CAN DISAGGREGATION IN THE FINANCIAL STATEMENTS ENHANCE THE

CREDIBILITY AND QUALITY OF NON-GAAP DISCLOSURES?

A Dissertation

by

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ABSTRACT

       Given the recent interest of standard-setters in financial statement disaggregation,

I investigate the open question of whether disaggregated information has confirmatory

value or results in information overload. Specifically, I utilize the non-GAAP setting to

investigate whether disaggregated information enhances the credibility of management's

voluntary disclosures. I find that reporting non-GAAP earnings is associated with greater

disaggregation in the firm's financial statements, whereas aggressive non-GAAP

reporters are less likely to disaggregate financial information. This suggests that

managers recognize the confirmatory value of more precise and verifiable information in

the annual report and increase disaggregation to enhance the credibility of private

information disclosures, such as non-GAAP earnings. Additionally, I find evidence that

disaggregation increases the quality of non-GAAP reporting, which further highlights

that firms which provide more transparent financial reporting are more consistent in the

presentation of non-GAAP earnings.

DEDICATION

       I dedicate this manuscript to the amazing people in my life who made this possible. First, my husband, who never once hesitated and said "yes, absolutely" when I wanted to uproot our family in pursuit of a PhD and a new career as a university professor. Second, my parents, who uprooted their lives to move to a small college town and play Grandma and PawPaw to two adorable grandsons. To my two sons, who made sure I was really committed to scholarly pursuit by testing my abilities to read and think critically on very little sleep. And finally, to my cohort, friends, mentors, and fellow doctoral students who went through this program with me every single day and filled my days with laughter, comradery, and several glasses of wine.

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1. INTRODUCTION

Too much aggregation in the presentation of financial statements remains a long-standing concern of standard-setters, users, and financial reporting preparers.[1] The continued interest of regulators and financial statement users has placed the topic of mandating the disclosure of greater detail in a firm's audited financial statements on the technical agenda of the Financial Accounting Standards Board (FASB) (Golden 2017). Supporters of increased disaggregation suggest that it provides a mechanism for communicating verifiable performance information to stakeholders that would be useful in their valuation of a firm (Turner 2000). However, critics note that disaggregation provides little benefit in view of the increased costs associated with collecting, refining, and communicating such detailed information and that it may hinder investors' ability to efficiently process a firm's performance information (Bloomfield 2002; Lawrence 2013; FASAC 2013). Prior literature highlights that more precise and detailed information decreases information asymmetry with stakeholders, but does not address the open question as to how disaggregated reporting interacts within a firm's information environment (Fairfield et al. 1996; Libby and Brown 2012; Chen et al. 2015; Heflin et al. 2015; Casey et al. 2018). In this study, I investigate how disaggregated information affects firm disclosure policy, whether managers use disaggregation in the financial

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[1] The FASB goes so far as to emphasize that aggregation of financial information is one of the "primary criticisms of how financial information is presented today in the financial statements – primarily that information is not presented consistently nor is it sufficiently disaggregated" and that aggregation can adversely impact the decision usefulness of reported financial information (FASB 2008, 3).

statements to clarify or obfuscate financial performance information, and whether

performance reporting is improved with the disclosure of more granular and refined

financial information.

It seems intuitive that more information is always better. However, the

theoretical literature offers mixed conclusions regarding whether more granular

information or more aggregate reporting is optimal (Dye and Sridhar 2004; Amir et al.

2014; Ebert et al. 2016).[2] On the one hand, Lev (1968) argues that financial statement

users would strictly prefer to have finer detail in order to make informed investment

decisions. However, the FASB cautions against providing too much detail in financial

reporting. Concept Statement No. 5 states that the purpose of financial reporting is to

simplify, condense, and aggregate data in an orderly manner, because "financial

statements convey information that would be obscured from most users if great detail,

such as descriptions of each transaction or event, were provided" (FASB 1984, 16).

Whereas too little information can obscure information relevant to investment decisions,

too much detailed information can fail to efficiently convey any information at all

(Hirshleifer and Teoh 2003).

I examine an emerging characteristic of financial reporting quality, financial

statement disaggregation, in a setting where the credibility and reliability of

management's voluntary disclosures has been called into question: non-GAAP reporting.

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[2] The conflict in the theoretical literature hinges on how each model operationalizes disaggregated
reporting and the mechanism for misrepresentation. Dye and Sridhar (2004) suggest that relying on more
detailed reporting is prepared by management subject to greater managerial bias that would be alleviated
with more aggregate reporting, whereas the models in Amir et al. (2014) and Ebert et al. (2016) assert that
the relationships between underlying accounts enhance the decision usefulness of the more detailed
information thus constraining managerial manipulation.

Financial reporting aims to provide investors and creditors with useful information so they can make rational investment and credit decisions. Although the incremental information presented in the historical financial statements may be limited, research shows that higher-quality financial reporting provides more useful information for stakeholders and enhances the credibility of managers' voluntary disclosures of private information (Ball et al. 2012; Drake et al. 2016).

Currently, non-GAAP reporting remains the topic of numerous comment letters, Securities Exchange Commission (SEC) guidance (e.g., Compliance and Disclosure Interpretations), and regulatory enforcement, highlighting the fact that the market regulators and standard-setters continue to be concerned about the reliability and credibility of non-GAAP measures. The recent addition of the disaggregation project to the FASB's technical agenda suggests a potential solution to the credibility concerns: increasing the level of verifiable information reported in the financial statements. To the extent that disaggregation enhances the credibility of managers' disclosures of private information, we would expect its value to be most evident in settings where credibility is under scrutiny. Thus, to test whether disaggregation provides confirmatory information to the market, I examine the relationship between non-GAAP reporting and disaggregated financial information, that is, whether disaggregation increases the quality and reliability of non-GAAP earnings through improved credibility and reduced incentives to misreport performance through non-GAAP reporting.

First, I investigate the role of disaggregation in enhancing the reliability and credibility of managers' disclosures of private information. Specifically, I look at the

voluntary disclosure of non-GAAP earnings information to the market. By committing to a higher level of external verification through disaggregation, managers can enhance the credibility of voluntary disclosures, such as adjusted non-GAAP earnings (referred to also as "proforma earnings"). I find that the decision to report non-GAAP earnings is positively influenced by the level of disaggregation found in the firm's financial statements. The positive association confirms that disaggregated financial information has confirmatory value in the non-GAAP setting and managers are utilizing complementary disclosure channels to signal the credibility and truthfulness of the information reported.

Second, I examine the value of disaggregation in disciplining managerial opportunism. Prior theoretical literature draws conflicting conclusions as to whether disaggregation is a mechanism that constrains or magnifies managerial incentives to manipulate earnings: disaggregation either enhances the quality and credibility of voluntary disclosures of information or is a means of obfuscating true performance (Dye and Sridhar 2004; Amir et al. 2014). I find that the level of financial statement disaggregation is associated with a reduction in aggressive non-GAAP reporting. These results suggest that managers understand that more detailed financial information provides investors with a clearer picture of the firm's performance and that managers who have a history of reporting more disaggregated financial statement information are less likely to use non-GAAP earnings to meet or beat analysts' benchmarks.

Finally, I explore whether the quality of non-GAAP information is enhanced when firms commit to the disclosure of disaggregated information in the financial

statements. I find that the items excluded from the firm's non-GAAP earnings are indeed more transitory, representing higher quality non-GAAP reporting, when managers disaggregate financial information in the historical financial statements. These findings suggest that managers alter the level of disaggregation reported in the historical financial statements to convey confirmatory information to stakeholders.

The results of my primary analyses confirm the predicted association between financial statement disaggregation and characteristics of non-GAAP reporting. In additional analyses, I further investigate the management's decision to change both the level of disaggregation and the initiation and discontinuation of non-GAAP reporting. I find that my predictions hold in both scenarios. An increase in financial statement disaggregation is positively (negatively) associated with the decision to report (aggressive) non-GAAP earnings. Similarly, an increase in the level of financial statement disaggregation is positively (negatively) associated with the likelihood that a firm initiates (discontinues) non-GAAP reporting in the current period.

In order to address the endogeneity inherent in my setting, I retest my analyses utilizing two methods that specifically address the endogeneity concerns: simultaneous equations model and a difference-in-differences model. Both prior literature and descriptive evidence of my setting suggest that simultaneity bias may affect the interpretation of my empirical results. Specifically, the level of disaggregation in the financial statements is hypothesized to have an effect on a firm's inclination to report non-GAAP earnings, but at the same time, the decision to engage in non-GAAP reporting can affect whether managers increase or decrease the level of detail reported in

the firm's financial statements. I employ a simultaneous equation model to piece apart the direction of the documented relationship. I find that the decision to issue non-GAAP earnings precedes the decision to provide more disaggregated information in the financial statements. This suggests that, on average, managers recognize the value of disaggregated information and increase disaggregation in the financial statements in order to signal greater credibility of complementary disclosures of private information, such as non-GAAP earnings. In the aggressive reporting scenario however, a firm's decision to use non-GAAP earnings to meet or beat earnings expectations is shaped by the firm's level of financial statement disaggregation.

In addition, I reanalyze my results exploiting an exogenous shock to investors' information-processing costs to confirm that an increase in the decision usefulness of disaggregated reporting heightens the relationship with non-GAAP reporting. In a two year pre- and post-XBRL period, I confirm that the likelihood of managers using non-GAAP earnings to meet or beat earnings benchmarks was significantly lower in the post-XBRL information rich environment for high-disaggregating firms. However, in this setting, I document no significant difference in the likelihood of non-GAAP reporting in the post-XBRL period from managers of high-disaggregating firms. Overall, these analyses help clarify both the direction and mechanism driving the relationship between the decision to report non-GAAP earnings and a change in the level of financial statement disaggregation.

My study contributes to the literature on a distinct dimension of information quality, disaggregation of financial statement line items, and it informs standard-setters

about the market's use of more detailed information disclosures and the relationship

between disaggregated financial reporting and other voluntary disclosures, such as non-

GAAP earnings. My study is motivated by the potential benefit of mandatory financial

statement disaggregation to enhance the verifiability of reported financial information

and the complementary relationship that increased disaggregated reporting has with

other components of the firm's information environment. By investigating the interactive

effects between voluntary and mandated financial reporting, I contribute to the literature

that explores how information from various sources influences market valuation (Beyer

et al. 2010). Finally, I contribute to the growing literature that investigates the value of

information presented in a firm's audited historical financial statements and provide

preliminary evidence to address the open question of whether financial statement

disaggregation can curb managerial manipulation of non-GAAP earnings..

2. BACKGROUND

2.1. Regulatory Focus

Regulators have been interested in financial performance disaggregation for more than two decades (Turner 2000). In 2001, both the FASB and the International Accounting Standards Board (IASB) added financial performance reporting projects to their technical agendas. Although these projects operated independently until 2004, it was evident that regulators, preparers, and users were interested in discussing changes to mandatory performance reporting. In 2004, the FASB and IASB (hereafter, the boards) began the joint Financial Statement Presentation project, which aimed to improve the usefulness of the information presented in the required financial statements, develop principles for disaggregating information, and promote the convergence of international accounting standards.

In July 2010, the boards issued a preliminary joint exposure draft, which addressed the disaggregation principle and provided guidelines designed to ensure standardization of the way that information is presented in financial statements (FASB 2008). Although the boards put the project on hold in early 2011 due to staffing constraints, they continued to revisit the role of financial statement presentation. They resumed the project in July 2014, renaming it the Financial Performance Reporting project; the modified project refocused the FASB's independent efforts to establish a framework for determining an operating performance metric and the presentation of operating and non-operating items on firms' financial statements. Finally, in September

2017, following continued support from several stakeholders, the FASB again added a reporting disaggregation project to its technical agenda. In its latest project, Financial Performance Reporting – Disaggregation of Performance Information, the FASB focused on better understanding how disaggregation of a firm's income statement can improve the decision-usefulness of the information presented. Siegel (2014) emphasizes that one goal of the Financial Performance Reporting project is to improve the understandability and decision-usefulness of mandatory financial performance reporting and notes that the combination of detailed financial information from the financial statements and other voluntary disclosures of private information can provide investors with a more complete picture of a firm's performance.

2.2. Disaggregation

Disaggregated information represents a more refined level of accounting information. Using Blackwell's theorem, Demski (1973) demonstrates that finer information is of higher quality than less precise information when comparing different information systems of accounting with varying levels of precision. This line of research often assumes that aggregation results in an overall loss of information and accuracy (Lev 1968). However, the benefits of information aggregation are unclear; as other theoretical literature argues, data aggregation facilitates a reduction of information

processing costs for end users and can discourage managerial manipulation[3] (Butterworth 1972; Dye and Sridhar 2004).

Ultimately, the level of aggregation reported will represent a trade-off between the costs and benefits of providing more disaggregated financial statements. More detailed financial reporting places a large burden on financial statement preparers to collect, refine, and communicate more disaggregated information (FASAC 2013). The net benefits of disaggregation continues to be debated. Prior studies document that disaggregated disclosure reduces information asymmetry, increases the perceived precision of the information, and can constrain managerial manipulation of a firm's disclosures (Hirst et al. 2007; Amir et al. 2014; Chen et al. 2015). However, the net benefits of more detailed reporting are not as straightforward as the literature would suggest. Preparers continue to argue that the costs of reporting more disaggregated information are too high and potentially reveal proprietary information to the firm's competitors (Hayes and Lundholm 1996; Botosan and Harris 2000; Ettredge et al. 2002).

Prior empirical literature supports the view that disaggregated information is of higher quality than more aggregate disclosures of financial information. Amir et al. (2014) predict that disaggregated line item disclosures can in fact help investors better interpret accounting information, both increasing the informativeness of a firm's earnings for stock valuation and decreasing the incentives to manipulate by exposing

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[3] Dye and Sridhar (2004) emphasize that aggregation can maximize the investors' expected return on investment by limiting managerial incentives to manipulate reported earnings through soft information. By committing to the aggregation regime ex ante, less weight is attached to subjective measures of earnings and aggregation is preferred.

bias in accounting reports. Libby and Brown (2012) find that voluntary disaggregation of line items on a firm's income statement increases auditor scrutiny and as a result, the overall reliability of the information presented. Similarly, Hirst et al. (2007) find that greater disaggregation in management forecasts is more credible because it provides a signal about the precision of the information provided by management. Finally, Chen et al. (2015) validate a measure of disclosure quality based on the level of disaggregation found in a firm's financial statements. Their results document that finer and more precise information is associated with a reduction in information asymmetry in a firm's information environment as a result of smaller analyst forecast dispersion, greater forecast accuracy, and a lower cost of equity for a firm. Given the improved information environment and potential enhanced credibility that disaggregated financial information provides, I examine the interactive effects between disaggregation and non-GAAP reporting, an area of disclosure that has recently come under regulatory scrutiny for credibility concerns.

2.3. The Setting

Non-GAAP reporting rose throughout the late 1990s as firms in the high-technology sectors began reporting on their future profitability prior to the dot-com boom. Regulator concerns mounted, emphasizing that investors are "more likely to rely upon a company's pro forma disclosures than the same company's meticulously prepared, mandated GAAP financial disclosures" (Pitt 2001). Although managers claim that non-GAAP earnings disclosures help them convey the persistent and core

component of earnings, critics are concerned that managers also use non-GAAP earnings to opportunistically portray their performance as more favorable.

In an attempt to enhance the reliability of non-GAAP earnings disclosures, the SEC mandated that firms reconcile pro forma disclosures to "the most directly comparable GAAP financial measure" (SEC 2002, 1). An underpinning of Regulation G is that enhanced transparency regarding the adjustments excluded from a firm's non-GAAP measures would alleviate the manager's incentives to manipulate by making aggressive non-GAAP reporting more costly and thereby eliminating the credibility issues associated with non-GAAP earnings. Another method for improving the transparency of non-GAAP reporting would be to improve the usefulness of the financial statements themselves (Siegel 2014). In September 2017, the FASB added to its technical agenda the project Financial Performance Reporting – Disaggregation of Performance Information, which sought to develop a better understanding of how disaggregation of the income statement can improve the decision usefulness of firm disclosures.

The reporting of non-GAAP earnings provides a unique setting in which to study the implications of disaggregated information's confirmatory role. Regulators are concerned about the use of non-GAAP measures, suggesting that they "lacked credibility because they ignored GAAP recognition and measurement principles altogether and inaccurately depicted the underlying transaction or event" (Golden 2017). One potential benefit of historical financial reporting is that it provides verifiable information that can be used to evaluate the truthfulness of prior voluntary disclosures of information (Gigler

and Hemmer 1998; Ball 2013). The managerial discretion involved in reporting non-GAAP earnings makes it an interesting setting in which to test whether and how management utilizes financial statement disaggregation to signal credibility and high-quality information to the market.

This study aims to improve the understanding of how finer, more detailed information influences the usefulness of financial statement information. I examine a potential advantage of disaggregated information, whether it lends greater credibility to management's disclosure of private information, whether it constrains managerial opportunism, and whether it improves the underlying quality of those disclosures.

3. HYPOTHESIS DEVELOPMENT

Prior empirical work provides evidence of some benefits of financial statement disaggregation, specifically an improvement in a firm's information environment and as a result, a lower cost of capital and cost of debt when more precise information is communicated to stakeholders (Fairfield et al. 1996; Libby and Brown 2012; Chen et al. 2015; Heflin et al. 2015; Casey et al. 2018). I examine whether line item disaggregation interacts with a firm's disclosure of private information, in particular, the decision to report and quality of non-GAAP reporting.

3.1. Decision to Report Disaggregated Information

Outside the mandatory reporting requirements and materiality thresholds, managers have significant discretion in how they communicate information to the market. Continued growth in non-GAAP reporting suggests that investors demand from management additional information that conveys the core and persistent components of earnings – information that goes beyond what is available in the financial statements prepared following generally accepted accounting principles (Pitt 2001). I explore how managers respond to this demand for more detailed financial information and how they can *credibly* communicate private information.

As insiders of a firm, managers are endowed with significant private information about a firm's true performance that is often difficult to convey through periodic mandatory reporting mechanisms, such as a firm's 10-K filing. The striking growth of

non-GAAP information disclosures in firms' earnings announcements indicates that managers are utilizing earnings announcements to communicate some of that private information to the market in a timelier manner. However, the value of the information in those disclosures hinges on the credibility of the information being disclosed. Investors are wary of managerial manipulation (Milgrom and Roberts 1986; Verrecchia 2001). Regulators are concerned about how firms influence the perception of their periodic performance through discretionary performance measures. Facing numerous incentives to present more favorable performance results, managers must demonstrate the truthfulness of their non-GAAP earnings disclosure. One way they do so is by providing more precise information in the subsequently filed financial statements.

According to the confirmation hypothesis, managers can credibly commit to providing truthful private information disclosures when those disclosures can be subsequently verified (Gigler and Hemmer 1998). Greater disaggregation of line items in a firm's financial statements generally conveys higher-quality financial reporting, because it allows for verification of a firm's financial results by financial statement users (Ball et al. 2012). Managers can commit to a more truthful voluntary report ex ante when they provide publicly verifiable information to the market to evaluate the truthfulness of their disclosure ex post. That is, greater disaggregation in the financial statements can incentivize managers to be more truthful in their non-GAAP reporting. This suggests a complementary relationship between disaggregation and non-GAAP reporting. If managers are interested in providing more information to the market, they are likely to combine a voluntary disclosure, such as adjusted earnings, with a more directly

verifiable public information disclosure, such as disaggregated financial statement line items. I first examine the underlying association between non-GAAP reporting and disaggregation of a firm's financial statements. My first hypothesis is as follows:

H1: A firm is more likely to report non-GAAP earnings when it reports disaggregated information in its financial statements.

However, there are several reasons that the predicted relationship may not manifest in my setting. First, disaggregation is costly. These costs can include the disclosure of proprietary information as well as the overall cost of collecting, refining, and reporting more disaggregated information (Botosan and Harris 2000; FASAC 2013). Second, aggregation may simply be the preferred communication level. Supporters of non-GAAP reporting emphasize that the demand for the aggregate net earnings measures is the result of investor demand for more simplified performance reporting, such as aggregate measures of net income (Pitt 2001). If stakeholders prefer aggregate reporting, then there may be a reluctance to provide more detailed reporting in a firm's financial statements. Alternatively, there may be no underlying relationship between disaggregation and non-GAAP reporting. Historical financial statements are late signals of information to the market (Easton and Zmijewski 1993). The information content of the SEC filings is typically subsumed by information released prior to the filing (i.e., earnings releases). As such, the information presented in the financial statements may be released too late to provide any benefit to investors, and this may result in the absence of a relationship between the two disclosure channels.

3.2. Disciplining Role of Disaggregated Information

The discretion afforded to managers in presenting non-GAAP earnings has raised concerns about the motivation behind the disclosure of adjusted earnings measures in a firm's quarterly earnings releases. Critics contend that non-GAAP reporting allows firms to present alternative and more favorable performance results that are more in line with managerial incentives but obfuscate a firm's true economic performance (Doyle et al. 2003; Black and Christensen 2009; Doyle et al. 2013). These studies find that some managers report aggressive non-GAAP earnings disclosures and that investors may be misled by the overly optimistic measures presented in the earnings release (Doyle et al. 2003; Frankel et al. 2011; Brown et al. 2012a).

Because finer performance detail enables investors to evaluate the truthfulness of management's voluntary disclosures, it can discipline misreporting. When investors are given more information in the subsequently filed financial statements, they are more likely to identify aggressive use of non-GAAP exclusions, thus reducing the incentive for managers to manipulate earnings through the reporting of an adjusted earnings measure (Amir et al. 2014). Because disaggregation provides investors with potential confirmatory information, I argue that managers will have less opportunity and incentive to use non-GAAP earnings to meet or beat earnings expectations. This leads to my second hypothesis:

H2: A firm is less likely to use non-GAAP earnings exclusions to meet or beat its earnings expectations when it reports disaggregated information in its financial statements.

Whereas the empirical literature generally supports the perspective that disaggregation will limit managerial opportunistic behavior, prior theoretical literature remains conflicted about whether more granular information or more aggregate reporting is optimal (Dye and Sridhar 2004; Amir et al. 2014; Ebert et al. 2016). Disaggregation in the financial statements may inherently limit managers' ability to use within-GAAP earnings management (Libby and Brown 2012; Amir et al. 2014). Auditor scrutiny and reduced information asymmetry with analysts and the market may increase the risk that earnings management will be detected, thus raising the cost of opportunistic behavior (Dye 1988; Richardson 2000). When within-GAAP earnings management, such as accruals management and real activities manipulation, is constrained, managers may resort to more "last chance" methods of performance management, such as aggressive non-GAAP reporting (Doyle et al. 2013; Black et al. 2017). This suggests that the hypothesized negative relationship may not hold, because disaggregated reporting may in fact increase the use of aggressive non-GAAP reporting.

3.3. Quality of Non-GAAP Reporting

The chief motivation cited for the prevalence of non-GAAP reporting is that investors require summarized performance metrics to better understand the persistent component of a firm's earnings. The belief is that adjusted earnings are more useful for firm valuation than its GAAP counterparts because managers are able to strip away transitory elements of the firm's financial results through non-GAAP reporting. Prior literature finds that the quality of non-GAAP reporting can be measured through the

persistence of "core" non-GAAP earnings and the transitory nature of the items excluded from those earnings (Bhattacharya et al. 2003).

Kolev et al. (2008) investigate whether the increased SEC scrutiny of non-GAAP reporting resulted in an increased quality of non-GAAP exclusions by incentivizing firms with lower-quality exclusions to stop reporting non-GAAP measures. If financial statement disaggregation increases the scrutiny of market participants, it may also influence the quality of non-GAAP reporting. An increase in relevant confirmatory information may help investors recognize the firm's opportunistic motives influencing the disclosure and quality of non-GAAP earnings, leading to improvements in the quality of information provided in non-GAAP earnings disclosures. My final hypothesis offers a prediction about how disaggregated information influences the quality of the exclusions reported through non-GAAP reporting.

H3: Adjusted earnings are of higher quality when a firm presents a greater level of disaggregation in its financial statements.

4. RESEARCH DESIGN

4.1. Data and Sample Selection

My sample consists of fiscal years between 2003 and 2015 with available data

from I/B/E/S, CRSP, Compustat, Thomson Reuters Institutional Holdings, and the

manager non-GAAP EPS databases.[4] The sample includes both the annual earnings

announcements and the subsequent 10-K filings of every firm with a fiscal year end

within the sample period. Following Chen et al. (2015), I calculate my main variable of

interest, disaggregation quality (*disaggregation*), using publicly available data from the

Compustat annual files.[5] Disaggregation quality is a measure of the disaggregation

present in a firm's historical financial statements and is calculated by counting

nonmissing line items in Compustat.[6]

To ensure consistency in the regulatory environment surrounding the reporting of

non-GAAP performance measures, my sample period begins with the fiscal period

following the implementation of Regulation G on March 28, 2003. Following the

passage of the Sarbanes–Oxley Act (SOX) in 2002, the SEC formalized SOX Section

401 and adopted Regulation G to address the disclosure of non-GAAP measures

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[4] The manager non-GAAP EPS dataset, as used in Bentley et al. (2018), was obtained from
https://sites.google.com/view/kurthgee/data. I supplemented the quarterly data available in the Bentley et
al. (2018) dataset with the annual non-GAAP adjusted earnings measures collected from the firm's annual
earnings announcements

[5] See the appendix for detailed variable definitions.

[6] According to Chen et al. (2015), a missing account from the Compustat database would be the result of
either (1) a firm omitting an account for which it does not have underlying operations, or (2) a firm
omitting an underlying account it does have, with each scenario resulting in an account being coded as
missing. Based on extensive discussion with Compustat staff, the authors conclude that miscoded accounts
should not result in systematically biased measures of disaggregation quality.

included in a firm's periodic reporting. Regulation G most notably included a

reconciliation requirement according to which firms must reconcile any non-GAAP

measure with "the most directly comparable financial measure calculated and presented

in accordance with GAAP" (SEC 2002). Consistent with Chen et al. (2015), I exclude

firms in the financial and utility industries (SIC 6000–6999 and 4900–4999) and firms

with assets of less than $10 million in order to construct a consistent measure of

disaggregation. Finally, I remove firm-year observations with missing data to be used in

my determinants model.

Table 1
Sample Construction

Criteria	Firm-Years
Firms at the intersection of the COMPUSTAT Annual File, the CRSP Daily File, and the I/B/E/S Unadjusted Summary History file for 2000-2015.	49,790
Remove Financial and Utility firms	-11,517
Remove observations missing variables used in determinants regression	-5,008
Base Sample	33,265
Remove observations in middle tercile of Disaggregation	-11,082
Determinants Model	22,183
Remove observations missing Non-GAAP data	-12,764
Remove observations missing lagged Disaggregation data	-3,492
Remove observations missing control variable data	-511
H1: Non-GAAP Sample	16,498
H2: Aggressive Non-GAAP earnings Sample (i.e. analyst GAAP forecast data)	4,329
H3: Subsample of firms that report Non-GAAP earnings (i.e. *nongaap*=1)	8,256
Subsample of years for XBRL Shock tests (2 years pre/post XBRL adoption)	5,106
Subsample of firms in Starters/Stoppers Analysis	14,302

To construct my main variable of interest, the 33,265 firm-year observations in my sample are divided into two groups, high- and low-disaggregation firms, based on a firm's relative disaggregation level within the Fama–French 48-industry classification and fiscal year.[7] This ensures that my evaluation of disaggregation quality is measured relative to the firm's industry peers in a given year and does not capture the increasing temporal trend and industry differences documented in Chen et al. (2015). For simplicity in my primary analyses, I utilize the high- and low-disaggregation measure and exclude observations that fall into the middle tercile in each fiscal year. This reduces my sample size by approximately 852 firm-year observations in each fiscal year (11,082 firm-years in my total sample). As an alternative specification, I calculate the change in disaggregation quality in each period (*dq_change*). First, I decile rank the raw disaggregation quality measure of the firms within their respective Fama–French 48-industry classification and fiscal year. I then record the change in decile rank from the prior year to the current period as my measure of *dq_change*, where a positive change indicates an increase in disaggregation relative to the firm's industry peers and a negative change marks a decrease in disaggregation quality.

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[7] The primary analyses utilize my main variable of interest, *disaggregation*, measured as the top and bottom tercile of within-year and within-industry disaggregation quality. As an additional measurement of disaggregation that maintains a larger sample size, I include a *dq_change* variable that measures the change in disaggregation from the prior year. In untabulated results, I confirm that a median split and decile measurement does not significantly alter my main results.

4.2. Determinants

A primary contribution of my study is an improved understanding of the determinants of managers' decisions to voluntarily disclose disaggregated information in their periodic financial reports. A closer look at firms' decisions to provide disaggregated information is warranted, because mandatory disaggregation continues to be a polarizing topic among standard-setters, financial statement users, and preparers.

I begin with the firm fundamentals identified in Chen et al. (2015) as determinants of whether or not a firm provides detailed information in its financial reporting. Highlighting the complementary relationship between voluntary disclosure and information quality, prior theoretical literature argues that managers are incentivized to voluntarily disclose information when the market finds that information useful in assessing firm value (Dye 1985; Verrecchia 1990). The demand for more precise financial information increases when firm value is uncertain and current earnings are uninformative. Specifically, the increased magnitude of large transitory earnings components (*special_items*), the growing incidence of negative earnings (*loss*), and the greater intangible asset intensity (*intangibles*) documented in Collins et al. (1997) contribute to the strong upward trend in disaggregation quality observed in my sample period. I include proxies for asset-restructuring (*restructure*) and acquisition (*merger*) activities to account for the influence of extraordinary one-time activities that add complexity to a firm's annual reporting. To control for the more persistent components of a firm's operating environment, I include a measure of operational complexity (*segments*). Because the volatility of operations (*volatility*) may dampen the

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informativeness of a firm's performance reporting, I expect that high idiosyncratic volatility will also influence a firm's disclosure strategy (Lang and Lundholm 1993; Bushee and Noe 2000).

A firm's information and financial reporting environments also contribute to its broader disclosure strategy. Because disaggregation is a component of a firm's overall financial reporting quality, I also include measures of a firm's financial reporting environment – firm size (*size*), reporting lag (*report_lag*), and audit quality (*big4*) – as determinants of disaggregation. The relationship between firm and auditor resources and disaggregation is unclear; although large firms and more experienced auditors may have greater capabilities to report and audit more detailed financial data than smaller firms and less experienced auditors, the materiality of financial information may lead to more aggregate reporting practices (DeFond and Zhang 2014). I expect to find that a firm's broader information environment influences the demand for more detailed reporting of periodic performance. I use analyst following (*analysts*) and the issuance of management guidance (*forecast*) as proxies for information asymmetry, and I predict that both demand for management guidance and firms with large analyst followings are likely to also experience a heightened demand for high-quality disclosures and increased disaggregation (Lang and Lundholm 1996). The sophistication of a firm's investor base and institutional ownership (*instit_own*) will likely also influence the demand for more granular information. Although institutional investors may have access to a firm's private information, thus lowering the demand for detailed public disclosures, I predict that an increasingly informed investor base will value the precision of the audited and

verifiable information available in annual reports (Healy et al. 1999; Bushee and Noe 2000).

Given the discretion afforded to managers in the production of disaggregated financial reports, I include variables that represent managerial incentives to restrict financial disclosure: bad news, litigation risk, and growth opportunities (Skinner 1997). I use the book-to-market ratio (*book_to_market*) as a proxy for a firm's growth opportunities, and I also include indicators for firms operating in highly litigious industries (*litigation*), financially distressed firms (*distress*), and bad earnings news (*loss*). Finally, I include controls for other types of stakeholder monitoring, specifically the level of creditor monitoring (*leverage*) and new debt issuances (*debt_issuance*). I argue that the relationship between a firm and its lender will reduce the level of disaggregation in the historical financial statements filed with the SEC, because banks have direct access to companies' private information and thus rely less on the public disclosures utilized by shareholders (Fama 1985). I estimate the probability that a firm will present highly disaggregated financial information in its audited historical financial statements (*disaggregation* = 1) using the following probit model:

(1) $\text{Pr}(\text{disaggregation}_{i,t} = 1) = \text{special\_items} + \text{loss} + \text{intangibles} + \text{restructure} + \text{merger} + \text{segments} + \text{volatility} + \text{size} + \text{report\_lag} + \text{big4} + \text{analysts} + \text{forecast} + \text{instit\_own} + \text{book\_to\_market} + \text{litigation} + \text{distress} + \text{leverage} + \text{debt\_issuance}.$

4.3. Research Design

In order to test the relationship between non-GAAP reporting and a manager's decision to disaggregate information (H1), I analyze the relationship between financial statement disaggregation and the decision to voluntarily report non-GAAP earnings information in the current year. I first estimate the relationship between financial statement disaggregation and non-GAAP reporting using a probit model, separately evaluating disaggregation of the income statement (*dq_is*), disaggregation of the balance sheet (*dq_bs*), and total disaggregation of the income statement and balance sheet combined (*dq_total*):

(2) $\Pr(\text{nongaap}_t = 1) = \text{disaggregation}_t + \text{nongaap}_{t-1} + \text{miss} + \text{Controls} + industry_k +$

$year_t$,

where the non-GAAP variable represents the firm's reporting of an adjusted earnings measure in the earnings announcement and disaggregation is an indicator variable signaling whether a firm is a high- or low-disaggregating firm for each measure of financial statement disaggregation (*dq_total, dq_is,* and *dq_bs*).

Following the work of (Brown et al. 2012b), I include several variables to control for other factors related to the decision to report an adjusted earnings metric. Primarily, I control for alternative channels of a firm's disclosure strategy, such as prior-period non-GAAP reporting (*nongaap_{t-1}*) and the issuance of a contemporaneous management forecast (*forecast*). I control for the incentive to issue non-GAAP earnings by identifying when GAAP earnings fall short of analysts' expectations (*miss*), because prior literature finds that managers are more likely to report adjusted earnings in order to meet earnings

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benchmarks. I also include controls for firm characteristics that, according to prior

literature, influence the reporting of non-GAAP earnings: the occurrence and magnitude

of one-time or "unusual" events (*spi* and *special_items*), earnings volatility (*volatility*),

cash flow volatility (*cfo_volatility*), firm size (*size*), leverage (*leverage*), litigation risk

(*litigation*), operational complexity (*segments*), and audit quality (*big4*). All regressions

include industry and year fixed effects.

For my initial analysis, which tests the first hypothesis (H1), I utilize my main

variable of interest, *disaggregation*, which is an indicator variable equal to 1 if the firm

falls into the top tercile of disaggregation quality and 0 if it falls into the bottom tercile,

identifying it as a low-disaggregation firm. Although this design improves the power of

my tests, the exclusion of the middle-tercile firms in each test does significantly reduce

my sample size. In an alternate specification, I examine the change in disaggregation

quality from the prior year. This measure continues to measure disaggregation of the

firm's financial reporting within industry and fiscal year, but it also documents the

firm's change in disaggregation relative to its industry peers. In this specification, I

estimate a slightly modified probit model that replaces the dummy variable indicating

high-disaggregating firms (*disaggregation*) with a measure of the change in financial

statement disaggregation (*dq_change*). Controls in this model remain the same as

documented in prior analyses.

(3) $\Pr(nongaap_t = 1) = dq\_change_t + nongaap_{t-1} + Controls + industry_k + year_t$

For my second hypothesis, I investigate the role of disaggregated financial

statements in constraining managerial opportunism in non-GAAP reporting. Non-GAAP

earnings are sometimes used to report periodic performance results that barely meet or

beat analyst expectations (Black and Christensen 2009; Doyle et al. 2013). To test for

the existence of managerial manipulation (H2), I follow the work of (Bradshaw et al.

2018) and regress a measure of non-GAAP reporting aggressiveness on an indicator

variable for disaggregation in a firm's financial statements. My dependent variable,

aggressive non-GAAP reporting, identifies firms that may have used non-GAAP

reporting for benchmark-beating purposes – specifically, the firms that miss analysts'

GAAP earnings expectations but meet and/or beat analysts' street earnings through the

issuance of an adjusted earnings measure in the earnings announcement.

Consistent with my first hypothesis, I again employ a probit specification and

changes model by reestimating models (2) and (3), replacing my dependent variable with

an indicator variable for opportunistically motivated non-GAAP reporting (*aggressive*). I

restrict my sample to those firms that report non-GAAP earnings in a given year to

ensure that my results are not driven by the decision to disclose an adjusted earnings

metric.

(4) $\Pr(\text{aggressive}_t = 1) = \text{disaggregation}_t + \text{aggressive}_{t-1} + \text{Controls} + industry_k + year_t$

(5) $\Pr(\text{aggressive}_t = 1) = \text{dq\_change}_t + \text{aggressive}_{t-1} + \text{Controls} + industry_k + year_t$

Prior literature suggests that the reporting of a non-GAAP earnings measure that

meets earnings expectations is likely to be opportunistically motivated. I expect that

disaggregation in financial statements will incentivize managers to be more truthful in

their voluntary reporting of private information, resulting in a negative relationship

between aggressive non-GAAP reporting and disaggregation.

Finally, to test my final hypothesis, I investigate the quality of the firm's reported adjusted earnings in the presence of additional disaggregated financial performance information. To test the quality of a firm's adjusted earnings measure, I examine the mapping between non-GAAP earnings, the items excluded from those earnings, and future performance conditional on whether the firm provided disaggregated financial statements. I test the quality of non-GAAP reporting in the presence of disaggregated financial reporting to evaluate whether the disaggregation results in higher-quality non-GAAP reporting.

Managers contend that non-GAAP reporting is used to communicate the core and persistent component of earnings to investors, whereas the items excluded from the non-GAAP earnings metric reflect transitory items. The quality of non-GAAP reporting can be measured through the persistence of core non-GAAP earnings and the expected transitory nature of the items excluded from those earnings. Consistent with prior research, I define high-quality exclusions as those that are more transitory (Doyle et al. 2003) and evaluate the quality of non-GAAP exclusions using the following model:

(6) $\text{Performance}_{t+1} = \beta_1 \text{Earnings}_{\text{non-GAAP}} + \beta_2 \text{Exclusions}_{\text{non-GAAP}} + \beta_3 \text{disaggregation}$

$+ \beta_4 \text{Exclusionss}_{\text{non-GAAP}} \times \text{disaggregation} + \text{Controls} + industry_k + year_t + e_{i,t},$

where performance is measured as both the earnings per share from operations ($operating_{t+1}$) and cash flow from operations (cfo_{t+1}) for the next fiscal year, $Earnings_{\text{non-GAAP}}$ is the annual adjusted earnings per share measure reported in the firm's earnings announcement, and $Exclusions_{\text{non-GAAP}}$ is the difference between reported GAAP earnings per share and non-GAAP earnings per share measures and reflects the

aggregated items excluded from non-GAAP earnings by management. Higher-quality

non-GAAP exclusions are regarded as more transitory, and I thus expect that the

interaction between my measure of financial statement disaggregation and non-GAAP

exclusions ($\beta 4$) will be negative, indicating that as disaggregation of line items increases,

the mapping of non-GAAP exclusions into future performance gets closer to 0.

5. RESULTS

5.1. Descriptive Statistics

The descriptive statistics for my sample are shown in Table 2 Panel A. Consistent with prior literature on disaggregation quality, I measure the level of disaggregation present in a firm's historical financial statements by counting nonmissing line items in Compustat as outlined by Chen et al. (2015). On average, disaggregation of the income statement and balance sheet are 0.6450 and 0.8968, respectively. My main variable of interest is the aggregate disaggregation of the financial statements, measured as the average disaggregation quality present in the separately calculated income statement and balance sheet disaggregation measures.[8] Disaggregation reflects a firm's relative financial statement disaggregation within the Fama–French 48-industry classification and fiscal year.

The mean total disaggregation quality of my sample is 0.7709, and my main set of analyses is estimated using a tercile definition of total financial statement disaggregation (*dq_total*). After the exclusion of the middle-tercile firm-year observations for both the contemporaneous and prior year disaggregation level, my analyses are estimated using 16,498 firm-year observations, and just under 50% of the firm-years in my sample period are classified as high-disaggregation firms (*disaggregation*). The level of disaggregation between periods remains fairly consistent.

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[8] Consistent with Chen et al. (2015), this study does not measure disaggregation of the statement of cash flows, because there is very little variation in the cash flow accounts disclosed in the annual report.

Table 2
Descriptive Statistics

Panel A: Descriptive Statistics						
Variable	Obs	Mean	Std. Dev	Q1	Median	Q3
Disaggregation Variables						
dq_is	33,265	0.6450	0.1104	0.5833	0.6596	0.7200
dq_bs	33,265	0.8968	0.1068	0.8889	0.9349	0.9590
dq_total	33,265	0.7709	0.0837	0.7317	0.7897	0.8259
disaggregation	22,183	0.4916	0.4999	0	0	1
dq_is_chg	29,773	-0.0270	2.3726	-1	0	1
dq_bs_chg	29,773	-0.0243	2.6856	-1	0	1
dq_total_chg	29,773	-0.0361	1.6410	-1	0	1
Non-GAAP Variables						
nongaap	20,501	0.4292	0.4950	0	0	1
aggressive	8,799	0.2808	0.4494	0	0	1
starter	9,153	0.1846	0.3880	0	0	0
stopper	6,251	0.1969	0.3977	0	0	0
earnings_nongaap	20,479	1.1230	1.8905	0.02	0.82	1.93
exclusions	20,479	-0.2759	1.0075	-0.36	-0.06	0.09
Instruments						
miss	33,265	0.3867	0.4870	0	0	1
debt_issuance	33,265	0.5110	0.4999	0	1	1
Firm Characteristics						
market_value	33,265	5,447	15,439	226	761	2,941
segments	33,265	5.6	4.8	3.0	3.0	9.0
size	33,265	6.7641	1.8985	5.4204	6.6345	7.9864
spi	33,265	0.7048	0.4561	0	1	1
loss	33,265	0.3134	0.4639	0	0	1
intangibles	33,265	0.1803	0.1970	0.0131	0.1093	0.2951
restructure	33,265	0.3322	0.4710	0.0000	0.0000	1.0000
merger	33,265	0.1849	0.3883	0	0	0
volatility	33,265	0.1281	0.0744	0.0770	0.1102	0.1579
book_to_market	33,265	0.5327	0.4991	0.2445	0.4251	0.6907
analysts	33,265	7.5889	7.0132	2.0	5.0	11.0
instit_own	33,265	0.6077	0.3038	0.3691	0.6711	0.8557
forecast	33,265	0.3137	0.4640	0	0	1
leverage	33,265	0.3906	0.7520	0.0032	0.1381	0.4157
distress	33,265	0.6103	0.4877	0	1	1
big4	33,265	0.8326	0.3733	1	1	1
litigation	33,265	0.3968	0.4892	0	0	1
report_lag	33,265	50.4	30.4	35.0	48.0	60.0

Note: The appendix provides definitions for variables used in analyses.

Panel B: Descriptive Statistics by High- and Low-Disaggregation

Variable	Low-Disaggregation		High-Disaggregation		Mean Difference
	Obs	Mean	Obs	Mean	
Non-GAAP Variables					
nongaap	6,036	0.3980	7,336	0.4070	-0.009
aggressive	2,401	0.2890	2,984	0.2580	0.031**
starter	2,832	0.1870	3,374	0.1460	0.041***
stopper	1,649	0.2200	2,192	0.1930	0.027**
earnings_nongaap	6,031	1.0330	7,327	1.1740	-0.140***
exclusions	6,031	-0.2690	7,327	-0.2380	-0.031*
Disaggregation Variables					
dq_total	11,278	0.7020	10,905	0.8350	-0.133***
dq_is	11,278	0.5600	10,905	0.7330	-0.172***
dq_bs	11,278	0.8440	10,905	0.9370	-0.093***
dq_change	9,950	-1.0150	9,782	1.2620	-2.276***
Instruments					
miss	11,278	0.4300	10,905	0.3540	0.075***
debt_issuance	11,278	0.5970	10,905	0.4100	0.187***
Firm Characteristics					
size	11,278	6.8170	10,905	6.6810	0.135***
special_items	11,278	-0.0160	10,905	-0.0140	-0.002***
spi	11,278	0.8220	10,905	0.4720	0.350***
segments	11,278	5.6950	10,905	5.3860	0.309***
loss	11,278	0.3390	10,905	0.2870	0.052***
intangibles	11,278	0.1530	10,905	0.1930	-0.041***
merger	11,278	0.3110	10,905	0.2950	0.017***
volatility	11,278	0.1670	10,905	0.1720	-0.005
cfo_volatility	9,742	0.4890	9,673	0.6900	-0.2010
book_to_market	11,278	0.0690	10,905	0.0680	0.0010
analysts	11,278	0.5570	10,905	0.5060	0.051***
instit_own	11,278	1.7500	10,905	1.9120	-0.162***
forecast	11,278	0.5280	10,905	0.6570	-0.129***
leverage	11,278	0.2460	10,905	0.3530	-0.106***
distress	11,278	0.5190	10,905	0.2730	0.246***
big4	11,278	0.6950	10,905	0.5420	0.154***
litigation	11,278	0.8390	10,905	0.8200	0.019***
report_lag	11,278	0.3770	10,905	0.4130	-0.036***

Panel C: Pairwise Correlations

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Disaggregation Variables											
disaggregation	(1)		**0.2231**	**0.0767**	-0.0278	-0.0038	**-0.0489**	-0.0238	**0.0364**	**0.0579**	**-0.2438**
dq_change	(2)	**0.2869**		**-0.0284**	-0.0261	**-0.0667**	**0.0370**	-0.0068	0.0155	-0.0014	-0.0261
Non-GAAP Variables											
nongaap	(3)	**0.0676**	-0.0210		.	**1.0000**	**-1.0000**	**0.1519**	**-0.2802**	**0.3301**	**0.0773**
aggressive	(4)	**-0.0305**	-0.0187	.		.	.	**0.1171**	**-0.1659**	**0.0935**	**0.0688**
starter	(5)	**-0.0304**	**-0.0597**	**1.0000**	.		.	**0.0929**	**-0.1912**	**0.1958**	**0.0709**
stopper	(6)	**-0.0563**	0.0197	**-1.0000**	.	.		**-0.1104**	**0.2033**	**-0.2493**	-0.0250
earnings$_{nongaap}$	(7)	0.0139	-0.0031	**0.1792**	**0.1257**	**0.1230**	**-0.1050**		**-0.1041**	**-0.0996**	**0.1811**
exclusions$_{nongaap}$	(8)	-0.0160	**0.0272**	**-0.4536**	**-0.2508**	**-0.2944**	**0.3801**	**-0.1018**		**-0.3387**	**-0.1022**
Instruments											
miss	(9)	**0.0650**	-0.0031	**0.3301**	**0.0935**	**0.1958**	**-0.2493**	**-0.1054**	**-0.4862**		0.0116
debt issuance	(10)	**-0.2462**	-0.0286	**0.0773**	**0.0688**	**0.0709**	-0.0250	**0.2014**	**-0.0835**	0.0116	
Controls											
market value	(11)	**-0.0343**	0.0105	**0.2184**	**0.1058**	**0.0794**	**-0.1487**	**0.6376**	**-0.0765**	**-0.0574**	**0.2102**
spi	(12)	**-0.2518**	**-0.2643**	**0.3238**	**0.0784**	**0.2348**	**-0.2020**	**0.0439**	**-0.2196**	**0.1165**	**0.1312**
segments	(13)	0.0184	0.0115	**0.0343**	0.0172	**0.0618**	0.0242	**0.1401**	0.0017	-0.0128	**0.0868**
loss	(14)	-0.0241	-0.0058	**-0.0259**	0.0004	**-0.0364**	**-0.0411**	**-0.6676**	**-0.1950**	**0.2198**	**-0.0681**
intangibles	(15)	**0.2363**	0.0279	**0.2645**	**0.0501**	**0.1639**	**-0.1408**	**0.2102**	**-0.1703**	**0.1364**	**0.1308**
restructure	(16)	**0.1258**	**0.0312**	**0.3111**	**0.0383**	**0.1906**	**-0.1851**	0.0036	**-0.2012**	**0.1046**	**0.0478**
acquisition	(17)	**0.0704**	-0.0019	**0.1584**	**0.0327**	**0.1031**	**-0.1125**	**0.1944**	**-0.0903**	**0.0571**	**0.0831**
volatility	(18)	**-0.1088**	0.0136	**-0.0744**	**-0.0580**	-0.0030	**0.0630**	**-0.3997**	-0.0155	0.0270	0.0049
cfo_volatility	(19)	-0.0108	-0.0160	**-0.1767**	**-0.0731**	**-0.0988**	**0.0988**	**-0.3348**	**0.1211**	**-0.0887**	**-0.2216**
book_to_market	(20)	**-0.0392**	0.0039	**0.0442**	**-0.0363**	**0.0699**	0.0122	**-0.1111**	**-0.0723**	**0.1111**	0.0130
analysts	(21)	-0.0212	0.0036	**0.2194**	**0.1117**	**0.0811**	**-0.1550**	**0.4142**	**-0.0983**	0.0086	**0.1084**
instit own	(22)	**0.0982**	-0.0006	**0.1972**	**0.0442**	**0.1298**	**-0.0583**	**0.3142**	**-0.0999**	0.0078	0.0107
forecast	(23)	**0.1273**	-0.0113	**0.1683**	**0.0684**	**0.1289**	**-0.0660**	**0.3178**	**-0.0709**	0.0160	**0.0692**
distress	(24)	**-0.0631**	**0.0342**	**0.0529**	**-0.0311**	**-0.0357**	**-0.0906**	**-0.4362**	**-0.1188**	**0.1500**	**0.0322**
big4	(25)	-0.0096	0.0170	**0.0910**	0.0163	**0.0301**	**-0.0720**	**0.1754**	-0.0445	-0.0180	**0.0663**
litigation	(26)	**0.2615**	0.0044	**0.0704**	-0.0183	**-0.0256**	**-0.1107**	**-0.2159**	**-0.0536**	**0.0877**	**-0.3094**
leverage	(27)	**-0.3311**	-0.0086	**0.1011**	**0.0557**	**0.0972**	-0.0057	**0.1453**	**-0.0972**	**0.0352**	**0.5766**
report_lag	(28)	**-0.0910**	-0.0088	**-0.1677**	0.0160	**-0.0735**	**0.0977**	**-0.3098**	**0.0303**	0.0240	**0.0877**

Panel D: Pairwise Correlations of Disclosure and Disaggregation Proxies

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Disaggregation Quality (Chen et al. 2015)											
dq_total	(1)		**0.7054**	**0.8378**	**0.8400**	**0.5188**	**0.7856**	**0.8361**	**-0.1248**	**-0.0738**	**-0.1794**
dq_is	(2)	**0.8031**		**0.2041**	**0.5111**	**0.6221**	**0.2135**	**0.5062**	0.0058	0.0393	-0.0557
dq_bs	(3)	**0.6200**	**0.1535**		**0.7665**	**0.2373**	**0.9206**	**0.7649**	**-0.1769**	**-0.1322**	**-0.2048**
Reporting Quality (Casey et al. 2018)											
rq	(4)	**0.7943**	**0.5710**	**0.6257**		**0.7477**	**0.8299**	**0.9990**	**-0.2297**	**-0.1845**	**-0.2273**
rq_is	(5)	**0.6371**	**0.6994**	**0.2906**	**0.8218**		**0.2525**	**0.7519**	**-0.2220**	**-0.2025**	**-0.1483**
rq_bs	(6)	**0.5695**	**0.1848**	**0.7987**	**0.7181**	**0.3187**		**0.8278**	**-0.1665**	**-0.1177**	**-0.2134**
Accounting Reporting Complexity (Hoitash and Hoitash 2017)											
arc	(8)	**-0.1377**	0.0059	**-0.2813**	**-0.2401**	**-0.1863**	**-0.2037**	**-0.2527**		**0.9587**	**0.6987**
arc_unique_fact	(9)	**-0.0940**	0.0405	**-0.2522**	**-0.1982**	**-0.1567**	**-0.1717**	**-0.2110**	**0.9711**		**0.7121**
arc_extensions	(10)	**-0.1869**	**-0.0606**	**-0.2581**	**-0.2588**	**-0.1744**	**-0.2440**	**-0.2630**	**0.7190**	**0.7128**	
Other Disclosure Quality measures											
analysts	(11)	0.0080	**0.0921**	**-0.1350**	**-0.0838**	**-0.0493**	**-0.0886**	**-0.0889**	**0.3023**	**0.3253**	**0.2138**
eightks	(12)	**-0.1928**	**-0.1303**	**-0.1712**	**-0.2169**	**-0.1491**	**-0.1983**	**-0.2149**	**0.2147**	**0.1943**	**0.2711**
wordcount	(13)	**-0.2070**	**-0.1050**	**-0.2044**	**-0.2543**	**-0.1563**	**-0.2421**	**-0.2544**	**0.4882**	**0.4443**	**0.5270**
forecast	(14)	**0.1711**	**0.1263**	**0.0842**	**0.1057**	0.0204	**0.1359**	**0.0983**	**0.1871**	**0.2148**	**0.0770**
segments	(15)	0.0133	0.0223	-0.0238	-0.0094	**-0.0425**	0.0333	-0.0148	**0.2149**	**0.2231**	**0.1090**
report_lag	(16)	**-0.1254**	**-0.1743**	**0.0310**	**-0.0665**	**-0.0730**	-0.0318	-0.0595	**-0.2309**	**-0.2643**	**-0.0722**

Bold indicates significant at less than 1%

I show that in my sample period, the average change in level of disaggregation across both the income statement and balance sheet is consistently under 5%. On average, firms are moving toward more aggregate reporting; across my full sample, the change in total financial statement disaggregation is -3.61%.

Finally, in Table 2 Panel B, the sample is separated into high- and low-disaggregation firms based on the total disaggregation quality measure (*dq_total*). The results show that the sample varies across firms that provide greater disaggregation in their financial statements (*disaggregation* = 1) and those that are less transparent (*disaggregation* = 0). This suggests that endogeneity – specifically, that firms are making a conscious choice to disclose more precise information in the financial statements – may be a concern. Although it does not appear that the decision to report non-GAAP earnings differs across the subsamples, the firm characteristics of the firm that provides greater disaggregation in the financial statements are statistically significant in nearly every category.

5.2. Time Series and Cross-Sectional Patterns

Both non-GAAP reporting and financial statement disaggregation have unique time-series and cross-sectional characteristics. It is important to understand the relevance of these characteristics in the context of changing reporting standards and regulatory enforcement. I tabulate the average level of disaggregation across all three financial statement measures (*dq_total, dq_is,* and *dq_bs*) over my sample period in Table 3 Panel A and Figure 5-1. Notably, excluding a small jump from 2003 to 2005, the level of

Table 3
Time Series and Cross-Sectional Patterns

Panel A: Time Pattern of Reporting Characteristics

	Disaggregation				Non-GAAP Reporting			
	dq_total	dq_is	dq_bs	dq_chg	nongaap	aggressive	starter	stopper
By Fiscal Year								
2003	0.696	0.497	0.895	-0.075	0.274	0.143	0.175	0.364
2004	0.757	0.615	0.898	-0.067	0.263	0.218	0.155	0.426
2005	0.779	0.654	0.904	-0.050	0.305	0.207	0.158	0.332
2006	0.779	0.656	0.902	-0.011	0.370	0.219	0.227	0.297
2007	0.780	0.660	0.900	0.021	0.340	0.265	0.136	0.289
2008	0.780	0.663	0.897	-0.059	0.452	0.321	0.229	0.177
2009	0.780	0.664	0.897	-0.064	0.456	0.278	0.180	0.219
2010	0.783	0.668	0.899	-0.048	0.454	0.290	0.188	0.235
2011	0.782	0.666	0.898	0.007	0.499	0.299	0.212	0.154
2012	0.779	0.665	0.894	0.022	0.536	0.327	0.219	0.148
2013	0.777	0.664	0.891	-0.022	0.547	0.311	0.195	0.116
2014	0.776	0.661	0.891	-0.001	0.569	0.315	0.161	0.102
2015	0.775	0.660	0.890	0.009	0.590	0.321	0.162	0.077

Panel B: Reporting Characteristics by Industry

	Disaggregation				Non-GAAP Reporting			
	dq_total	dq_is	dq_bs	dq_chg	nongaap	aggressive	starter	stopper
By Industry								
Consumer NonDurables	0.779	0.649	0.910	-0.065	0.439	0.350	0.252	0.289
Consumer Durables	0.777	0.645	0.908	-0.017	0.378	0.286	0.170	0.287
Manufacturing	0.781	0.653	0.909	-0.012	0.414	0.264	0.206	0.230
Energy	0.652	0.592	0.711	0.002	0.424	0.316	0.188	0.185
Chemical Products	0.769	0.644	0.894	0.055	0.444	0.323	0.169	0.168
Business Equipment	0.803	0.665	0.942	-0.033	0.603	0.228	0.235	0.104
Telecom	0.716	0.587	0.844	-0.008	0.272	0.294	0.124	0.322
Retail & Wholesale	0.789	0.672	0.906	-0.058	0.353	0.288	0.195	0.319
Healthcare	0.789	0.639	0.940	-0.057	0.325	0.393	0.119	0.176
Other	0.739	0.631	0.847	0.001	0.342	0.280	0.173	0.317

disaggregation across all firms in my sample period remains remarkably consistent over

time.[9] This suggests that the procedures undertaken to normalize the measure of

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[9] In untabulated analyses, I reestimate each model with an alternate measure of reporting quality from Casey et al. (2018). This measure accounts for changes to GAAP reporting requirements that took place

disaggregation to account for changes in the collection processes of Compustat personnel and changes in reporting standards have at least initially succeeded. At the firm level, disaggregation of financial statements appears to be a fairly consistent measure from year to year, because the average change in a single firm's disaggregation relative to its industry peers holds between -10% and +10%.
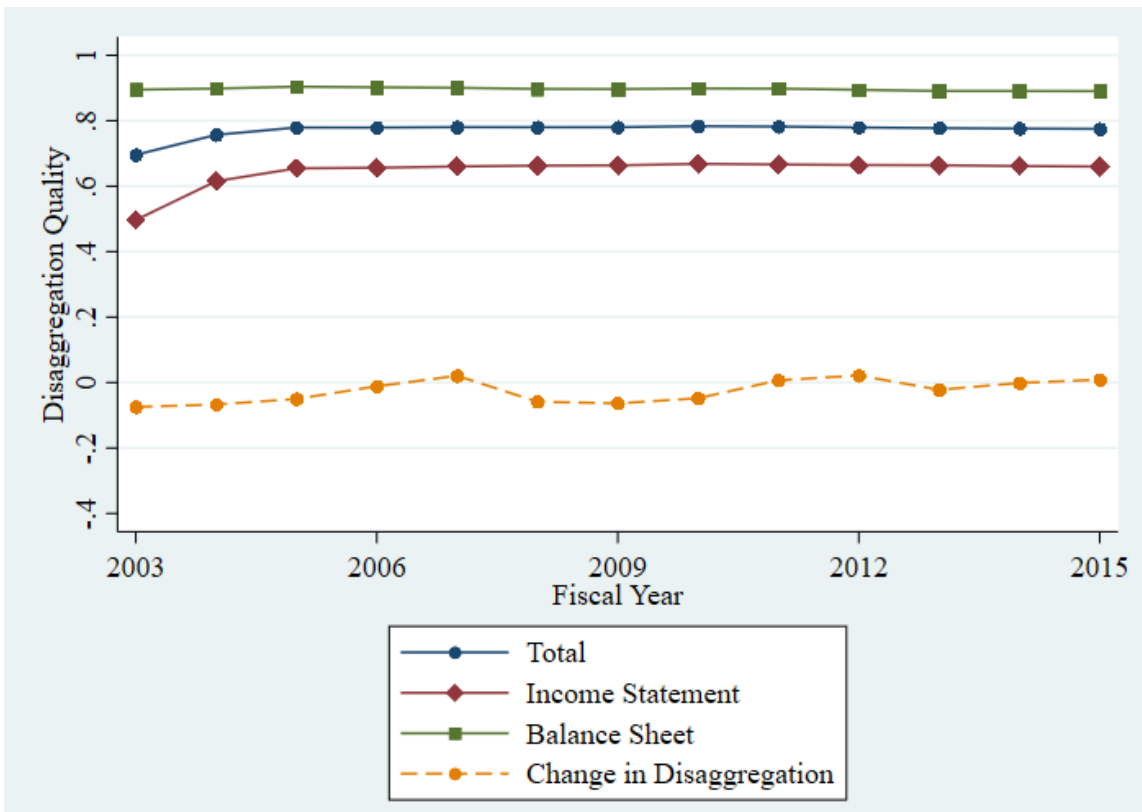

Figure 5-1: Disaggregation Quality by Fiscal Year

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during my sample period, specifically, a spike in my disaggregation quality measure (*dq_total*) for the period between 2003 and 2006 following the implementation SFAS 130. While my measure controls for both the time and industry trends through both the relative measurement of my main variable of interest and year and industry fixed effects, I confirm that my results are robust to other specifications of the measure found in the literature.

Next, I tabulate the changes to non-GAAP reporting over the sample period in Table 3 Panel A and Figure 5-2. In contrast to the level-reporting of disaggregation, non-GAAP reporting increases significantly over my sample period. Consistent with prior literature that documents this dramatic rise in non-GAAP reporting, in my sample period the percentage of non-GAAP reporting firms (nongaap) increased from approximately a quarter of firms (27.4%) to over 59% of firms in the last year of my study. The use of non-GAAP reporting to meet or beat earnings expectations (aggressive) has increased similarly, more than doubling from 14.3% in 2003 to 32.1% in the final year of my sample. Consistent with disclosure theory, which suggests that once a firm starts reporting a particular type of information it becomes difficult for the firm to stop, the number of non-GAAP discontinuers (stoppers) decreases over my sample period from close to 36% in 2003 to just under 8% in 2015.

I also present the average level of disaggregation and non-GAAP reporting across large industry groups. I note significant differences in the levels of disaggregated reporting and non-GAAP reporting across different industry sectors. These differences are likely due to both reporting norms and industry standards that would typically bias the tests of associations between these two disclosure choices. To address these inherent differences, I normalize my variables of interest (disaggregation and dq_change) within both industry and fiscal year to help capture and control for both the time trend and unique industry reporting characteristics found in my sample period.
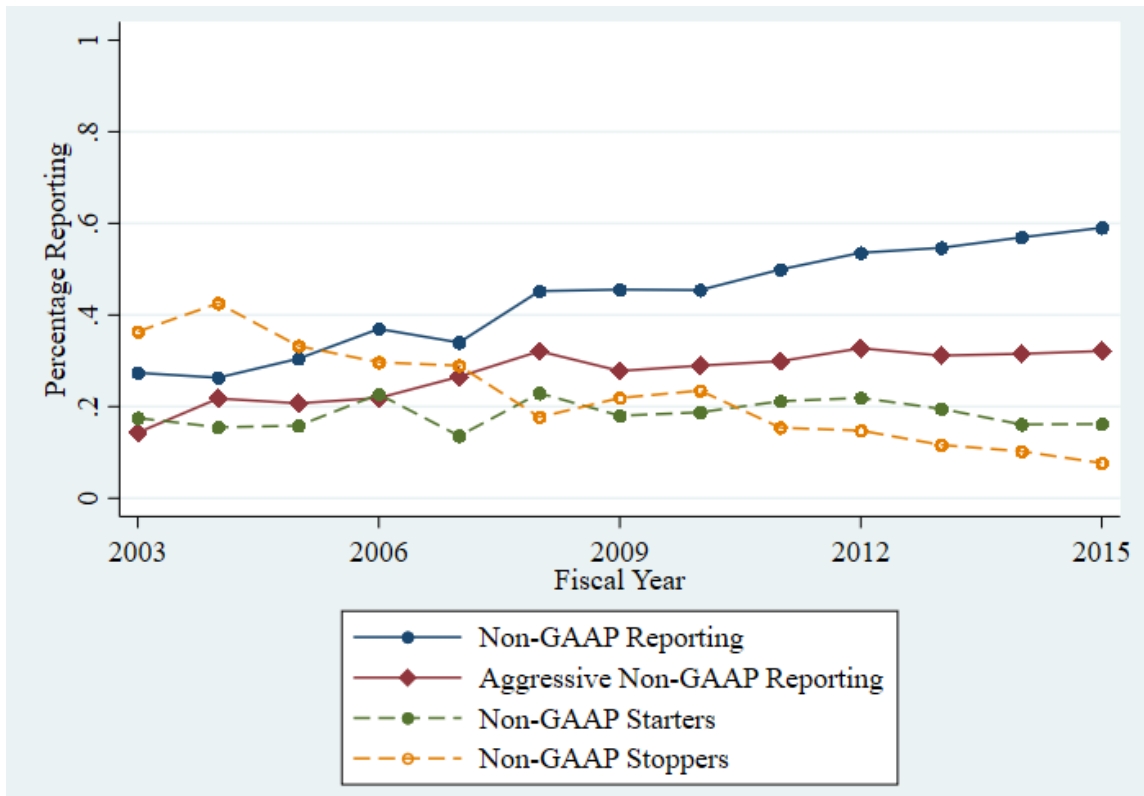
Figure 5-2 Non-GAAP Reporting by Fiscal Year

5.3. Disclosure Methods

I investigate two distinct but potentially related forms of disclosure, Non-GAAP reporting and financial statement disaggregation. A potential hurdle of my study is the fact that these disclosure choices are likely closely related and may merely represent different facets of a firm's broader disclosure policy. I believe that a significant contribution of my study is not only its investigation of the relationship between non-GAAP reporting and the decision to provide more detailed financial statements, but also its discussion of how these two choices are uniquely associated given the interest of both regulators and standard-setters.

In each of my analyses, I control for several forms of management disclosure, including the decision to report in the prior year (disaggregation, non-GAAP reporting, reporting lag, and management forecasts, etc.) Table 2 Panel D presents the correlations between my main variables of interest (*disaggregation, dq_total, dq_is,* and *dq_bs*) and other proxies of disclosure quality that are customarily used in the literature.[10] These proxies, though related to each other, constitute the mosaic of information communicated to a firm's stakeholders. I suggest that the relationship between different forms of disclosure is both nuanced and affected by the type of information to which managers have access. Panel D of Table 2 documents these relationships. Although each proxy is associated with the others, none are very highly correlated (> 25%) with my main variable of interest (*disaggregation*). This suggests that although simultaneity bias may be a concern in my setting, my proxy for disaggregation of financial reporting is not subsumed by these other forms of disclosure.[11]

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[10] I include several proxies for disclosure quality and accounting complexity in this analysis. Several of these proxies are included as controls in my main analyses (*forecast*, *report_lag*, and *segments*), whereas others reflect alternative specifications of my variables of interest (*rq and arc*). Finally, I compare proxies for the firm's broader information environment (*analysts*, *eightks*, and *wordcount*). See the appendddix for more detailed descriptions of the measurement of each variable.

[11] Given my setting, multicollinearity among my independent variables may also be an issue. In order to address this concern, I examine the correlation between my explanatory variables and estimate the variance inflation factor (*vif*) following each of my main analyses. In untablulated results, I find that my variable of interest is not strongly correlated with the other control variables in my regression (<0.25). Additionally, the *vif* for my main variable of interest (*disaggregation* and *dq_change*) is less than 3.0 in all regressions. As the mean *vif* of all regressions (1.9) falls under the threshold of 10, I do not believe I have a severe multicollinearity problem (O'brien 2007).

5.4. Determinants of Disaggregation

I begin my study by examining management's decision to increase the granularity of the disclosure presented in a firm's financial statements. The results tell a story that is consistent with the findings reported in previous studies of the incentives to disclose private information to the public. In particular, the financial strength and operating results of the year, one-time extraordinary transactions that increase the complexity of a firm's operating environment, the overall information environment, and managerial incentives to withhold bad news all lead to the level of disaggregation presented in a firm's annual report. The results demonstrate that nearly all the determinants load as statistically significant predictors of disaggregation, with the exception of the firm's auditor, growth opportunities, and operational complexity. Notably, the reporting of special items (*spi*) loads in the opposite direction than originally predicted. The negative and statistically significant correlation between the reporting of special and extraordinary items and disaggregation is puzzling. Although the presence of the transitory components of earnings would mechanically increase the disaggregation in the financial statements and indicate less informative earnings, it would also predict a greater incentive to disclose more private information to the market. However, it appears that firms that have large positive or negative transitory items during the fiscal period are less likely to increase disaggregation of the financial statements beyond those specific line items, demonstrating a preference for more aggregate performance reporting.

Table 4
Determinants of Disaggregation

VARIABLES		coefficient	std error	t-stat
		disaggregation		
debt_issuance	(−)	-0.423***	(0.0308)	-13.71
segments	(+)	0.00433	(0.00454)	0.95
size	(±)	-0.136***	(0.0168)	-8.07
spi	(+)	-1.636***	(0.0393)	-41.62
loss	(+)	0.121***	(0.0341)	3.54
intangibles	(+)	1.553***	(0.104)	14.91
restructure	(+)	0.655***	(0.0369)	17.74
merger	(+)	0.338***	(0.0387)	8.74
volatility	(±)	0.374*	(0.204)	1.84
book_to_market	(+)	0.0141	(0.0354)	0.40
analysts	(+)	0.139***	(0.0343)	4.05
instit_own	(+)	1.078***	(0.0745)	14.46
forecast	(+)	0.163***	(0.0405)	4.02
distress	(−)	-0.403***	(0.0402)	-10.02
big4	(±)	-0.0577	(0.0489)	-1.18
litigation	(±)	0.283***	(0.0797)	3.55
leverage	(−)	-0.185***	(0.0283)	-6.53
report_lag	(±)	-0.00241***	(0.000717)	-3.36
Constant		1.318***	(0.432)	3.05
Industry Fixed Effects			Yes	
Year Fixed Effects			Yes	
Observations			22,183	
Pseudo R2			0.2591	

t-statistics in parentheses   *** p<0.01, ** p<0.05, * p<0.1

area under ROC curve   =   0.825

disaggregation measures the level of vertical disaggregation present in in the firm's historical financial statements by counting non-missing line items in Compustat as outlined in Chen et al. (2015). *disaggregation* identifies high- and low-disaggregating firms (indicator variable equal to 1 or 0) depending on whether the firm was in the top or bottom tercile of financial statement disaggregation within the firm's industry and fiscal year.

5.5. Testing the Decision to Report Disaggregated Information (H1)

In my first and second hypotheses, I address the manager's decision to communicate private information about a firm to the market and examine whether disaggregation influences that disclosure. I first investigate whether disaggregation is used by managers to enhance the credibility of a firm's non-GAAP reporting. I use the disclosure of non-GAAP earnings as my proxy for voluntary disclosure because of its close relationship with the confirmatory information reported in a firm's financial statements. I argue that if managers understand the value the market places on more granular information in the annual report, they may utilize greater disaggregation to signal the credibility of their voluntary disclosures. Thus, in my first hypothesis, I predict that an increase in the disaggregation of financial information in a firm's annual report will positively influence the disclosure of adjusted earnings in the earnings announcement.

The results of the first hypothesis are presented in the first column of Table 5. I model the decision to report non-GAAP earnings for high-disaggregating firms using the three measurements of financial statement disaggregation, total financial statement disaggregation, and disaggregation of the separate income statement and balance sheet. Given the relationship between GAAP and non-GAAP performance reporting, it is not surprising that the measures of disaggregation on the income statement and total financial statement disaggregation are both statistically significant (dq_total = 0.315, t-stat = 5.41 and dq_is = -0.353, t-stat = 6.58), indicating that firms primarily utilize disaggregation of the income statement line items to enhance the credibility of non-

Table 5
Disaggregation and Non-GAAP Reporting

	H1: Non-GAAP Reporting			H2: Aggressive Reporting		
VARIABLES	Total F/S	Income Statement	Balance Sheet	Total F/S	Income Statement	Balance Sheet
disaggregation	0.315***	0.353***	0.0418	-0.0349	-0.142*	-0.313**
	(5.41)	(6.58)	(0.46)	(-0.41)	(-1.85)	(-2.39)
Controls						
Lag.nongaap	1.232***	1.227***	1.176***			
	(30.50)	(30.10)	(31.74)			
Lag.aggressive				0.266***	0.224***	0.189***
				(4.09)	(3.47)	(3.27)
Lag.disaggregation	-0.0576	-0.0316	0.0729	-0.134*	0.0248	0.170
	(-1.08)	(-0.72)	(0.81)	(-1.66)	(0.37)	(1.30)
spi	0.773***	0.818***	0.589***	0.197**	0.156*	0.211***
	(16.93)	(16.28)	(15.53)	(2.49)	(1.88)	(2.88)
special_items	-1.566***	-1.669***	-1.572***	-1.309***	-0.718*	-1.495***
	(-4.13)	(-4.29)	(-4.04)	(-3.17)	(-1.73)	(-3.50)
leverage	0.0326	0.000404	0.00794	-0.0767*	-0.00683	-0.0948**
	(1.14)	(0.01)	(0.31)	(-1.81)	(-0.17)	(-2.34)
size	0.118***	0.104***	0.139***	0.0450**	0.0633***	0.0467***
	(8.99)	(7.97)	(11.07)	(2.16)	(3.04)	(2.72)
big4	0.0659	0.0769	0.0832*	-0.134	-0.102	-0.0538
	(1.20)	(1.42)	(1.65)	(-1.53)	(-1.22)	(-0.73)
volatility	-0.0007*	-0.000529	-0.00139	-0.00130	-0.00101	-0.00776
	(-1.66)	(-1.50)	(-1.32)	(-1.00)	(-0.75)	(-1.16)
cfo_volatility	-0.362	-0.543*	-0.864***	-0.448	0.0702	-0.912
	(-1.08)	(-1.67)	(-2.80)	(-0.73)	(0.11)	(-1.62)
forecast	0.348***	0.305***	0.374***	0.0789	0.0403	0.153***
	(8.68)	(7.68)	(10.29)	(1.41)	(0.70)	(3.14)
litigation	0.342***	0.294***	0.359***	-0.00135	-0.0937	-0.0123
	(4.61)	(4.01)	(4.99)	(-0.01)	(-0.94)	(-0.12)
segments	-0.00350	-0.00104	-0.014***	0.00039	0.0048	0.0131***
	(-0.89)	(-0.26)	(-3.96)	(0.07)	(0.82)	(2.63)
miss	0.544***	0.539***	0.575***	0.0780	0.0249	0.0919*
	(14.93)	(14.89)	(17.46)	(1.46)	(0.49)	(1.88)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,936	7,884	9,109	3,084	3,078	3,732
R-squared	0.359	0.351	0.338	0.059	0.052	0.060

nongaap is set to 1 if the firm issues a non-GAAP earning metric in their annual earnings announcement. *aggressive* is set to 1 if the firm reports a non-GAAP earnings metric in their annual earnings announcement that meets or beats analysts' expectations when the firm's reported GAAP earnings would have missed the analysts' GAAP earnings benchmark. *t*-statistics in parentheses   *** p<0.01, ** p<0.05, * p<0.1

GAAP reporting. As expected, prior period reporting ($nongaap_{t-1}$ = 1.232, t-stat = 30.50), the existence of special items (spi = 0.773, t-stat = 16.93), and negative earnings news ($miss$ = 0.544, t-stat = 14.93) all increase the likelihood of communicating an adjusted earnings measure. Due to the stable nature of disaggregated reporting documented in Table 3 and Figure 1, I include the lagged level of disaggregation to control for prior period disaggregated reporting. I find that the level of disaggregated reporting in the prior year is not a significant determinant of current period non-GAAP reporting, suggesting instead that the contemporaneous decision to communicate disaggregated information is associated with the decision to report adjusted performance metrics.

5.6. Testing the Disciplining Role of Disaggregated Information (H2)

Whereas the results of my first hypothesis highlight the fact that the decision to report non-GAAP earnings is related to the level of disaggregated information in a firm's annual report, in my second hypothesis, I attempt to identify the motivation behind non-GAAP reporting. The use of non-GAAP earnings to manipulate the perception of firm performance is a well-studied area in the field of accounting research. Disaggregation provides greater transparency to the market. This increased transparency can discipline misreporting and reduce incentives to engage in earnings management (Amir et al. 2014). In my second hypothesis, I predict that the aggressive use of non-GAAP reporting will be constrained by the ex post confirmatory nature of highly disaggregated reporting.

The results of the tests of the second hypothesis are presented in the second column of Table 5. Interestingly, although managers are on average more likely to disaggregate information in the financial statements when they report non-GAAP earnings (H1), the results presented in column (2) suggest that managers are aware of the confirmatory value of disaggregated information and that the incentive to provide disaggregated information is lower when they use non-GAAP earnings to meet or beat earnings expectations. I find that high-disaggregating firms are less likely to use non-GAAP reporting to meet or beat earnings expectations. Specifically, my measure of both income statement (*disaggregation* = -0.142, *t*-stat = -1.85) and balance sheet (*disaggregation* = -0.313, *t*-stat = -2.39) disaggregation are negative and statistically significant. Whereas the combined measure of total financial statement disaggregation is not significant in the current period (*disaggregation* = -0.035, *t*-stat = -0.41), the level of disaggregation in the prior period (*disaggregation$_{t-1}$* = -0.134, *t*-stat = -1.66) continues to reflect the negative relationship between disaggregated reporting and aggressive non-GAAP reporting.

5.7. Testing the Quality of Non-GAAP Reporting (H3)

Thus far, my study has investigated the interplay between financial statement disaggregation and the manager's decision to report non-GAAP measures, but it has not yet evaluated the quality of those disclosures. I hypothesize that greater scrutiny from market participants resulting from increased financial statement disaggregation may also influence the quality of non-GAAP reporting. The results of my second hypothesis

indicate that managers who report aggressive non-GAAP earnings are less likely to disaggregate financial statement information, suggesting that this disaggregated information may reveal the opportunistic motives behind the firm's decision to report an adjusted earnings measure and that disaggregation may serve as a control on low-quality non-GAAP reporting.

In testing my third hypothesis, I evaluate the quality of non-GAAP reporting in the presence of disaggregated financial information. In line with prior studies, I expect a positive coefficient on non-GAAP earnings (β_1), suggesting that non-GAAP earnings are predictive of future performance and in line with managers' contention that non-GAAP earnings reflect the persistent component of a firm's performance. A statistically significant coefficient on non-GAAP exclusions (β_2) reflects evidence that the items excluded from non-GAAP earnings are predictive of future operating performance. Because these exclusions are not transitory ($\beta_2 = 0$), prior literature suggests that a positive coefficient is a reflection of low-quality non-GAAP reporting. A negative coefficient on the interaction term between non-GAAP exclusions and disaggregation (β_4) would suggest that on average, firms with greater disaggregation in their financial reporting have higher-quality non-GAAP exclusions (i.e., the full coefficient on non-GAAP exclusions is approaching 0, which reflects the transitory nature of those exclusions).

The results are presented in Table 6 and reflect two variables that measure future performance of the firm, future operating income (*operating$_{t+1}$*) and future cash flow

Table 6
Disaggregation and the Quality of Non-GAAP Reporting

VARIABLES	Prediction	H3: Quality of Non-GAAP Reporting	
		Operating Earnings$_{t+1}$	Operating Cash Flow$_{t+1}$
Non-GAAP Earnings	(+)	0.696***	0.598***
		(11.71)	(14.73)
Non-GAAP Exclusions		0.124***	0.0406**
		(2.96)	(2.11)
disaggregation		0.000778	-0.00495*
		(0.24)	(-1.67)
disaggregation x	(–)	-0.108**	-0.0540*
Non-GAAP Exclusions		(-2.46)	(-1.80)
Controls		Yes	Yes
Industry Fixed Effects		Yes	Yes
Year Fixed Effects		Yes	Yes
Observations		4,962	4,962
R-squared		0.563	0.511

Operating Earnings$_{t+1}$ is the operating income for the next fiscal year (t+1) and *Operating Cash Flow$_{t+1}$* is the cash flow from operations for the next fiscal year (t+1). *Non-GAAP earnings* is the reported adjusted earnings per share (Non-GAAP) in the annual earnings announcement. *Non-GAAP exclusions* is Non-GAAP earnings less reported GAAP earnings. *disaggregation* measures the level of disaggregation present in in the firm's historical financial statements by counting non-missing line items in Compustat as outlined in Chen et al. (2015). *d*Non-GAAP exclusions* indicates the interaction between the Non-GAAP exclusions and my main variable of interest *disaggregation. t*-statistics in parentheses   *** p<0.01, ** p<0.05, * p<0.1

from operations (*cfo$_{t+1}$*). First, the coefficients on non-GAAP earnings (β_1) for operating earnings and cash flow from operations are 0.696 and 0.598, respectively, where perfectly permanent earnings would have an estimated coefficient approaching 1. The coefficient on non-GAAP exclusions (*operating$_{t+1}$* = 0.124 and *cfo$_{t+1}$* = 0.041) is also positive and statistically significant. Consistent with prior literature, this result suggests that although non-GAAP exclusions are not perfectly transitory ($\beta_2 \neq 0$), they are still, on average, more transitory than core earnings ($\beta_1 > \beta_2$). The coefficient of interest (β_4) is the influence of disaggregation on the persistence of non-GAAP exclusions. The negative and statistically significant result (*operating$_{t+1}$* = -0.108, *t*-stat = -2.46 and *cfo$_{t+1}$*

= -0.054, *t*-stat = -1.80) implies that the non-GAAP exclusions of firms with greater

disaggregation in their financial statements are of higher quality (i.e., more transitory)

than those of firms in the low-disaggregation group. These results complement the

testing of my first two hypotheses and are consistent with the finding that disaggregation

can serve as a constraint on managers' reporting of aggressive or low-quality non-GAAP

earnings.

5.8. Additional Analyses

5.8.1. Change Analyses

To capture the decision to change the level of disaggregation of the firm's

financial reporting, I reestimate the results of my first two hypotheses using a change

model. I transform the measurement of my main variable of interest to capture the firm's

change in disaggregation relative to its industry peers and document an increase and/or

decrease in financial statement disaggregation (*dq_change*). As in the estimation of my

main analyses, I control for items that influence the manager's decision to report non-

GAAP earnings with the exception of prior period level of disaggregation, because I am

investigating the increase or decrease of financial statement disaggregation, not the level

of disaggregation tested in model (2) and (3).

The results of this analysis are presented in Table 7. Again, I separately estimate

the effect of the change in level of disaggregation across the three measurements of

financial reporting (*dq_total, dq_is,* and *dq_bs*) and the dependent variables from both

my H1 and H2 analyses (*nongaap* and *aggressive*). Consistent with my main analysis of

50

Table 7
Changes in Disaggregation and Non-GAAP Reporting

VARIABLES	H1: Non-GAAP Reporting			H2: Aggressive Reporting		
	Total F/S	Income Statement	Balance Sheet	Total F/S	Income Statement	Balance Sheet
dq_change	0.0262***	0.0277***	0.00564	-0.0395***	-0.0392***	-0.0240*
	(4.95)	(5.81)	(0.77)	(-3.57)	(-3.80)	(-1.78)
Controls						
Lag.nongaap	1.138***	1.136***	1.148***			
	(41.93)	(41.83)	(42.46)			
Lag.aggressive				0.254***	0.262***	0.223***
				(4.71)	(4.84)	(4.28)
spi	0.672***	0.692***	0.610***	-0.160***	-0.168***	-0.141***
	(21.31)	(21.43)	(21.18)	(-3.05)	(-3.04)	(-3.03)
special_items	-1.615***	-1.561***	-1.672***	0.118*	0.0596	0.185***
	(-5.99)	(-5.78)	(-6.20)	(1.68)	(0.79)	(2.75)
leverage	0.00500	0.00351	0.00867	-1.315***	-1.078***	-1.467***
	(0.25)	(0.18)	(0.44)	(-3.67)	(-3.02)	(-3.99)
size	0.138***	0.137***	0.140***	-0.0388	-0.0230	-0.105***
	(15.39)	(15.27)	(15.66)	(-1.05)	(-0.66)	(-2.87)
big4	0.0453	0.0437	0.0497	0.0502***	0.0643***	0.0492***
	(1.20)	(1.16)	(1.32)	(2.96)	(3.72)	(3.18)
volatility	-0.000649	-0.000637	-0.000669*	-0.107	-0.107	-0.0366
	(-1.61)	(-1.58)	(-1.67)	(-1.51)	(-1.56)	(-0.55)
cfo_volatility	-0.527**	-0.523**	-0.517**	-0.000370	-0.000750	-0.00225
	(-2.31)	(-2.28)	(-2.26)	(-0.25)	(-0.53)	(-1.49)
forecast	0.344***	0.346***	0.341***	0.116**	0.0938*	0.119***
	(12.75)	(12.81)	(12.67)	(2.45)	(1.95)	(2.67)
litigation	0.380***	0.379***	0.382***	-0.417	-0.0442	-0.654
	(7.43)	(7.41)	(7.49)	(-0.82)	(-0.09)	(-1.38)
segments	-0.00692***	-0.00707***	-0.00657**	-0.0178	-0.0635	0.0380
	(-2.58)	(-2.64)	(-2.46)	(-0.19)	(-0.74)	(0.43)
miss	0.581***	0.580***	0.583***	0.00203	0.00798*	0.00798*
	(23.80)	(23.75)	(23.92)	(0.43)	(1.67)	(1.76)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,498	16,498	16,498	4,329	4,407	4,543
R-squared	0.337	0.338	0.329	0.049	0.049	0.0518

nongaap is set to 1 if the firm issues a non-GAAP earning metric in their annual earnings announcement. *aggressive* is set to 1 if the firm reports a non-GAAP earnings metric in their annual earnings announcement that meets or beats analysts' expectations when the firm's reported GAAP earnings would have missed the earnings benchmark. *dq_change* measures the change in disaggregation reported in the financial statements relative to the firm's industry peers.

H1, I find that an increase in disaggregation is associated with an increased likelihood of reporting non-GAAP earnings for both total financial statement disaggregation (*dq_change* = 0.026, *t*-stat = 4.95) and disaggregation of the income statement (*dq_change* = 0.028, *t*-stat = 5.81). Conversely, I confirm that a change in the disaggregation of financial reporting is negatively associated with the likelihood that a firm will aggressively report non-GAAP earnings across all three measurements of disaggregation: total financial statement disaggregation (*dq_change* = -0.040, *t*-stat = -3.57), disaggregation of the income statement (*dq_change* = -0.039, *t*-stat = -3.80), and disaggregation of the balance sheet (*dq_change* = -0.024, *t*-stat = -1.78). These results supplement my main results and suggest that managers are indeed altering the level of disaggregation, albeit slightly, in response to the decision to reporting non-GAAP earnings.

5.8.2. Non-GAAP Reporting Starters and Stoppers

Several significant changes in the regulation of non-GAAP reporting have affected the firm's decision to issue non-GAAP earnings over my sample period. Starting in 2003 with the implementation of Regulation G and the requirement for firms to reconcile any non-GAAP measures, Heflin and Hsu (2008) find that firms previously reporting a non-GAAP earnings measure suddenly stopped, citing the increased cost of those disclosures in the presence of a more informative disclosure in the earnings announcement. Although non-GAAP reporting, on average, increases over my sample period, firms both initiate and discontinue non-GAAP reporting disclosures each year.

Presumably, a firm could alter both the financial statement disaggregation and non-GAAP reporting when deciding how to present performance information to its stakeholders. I investigate the decision to initiate (starter) and discontinue (stopper) non-GAAP reporting with respect to changes in the firm's level of disaggregation using the following change model:

(7) $\text{Pr}(\text{starter}_t = 1 \text{ or stopper}_t = 1) = \text{dq\_change}_t + \text{Controls} + industry_k + year_t$,

where *starter* is equal to 1 if a non-reporting firm initiated non-GAAP earnings in the current period and 0 if a non-reporting firm continues to not report, and *stopper* is equal to 1 if a reporting firm discontinues non-GAAP reporting in the current period and 0 if a non-GAAP reporting firm continues to report in the current period. My measure of the change in disaggregation (*dq_change*) and controls included in the regression remains as described above.

The results of the test of the initiation and discontinuance of non-GAAP reporting are presented in Table 8. I separately estimate the effect of the change in level of disaggregation across the three measurements of financial reporting (*dq_total, dq_is,* and *dq_bs*) and the decision to report non-GAAP earnings (*starter* and *stopper*). I suggest that if managers increase financial statement disaggregation to enhance the credibility and informativeness of non-GAAP reporting, then a firm issuing non-GAAP reporting for the first time is likely to have a higher level of disaggregation compared to its non-reporting peers. Similarly, a firm that decides to stop reporting non-GAAP earnings is likely to decrease the level of disaggregation in its financial statements compared to its reporting peers.

Table 8
Disaggregation and the Decision to Initiate or Discontinue Non-GAAP Reporting

| | Start Non-GAAP Reporting | | | Stop Non-GAAP Reporting | | |
| | | Income | Balance | | Income | Balance |
VARIABLES	Total F/S	Statement	Sheet	Total F/S	Statement	Sheet
dq_change	0.0170**	0.0241***	0.00221	-0.0241**	-0.0245***	0.0124
	(2.30)	(3.64)	(0.20)	(-2.46)	(-2.69)	(0.98)
Controls						
spi	0.682***	0.714***	0.640***	-0.487***	-0.504***	-0.425***
	(14.59)	(14.91)	(14.93)	(-7.65)	(-7.64)	(-7.43)
special_items	-1.922***	-1.875***	-1.936***	0.772	0.722	0.772
	(-5.35)	(-5.22)	(-5.37)	(1.56)	(1.45)	(1.55)
leverage	-0.0265	-0.0292	-0.0228	0.0342	0.0347	0.0322
	(-0.87)	(-0.96)	(-0.75)	(0.91)	(0.92)	(0.85)
size	0.094***	0.092***	0.096***	-0.150***	-0.149***	-0.151***
	(6.23)	(6.10)	(6.34)	(-7.29)	(-7.26)	(-7.38)
big4	-0.0291	-0.0302	-0.0266	-0.179**	-0.179**	-0.181**
	(-0.51)	(-0.53)	(-0.46)	(-2.40)	(-2.38)	(-2.41)
volatility	0.240**	0.235**	0.244**	-0.272	-0.271	-0.281
	(2.26)	(2.25)	(2.29)	(-1.09)	(-1.09)	(-1.14)
cfo_volatility	-0.783**	-0.789**	-0.774**	0.300	0.286	0.331
	(-2.22)	(-2.24)	(-2.19)	(0.54)	(0.51)	(0.60)
forecast	0.387***	0.390***	0.386***	-0.187***	-0.188***	-0.182***
	(8.70)	(8.73)	(8.69)	(-3.66)	(-3.68)	(-3.56)
litigation	0.0541	0.0550	0.0538	-0.644***	-0.646***	-0.641***
	(0.65)	(0.66)	(0.65)	(-5.98)	(-5.98)	(-5.99)
segments	0.00311	0.00294	0.00337	0.0149***	0.0150***	0.0149***
	(0.69)	(0.65)	(0.75)	(2.68)	(2.69)	(2.68)
miss	0.488***	0.488***	0.490***	-0.541***	-0.540***	-0.541***
	(13.06)	(13.03)	(13.11)	(-11.24)	(-11.22)	(-11.26)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,443	8,443	8,443	5,859	5,859	5,859
R-squared	0.144	0.145	0.144	0.201	0.202	0.201

t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

starter is set to 1 if the firm issues a non-GAAP earning metric in their annual earnings announcement but not in prior year. *starter* is set to 0 if the firm did not include a non-GAAP earnings metric in both the current and prior period annual earnings announcement. *stopper* is set to 1 if the firm ceases to report a non-GAAP earnings metric in their annual earnings announcement when they reported non-GAAP earnings in prior year. *stopper* is set to 0 if the firm continued to issue a non-GAAP earnings metric in both the current and prior period annual earnings announcement. *dq_change* measures the change in disaggregation reported in the financial statements relative to the firm's industry peers.

The results support my prediction. That is, firms that discontinue non-GAAP reporting concurrently lower the disaggregation of their financial reporting on both the income statement (*dq_change* = -0.025, *t*-stat = -2.69) and total financial statement disaggregation (*dq_change* = -0.024, *t*-stat = -2.46). By contrast, firms that increase the disaggregation of their financial reporting are more likely to initiate non-GAAP reporting if they were non-reporters in the prior period. Both an increase in total financial statement disaggregation (*dq_change* = 0.017, *t*-stat = 2.30) and income statement disaggregation (*dq_change* = 0.024, *t*-stat = 3.64) are positive and statistically significant predictors of non-GAAP reporting initiation.

5.8.3. Simultaneity Bias

There is a considerable literature evaluating the determinants of a firm's corporate disclosure strategy. Voluntary disclosures are subject to numerous factors, and I would be remiss not to address the concern that corporate policy decisions are endogenously determined. Specifically, because a manager's decision to provide non-GAAP earnings and disaggregation within the annual report may result from their firm's comprehensive disclosure policy, simultaneity may exist between non-GAAP reporting and disaggregation of financial statement line items. To address these concerns, I retest the association between disaggregation in a firm's financial statements and a manager's decision to provide an adjusted earnings measure using a simultaneous equations model to control for the inherent endogeneity in these two disclosure decisions, non-GAAP reporting and disaggregation. I model the decision to disclose in the following equations:

(8) $\Pr(\text{nongaap}_t = 1) = \text{disaggregation}_t + \text{nongaap}_{t-1} + \text{miss} + \text{Controls} + industry_k +$

   $year_t$

(9) $\Pr(\text{disaggregation}_t = 1) = \text{nongaap}_t + \text{disaggregation}_{t-1} + \text{debt\_issuance} + \text{Controls} +$

   $industry_k + year_t$

where the *nongaap* variable represents the firm's reporting of an adjusted earnings

measure in the earnings announcement and disaggregation is an indicator variable

signaling whether a firm is a high- or low-disaggregating firm. I instrument for non-

GAAP reporting (*nongaap*) by identifying when GAAP earnings fall short of analysts'

expectations (*miss*), because prior literature finds that although managers are more likely

to report adjusted earnings in order to meet earnings benchmarks, it is unlikely that they

will adjust the level of disaggregation between fiscal periods. I use the issuance of new

debt *(debt_issuance)* as an instrument for line item disaggregation; studies show that

although creditors influence the level of detail reported in the financial statements,

creditor scrutiny is unlikely to shape non-GAAP reporting (Fama 1985).

   Similarly, I retest the association between aggressive non-GAAP reporting and

the decision to engage in high-disaggregation financial reporting using the following

system of equations:

(10) $\Pr(\text{aggressive}_t = 1) = \text{disaggregation}_t + \text{aggressive}_{t-1} + \text{miss} + \text{Controls} + industry_k$

   $+ year_t$

(11) $\Pr(\text{disaggregation}_t = 1) = \text{aggressive}_t + \text{disaggregation}_{t-1} + \text{debt\_issuance} + \text{Controls}$

   $+ industry_k + year_t,$

where my dependent variable (*aggressive*) is an indicator variable for managerial reports of non-GAAP earnings measures that meet or beat analysts' street expectations for the period when the firm's reported GAAP earnings missed the analysts' GAAP earnings benchmark.

The results of the testing of both the first and second hypothesis using the simultaneous equation design are presented in Table 9. When the simultaneity of the disclosure decision is controlled, non-GAAP reporting is positively associated with a manager's decision to report more granular information in the subsequent financial statements, whereas the decision to issue non-GAAP earnings is not necessarily associated with the level of disaggregation in the financial statements.

This result is interesting because it suggests that the decision to issue non-GAAP earnings precedes the decision to disaggregate information in the financial statements and provides evidence that firms that report non-GAAP earnings are more likely to provide detailed information in their financial statements (*nongaap* = 0.231, *t*-stat = 4.66), holding other determinants of non-GAAP reporting constant. Second, the type of firm that is more likely to disaggregate information in its annual report (*disaggregation*) appears to be unassociated with the reporting of adjusted net earnings (*disaggregation* = -0.218, *t*-stat = -1.13).

However, a firm's decision to use non-GAAP earnings to meet or beat earnings expectations appears to be influenced by the firm's historical level of financial statement disaggregation. The direction of this result for H2 is the opposite of the prior result for H1. In this case, high-disaggregating firms are less likely to report non-GAAP earnings

Table 9
Simultaneous Equation Model

VARIABLES	H1: Non-GAAP Reporting		H2: Aggressive Reporting	
	nongaap	disaggregation	aggressive	disaggregation
disaggregation	-0.2177		-10.7817**	
	(-1.13)		(-2.34)	
nongaap		0.2306***		
		(4.66)		
aggressive				0.1043
				(1.42)
Instruments				
miss	0.1592***		0.0606**	
	(13.88)		(2.51)	
debt_issuance		-0.0551***		-0.0102**
		(-6.82)		(-2.27)
Controls				
Lag.nongaap	0.4078***	-0.0354		
	(26.58)	(-1.59)		
Lag.aggressive			0.0579**	-0.0121*
			(2.05)	(-1.73)
Lag.disaggregation	0.1880	0.6654***	0.7521**	0.0732***
	(1.43)	(86.75)	(2.27)	(29.56)
spi	0.1034*	-0.3453***	-0.4407**	-0.0525***
	(1.71)	(-27.34)	(-2.03)	(-9.82)
special_items	-0.4968***	-0.1350	-0.8338***	0.0018
	(-4.70)	(-1.63)	(-3.30)	(0.05)
leverage	-0.0005	-0.0169***	-0.0647**	-0.0022
	(-0.06)	(-2.94)	(-2.34)	(-1.00)
size	0.0338***	0.0079***	0.0111	-0.0012
	(8.58)	(2.62)	(1.48)	(-1.11)
big4	0.0199	-0.0131	0.0021	0.0066
	(1.48)	(-1.23)	(0.06)	(1.54)
volatility	-0.0001	-0.0000	-0.0013	-0.0001
	(-0.76)	(-0.05)	(-1.59)	(-1.41)
cfo_volatility	-0.1076	-0.0116	-0.2513	-0.0050
	(-1.38)	(-0.19)	(-1.11)	(-0.21)
forecast	0.0956***	0.0055	0.1000***	0.0023
	(8.60)	(0.60)	(2.98)	(0.69)
litigation	0.1021***	0.0411***	0.1031*	0.0102**
	(4.53)	(2.64)	(1.67)	(2.52)
segments	-0.0005	0.0011	0.0057*	0.0005**
	(-0.54)	(1.35)	(1.84)	(2.31)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	7,936	7,936	4,334	4,334
R-squared	0.380	0.624	0.873	0.216

t-statistics in parentheses   *** p<0.01, ** p<0.05, * p<0.1

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nongaap is set to 1 if the firm issues a non-gaap earning metric in their annual earnings announcement. *aggressive* is set to 1 if the firm reports a non-GAAP earnings metric in their annual earnings announcement that meets or beats analysts' expectations when the firm's reported GAAP earnings would have missed the earnings benchmark. *disaggregation* measures the level of disaggregation present in in the firm's historical financial statements by counting non-missing line items in Compustat as outlined in Chen et al. (2015). Regressions are the result of a simultaneous equations model where *miss* (set to one if the firm's GAAP earnings miss analysts' expectations, zero otherwise) and *debt_issuance* (set to one if a firm issues new debt during the prior fiscal period, zero otherwise) are instruments for *aggressive* and *disaggregation,* respectively.

aggressively (*disaggregation* = -10.78, *t*-stat = -2.34), while the contemporaneous

decision to report more aggressive non-GAAP earnings is not associated with the current

level of disaggregation (*nongaap* = 0.104, *t*-stat = 1.42). This result, which is relevant to

standard-setters, suggests that firm type (i.e., high disaggregation or low disaggregation)

is a stronger predictor of whether firms will engage in managerial manipulation of non-

GAAP earnings. These results confirm the intuition that managers are more inclined to

increase the level of disaggregated reporting in response to non-GAAP reporting

changes, but that a similar decrease in disaggregation is difficult to implement and that

my prior results suggesting a reduction in aggressive non-GAAP reporting are likely

driven by firms that consistently lean towards more aggregated financial reporting.

5.8.4. Information Processing Costs

Thus far, my research design has attempted to control for the endogenous

relationship between my variables of interest, non-GAAP reporting and disaggregation

of the financial statements, through the use of a change model as well as a simultaneous

equations model. Although my main results may demonstrate a relationship between

voluntary disclosure and disaggregation, I cannot rule out that bias may still exist if my

instruments do not fulfill the exclusion restriction. Thus, as an alternative research design, I turn to a natural experiment to supplement my main findings.

I use the mandatory adoption of eXtendible Business Reporting Language (XBRL) as a natural experiment to directly examine how an exogenous shock to investors' information-processing costs affects management's decision to provide greater disaggregation in the financial statements. The XBRL mandate was rolled out in phases starting on June 15, 2009, and it required all publicly traded firms to file XBRL documents by June 15, 2011. XBRL was intended to make financial statements more accessible by providing users with machine-readable information from the financial statements. Prior studies of the capital market effects of the mandate find that XBRL implementation resulted in more efficient pricing, greater quantitative disclosures, and an overall reduction of information asymmetry (Blankespoor et al. 2014; Dong et al. 2016), consistent with a reduction in information processing costs.

If information processing costs are reduced, the accessibility of disaggregated information presented in the financial statements will be magnified. The main argument against increased disaggregation in the financial statements hinges on whether more detailed information is useful to financial statement users. I suggest that if the availability of machine-readable information can free users from the inefficiencies associated with manual data collection and processing, then the influence of disaggregated information will increase following the XBRL rollout.

I retest my first and second hypotheses using the three-year phased rollout of the XBRL adoption. I restrict my analysis to the two years preceding and two years

following the implementation of XBRL for each firm, excluding the actual year of implementation. By utilizing the staggered XBRL adoption, I estimate a difference-in-differences regression to estimate the relationship between my variable of interest, disaggregation, and my outcome variables, non-GAAP reporting and aggressive non-GAAP reporting.

(12) $\Pr(nongaap_t = 1) = disaggregation_t + post + disaggregation_t \times post + Controls$

   $+ industry_k + year_t$

(13) $\Pr(aggressive_t = 1) = disaggregation_t + post + disaggregation_t \times post + Controls$

   $+ industry_k + year_t,$

where *post* is an indicator variable equal to 1 for the two annual reporting periods following the XBRL implementation and equal to 0 for the two pre-reporting periods. I include the same control variables as in previous regression models as well as industry fixed effects.

    The results of this subsample analysis generally confirm my prior results and are presented in Table 10. I find that the implementation of XBRL enhanced the constraining effect of disaggregated reporting on managerial manipulation of non-GAAP earnings. Although I find no difference in the relationship between non-GAAP reporting and disaggregated financial reporting between the pre- and post-XBRL periods for any measure of disaggregation, I do find that the occurrence of aggressive non-GAAP reporting was significantly lower in the post-XBRL information rich environment (*dq_total* = -0.045, *t*-stat = -1.76; *dq_is* = -0.093, *t*-stat = -1.77; *dq_bs* = -0.020, *t*-stat = -0.46). The results suggest that the reduction in processing costs to impound

Table 10
Differences-in-Differences Model–XBRL Implementation

| | | (1) | | | | (2) | | |
| | | H1: Non-GAAP Reporting | | | | H2: Aggressive Reporting | | |
VARIABLES	Pr.	Total F/S	Income Statement	Balance Sheet	Pr.	Total F/S	Income Statement	Balance Sheet
disaggregation x	(+)	0.00219	0.0111	-0.00730	(–)	-0.0449*	-0.0926*	0.0203
Post XBRL		(0.12)	(0.36)	(-0.24)		(-1.76)	(-1.77)	(0.46)
disaggregation		0.0334**	0.0371	0.0223		0.00580	0.0108	-0.0121
		(2.54)	(1.60)	(1.01)		(0.31)	(0.29)	(-0.39)
Post XBRL		0.107***	0.0792	0.0820		0.0250	0.0830	0.165*
		(2.78)	(1.24)	(1.32)		(0.44)	(0.89)	(1.82)
miss		0.520***	0.474***	0.518***		0.131**	0.0885	0.140*
		(11.64)	(8.41)	(9.36)		(2.10)	(1.11)	(1.85)
Controls		Yes	Yes	Yes		Yes	Yes	Yes
Industry Fixed Effects		Yes	Yes	Yes		Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes		Yes	Yes	Yes
Observations		5,106	3,349	3,279		2,312	1,469	1,465
R-squared		0.318	0.354	0.311		0.057	0.073	0.056

nongaap is set to 1 if the firm issues a non-GAAP earning metric in their annual earnings announcement. *aggressive* is set to 1 if the firm reports a non-GAAP earnings metric in their annual earnings announcement that meets or beats analysts' expectations when the firm's reported GAAP earnings would have missed the earnings benchmark. *disaggregation* measures the level of disaggregation present in in the firm's historical financial statements by counting non-missing line items in Compustat as outlined in Chen et al. (2015). *post* is an indicator variable set to 1 following the implementation of XBRL for each filer type. Regressions are the estimated in the two year pre- and post-XBRL implementation period. *t*-statistics in parentheses   *** p<0.01, ** p<0.05, * p<0.1

disaggregated financial information resulted in a constraint on managers' manipulation of performance reporting for the purpose of meeting or beating earnings expectations; however, managers did not respond to the increase in information content in the post-XBRL period by immediately increasing disaggregation as a signal of reporting credibility.

6. CONCLUSION

In this study, I examine whether financial statement disaggregation is associated with the market's ability to assess the value of a firm. I posit that information in the audited historical financial statements provides managers with a mechanism for credibly conveying the reliability of their disclosures of private information and allows investors to better evaluate the truthfulness of those disclosures.

My analyses reveal that disaggregation facilitates (1) more credible disclosures of adjusted earnings, (2) a reduction in incentives for managerial manipulation of non-GAAP earnings, and (3) higher-quality non-GAAP earnings reporting. My findings have implications for managers, investors, and regulators, because they confirm that disaggregation improves the reliability of non-GAAP reporting both by providing a means of committing to truthful reporting and weakening the incentives for managerial opportunism. Although recent attention from standard-setters has highlighted the potential need for mandatory disaggregation information in a firm's periodic reporting, my findings indicate that managers already appear to utilize the confirmatory value of voluntary disaggregation in financial statements to reduce information asymmetry and signal the credibility of voluntary disclosures of adjusted non-GAAP earnings.

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APPENDIX

VARIABLE DEFINITIONS

Variable	Description	Definition
Disaggregation		
disaggregation	Disaggregation Quality	Indicator set to 1 if the firm has top-tercile disaggregation quality (*dq_total, dq_is, or dq_bs*) within Fama-French 48 industry classification and fiscal year, zero otherwise.
dq_change	Disaggregation Quality (change measure)	The change in the firm's level of disaggregation quality from prior year. The level of disaggregation is first split into deciles for each financial statement within Fama-French 48 industry classification and fiscal year (*decile_dq*) and the change reflect the change in disaggregation relative to its industry peers ($decile\_dq_t$ - $decile\_dq_{t-1}$)
Non-GAAP Variables		
nongaap	Reporting of Non-GAAP earnings	Indicator set equal to 1 if the firm reports a non-GAAP earnings metrics in their annual earnings announcement, zero otherwise.
aggressive	Reporting of aggressive Non-GAAP earnings	Indicator set equal to 1 if the firm reports a non-GAAP earnings metric in their annual earnings announcement that meets or beats analysts' expectations when the firm's reported GAAP earnings would have missed the analysts' GAAP benchmark (Bradshaw et al. 2018). Non-GAAP Earnings > Analysts' Street Consensus and GAAP Earnings < Analysts' GAAP Consensus
starter	Initiates Non-GAAP Reporting	Indicator equal set equal to 1 if a non-reporting firm initiated non-GAAP earnings in the current period and zero if a non-reporting firm continues to not report.

Variable	Description	Definition
stopper	Discontinues Non-GAAP Reporting	Indicator equal set equal to 1 if a reporting firm discontinues non-GAAP reporting in the current period and zero if a non-GAAP reporting firm continues to report in the current period.
earnings_{nongaap}	Non-GAAP Earnings	Reported adjusted earnings per share (Non-GAAP) in the annual earnings announcement. Obtained from the Non-GAAP earnings database from Bentley et al. (2018).
exclusions_{nongaap}	Non-GAAP Exclusions	Annual reported GAAP earnings per share (EPSFI) less the reported adjusted earnings per share (Non-GAAP) in the annual earnings announcement.
Performance Variables		
operating_{t+1}	Future Operating Earnings	Operating Earnings for the following year scaled by total assets in the current period. $(\text{OPREPSX}_{t+1} \times \text{CSHD}_{t+1})/\text{Total Assets}_t$
cfo_{t+1}	Future Cash Flow from Operations	Operating cash flow for the following year scaled by total assets in the current period. $(\text{OANCF}_{t+1}/\text{Total Assets}_t)$
Instrumental Variables		
miss	Missed Forecast	Indicator set equal to 1 if the firm missed the consensus earnings forecast in the 3rd quarter of the fiscal period (Actual-Consensus<0)
debt_issuance	New Debt Issuance	Indicator set equal to 1 if the firm issued new debt during the year ($\text{DLTIS}_t>0$), zero otherwise.
Control Variables		
analysts	Analysts Following	Log (1+number of analysts following the firm at the end of the fiscal year *t*)
big4	Big 4/5/6 Auditor	Indicator set equal to 1 if the firm is audited by a Big 4/5/6 auditor in year *t*, and 0 otherwise.
book_to_market	Book to Market Ratio	Book-value of equity (CEQ) scaled by market-value of equity (PRCC_F*CSHO) in year *t*

Variable	Description	Definition
cfo_volatility	Cash Flow Volatility	std(OANCF$_t$/Total Assets$_t$) for years *t-4* through *t*
distress	Distressed Firm	Indicator set equal to 1 if a firm's Altman' Z-Score (Altman 1968) is less than 2.675 in year *t-1*, and 0 otherwise.
forecast	Management Forecast	Indicator set equal to 1 if the firm issues a forecast during the fiscal year, zero otherwise.
instit_own	Institutional Ownership	Log (1+annual Institutional Ownership) Average quarterly institutional ownership in year t. Number of shares held by institutional owners at quarter end from the 13F filings / number of shares outstanding (CSHOQ)
intangibles	Intangible Asset Intensity	Intangibles (INTAN $_t$) scaled by total assets (AT$_{t-1}$)
leverage	Leverage Ratio	Total long term debt (DLTT) and noncurrent liabilities scaled by MVE at the beginning of year *t*.
litigation	Litigation Risk	Indicator set equal to 1 if the firm is in an industry with high litigation risk, zero otherwise. (SIC 2388-2836; 8731-8734; 3570-3577; 7370-7374; 3600-3674; or 5200-5961)
loss	Loss Firm	Indicator set equal to 1 if income (IB$_t$) is negative, zero otherwise.
merger	Merger & Acquisition	Indicator set equal to 1 if acquisition costs (AQP) is non-zero, zero otherwise.
post	Post-XBRL Implementation	Rolling implementation by filer type: Large accelerated filers after June 15, 2009 Accelerated filers after June 15, 2010 All other filers after June 15, 2011
report_lag	Reporting Lag	Number of days between the fiscal period end and earnings announcement date.
restructure	Asset restructuring	Indicator set equal to 1 if restructuring costs (RCP) is non-zero, zero otherwise.
segments	Business Segments	Log(Total number of Business Segments)

Variable	Description	Definition
size	Firm Size	Log (PRCC_F*CSHO)
special_items	Magnitude of Special Items	Special Items scaled by lagged assets (SPI_t/AT_{t-1})
spi	Special Items	Indicator set equal to 1 if the firm has a non-zero special items reported, zero otherwise.
volatility	Earnings Volatility	std($IBCOM_t/MVE_{t-1}$) for years t through $t+3$