays the mean, post-RegG share of “implicit non-GAAP reporting” by type of firm; i.e., starters and continuers. Relative to their number of overall non-GAAP reports, starters are much more likely to report non-GAAP earnings implicitly. In fact, starters report non-GAAP earnings implicitly in 35.9 percent of the cases. By contrast, the same proportion for continuers only stands at 19.6 percent. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*

We interpret this finding as an unintended consequence because it means that firms, which only started to report non-GAAP earnings after the adoption of RegG, are less compliant with the regulation’s specific provision than firms, which reported non-GAAP earnings across the regulatory intervention. Hence, we conclude that the regulation not only encouraged this group of firms to report non-GAAP earnings but also to do so in a way that is incompliant with its specific provision. On the one hand, this interpretation is consistent with Black et al. (2017) who find that, relative to continuers, starters show heightened opportunism by adjusting their non-GAAP disclosures for more recurring items. However, on the other hand, our finding is at odds with the proposition that the increased proliferation of non-GAAP earnings skyrocketed after RegG because the regulation provided a safe harbour. Specifically, the high prevalence of “implicit non-GAAP reporting” among starters is inconsistent with the idea that as a precondition to a safe harbour firms must comply with the explicitly regulated aspects of the respective regulation.

In addition, we consider that firms self-select into being starters or continuers and, to the extent, they decide to report non-GAAP earnings, whether to do so implicitly or in a transparent and regulation-compliant manner. Hence, certain firm characteristics may explain starters’ and continuers’ differing non-GAAP disclosure behaviour. Thus, we dedicate the remainder of this section to explore how both types of firms compare along certain characteristics. Specifically, we draw on some firm characteristics that prior non-GAAP literature (e.g. Lougee & Marquardt, 2004; Isidro & Marques, 2015) has identified as potential drivers of the decision to report non-GAAP earnings. Table 21 shows the means of the selected variables by type of firm; i.e., starters vs. continuers as well as the respective t-statistic, which indicates any significant differences between the groups.

Table 21: Mean Comparison of Firm Characteristics

	Starters	Continuers	t
Total Assets	10556.6	18679.8	-9.776***
Special_Items	-0.00325	-0.00380	0.772
ROA	0.0129	0.0145	-1.745
SD_ROA	0.0116	0.0110	0.966
Tangibility	0.403	0.341	8.056***
Leverage	0.260	0.281	-4.154***
Numest	13.02	14.07	-3.813***
Neg_Earnings_Surprise	0.489	0.476	0.674
Loss	0.172	0.124	3.571***
N	3,365		

*Notes: Table 21 displays the means of several firm characteristics for starters and continuers respectively. Specifically, the means are calculated based upon 3,365 observations, which are composed of 888 firm-quarters pertaining to starters and 2,477 firm-quarters pertaining to continuers (compare Table 15). The third column holds t-statistics, which result from a mean comparison test between starters and continuers. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.*

The means are calculated based upon 888 observations that pertain to starters and 2,477 observations that pertain to continuers; i.e., 3,365 observations in total (reconciles with Table 15). We note that several key differences exist between both types of firm: First, starters have significantly less total assets and therefore are on average much smaller than continuers are. Most likely correlated with their smaller size, starters also exhibit less analyst coverage (around 13 vs. 14 analysts following) and are less levered. Nonetheless, at around 26 and 28 percent of total assets, leverage seems modest for both starters and continuers, respectively. Further, starters have significantly more tangible assets. Thus, potentially their need for non-GAAP disclosure was lower and they only started once RegG was in place.⁴³ Finally, at around 17 percent of all cases the proportion of loss quarters for starters is significantly higher than that for continuers. For now, this is the only indicator, which suggests that presumably opportunistic motives drive starters' higher proportion of "implicit non-GAAP reporting", which the next section investigates in more detail.

3.6.3 Motives for "Implicit Non-GAAP Reporting" Post-RegG

We dedicate this section to exploring the motives that underlie "implicit non-GAAP reporting". Specifically, we try to disentangle whether a) the reporting of "implicit non-GAAP earnings" is consistent with presumably opportunistic motives and

⁴³ For instance, Lougee & Marquardt (2004) argue that firms with more intangible assets are more inclined to report non-GAAP earnings because their GAAP earnings tend to be less informative due to being distorted by charges relating to intangibles e.g. R&D expenditure.

b) whether these motives differ between starters and continuers. Therefore, we run Probit regressions that model managers' decision to disclose non-GAAP earnings implicitly as a function of proxies for opportunistic behaviour as well as several control variables. We use two different proxies for opportunistic motives. First and most importantly, we analyse to what extent "implicit non-GAAP earnings" are associated with the use of non-GAAP earnings to beat analyst earnings forecasts when at the same time GAAP earnings fall short of these expectations. Second, we treat the presence of GAAP losses as a proxy for potentially more opportunistic motives.

In particular, prior literature has often used our first proxy to infer opportunistic non-GAAP disclosures (e.g. Black et al., 2012). In fact, managers seem to use non-GAAP earnings routinely in order to beat analysts' earnings forecast if they cannot do so on a GAAP basis. For instance, Black & Christensen (2009) show that firms often adjust for recurring items like e.g. R&D expense or depreciation charges in order to beat analysts' forecast earnings. Doyle et al. (2013) even find that firms substitute analyst-beating non-GAAP adjustments with traditional forms of earnings management like accrual-based or real earnings management. Indeed, firms seem to be so fixated on analysts' earnings that some prior non-GAAP literature even justifies the use of I/B/E/S-provided analyst earnings as a substitute for actual management reported non-GAAP earnings (e.g. Heflin & Hsu, 2008; Kolev et al., 2008).⁴⁴ Nonetheless, when managers make opportunistic non-GAAP adjustments to beat analyst forecasts, they surely do not want investors to take notice. Since particularly the mandatory GAAP to non-GAAP reconciliation makes it easier to detect their behaviour (Doyle et al., 2013), they might wish to present non-GAAP earnings in a more subtle way. We reason that one such strategy could be via "implicit non-GAAP reporting".

Hence, from this perspective, we would expect a positive association between implicitly reported non-GAAP earnings and benchmark-beating behaviour. However, on the contrary, firms, which have good reason; i.e., an informative purpose to beat analyst earnings on a non-GAAP basis, might wish to be very transparent about it. Therefore, they might provide a detailed non-GAAP to GAAP reconciliation voluntarily. As a result, we do not have any ex ante expectation as to the presumed

⁴⁴ The argument typically goes that analysts and managers focus on the same benchmark earnings and that therefore, it is justified to use I/B/E/S provided analyst earnings instead of hand-collecting non-GAAP earnings actually communicated by managers.

association between the beating of analyst expectations and the use of “implicit non-GAAP reporting”.

Our second proxy for opportunistic non-GAAP disclosure, the presence of GAAP losses, is associated with similarly conflicting motives for non-GAAP disclosure. On the one hand, GAAP losses may point towards a limited informativeness of GAAP earnings, thus providing room for non-GAAP disclosures to address any potential shortcomings inherent to GAAP. On the other hand, (sustained) GAAP losses present a precarious issue to any management and may therefore be associated with incentives to release opportunistic disclosures. Hence, it is *ex ante* not clear how the presence of GAAP losses manifests itself with respect to non-GAAP disclosures and in particular, with which degree of transparency these non-GAAP disclosures are presented to investors. The only research we are aware of that speaks somewhat to this issue is by Leung & Veenman (2018) and Zhang & Zheng (2011), respectively. Results from the former suggests that non-GAAP disclosures by loss-making firms are indeed indicative of future performance. In particular, Leung & Veenman (2018) find this to be true, when firms convert GAAP losses to non-GAAP profits. By contrast, Zhang & Zheng (2011) expect GAAP losses to be associated with more informative non-GAAP disclosure characteristics; i.e., specifically, a better GAAP to non-GAAP reconciliation quality but their empirical analysis yields the opposite result. Thus, the association between GAAP losses and “implicit non-GAAP reporting” constitutes an interesting subject of analysis.

To test the association between managers’ choice to disclose non-GAAP earnings implicitly and our two proxies of opportunistic motives, we use Probit regressions. Specifically, we model *Implicit*, an indicator variable that takes the value of one when non-GAAP earnings are disclosed implicitly and zero otherwise, as a function of the two indicator variables *Beat_Analyst_GAAP_Fail* and *Loss*, respectively.⁴⁵ In order to distinguish between the importance of these proxies between starters and continuers, we further interact both variables with “*Starter*”, an indicator variable, which is equal to one if a firm is defined a starter firm. Thus, we obtain the variables *Starter_Beat_Analyst_GAAP_Fail* and *Starter_Loss*, respectively. We also add the variable *Starter* to the regression models in order to control for the differing baseline level of “implicit non-GAAP reporting” between starters and continuers as documented in section 3.6.2. In addition, we consider other potential reasons to engage in “implicit

⁴⁵ *Beat_Analyst_GAAP_Fail* takes the value of one if firms’ non-GAAP EPS beat analysts’ forecast earnings, while concurrent GAAP earnings fall short. *Loss* equals one in the presence of a GAAP loss and zero otherwise. See Appendix for variable definitions.

non-GAAP reporting”. Specifically, we take into account firm size (*Size*) as well as the number of non-GAAP adjustments (*#_Adjustments*). We define firm size as the natural logarithm of total assets and like e.g. Baumker et al. (2013) argue that it represents a proxy for firms’ overall disclosure policy.⁴⁶ With respect to the low number of adjustments, we reason that some managers might be tempted to move to “implicit non-GAAP reporting” simply for the sake of convenience when there is fewer adjustments. Hence, we expect a negative association between *#_Adjustments* and *Implicit*.

Moreover, we insert all firm characteristics and known determinants of non-GAAP disclosure analysed in section 3.6.2. The reason is that these variables might simultaneously drive the decision to disclose non-GAAP earnings as well as whether to disclose them implicitly. Further, we have seen in section 3.6.2 that there are differences in some of these firm characteristics between starters and continuers. Hence, their inclusion in our regression model accounts for any potential impact of these observed differences. Finally, we cluster all standard errors at the firm level in order to account for serial correlation within our independent variables.

We run the models with and without the inclusion of *Starter* as well as *Starter_Beat_Analyst_GAAP_Fail* and *Starter_Loss*, respectively. Hence, four different specifications result. However, for brevity the following equations only display the two expanded models; i.e., those that differentiate between starters and continuers via the introduction of the respective interaction terms:

$$\begin{aligned}
 (I) \text{ Probit } [Implicit_{it} = 1] \\
 &= \beta_1 Starter_{it} + \beta_2 BeatAnalystGAAPFail_{it} \\
 &+ \beta_3 StarterBeatAnalystGAAPFail_{it} + \beta_4 \#Adjustments_{it} + \beta_5 Size_{it} \\
 &+ \beta_6 ROA_{it} + \beta_7 SD_ROA_{it} + \beta_8 Special_Items_{it} + \beta_9 Tangibility_{it} \\
 &+ \beta_{10} Leverage_{it} + \beta_{11} Numest_{it} + \beta_{12} Loss_{it} \\
 &+ \beta_{13} Neg.\ Earnings\ Surprise_{it} + \epsilon_{it}
 \end{aligned}$$

⁴⁶ Baumker et al. (2013) argue that in general larger firms have better disclosure. However, since we do not have any priors on “implicit non-GAAP reporting” we do not have any ex ante expectation regarding the sign of the coefficient.

(II) Probit [$Implicit_{it} = 1$]

$$\begin{aligned}
 &= \beta_1 Starter_{it} + \beta_2 Loss_{it} + \beta_3 StarterLoss_{it} + \beta_4 \#Adjustments_{it} \\
 &+ \beta_5 Size_{it} + \beta_6 ROA_{it} + \beta_7 SD_ROA_{it} + \beta_8 Special_Items_{it} \\
 &+ \beta_9 Tangibility_{it} + \beta_{10} Leverage_{it} + \beta_{11} Numest_{it} \\
 &+ \beta_{12} Neg.\ Earnings\ Surprise_{it} + \epsilon_{it}
 \end{aligned}$$

Our coefficients of interest are those on *Beat_Analyst_GAAP_Fail* and *Loss* as well as *Starter_Beat_Analyst_GAAP_Fail* and *Starter_Loss*, respectively. Tables 22 and 23 display the results for equations (I) and (II), respectively.

Table 22: Results on Analyst Earnings Benchmarks

Dependent Variable: Implicit		
	(1) Baseline Model	(2) Expanded Model
Starter		0.438 (1.46)
Beat_Analyst_GAAP_Fail	-0.0749 (-0.52)	-0.186 (-1.07)
Starter_Beat_Analyst_GAAP_Fail		0.502* (1.72)
# Adjustments	-0.127** (-2.12)	-0.139** (-2.41)
Size	-0.00241 (-0.02)	0.0457 (0.30)
ROA	-10.95* (-1.65)	-11.06 (-1.63)
SD_ROA	-4.319 (-0.68)	-5.620 (-0.90)
Special_Items	12.20* (1.72)	12.85* (1.80)
Tangibility	0.672 (1.04)	0.388 (0.59)
Leverage	-0.111 (-0.12)	0.177 (0.18)
Numest	0.0000389 (0.00)	0.00200 (0.10)
Loss	0.291 (1.34)	0.280 (1.25)
Neg_Earnings_Surprise	-0.170 (-1.31)	-0.170 (-1.28)
N	637	637
Pseudo R ²	0.051	0.076

Notes: Table 22 displays the results of a Probit regression that models the probability of “implicit non-GAAP reporting” as a function of beating analyst earnings benchmarks and several control variables (Baseline Model). Further, in the second column, we disaggregate results for starters relative to continuers (Expanded Model). Ultimately, our coefficients of interest are those on “Beat_Analyst_GAAP_Fail” and “Starter_Beat_Analyst_GAAP_Fail”. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; t-statistics are in parentheses.

The first column of Table 22, shows results for our baseline model; i.e., when running equation (I) without *Starter* and *Starter_Beat_Analyst_GAAP_Fail*, respectively. The insignificant coefficient of *Beat_Analyst_GAAP_Fail* indicates that across all our 637 sample observations there is no association between managers' decision to beat analyst benchmarks on a non-GAAP basis and the reporting of "implicit non-GAAP earnings". By contrast, the second column of Table 22 holds the results for our expanded model, which differentiates between starters and continuers. It reveals that the insignificant association between *Beat_Analyst_GAAP_Fail* and *Implicit* only holds for continuers. However, at the same time the coefficient on *Starter_Beat_Analyst_GAAP_Fail* is positive and significant. We conclude that unlike continuers, starters are more likely to favour the reduced transparency of "implicit non-GAAP reporting" when their non-GAAP earnings beat analyst forecasts while their concurrent GAAP earnings fall short of these expectations. Hence, starters seem to engage in "implicit non-GAAP reporting" for opportunistic benchmark-beating motives.

The results from Table 23 point to a similar conclusion. In the baseline model, the coefficient on *Loss* is insignificant which means that overall the presence of GAAP losses is irrelevant for firms' decision to report "implicit non-GAAP earnings". However, the second column of Table 23 reveals that this is only true for continuers. In fact, for starters the presence of GAAP losses is positively associated with their decision to report non-GAAP earnings implicitly. Again, this suggests that, unlike continuers, starters' "implicit non-GAAP reporting" is opportunistically motivated.

In addition, we calculate the marginal effects for our two significant variables of interest *Starter_Beat_Analyst_GAAP_Fail* and *Starter_Loss*. For the former, these calculations yield a marginal effect of approximately 14.5 percent whereas the marginal effect for the latter stands at about 21.5 percent. This means that, all other variables constant,⁴⁷ for starter firms the beating of analyst earnings benchmarks on a non-GAAP basis and the presence of GAAP losses increases the probability of "implicit non-GAAP disclosure" by 14.5 and 21.5 percent, respectively. Hence, we conclude that despite the significance level of ten percent only, the association between starters' "implicit non-GAAP reporting" behaviour and the beating of analyst earnings benchmarks as well as the presence of GAAP losses is economically relevant.

⁴⁷ Calculation of the marginal effects assumes that the value of all other variables corresponds to their observed sample means; i.e., at means calculation.

Table 23: Results on GAAP Losses

Dependent Variable: Implicit		
	(1) Baseline Model	(2) Expanded Model
Starter		0.403 (1.43)
Loss	0.290 (1.33)	0.0884 (0.31)
Starter_Loss		0.743* (1.86)
# Adjustments	-0.127** (-2.12)	-0.142** (-2.47)
Size	-0.00425 (-0.03)	0.0427 (0.29)
ROA	-11.09* (-1.66)	-10.56 (-1.49)
SD_ROA	-4.296 (-0.68)	-6.947 (-1.08)
Special_Items	12.53* (1.76)	12.91* (1.82)
Tangibility	0.708 (1.10)	0.456 (0.68)
Leverage	-0.130 (-0.14)	0.115 (0.12)
Numest	0.0000956 (0.01)	0.000875 (0.05)
Neg_Earnings_Surprise	-0.173 (-1.35)	-0.193 (-1.46)
N	637	637
Pseudo R ²	0.051	0.079

Notes: Table 23 displays the results of a Probit regression that models the probability of “implicit non-GAAP reporting” as a function of the presence of GAAP losses and several control variables (Baseline Model). Further, in the second column, we disaggregate results for starters relative to continuers (Expanded Model). Ultimately, our coefficients of interest are those on “Loss” and “Starter_Loss”. The asterisks indicate applicable significance levels as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; t -statistics are in parentheses.

Finally, Table 22 and 23 reveal that the number of adjustments is indeed a relevant driver of the decision to disclose non-GAAP earnings implicitly. As expected, a higher number of adjustments reduces management’s propensity to disclose non-GAAP earnings implicitly and drives them towards more transparent non-GAAP disclosure. This could signal either a form of convenience or the expectation to “get away” with “implicit non-GAAP disclosure” more easily when the number of adjustments is low.

In addition, both specifications display a weakly positive association between *Special_Items* and “implicit non-GAAP disclosure”. Because special items are on average negative (refer to Table 16) the positive coefficient implies that firms are less likely to report non-GAAP earnings implicitly when they have special item costs but more likely to do so if there are special item gains. One interpretation would be that in

the presence of special item losses firms are happy to report non-GAAP earnings very clearly because vis à vis GAAP earnings these are improved. Yet, in the presence of special item gains, they do not want to direct investors' attention towards non-GAAP earnings because relative to GAAP earnings these are worse and therefore choose to report non-GAAP earnings implicitly. This interpretation would also be consistent with the finding from Baumker et al. (2013) that some firms choose not to disclose non-GAAP earnings in the presence of transitory gains; i.e., “implicit non-GAAP disclosure” could be a middle ground between not disclosing on the one hand and full disclosure on the other.

Further, in unreported robustness tests we find that our results are robust to a) changing the cut-off point of RegG adoption to after the second quarter of 2002⁴⁸ and b) winsorization of all continuous control variables at the 1st and 99th percentile. We also include industry fixed effects based on one-digit SIC codes which improves the significance level of *Starter_Beat_Analyst_GAAP_Fail* to the five percent level, yet leaves *Starter_Loss* insignificant. We conclude that at least the motive to beat analyst earnings benchmarks constitutes a determinant to starters' “implicit non-GAAP disclosure”.

3.7 Conclusion

In this paper, we explore the use and motives of a self-devised strategy, which we refer to as “implicit non-GAAP reporting”. Specifically, “implicit non-GAAP reporting” enables firms to report non-GAAP earnings while avoiding the applicable regulatory requirements of RegG. We find that a) many but not all managers seem to apply “implicit non-GAAP reporting” in order to avoid RegG's reconciliation requirement, b) it is more prevalent among starter than continuer firms and c) only for starters, it is associated with presumably opportunistic motives of beating analyst earnings forecasts as well as experiencing GAAP losses.

Our findings complement prior research that documents unintended consequences around the adoption of RegG as well as the persistence of opportunistic non-GAAP disclosures during the post-RegG time-period. The main contribution with respect to existing literature is that our proxy of “implicit non-GAAP reporting” captures a strategy interpretable as outright regulatory avoidance rather than just potentially misleading but not explicitly forbidden non-GAAP disclosure. Particularly the finding that firms which

⁴⁸ Some prior literature like e.g. Black et al. (2012 & 2017) uses the enactment of SOX in the second quarter of 2002 as the cut-off point for the pre-/post-RegG time-period. Hence, for robustness purposes we follow that literature here.

only started to report non-GAAP earnings after RegG exhibit an especially high proportion of “implicit non-GAAP reporting” and seem to do so for opportunistic motives, is at odds with our expectations. We conclude that the regulation itself must have encouraged these firms to report non-GAAP earnings in ways that run counter to its intentions. Hence, we interpret their behaviour as an unintended consequence of the regulatory intervention but stress that it is inconsistent with the idea of a safe harbour. Yet, we also caution that some of our results are weakly significant only (refer to section 3.6.3) and are derived from the purely explorative analysis of a relatively small sample.

Nonetheless, we believe that our findings might be indicative for future research and in practical terms could inform regulators around the world who ponder to emulate U.S. style non-GAAP regulation or have recently introduced a similar rule. In particular, this may apply to the recently adopted ESMA guidelines, as the nature of their reconciliation requirement is similar to the one introduced by RegG and circumvented through “implicit non-GAAP disclosure”.

3.8 References

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3.9 Appendix

Table 24: Variable Definitions

Variable	Description
# Adjustments	number of non-GAAP adjustments firms make
Beat_Analyst	dummy variable equal to one if reported non-GAAP earnings beat analyst forecasts
Beat_Analyst_GAAP Fail	dummy variable equal to one if reported non-GAAP earnings beat analyst forecasts while GAAP earnings fall short of the same analyst forecasts
Beat_GAAP	dummy variable equal to one if non-GAAP earnings beat GAAP earnings
Continuer	dummy variable equal to one if a firm reports non-GAAP earnings at least twice in each of the pre- and post-RegG time-periods
Emphasis	dummy variable equal to one if non-GAAP earnings are presented ahead of GAAP earnings; i.e., with greater emphasis
Implicit	dummy variable equal to one if firms report non-GAAP earnings implicitly
Leverage	long-term debt and current portion of long-term debt divided by total assets
Loss	dummy variable equal to one if firm exhibits a GAAP loss and zero otherwise
Neg. Earnings Surprise	dummy variable equal to one if earnings for the quarter are lower than during the same quarter a year ago
Non-Reporter	dummy variable equal to one if a firm does not report non-GAAP earnings at all or up to a maximum of one non-GAAP earnings figure during each of the pre and post-RegG time-periods
Numest	number of analysts following a firm
ROA	return on assets defined as net income divided by total assets
SD ROA	standard deviation of return on assets calculated on a rolling basis for the last 6 quarters
Size	logarithm of total assets
Special_Items	special items divided by total assets
Starter	dummy variable equal to one if a firm reports non-GAAP earnings at least twice only in the post-RegG time-period

Starter_Beat_Analyst_GAAP Fail	interaction between “Starter” and “Beat_Analyst_GAAP_Fail”
Starter_Loss	interaction between “Starter” and “Loss”
Stopper	dummy variable equal to one if a firm reports non-GAAP earnings at least twice during the pre-RegG time-period but does not report non-GAAP earnings at all or maximum once during the post-RegG time-period
Tangibility	net property, plant and equipment divided by total assets
Total Assets	total asset in million USD

4. Essay III

The Predictive Ability of S&P's Core Earnings: An In-Sample Out-Of-Sample Estimation Approach

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4.1 Abstract

This study examines the respective ability of GAAP earnings and Standard & Poor's (S&P) so-called Core Earnings to predict future operating cash flow. Particularly, a more realistic and relevant out-of-sample estimation approach complements the in-sample analysis commonly used in prior literature. In the in-sample setting, S&P's Core Earnings are more apt at predicting future cash flows. However, in the out-of-sample setting differences between GAAP earnings and Core Earnings vanish; i.e., both metrics are equally good or bad at predicting future cash flows. This result highlights the limited usefulness of earnings figures, which are adjusted according to a standardised methodology.

Keywords: S&P Core Earnings, predictive ability, non-GAAP / adjusted earnings

JEL Classification: G17, M41

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4.2 Introduction

One important characteristic of decision-useful accounting information is that it has predictive value, confirmatory value or both (e.g. FASB 2010; IASB 2015). Since valuation approaches are typically built around the discounting of expected future cash flows, any accounting figure that enhances the accuracy of (operating) cash flow forecasts is of particular interest to practitioners (e.g. management or investors) and academics alike. Not surprisingly, there is a long-standing body of accounting literature, which analyses the relative predictive ability of earnings and cash flow measures. Generally, this literature asserts that earnings calculated in accordance with Generally Accepted Accounting Principles (GAAP) are a better predictor of future cash flows than past cash flows (e.g. Greenberg, Johnson & Ramesh, 1986; Dechow, Kothari & Watts, 1998). Further, disaggregation of GAAP earnings into different accrual components seems to improve predictive ability (e.g. Barth, Cram & Nelson, 2001).

However, several issues might impair the predictive ability of GAAP earnings. Specifically, GAAP earnings are prone to earnings management, they are “one size fits all” and often include non-recurring items. In principle, manager-adjusted, so-called non-GAAP earnings could alleviate many of these problems but potentially feature a severe credibility problem. In 2002, Standard & Poor’s (S&P) capitalised on its status as an impartial organisation and set out to combine the strengths of GAAP and non-GAAP earnings by releasing so-called Core Earnings, its own adjusted earnings metric. Core Earnings are calculated by making standardised adjustments to GAAP earnings in order to measure companies’ core operating performance (S&P, 2002a). To the extent that this approach indeed succeeds in eliminating non-recurring items, it should therefore yield an earnings figure more apt at predicting future performance than GAAP earnings. Thus, it is per se an interesting question to test whether S&P’s Core Earnings have indeed lived up to this expectation. However, these days it also bears renewed relevance as standard setters like the International Accounting Standards Board (IASB), as part of its newly introduced “Primary Financial Statements” project, are contemplating to bring non-GAAP earnings measures onto the financial statements. There is a current discussion on what particular direction this initiative might take. One potential avenue by the IASB is to require firms to present a board-defined, standardised measure of operating / recurring profit on their financial statements (e.g. Kabureck, 2017). Given the inherent similarity of such an approach with the underlying idea of Core Earnings, new insights from this study on the predictive ability of S&P’s Core Earnings may contribute to the current debate.

Prior literature examining S&P's Core Earnings is scarce and has yielded conflicting results. In fact, while there is literature that finds Core Earnings to be more value relevant than GAAP earnings (Albring, Cabán-García & Reck, 2010; Wieland, Dawkins & Dugan, 2013; 2014), Robinson, Dawkins, Wintoki & Dugan (2008) is so far the first and only paper in which S&P's Core Earnings are specifically tested for their predictive ability. Their counterintuitive result suggests that in terms of predictive ability, S&P's Core Earnings are inferior to GAAP earnings. However, Robinson et al. (2008) only examine predictive ability in an in-sample setting and over a relatively short time-period. Therefore, this paper takes their finding as a vantage point to first comprehensively re-examine predictive ability in an in-sample setting and second, complement the analysis with an out-of-sample test, which is novel in this setup. In contrast to Robinson et al. (2008), for the in-sample analysis I find Core Earnings to have better predictive ability than GAAP earnings. However, in the out-of-sample setting the difference vanishes; i.e., both metrics are equally good or bad at predicting future cash flows.

The next section provides background on S&P's Core Earnings whereas section 4.4 introduces related literature and develops the hypothesis. Section 4.5 describes the methodology and section 4.6 presents the data as well as some descriptive statistics. Finally, section 4.7 discusses the results and section 4.8 concludes.

4.3 Background

Non-GAAP earnings are earnings, which “either exclude or include amounts that are included or excluded in the most directly comparable GAAP measure” (SEC, 2002). Although the term non-GAAP earnings typically refers to adjusted earnings calculated and communicated by managers, this definition highlights that the universe of non-GAAP earnings is much larger. In fact, also S&P's Core Earnings exclude or include amounts included or excluded in GAAP earnings and therefore fall within the scope of this definition. Thus, Core Earnings and potentially other database-provided earnings constitute a special type of non-GAAP earnings. Their unique feature is their lack of credibility issues, which naturally come with manager-communicated non-GAAP earnings.

The launch of Core Earnings in 2002 coincided with a difficult time for corporate financial reporting and the accounting profession in general. On the one hand, high-profile corporate bankruptcies and accounting scandals that involved firms like Enron or WorldCom have contributed to an erosion of trust in GAAP earnings. On the other hand, the increasing proliferation of manager-reported non-GAAP earnings nurtured

uncertainties about companies' true earnings power. Yet, the Sarbanes-Oxley Act (SOX) had not yet been signed into law and regulation of manager-adjusted non-GAAP measures / earnings (Regulation G and Item 10(e) of Regulation S-K) was still to come.

Thus, S&P's Core Earnings were greatly praised upon their initial release. For instance, Peter Coy (2002), the economics editor of Bloomberg Businessweek, hailed them because they "*would make it far more difficult for companies to hoodwink investors by playing games with their earnings*". That, he argues, would ultimately ensure valuations that are more accurate. Nonetheless, there was also critique. Schiff & Schiff (2003) point out that Core Earnings are not company-specific so that they do not constitute an appropriate basis to forecast earnings or cash flows. In addition, they particularly lament the exclusion of goodwill impairment, which they deem to be a recurring charge that merely reflects a company's strategy to grow via acquisitions.

Table 25 presents S&P's methodology to calculate its Core Earnings metric. The methodology was first laid out in a white paper called "Measures of Corporate Earnings" and dated July 2001 but published as a revised version in May 2002 (S&P, 2002a). In October 2002, S&P published further refinements in a document called "Standard & Poor's Core Earnings Technical Bulletin" (S&P, 2002b). Table 25 relates to this latest version of S&P's Core Earnings.

Table 25: Calculation of S&P Core Earnings

GAAP Earnings

- Employee Stock Option Expense
- Gains / Losses from Asset Sales
- + Goodwill Impairment Charges
- Settlement & Litigation Proceeds
- Reversals of Prior Year Charges and Provisions
- + Post-Retirement Cost
- + Pension Interest Cost
- = **S&P Core Earnings**

The calculation of Core Earnings follows a standardised approach according to which a total of seven charges and gains is either added back to or subtracted from GAAP earnings. Certainly, an important modification from GAAP at the time, stock option expense was subtracted from earnings. However, with the adoption of Financial

Accounting Standard (FAS) 123, effective as of 15 June 2005, stock option remuneration became an expense according to GAAP. Thus, an important difference between GAAP earnings and Core Earnings disappeared.

4.4 Related Literature & Hypothesis Development

Literature on non-GAAP earnings is vast. However, that only holds true with respect to manager-reported non-GAAP earnings. By comparison, the literature on S&P Core Earnings, which are at the heart of this paper, is tiny. In fact, to the best of my knowledge, I am only aware of four papers that explicitly study this subject: 1) Albring et al. (2010), 2) Robinson et al. (2008), 3) Wieland et al. (2013) as well as 4) Wieland et al. (2014). Both Albring et al. (2010) as well as Wieland et al. (2013; 2014) exclusively employ a value-relevance approach and find that Core Earnings are more value-relevant than GAAP earnings. Wieland et al. (2013; 2014) also split the sample into a pre- and post-FAS 123 period and find that even after the incorporation of employee option expense into GAAP earnings, Core Earnings are more value-relevant than GAAP earnings. By contrast, Robinson et al. (2008) find that Core Earnings are less value relevant than GAAP earnings but that the individual adjustments provide some incremental value relevance.⁴⁹

In addition, Robinson et al. (2008) are the only ones who examine the predictive ability of GAAP earnings relative to S&P's Core Earnings. In two separate regressions, they examine the relationship between future cash flows and both earnings metrics respectively. Subsequently, they compare the adjusted R^2 of the regression models using the Vuong Test. Similar to their results in the value-relevance setting, they find that the model based on aggregate GAAP earnings features a higher adjusted R^2 and consequentially, a higher degree of predictive ability than the one based on Core Earnings. Again, they document that taking into account the individual adjustments provides incremental predictive ability. This result is counterintuitive to the extent that Core Earnings are intended to remove non-recurring and non-operating items from GAAP earnings so that they are more apt at predicting future operating cash flow. While Core Earnings do not capture factors such as earnings management via revenue recognition, it is still hard to conceive how they can actually have a lower predictive ability than GAAP earnings. This makes the finding by Robinson et al. (2008) so

⁴⁹ Adjustments that they find to exhibit incremental value relevance beyond GAAP earnings are stock option expense, gains and losses from asset sales, goodwill impairment charges and pension costs.

puzzling, since their result implies that the adjustments made by S&P destroy predictive ability.⁵⁰

In addition, the results of Robinson et al. (2008) are also at odds with the results obtained by Albring et al. (2010) and Wieland et al. (2013; 2014). One weakness is that their analysis of predictive ability rests on a simple in-sample analysis only. In the real world, investors are not interested in predicting cash flows ex post; i.e., in-sample. Instead, they focus on finding out which metric serves as the best predictor of future cash flows in an untested sample; i.e., out-of-sample tests are ultimately the most important ones for them. As a result, out-of-sample predictions of future cash flow form part of the extant accounting literature (e.g. Finger, 1994; Kim & Kross, 2005). However, these studies focus on a comparison of forecast accuracy between cash flow- and earnings-based predictions rather than the relative performance of two different earnings measures. In fact, I am not aware of any study that compares the predictive ability of GAAP earnings to non-GAAP earnings and in particular, none related to S&P Core Earnings in an out-of-sample setting.

Therefore, this paper examines the predictive ability of S&P Core Earnings in an in-sample as well as an out-of-sample setting. Overall, the expectation is that in both settings Core Earnings predict future cash flow better or at least equally well as GAAP earnings do. Nonetheless, I acknowledge that factors for which S&P does not adjust (e.g. earnings management via revenue recognition) might drive the predictive ability of Core Earnings. Yet, in such a case, the expectation would be for Core Earnings to be of equal rather than worse predictive ability than GAAP earnings. As a result, I posit the following hypothesis:

Hypothesis: The predictive ability of S&P Core Earnings with respect to future operating cash flow is either higher or equal to the one of GAAP earnings.

4.5 Methodology

First, I replicate the in-sample analysis carried out by Robinson et al. (2008). I estimate the following two OLS regressions designed to explain future operating cash flow as a function of current period earnings. Whereas Model (I) explains future operating cash flow per share (*OCF*) by current GAAP EPS, Model (II) describes cash flow as a function of S&P Core Earnings per share. To assess which metric is more apt at predicting future cash flows, I compare the adjusted R^2 from the two models.

⁵⁰ Although Robinson et al. (2008) only report a marginally different R^2 as proxies for the respective predictive ability of GAAP and S&P Core Earnings, the difference is still significant at the 1% level.

Generally, the model with the higher R^2 is said to have superior predictive ability over the other.

$$(I) \quad OCF_{it+1} = \alpha + \beta GAAP_EPS_{it} + u_{it}$$

$$(II) \quad OCF_{it+1} = \alpha + \beta S\&P_EPS_{it} + u_{it}$$

For the out-of-sample estimation approach, the first step is to split the sample into two roughly equal time-periods, whereby one constitutes the in-sample; i.e., training time-period and the other the out-of-sample; i.e., estimation time-period. Next, I run both regression models on the in-sample portion of the data only. I use the estimated coefficients to calculate forecasts of operating cash flow per share using the GAAP and S&P Core Earnings realisations from the out-of-sample time-period. Thus, for the out-of-sample time-period I obtain predicted values of operating cash flow per share based on S&P Core Earnings and GAAP earnings, respectively. The difference between the actual operating cash flow and the respective operating cash flow estimates, scaled by the actual operating cash flow, yields the forecast errors as shown by equations (III) and (IV):

$$(III) \quad GAAP \text{ Forecast Error}_{it} = (OCF_{it} - GAAP \text{ Estimated } OCF_{it}) / OCF_{it}$$

$$(IV) \quad S\&P \text{ Forecast Error}_{it} = (OCF_{it} - S\&P \text{ Estimated } OCF_{it}) / OCF_{it}$$

To infer which of the two earnings metrics provides the relatively better estimate of operating cash flow in an out-of-sample setting, I run a t-test to compare the mean forecast errors.

4.6 Data & Descriptive Statistics

First, I select all annual data for the years 2001 to 2012 from the entire Compustat North America database. Subsequently, I remove financial firms as well as firms that report in CAD rather than USD. Next, I delete firm-years for which there are 1) no observations for either S&P Core Earning or GAAP earnings, 2) missing or zero total assets, 3) negative total equity or a negative return on equity greater than minus 100% or 4) negative or zero sales. This leaves a starting sample of 47,041 firm-years pertaining to 8,633 unique firms. Finally, firms are required to have observations for every year of the 12-year time-period so that a balanced panel results.⁵¹ This reduces the final sample to 4,224 firm-years pertaining to 352 unique firms.

⁵¹ This ensures that the same firms are contained in the in-sample as well as the out-of-sample time-period.

I assign the years 2001 to 2006 as the in-sample period whereas the years 2007, 2010, 2011 and 2012 constitute the out-of-sample time-period. The two crisis years 2008 and 2009 are dropped from the out-of-sample period because of concerns that they might cause the model predictions, which are calibrated on the pre-crisis training set, to be too imprecise.

Table 26 contains summary statistics on all the variables collected from Compustat. Panel A displays the (S&P) earnings per share and operating cash flow per share variables of interest whereas Panel B shows some firm characteristics. In order to minimise the potential impact of outliers all variables are winsorized at the 1st and 99th percentile.

Table 26: Summary Statistics

	Mean	Sd	Min	Max	p5	Median	p95
Panel A: Earnings & Cash Flow Variables							
GAAP_EPS	0.763	1.875	-5.420	9.200	-1.560	0.460	3.840
SP_EPS	0.743	1.778	-4.250	9.390	-1.400	0.430	3.720
OCF	1.997	2.665	-2.108	14.05	-0.475	1.169	7.369
Panel B: Firm Characteristics							
Total_Assets	4901.2	14594.5	4.981	97054.4	12.76	422.4	26075.9
Intangibles	0.150	0.169	0	0.662	0	0.0845	0.507
Equity	0.563	0.211	0.121	0.949	0.199	0.575	0.885
ROA	0.0208	0.121	-0.532	0.293	-0.211	0.0364	0.179
ROE	0.0450	0.199	-0.736	0.566	-0.342	0.0738	0.298
Asset_Turnover	1.100	0.794	0.0666	4.751	0.303	0.892	2.664
N	4,224						

*Notes: Panel A of Table 26 displays summary statistics on the earnings and cash flow variables whereas Panel B shows summary statistics on selected firm characteristics. The variables are defined as follows: **GAAP_EPS** = earnings per share according to GAAP, **SP_EPS** = S&P Core Earnings per share, **OCF** = operating cash flow per share, **Total Assets** = total assets in million USD, **Intangibles** = intangible assets as a percentage of total assets, **Equity** = total equity as a percentage of total assets, **ROA** = return on assets, **ROE** = return on equity, **Asset_Turnover** = sales divided by total assets*

Table 27 displays the Pearson correlations between earnings per share calculated according to GAAP as well as S&P methodology and operating cash flow per share. As expected, all of the variables feature a high positive correlation among each other; i.e., higher earnings are typically associated with higher cash flows. However, it is noteworthy that the correlation between S&P Core Earnings (*SP_EPS*) and current operating cash flows per share is higher than between GAAP earnings and the same cash flow metric. Therefore, S&P Core Earnings have a stronger current cash flow association than do GAAP earnings, which is in line with my hypothesis.

Table 27: Correlation Analysis

	OCF	GAAP_EPS	SP_EPS
OCF	1		
GAAP_EPS	0.588***	1	
SP_EPS	0.629***	0.941***	1
N	4,224		

*Notes: Table 27 contains Pearson correlation coefficients between operating cash flow per share (OCF), GAAP earnings per share (GAAP_EPS), and S&P Core Earnings per share (SP_EPS). The asterisks indicate whether the correlations are significant at the * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ level.*

4.7 Results

4.7.1 In-Sample Analysis

Table 28 presents the results for the in-sample estimation approach. As expected both GAAP as well as S&P Core Earnings exhibit a positive and highly significant association with respect to future operating cash flows. However, the magnitude of the association is greater with respect to S&P Core Earnings as compared to GAAP earnings. For example, in the full sample period between 2001 and 2012 the coefficients show that for every Dollar increase in earnings per share, future operating cash flow per share will increase by approximately 78 cents in the case of S&P Core Earnings and by 68 cents in the case of GAAP earnings. Further, the relevant metric to assess predictive ability, adjusted R^2 , is greater in the case of S&P Core Earnings (39.1%) than GAAP earnings (35.6%). The difference in adjusted R^2 is significant as determined by the Vuong Test (z-statistic: 3.45, p-value < 0.01). This finding suggests that for the 2001 to 2012 time-period, S&P Core Earnings have higher predictive ability than GAAP earnings.

I further rerun the model for the same sample period as Robinson et al. (2008); i.e., for the years 2001 to 2005. Also during this time-period, the predictive ability as measured by adjusted R^2 is higher for S&P Core Earnings than for GAAP earnings (Vuong z-statistic of 3.86, p-value < 0.01). In additional unreported robustness checks, the regressions are run year by year and it turns out that S&P Core Earnings are more suited to predict operating cash flow in every year except for 2002. Further, all results hold even when dropping the requirement that observations need to be available in every year. The findings are in line with the hypothesis that S&P Core Earnings are relatively more apt at predicting future operating cash flow than GAAP earnings and challenge the results of Robinson et al. (2008).

Table 28: In-Sample Analysis of Predictive Ability

	Predicted Sign	Years: 2001 - 2012		Years: 2001 – 2005	
		(1)	(2)	(3)	(4)
		OCF	OCF	OCF	OCF
GAAP_EPS _{t-1}	+	0.677*** (16.84)		0.648*** (8.47)	
SP_EPS _{t-1}	+		0.782*** (18.95)		0.698*** (8.72)
_cons		0.725 (1.21)	0.627 (1.42)	2.017*** (2.94)	1.276* (1.89)
Time FE		Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes
Adjusted R ²		0.356	0.391	0.311	0.323
N		3,872	3,872	1,408	1,408
Vuong (z-statistic)		3.45***		3.86***	

Notes: Table 28 shows the results for the in-sample analysis. In column (1) operating cash flow per share (OCF) is regressed on prior-period GAAP earnings per share (GAAP_EPS_{t-1}). In column (2) operating cash flow per share (OCF) is regressed on prior-period S&P Core Earnings per share (SP_EPS_{t-1}). Similar regression results are displayed in column (3) and column (4) though only for the time-period 2001 to 2005. The respective predictive ability is captured by the adjusted R². The Vuong Test is a likelihood ratio test, which compares the fit of models (1) and (2) for the respective time-periods. For example, the z-statistic of 3.45 indicates that during the 2001 to 2002 time-period the model based on S&P Core Earnings provides a significantly better fit than the GAAP earnings-based model. The asterisks indicate significance of the relationships at the *p<0.1, **p<0.05 and ***p<0.01 levels; t-statistics are in parentheses.

4.7.2 Out-Of-Sample Analysis

Table 29 displays descriptive statistics for the resulting out-of-sample estimations. More specifically, it shows the distribution of the actual; i.e., realised operating cash flows (OCF) as well as the predicted operating cash flows where prior-period GAAP earnings (OCF_GAAP_Prediction) and prior-period S&P Core Earnings (OCF_S&P_Prediction) constitute the basis for the respective predictions. Actual mean operating cash flow, as the figure of interest, is underestimated by GAAP-based predictions by approximately 21 cents as well as S&P-based predictions by approximately 10 cents per share. However, the distribution of (estimated) cash flows is skewed, particularly to the upside.

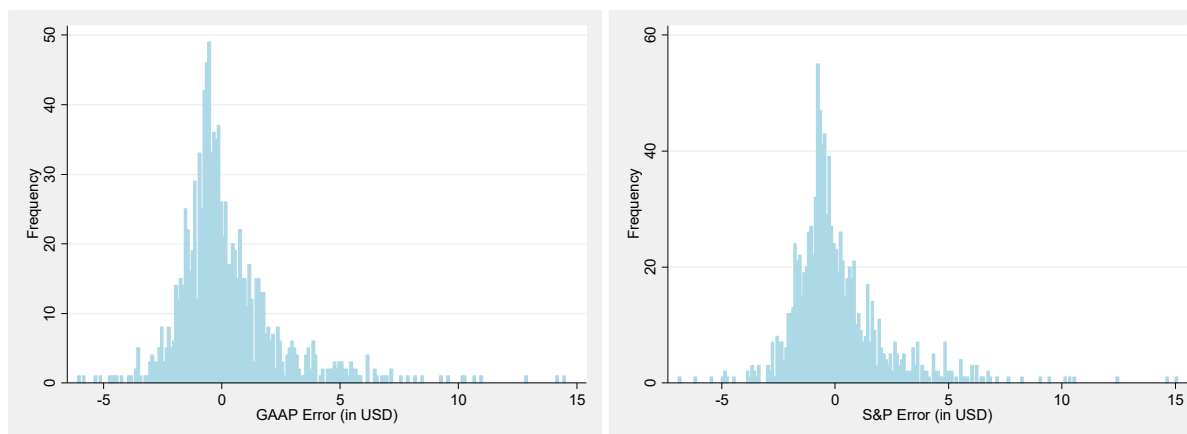
Table 29: Out-Of-Sample Predictions vs. Actual Operating Cash Flow

	Mean	Sd	Min	Max	p5	Median	p95
OCF	2.193	2.872	-2.108	14.05	-0.439	1.260	8.388
OCF_GAAP_Prediction	1.982	1.680	-3.986	9.281	0.0159	1.682	5.085
OCF_S&P_Prediction	2.098	1.683	-3.325	9.726	0.209	1.761	5.312
<i>N</i>	1,056						

Notes: Table 29 shows descriptive statistics for the out-of-sample group. The first row contains the actual operating cash flow per share (OCF), the second row contains operating cash flow per share predicted based on prior-period GAAP earnings per share (OCF_GAAP_Prediction) and the third row displays predicted operating cash flow per share based on prior-period S&P Core Earnings per share (OCF_S&P_Prediction).

This is also reflected in the frequency distribution of the Dollar differences between the actual operating cash flow per share (*OCF*) and the respective predictions based on GAAP earnings (*OCF_Prediction_GAAP*) and S&P earnings (*OCF_Prediction_S&P*), both displayed in Figure 10. While the mean peaks around zero, the particularly long tail to the right implies that in some instances the model severely underestimates the actual operating cash flow per share. According to the methodology measuring forecast accuracy as specified in equations (III) and (IV), this results in relatively high positive deviations.

Figure 10: Frequency Distribution of Estimation Errors (in USD per share)



To test my hypothesis, I compare the error means calculated according to equations (III) and (IV). Table 30 shows the results of the corresponding t-test: On average, predictions based on GAAP earnings are off by approximate 39% whereas predictions based on S&P Core Earnings are off by a slightly lower 36.6%. Nonetheless, the result from the t-test indicates that in statistical terms the respective errors do not

differ. Thus, in contrast to the in-sample analysis, in an out-of-sample setting, GAAP earnings and S&P Core Earnings are equally good or bad predictors of future cash flows.

Table 30: Comparison of S&P Core Earnings vs. GAAP Estimation Errors

Variable	Obs.	Mean	Std. Err.	Std. Dev	[95% Conf. Interval]	
GAAP Error	1,056	.389527	1.691193	54.95725	-2.928957	3.708011
S&P Error	1,056	.3662619	1.862866	60.536	-3.289083	4.021607
Diff.	1,056	.023265	.2026897	6.586636	-3.744558	.4209858
					t = 0.1148	
					p = 0.9086	

Notes: Table 30 shows the estimation errors for the out-of-sample group. Errors are calculated as the difference between actual operating cash flow per share (OCF) and the respective predictions based on GAAP and S&P Core Earnings scaled by actual OCF (refer to equations III and IV). Finally, Diff displays the distribution of the difference in the means of GAAP Error and S&P Error.

These results on the relative predictive ability of S&P Core Earnings and GAAP earnings also hold when subjected to several unreported robustness tests. These include: 1) the inclusion of the two crisis years 2008 and 2009 in the out-of-sample period, 2) the variation of the in-sample period by plus / minus one year, 3) the calculation of errors in absolute terms rather than positive and negative deviations, 4) the inclusion of lagged operating cash flow as an explanatory variable in the regression models as well as 5) the elimination of the requirement for a balanced dataset.

4.8 Conclusion

In this paper, I examine the respective ability of GAAP earnings and S&P Core Earnings to predict future operating cash flow using both an in-sample comparison of adjusted R^2 as well as an out-of-sample analysis. I hypothesise and confirm that in terms of predicting future cash flows S&P Core Earnings are always better than or equally good as GAAP earnings. In fact, for the in-sample analysis I find that S&P Core Earnings have higher predictive ability than GAAP earnings. This finding is at odds with the worse predictive ability of S&P Core Earnings documented by Robinson et al. (2008) but supports evidence from market-based value relevance tests found in both Albring et al. (2010) as well as Wieland et al. (2013; 2014).

However, in the out-of-sample setting, I do not find any differential predictive ability of S&P Core Earnings and GAAP earnings. Most likely this result is driven by certain attributes like e.g. potential earnings management via revenue recognition (for which S&P's adjustments do not control) or through the increasing assimilation of S&P Core Earnings and GAAP results over time e.g. through the incorporation of option expense into the latter. Thus, the key implication from this finding is that although the

explanatory power of S&P Core Earnings is superior to GAAP earnings, this advantage does not translate into higher forecast accuracy in the out-of-sample setting.

To the extent that these results are transferable to a non-U.S. setting, they might provide a useful insight with respect to the IASB's ongoing "Primary Financial Statements" project. Under this project, non-GAAP earnings and potentially a standardised board-defined earnings measure are to be included on companies' financial statements. Nonetheless, more research, particularly on which earnings sub-components exactly drive out-of-sample forecast accuracy, is certainly needed.

4.9 References

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Curriculum Vitae

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Publications / Working Papers:

- Dinh, T.; Thielemann, F.: ESMA Guidelines on Alternative Performance Measures – Möglichkeiten und Herausforderungen bei der Darstellung von Pro-Forma-Kennzahlen. In: IRZ Zeitschrift für Internationale Rechnungslegung (2016), 10, 413-418.
- Thielemann, F. (2018). The Predictive Ability of S&P's Core Earnings: An In-Sample Out-Of-Sample Estimation Approach. *Management Accounting Quarterly*, 19(3), 20-27.
- Thielemann, F.; Dinh, T. & Kang, H. (2019). Non-GAAP Reporting and Debt Market Outcomes: Evidence from Regulation G. *Schmalenbach Business Review*, 71(2), 169-203.
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