Internal Controls and Non-GAAP Reporting

Anne Albrecht*
Neeley School of Business
Texas Christian University
a.albrecht@tcu.edu

Roy Schmardebeck
Haslam College of Business
The University of Tennessee, Knoxville
rs@utk.edu

Marcy Shepardson
Kelley School of Business
Indiana University
shepardm@indiana.edu

May 2024

Keywords: Non-GAAP reporting; internal controls over financial reporting; disclosure controls; SOX 404(a); SOX 302
Data Availability: Data are available from public sources identified in the text

*Corresponding author

We thank Sarah McVay, David Weber, and seminar participants at the University of Florida, Texas Christian University, and the University of Connecticut for helpful comments and suggestions. We also thank the authors of Bentley, Christensen, Gee, and Whipple (2018) for the use of their non-GAAP earnings disclosure data.

Internal Controls and Non-GAAP Reporting

ABSTRACT: We examine whether strong controls are associated with the informativeness of non-GAAP earnings disclosures. Non-GAAP earnings should be affected by internal controls over financial reporting (ICFR) and disclosure controls outside of ICFR because they affect the recording, processing, summarizing, and reporting of disclosures required by the Securities and Exchange Commission. However, little is known about disclosure controls outside of ICFR and lack of oversight suggests firms may not have engaged in robust implementation of controls over non-GAAP disclosures given their relatively unregulated and unaudited nature. We find that strong controls are associated with constraining aggressive and promoting informative non-GAAP disclosures. We further find that non-GAAP earnings are much more predictive of future performance than GAAP earnings, and more so in firms with strong controls. Our results should be of interest to the SEC and PCAOB as they consider the impact of ICFR and disclosure controls on non-GAAP earnings.

I. INTRODUCTION

Non-GAAP financial measures, defined as voluntarily disclosed performance measures that adjust the amount calculated using generally accepted accounting principles (GAAP) for items that managers choose to exclude or include (SEC [2003]), were provided by nearly all of the S&P 500 in 2017 (Audit Analytics [2018]). Their voluntary, unaudited nature increases the potential for managers to use non-GAAP measures opportunistically, which is highlighted in Securities and Exchange Commission (SEC) and Public Company Accounting Oversight Board (PCAOB) concerns that non-GAAP earnings are used to manage investor perceptions (SEC [2015]; PCAOB [2017]). However, regulatory concerns are at odds with recent research concluding that non-GAAP reporting is frequently informative, particularly for retail investors (e.g., Black, Christensen, Ciesielski, and Whipple [2018]; Black and Christensen [2018]). Thus, we investigate how firms achieve informative non-GAAP earnings in the face of limited oversight and examine whether strong controls, both internal controls over financial reporting (ICFR) and other disclosure controls and procedures outside of ICFR (disclosure controls hereafter) help firms achieve high-quality non-GAAP earnings. Our study is important for regulators exploring constraining non-GAAP reporting, managers and boards of directors who assess the costs and benefits of implementing internal controls, and stakeholders interested in understanding the benefits of disclosure controls.

ICFR are procedures and processes designed to address risks related to the reliability of *historical financial statements*, whereas disclosure controls are more broadly defined and include ICFR as well as other controls over the information required to be disclosed *outside the historical financial statements* (SEC [2002], emphasis added). We expect strong controls (including both ICFR and disclosure controls) play a role in high-quality non-GAAP reporting. Boards of directors and managers are responsible for identifying mandatory disclosure-related control objectives, such

as timely disclosure of material corporate events, responding to changes in disclosure requirements, and ensuring the accuracy or reasonableness of mandatory disclosures, and in turn implementing controls to achieve those objectives. As controls have the potential to both aid managers in identifying and recording appropriate and accurate exclusions and constrain them from inappropriate or inaccurate exclusions, we posit that strong controls both promote informative and constrain opportunistic non-GAAP earnings.

Next, we explore whether benefits are derived from ICFR, disclosure controls, or both. Prior ICFR research is clear; strong ICFR is associated with higher-quality, historical financial statements (i.e., Doyle, Ge and McVay [2007a]; Ashbaugh-Skaife, Collins, Kinney and Lafond [2008]). Well-controlled firms should implement ICFR that reasonably assures the material accuracy of GAAP earnings. Thus, we expect that strong ICFR should also be associated with high-quality non-GAAP earnings which are derived by adjusting reported GAAP earnings.

There is, however, virtually no research on disclosure controls in any context. The link between disclosure controls and non-GAAP earnings was not made explicit until 2015 by then SEC Chair Mary Jo White (SEC [2015]), who noted that companies should be implementing "appropriate controls over the calculation of non-GAAP measures". Two examples highlight recent SEC enforcement of disclosure controls over non-GAAP disclosures. In 2023, the SEC issued enforcement actions against DXC Technology Corporation and Newell Brands, citing that they failed to maintain disclosure controls over the creation of their non-GAAP metrics (SEC, [2023a, 2023b]). Well-controlled firms might create policies detailing when it is appropriate to report a non-GAAP earnings amount and appoint a monitor to review policy compliance and exceptions. Board approval of policies over exclusion selection and consistency, standardization (and review) of calculations, and follow-up on amounts inconsistent with overall policy objectives

should each impact the quality of non-GAAP earnings. We therefore posit that strong disclosure controls should be associated with the disclosure of high-quality non-GAAP earnings.

To test our hypotheses, we require a measure of whether firms have strong controls, overall. Firms provide disclosures about the existence of material weaknesses in (a) ICFR in accordance with Section 404(a) of the Sarbanes-Oxley Act of 2002 (SOX, U.S. Congress [2002]) on an annual basis and (b) disclosure controls in accordance with SOX Section 302 on a quarterly basis. Given that there are no models that predict the quality of disclosure controls and ICFR, we use a model adapted from prior ICFR research (Ge, Koester, and McVay [2017]; Bhaskar, Schroeder, and Shepardson [2019]). We classify firms in the lowest (highest) quartile of the predicted probability of disclosing that a material weakness in ICFR or disclosure controls exists as having strong (weak) controls. The use of a prediction model is important because it allows us to identify firms with strong, as compared to merely effective, controls. Because the strength of a firm's controls should impact how quickly they issue their financial statements and the likelihood of receiving an SEC comment letter, we validate our estimates by showing they are predictably associated with the number of days it takes the firm to file annual and quarterly reports on Form-10K and 10-Q and the likelihood a received SEC comment letter has at least one disclosure control related comment.

We obtain quarterly non-GAAP earnings disclosure data from Bentley, Christensen, Gee and Whipple (2018) from 2004 through 2018 and test our hypotheses in firm-quarters with reported non-GAAP earnings. We begin by examining whether strong controls are associated with (1) constraining opportunistic disclosures (i.e., firms with strong controls are less likely to disclose aggressive non-GAAP amounts) and (2) promoting informative disclosures (i.e., firms with strong controls are more likely to disclose income decreasing non-GAAP amounts), both unconditional on incentives and within subsamples of firm-quarters we identify as having opportunistic and

informational incentives to provide non-GAAP amounts. Following Davidson, Gomez, Heflin and Wallace [2020], we include firm-quarters where GAAP earnings miss the consensus analyst GAAP forecast by $0.05 or less in the *Opportunistic Incentives* subsample because these firms "just missed" the consensus analyst forecast and therefore have greater ability and incentive to manage perceptions by reporting a higher non-GAAP earnings amount. Firm-quarters where the absolute value of the difference between the consensus analyst GAAP forecast and GAAP earnings is greater than $0.05 are included in the *Informational Incentives* subsample because these firms missed analyst forecasts by a wide margin and thus may benefit from providing a non-GAAP earnings disclosure that increases the predictiveness of earnings.

First, we examine if the quality of controls impacts whether opportunistic or informative non-GAAP earnings measures are disclosed. We find that firms with strong controls are significantly less likely to report a non-GAAP earnings amount that exceeds operating earnings (our outcome measure of opportunistic behavior) and are more likely to report income-decreasing non-GAAP earnings (our outcome measure of informative behavior), prior to conditioning on incentives. We also find that these results are consistent when we split the sample into *Opportunistic* and *Informational Incentives* subsamples. This evidence is consistent with strong controls both constraining opportunistic and promoting informative non-GAAP reporting.

Next, we explore the effects of strong controls, ICFR, and disclosure controls using estimates of the relative predictiveness of GAAP earnings, non-GAAP earnings, and exclusions for future performance across firms with strong and weak controls. We assume non-GAAP amounts that are more predictive of future operating earnings and cash flows than corresponding GAAP amounts are high-quality because managers frequently state that non-GAAP disclosures aide in forecasting future performance (e.g., Leung and Veenman [2018]; Davidson et al. [2020]).

Because our strong controls measure combines ICFR and disclosure controls quality, we look to the relative predictiveness of GAAP earnings to draw inferences about ICFR and we look to the relative predictiveness of exclusions to draw inferences about disclosure controls.

We find that non-GAAP earnings are highly predictive of future performance regardless of control quality and that non-GAAP earnings are more predictive of future earnings and cash flows than GAAP amounts in all specifications. From an economic perspective, $1.00 of current year GAAP earnings are associated with $0.26 of next year's operating earnings, on average, whereas $1.00 of current year non-GAAP earnings are associated with $0.76, an economically significant difference, and the amount is larger for firms with strong versus weak disclosure controls.

We next show that GAAP earnings are more predictive of future earnings for firms with strong than weak controls, consistent with the beneficial effects of strong ICFR. While non-GAAP exclusions are statistically associated with future performance across groups, from an economic perspective, $1.00 of exclusions is associated with only $0.08 of future earnings, on average, suggesting that a large majority of exclusions are not predictive of future performance. However, in our primary analysis, we find no difference in the predictiveness of exclusions between firms we estimate have strong versus weak controls, inconsistent with strong disclosure controls reducing opportunism as compared to firms with weak controls. When estimating a firm-fixed effects version of our model, we do find evidence that exclusions are less predictive of future operating earnings for firms with strong versus weak controls. In combination, this set of analyses suggests that ICFR over recorded amounts and disclosure controls over exclusion selection combine to improve the predictiveness of non-GAAP over GAAP earnings, however our results

also suggest some room for improvement in terms of the exclusion of persistent items.[1] Taken as a whole, our results support that disclosed non-GAAP earnings are informative on average and we find evidence that strong controls aid in achieving on-average informativeness by constraining opportunistic use, encouraging informative use, and improving the predictiveness of future earnings and cash flows.

We contribute to non-GAAP earnings research, particularly work addressing monitoring effects on non-GAAP earnings. Prior studies conclude that monitoring decreases the provision of or improves non-GAAP disclosures (Frankel, McVay and Soliman[2011]; Seetharaman, Wang and Zhang [2014]; Christensen, Pei, Pierce and Tan [2019]). However, boards are only one, albeit important, component of the overall control system. Our research complements this work by finding evidence that strong controls both constrain opportunistic use of non-GAAP earnings and may encourage use when non-GAAP earnings could be informative.

We also contribute to research on the benefits of internal controls. Research on disclosure controls outside of ICFR is sparse, and the explicit connection between disclosure controls and non-GAAP reporting is recent (e.g., SEC [2015], [2019]). Thus, while we contribute to extant research on ICFR (e.g., Ashbaugh-Skaife, Collins, and Kinney [2007]; Hammersley, Myers and Zhou[2012]) including spillover benefits outside of audited financial reports (Feng, Li and McVay[2009]; Feng, Li, McVay and Skaife [2015]), ours is the first study of which we are aware that explicitly examines disclosure controls. We contribute to the literature by examining the impact of ICFR and disclosure controls on the reporting and quality of non-GAAP earnings.

[1] Alternatively, because our prediction model combines ICFR and disclosure controls and material weakness disclosure accuracy is much higher for ICFR than disclosure controls, this could be due to the majority of the variation in our control quality proxy being driven by ICFR rather than disclosure controls.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Non-GAAP Reporting Background and Prior Research

Background

Non-GAAP financial measures are numerical measures of performance that exclude (include) amounts that are included in (excluded from) the most directly comparable measure calculated and presented following GAAP.[2] Managers frequently report non-GAAP measures, stating they are more predictive of future earnings or representative of core earnings than GAAP amounts, and are therefore important for user decision making. Non-GAAP earnings amounts, specifically, are calculated by adjusting GAAP earnings for (typically) one-time or non-cash items that managers choose to exclude (i.e., exclusions). Thus, the quality of non-GAAP earnings amounts is a function of the nature of the items that firms choose to exclude, as well as the accuracy of the recorded amounts of both GAAP earnings and excluded items.

Non-GAAP earnings are voluntarily disclosed and there is little standardization of what can or cannot be excluded from GAAP earnings to arrive at non-GAAP earnings. The SEC has, however, issued general guidance about non-GAAP measures. Regulation G (Reg G) prohibits firms from making untrue statements (either by error or omission) that make the presentation of a measure misleading and Reg S-K prohibits adjusting a non-GAAP performance measure to eliminate or smooth items identified as non-recurring, infrequent, or unusual when (1) the nature of the charge or gain is reasonably likely to recur within 2 years or (2) there was a similar charge or gain within the prior 2 years. Further, in 2016 the SEC updated their interpretive guidance on non-GAAP measures, clarifying that both the presentation of performance measures excluding normal, recurring, cash operating expenses and inconsistent presentation between periods may be

[2] See Topic 8 – Non-GAAP Measures of Financial Performance, Liquidity and Net Worth of the SEC's Financial Reporting Manual. Available at https://www.sec.gov/corpfin/cf-manual/topic-8.

misleading. However, the SEC has generally left the nature of exclusions to management's discretion and has instead focused their regulatory efforts on disclosures (SEC [2018]).

There are comparatively specific requirements about how non-GAAP measures must be disclosed when managers choose to use them. Reg G requires the presentation of and reconciliation to the most directly comparable GAAP measure whenever a registrant discloses material information that includes a non-GAAP financial measure. In addition to requirements redundant with those in Reg G, Reg S-K 10 (e) requires that GAAP measures be presented with equal or greater prominence than their non-GAAP counterpart and that management disclose why the non-GAAP measure is useful and, when material, how it is used. Thus, while few standards define the composition of a high (or low) quality non-GAAP figure, requirements to disclose what (and in some cases, why) amounts are excluded should improve non-GAAP reporting.

Controls and Non-GAAP Reporting

The Sarbanes-Oxley Act of 2002 (SOX) requires firms to report on the effectiveness of disclosure controls (Section 302) quarterly and ICFR (Section 404) annually. SOX defines disclosure controls and procedures as "internal controls which could affect the issuer's ability to record, process, summarize and report financial data" and the PCAOB defines ICFR more specifically as "a process designed to provide reasonable assurance regarding the reliability of financial reporting and preparation of financial statements in accordance with GAAP". The SEC later clarified that disclosure controls should ensure that information required to be disclosed is accumulated and internally communicated to allow timely decisions regarding the information's disclosure, including the quarterly and annual financial statements (SEC [2002]). Thus, disclosure controls and procedures include, but are not limited to, ICFR specifically designed to provide

reasonable assurance over mandatory external financial reports.[3] Figure 1 depicts the relationship between ICFR and disclosure controls.

[INSERT FIGURE 1]

While the majority of ICFR (with minor exceptions) are also considered disclosure controls, many disclosure controls outside of ICFR do not relate specifically to the financial statements.[4] Firms with strong controls should also implement disclosure controls addressing the accumulation and reporting of information outside of the historical financial statements such as risk factor discussions, management's discussion and analysis, quantitative and qualitative disclosures about market risk on forms 10-K, information required to be disclosed in annual proxy statements, and quarterly earnings releases furnished on Form 8-K (SEC [2002]), where non-GAAP earnings are typically disclosed. Overall, controls could affect non-GAAP earnings via ICFR affecting the quality of recorded financial statement amounts and disclosure controls governing both the disclosure of non-GAAP earnings and their calculations.

Hypothesis Development

The consensus of recent non-GAAP research is that non-GAAP earnings disclosures are beneficial, on-average, which may be surprising given that these disclosures have limited external monitoring. They are unaudited and relatively unregulated. We posit that strong controls help firms achieve informative non-GAAP earnings disclosures. We first discuss how firms with strong controls, including both ICFR and disclosure controls, can achieve more informative outcomes, followed by a discussion of non-GAAP and ICFR research that supports our predictions.

[3] SEC General Rules and Regulations, Securities Exchange Act of 1934 (17 CFR Part 240) § 240.13a-15(e-f).
[4] Regarding the limited ICFR that may be outside the purview of disclosure controls, the SEC has suggested that management may exclude "components of [ICFR] pertaining to the accurate recording of transactions and disposition of assets or to the safeguarding of assets" (SEC [2007]).

Internal controls are classically defined as monitoring devices that benefit owners by altering the opportunity for managers to capture non-pecuniary benefits (Jensen and Meckling [1976]). Said differently, they keep managers from acting in their own best interest to the extent that their best interest is not aligned with absentee owners. At a minimum, controls should constrain managerial decision making and limit actions that do not benefit stakeholders, more generally. However, in addition to keeping managers from doing "bad" things, strong controls can also induce beneficial behaviors that managers may not otherwise engage in. We posit that strong controls do both in the context of non-GAAP earnings.

As previously discussed, disclosure controls are processes that help firms achieve objectives related to disclosures required by the SEC, both inside and outside of the historical financial statements. That ICFR should affect the quality of non-GAAP earnings derived from and reconciled to GAAP earnings seems clear. If GAAP earnings are more reliable in firms with strong controls, and exclusion amounts are derived from amounts initially recorded from transactions governed by ICFR, then the quality of non-GAAP earnings should also be a function of ICFR. However, the explicit recognition that disclosure controls outside of ICFR should include controls over non-GAAP reporting is recent, as first highlighted by then SEC Chair Mary Jo White in 2015 (SEC [2015]), echoed by Wes Bricker, former Chief Accountant of the SEC (SEC [2019]), and followed by Big 4 accounting firm issuance of disclosure control and non-GAAP reporting guidance (e.g. Deloitte [2016], [2023]; KPMG [2018]). We argue that disclosure controls outside of ICFR have the potential to affect non-GAAP earnings in two primary ways: processes and procedures governing (1) exclusion selection, or the nature of exclusions and (2) exclusion amounts, or the accuracy of exclusion amounts, conditional on their selection.

Control design and implementation begin with risk assessment and objective setting. With respect to ICFR that are likely to affect the quality of GAAP earnings, boards or disclosure committees identify risks related to the accuracy, completeness, and occurrence (to name three assertions) of transactions required to be recorded under GAAP. For example, strategies such as international growth via acquisition lead to financial reporting risks related to income tax, foreign currency translation, consolidation, and intangible assets. Policies and controls are then designed and implemented to reasonably assure that amounts related to these risks are not materially misstated, which ultimately should improve the quality of both GAAP and non-GAAP earnings.

With respect to disclosure controls, boards or disclosure committees might identify non-GAAP disclosures as an area that managers can use opportunistically and set an objective to curb those behaviors. Alternatively, firms may recognize that non-GAAP disclosures can be useful for investors and set an objective to capitalize on their use in settings where GAAP earnings are less informative. An appropriate (albeit generic) non-GAAP policy objective would be "to provide useful and clear supplemental information to investors" (Deloitte [2023]).

Control system owners then oversee the implementation of policies and procedures that help them to achieve objectives (i.e., controls). Preventive disclosure controls may include policies regarding allowable (and prohibited) exclusions, the review of any material, one-time charges for exclusion consideration, and standardization of calculations. Detective controls such as disclosure committee or internal audit review of all non-GAAP measures and follow-up on amounts deemed by reviewers as inconsistent with overall policy objectives should increase the likelihood that preventive control activities are performed and thereby improve the informativeness of non-GAAP disclosures. Ultimately, when implemented, disclosure controls designed to achieve non-GAAP

objectives should increase non-GAAP earnings quality. Whether firms have implemented robust disclosure controls over non-GAAP earnings is an empirical question.

Non-GAAP research has not explored the effects of internal controls (disclosure or otherwise) on non-GAAP earnings. However, prior work has examined the effects of regulatory scrutiny and external monitoring on non-GAAP reporting. Research examining non-GAAP earnings changes around Reg G finds that increased external scrutiny from Reg G led to initial declines in non-GAAP usage, the extent of exclusions, and less misleading presentations of non-GAAP earnings (e.g., Bhattacharya, Black, Christensen, and Mergenthaler [2004]; Entwistle, Feltham, and Mbagwu [2006]; Heflin and Hsu [2008]). This prior work suggests oversight and regulatory focus related to Reg G is associated with a reduction in opportunistic use of non-GAAP disclosures, supporting our hypothesis that stronger oversight via controls should improve non-GAAP earnings quality.

Prior research also finds that governance-related oversight improves non-GAAP earnings. Regarding external pressures to improve non-GAAP reporting, firms receiving SEC comment letters on their non-GAAP measures are more likely to abandon non-GAAP disclosures (Jo and Yang [2020]), and increased lender scrutiny after debt covenant violations is associated with decreased predictiveness of exclusions (Christensen et al. [2019]). From a board governance perspective, board independence and audit committee accounting expertise have been shown to improve the quality (Frankel et al. [2011]) and extent (Seetharaman et al. [2014]) of exclusions, respectively. While effective boards are an important component of a strong control environment, in the absence of controls specifically employed to achieve non-GAAP reporting objectives, strong boards would likely be insufficient to achieve high-quality non-GAAP disclosures.[5] In sum, prior

[5] In sensitivity analysis we reperform our primary analyses including controls for board independence, audit committee size, and if the CEO is the chair of the board and find qualitatively and quantitatively similar results.

non-GAAP research suggests monitoring decreases opportunistic disclosure, supporting our contention that strong controls should improve the quality of non-GAAP earnings.

With respect to the controls literature, most research addresses the effects of ICFR specifically, rather than disclosure controls more generally, on financial reports and concludes that ineffective ICFR is associated with lower quality financial reporting. Seminal internal control studies conclude that firms disclosing ineffective ICFR suffer from lower quality accruals (Doyle et al. [2007a]; Ashbaugh-Skaife et al. [2008]). Studies have also identified associations between ineffective ICFR and earnings management (Chan, Farrell, and Lee [2008]), information risk (Kim, Song, and Zhang [2011]), future reporting quality (Myllymaki [2014]), information uncertainty (Beniesh, Billings, and Hodder [2008]), and fraud (Donelson, Ege, and McInnis [2017]). Each of these studies is consistent with our position that strong controls should constrain low-quality decision making and improve non-GAAP disclosures.

In addition to the direct effects of ICFR on financial reports, prior work concluding that ICFR is associated with operational or compliance outcomes is also relevant. Feng et al. (2009) conclude that firms with ineffective ICFR provide less accurate management guidance and Feng et al. (2015) conclude that ineffective ICFR affects operations via low-quality inventory management. Recent work also finds firms with weak controls experience worse post-acquisition performance (Harp and Barnes [2018]), are less innovative (Miller, Sheneman, and Williams [2022]), and experience worse investment efficiency (Lai, Liu, and Wang [2014]). This prior work suggests that firms implementing strong ICFR should also reap spillover benefits in disclosure controls.

We posit that strong disclosure controls will improve the quality of non-GAAP earnings disclosures via constraining (increasing) opportunistic (informative) non-GAAP decisions, and thus state our hypotheses in alternative form:

H1a: Strong controls constrain opportunistic non-GAAP reporting.
H1b: Strong controls increase informative non-GAAP reporting.

We also posit that both strong ICFR and disclosure controls will be associated with higher quality non-GAAP earnings:

H2: Strong ICFR is associated with higher quality non-GAAP earnings.
H3: Strong disclosure controls are associated with higher quality non-GAAP earnings.

However, the dearth of standards over non-GAAP reporting and relative lack of oversight over disclosure controls also suggests that we may not identify effects. While there are general disclosure requirements regarding the presentation of non-GAAP earnings, the SEC did not specifically link internal controls to non-GAAP reporting until 2015. As such, firms' disclosure controls may not address non-GAAP reporting or may only display beneficial effects post-2015.

Further, whether benefits evidenced in the more highly regulated and monitored ICFR environment will necessarily convey to the more general and unaudited disclosure controls setting is uncertain. First, disclosure controls are not subject to intense scrutiny. Managers' quarterly SOX 302 disclosures are less effort intensive than ICFR assessments under SOX 404(a), therefore benefits accruing to ICFR may not convey to disclosure controls. Second, because SOX 302 disclosures are unaudited, the disclosures and underlying controls are subject to less auditor scrutiny than ICFR which are audited annually for most large firms. Ultimately, while theory predicts disclosure controls should improve non-GAAP earnings when implemented, whether they have been implemented sufficiently to provide benefits and whether we can identify them using joint measures of ICFR and disclosure control quality is an empirical question.

III. RESEARCH DESIGN, SAMPLE SELECTION, AND DESCRIPTIVE STATISTICS

Research Design

We use multiple methods to examine whether and how strong controls improve the quality of non-GAAP earnings. First, we examine the effects of controls on reported non-GAAP amounts and draw inferences based on whether reported outcomes are consistent with opportunism or informativeness. Next, we condition on managerial incentives and estimate whether strong controls constrain opportunistic and/or induce informative non-GAAP reporting. Finally, we draw inferences about the effects of ICFR versus disclosure controls on non-GAAP amounts by examining the relative predictiveness of non-GAAP earnings, GAAP earnings, and exclusions between firms with strong and weak disclosure controls.

Controls Quality Prediction Model

Prior work on ICFR uses disclosures of control weaknesses (e.g., Doyle, Ge and McVay [2007b]; Ashbaugh-Skaife et al. [2007]) and material weakness prediction models to estimate actual control quality (Ge et al. [2017]; Bhaskar et al. [2019]). Similarly, we use a prediction model to estimate controls quality for two primary reasons. First, controls quality exists on a continuum and current controls reporting produces only a binary output (Christensen, Neuman, and Rice [2019]). Thus, to obtain a strong controls indicator, we predict the likelihood of having good (and bad) controls. Second, ICFR quality disclosures historically suffer from severe accuracy concerns (Rice and Weber [2012]; Rice, Weber, and Wu [2015]; DeFond and Lennox [2017]), suggesting that unaudited disclosure controls disclosures are even less accurate. Thus, a prediction model also helps us to combat inaccuracies in control quality disclosures.

We base our control quality prediction model on ICFR prediction methods found in Ge et al. (2017) and Bhaskar et al. (2019). We include material weaknesses in either ICFR or disclosure controls and estimate our model by quarter-year and estimate the following logistic model:

$$\begin{aligned} Pr(Ineffective\ Controls) = {} & \beta_0 + \beta_1\, MW302_{q-1} + \beta_2 MW404_{t-1} + \beta_3 Integrated + \beta_4 LnMVE + \\ & \beta_5 LnAge + \beta_6 LnBSeg + \beta_7 Foreign + \beta_8 M\&A + \beta_9 Restructure + \\ & \beta_{10} ARInv + \beta_{11} AGrowth + \beta_{12} CFO + \beta_{13} Loss + \beta_{14} MBR + \beta_{15} Lit + \\ & \beta_{16} Big4 + \beta_{17} Aud\_Resign + \beta_{18} Announce\ Restate + Industry\ FE + \varepsilon \end{aligned} \quad (1)$$

where *Ineffective Controls* is equal to one when the firm reports ineffective disclosure controls under SOX 302 in the current quarter, ineffective financial reporting controls under SOX 404 in the current year, or the financial statements in the current quarter are misstated (as revealed through a subsequent restatement). All variables are measured at quarter *q* unless otherwise specified.

We include several material weakness determinants based on prior ICFR literature (e.g. Ashbaugh-Skaife et al. [2007]; Doyle et al. [2007b]; Ge et al. [2017]; Bhaskar et al. [2019]). These variables include prior disclosed material weaknesses ($MW302_{q-1}$, $MW404_{t-1}$), whether the firm receives an ICFR audit (*Integrated*), the natural logarithm of the market value of equity (*LnMVE*), the natural logarithm of firm age (*LnAge*), the natural logarithm of the number of business segments (*LnBSeg*), and indicators of foreign operations (*Foreign*), merger and acquisition activity (*M&A*), and restructuring (*Restructure*). We control for accounts receivable and inventory (*ARInv*), asset growth (*Agrowth*), cash flow from operations (*CFO*), financial distress (*Loss*), market-to-book ratio (*MBR*), and litigious industries (*Lit*). Because auditors evaluate internal controls in risk assessments, we control for whether the auditor is a Big 4 auditor (*Big4*) and whether the auditor resigns in the prior year (*Aud Resign*). Lastly, we include an indicator for announced prior period restatements announcements in the current quarter (*Announce Restate)*. All variables are defined in Appendix A. Industry fixed effects are included to control for variation

across industries. While we estimate this model using quarter-year regressions, we report pooled regression results with quarter-year indicators in Appendix B for brevity.

To estimate controls quality, we use within-sample estimated coefficients from our quarter-year regressions to calculate predicted probabilities that a material weakness exists (*Prob Ineffective Controls*) and classify those in the bottom (top) quartile as having *Strong Controls (Weak Controls).* We then split the observations into quartiles based on the predicted probabilities, where the first quartile represents strong controls (i.e., a low probability of a material weakness) and the fourth quartile represents weak controls (i.e., a high probability of a material weakness) (e.g., Ge et al. [2017]). Thus, *Strong (Weak) Controls* equals one if the observation falls within the first (fourth) quartile of *Prob Ineffective Controls*, and zero otherwise. We additionally classify all firm-quarters disclosing a material weakness as having weak controls.[6]

Provision of non-GAAP earnings

We begin by testing whether disclosure controls affect the likelihood of firms disclosing non-GAAP earnings and whether they disclose non-GAAP amounts that are consistent with opportunism or informativeness.

To test our first hypothesis, we estimate the following logistic regression model:[7]

$$Pr(NG\ Variable) = \beta_0 + \beta_1 Controls\ Quality + \beta_2 Special + \beta_3 Loss + \beta_4 LnMVE + \beta_5 MBR + \beta_6 Intangibles + \beta_7 Lit + \beta_8 NG_{q-1} + \beta_9 Std\ ROA + Qtr\text{-}Year\ FE + Industry\ FE + \varepsilon \quad (2)$$

where *NG Variable* is a placeholder for either *NG*, *Income Dec NG*, or *Aggressive NG*. *NG* equals one if the firm discloses non-GAAP earnings in their earnings announcement in quarter *q*, and zero otherwise. For informative non-GAAP reporting, we set *Income Dec NG* equal to one if the firm

[6] Disaggregating the sample into controls quality quartiles without forcing all material weakness firm-quarters into the fourth quartile still results in approximately 95 percent to be included in the fourth quartile. The concentration of material weaknesses in the top quartile provides support that our model captures controls quality.

[7] Results remain qualitatively consistent when using a linear probability model.

discloses an income decreasing non-GAAP earnings amount in quarter *q*, and zero otherwise as we assume income decreasing amounts are likely reported to inform. In terms of aggressive non-GAAP reporting, we classify *Aggressive NG* equal to one if the firm discloses a non-GAAP earnings amount that exceeds operating earnings in quarter *q*, and zero otherwise. We use this aggressive non-GAAP reporting variable because it is more likely that the firm used non-GAAP to improve perceptions of performance. All variables are measured at quarter *q* unless specified otherwise. We expect that strong controls will be associated with more informative non-GAAP earnings, and thus a higher likelihood of *Income Dec NG* and a lower likelihood of *Aggressive NG*.

Controls Quality is a placeholder for our independent variables of interest. As discussed previously, *Strong (Weak) Controls* equals one if the observation falls within the first (fourth) quartile of *Prob Ineffective Controls*, and zero otherwise.

Based on prior literature, we control for several firm-level variables (e.g., Lougee and Marquardt [2004]; Brown, Christensen, Elliott and Mergenthaler [2012]). We include an indicator for special items (*Special*) and for firms experiencing losses (*Loss*). We control for *LnMVE*, *MBR*, intangible assets (*Intangibles*), and *Lit*. Because non-GAAP reporting may be sticky, we include whether the firm reports a non-GAAP earnings number in the prior quarter (NG_{q-1}). Lastly, we control for profitability volatility (*Std ROA*). We include quarter-year and industry fixed effects and clustering at the firm level. Continuous variables are winsorized at the 1 and 99 percent levels. All variables are defined in Appendix A.

Provision of non-GAAP earnings conditional on managerial incentives

Next, among firms we estimate have specific reporting incentives, we estimate whether strong controls affect non-GAAP reporting outcomes. In the presence of incentives to opportunistically use non-GAAP reporting, we predict that strong controls will constrain their use

whereas in the presence of incentives to provide a more useful earnings amount than GAAP earnings, we predict that strong controls will increase their use.

Specifically, we split our sample into firm-quarters with incentives to report opportunistic non-GAAP earnings (*Opportunistic Incentives* subsample) and incentives to improve the informativeness of earnings by providing a non-GAAP earnings amount (*Informational Incentives* subsample). To identify our subsamples, we compare the consensus analyst GAAP forecast to reported GAAP earnings, following the strategy used in Davidson et al. (2020). Our *Opportunistic Incentives* subsample includes firm-quarters where GAAP earnings miss the consensus analyst GAAP forecast by $0.05 or less (*GAAP Just Miss*) as increased opportunistic incentives to affect investor perceptions of results exist (e.g., Doyle, Jennings and Soliman [2013]) and the proximity of GAAP earnings to the consensus forecast suggests meeting or beating analyst forecasts using a non-GAAP number is achievable. Our *Informational Incentives* subsample is comprised of firm-quarters where the absolute value of the difference between the consensus analyst GAAP forecast and GAAP earnings is greater than $0.05 (*LQ GAAP*) as the lower predictability of GAAP earnings provides higher informational incentives. Importantly, we also expect our informational subsample to have lower opportunistic incentives to beat analysts' forecasts due to the large difference between forecasted and actual GAAP earnings (i.e., lower ability to beat analysts' forecasts).

Using these subsamples, we estimate whether strong controls affect managements' ability to act on the identified incentives. In the *Opportunistic Incentives* subsample, we expect firms having better controls will be less likely to record a non-GAAP amount that is greater than operating earnings. In the *Informational Incentives* Subsample, we expect firms with strong controls will be more likely to disclose an income decreasing non-GAAP amount.

Predictiveness of non-GAAP earnings versus GAAP earnings

In our third specification, we examine the relative predictiveness of non-GAAP earnings, GAAP earnings, and exclusions for future operating earnings and cash flows between firms we estimate have strong and weak controls. We assume that more predictive non-GAAP earnings and less predictive exclusions indicate higher quality non-GAAP earnings. We expect that firms with strong controls will have more predictive non-GAAP earnings than firms with weak controls. Further, we examine differences in the predictiveness of GAAP earnings and exclusions to inform our expectations about individual and combined effects of ICFR and disclosure controls on non-GAAP earnings. Controls can affect the quality of non-GAAP earnings via ICFR affecting GAAP-based amounts and disclosure controls governing the decision to disclose non-GAAP earnings, exclusion selection, and calculations. However, because our controls quality measure is combined, we look to the relative predictiveness of GAAP earnings and exclusions across firms with strong and weak controls to test our hypotheses related to ICFR and disclosure controls quality.

To test our predictions, we estimate the following OLS regression model separately for our strong control sample (*Strong Controls*) and a weak control sample (*Weak Controls*), and perform cross model comparisons of coefficients on non-GAAP earnings (*NG Earnings*), exclusions (*Exclusions*) and GAAP earnings (*GAAP Earnings*):

$$\begin{aligned} \textit{Future Earnings} = \; & \beta_0 + \beta_1\, \textit{Earnings Variable} + \beta_2 \textit{LnAssets} + \beta_3 \textit{Leverage} + \beta_4 \textit{Loss} \\ & + \beta_5 \textit{MBR} + \beta_6 \textit{Sales Growth} + \beta_7 \textit{Std ROA} + \textit{Qtr-Year FE} + \\ & \textit{Industry FE} + \varepsilon \end{aligned} \qquad (3)$$

where *Future Earnings* is either quarterly operating earnings for the same quarter in the following year, $Operating\ Earnings_{q+4}$ or quarterly cash flows from operations for the same quarter in the following year, CFO_{q+4}. *Earnings Variable* is either *NG Earnings*, the reported non-GAAP earnings amount, or *GAAP Earnings*, the reported earnings amount. In the specifications where *Earnings Variable* is *NG Earnings*, we also include *Exclusions*, which is equal to *GAAP Earnings*

less *NG Earnings*. We control for additional variables based on prior research including firm size (*LnAssets*), leverage (*Leverage*), *Loss*, *MBR*, quarterly sales growth (*Sales Growth*), and *Std ROA*. Continuous variables are winsorized at the 1 and 99 percent levels. Variable definitions are detailed in Appendix A. We include quarter-year and industry fixed effects and clustering at the firm level.

Sample Selection

Our sample begins with the intersection of Audit Analytics SOX 302 and Compustat quarterly datasets with non-missing variable information.[8] We obtain disclosed non-GAAP earnings amounts from a database accumulated in connection with Bentley et al. (2018) and remove observations with missing earnings announcement data. We only include firms with at least one reported non-GAAP earnings amount during our sample period. We begin our sample in 2004, the first full year of required SOX 404 disclosures and end our sample in 2018, the last year the non-GAAP data is available. We remove observations in the highly regulated financial and utility industries (SIC 6000-6700). Our final sample consists of 67,776 firm-quarter observations. After removing observations not disclosing non-GAAP earnings, our final non-GAAP sample consists of 26,254 firm-quarter observations. Table 1, Panel A details this selection process.

INSERT TABLE 1 ABOUT HERE

To estimate controls quality, we use the within-sample estimated coefficients from quarter-year regressions to calculate the predicted probability that at least one material weakness exists (*Prob Ineffective Controls*) and classify those in the bottom (top) quartile as having high (low) quality controls, *Strong Controls (Weak Controls)*. While our prediction model is estimated by quarter, we present an output of a pooled version of our model in Appendix B. The most significant predictors of *Ineffective Controls* are the prior disclosure of a material weakness in ICFR or

[8] In addition, we remove firm-quarter observations in which disclosure control quality was not disclosed.

disclosure controls, as expected, because weak controls tend to persist over time. The area under the ROC curve for our prediction model is 0.728, suggesting sufficient discriminatory power.

Table 1, Panel B presents the frequencies of *Ineffective Controls* and non-GAAP reporting (*NG*) by quartiles of *Prob Ineffective Controls*. By construction, all material weakness observations are included in the top quartile of *Prob Ineffective Controls,* with 67.89 percent of firm-quarters in the top quartile disclosing ineffective controls. Importantly, a similar proportion of firms disclose non-GAAP earnings across each of the quartiles of *Prob Ineffective Controls*, suggesting that the relationship between controls and non-GAAP reporting is not mechanical.[9]

Table 1, Panel C presents information by fiscal quarter. Both *Ineffective Controls* and *NG* are similarly disclosed during the first, second and third quarters. Approximately 16.97 (38.74) percent of observations report ineffective controls (non-GAAP earnings measure) relatively consistently across these interim quarters. However, the percentage of firm-quarters reporting non-GAAP earnings increases to approximately 43 percent in the fourth quarter, consistent with increased special items in the fourth quarter (Fan, Barua, Cready and Thomas [2010]).

Panels D and E present three convergent validity tests to provide evidence that our *Strong Controls* proxy measures what we intend it to measure. We examine whether quartiles of *Prob Ineffective Controls* are associated with three characteristics we expect it to be associated with: the number of days it takes the firm after period end to file the annual report on Form-10K (*10-K Lag*), the quarterly report on Form 10-Q (*10-Q Lag*), and the likelihood that a received comment letter from the SEC has at least one disclosure control related comment. We expect that as controls quality improves, it will take firms less time to file their annual and quarterly reports and that the likelihood of receiving a disclosure control related comment will decrease.

[9] In sensitivity analysis, we analyze our results in a sample of firm-quarters without special items to further ensure that we have not induced an association between controls quality and non-GAAP earnings.

As expected, we find monotonic increases in all three characteristics, with the lowest (highest) *10-K Lag*, *10-Q Lag*, and proportion of comment letters with a disclosure control-related comment in the *Strong (Weak) Controls* quartile. This suggests that firms classified as having *Strong Controls* issue their reports with the shortest lag and are the least likely to receive a disclosure control related comment in issued SEC comment letters. These results provide support that our prediction model discriminates firms with strong and weak disclosure controls.

Descriptive Statistics

Table 2, Panel A presents descriptive statistics for the variables used in the non-GAAP sample.[10] Sample firms are relatively large (*LnAssets*), with a third of the sample experiencing a current period loss (*Loss*). Less than half of the observations report special items. In Panel B, we find that firms report income decreasing non-GAAP earnings in 16.8 percent of non-GAAP quarters, whereas firms report aggressive non-GAAP earnings in 67.5 percent of non-GAAP quarters, consistent with regulatory concerns over opportunistic use of non-GAAP earnings.

INSERT TABLE 2 ABOUT HERE

Table 2, Panel B presents Pearson correlation coefficients within the non-GAAP sample. *Strong Controls (Weak Controls)* is positively (negatively) correlated with *Income Dec NG*, providing initial evidence that strong controls encourage informative non-GAAP reporting. However, *Strong Controls* is also positively correlated with *Aggressive NG*, suggesting the need for further multivariate analysis.

Table 3 reports the results of estimating equation (2) in the sample of firms that disclose a non-GAAP amount at least once, without requiring a non-GAAP disclosure in the current quarter or conditioning on managerial incentives to report non-GAAP amounts. In addition to estimating

[10] In the full sample, we find (untabulated) that firms report non-GAAP earnings in 38.7 percent of quarters and 38.2 percent reports non-GAAP earnings in the prior quarter.

results among firms we estimate have strong and weak controls, we report results on the second quartile and third quartile to provide a complete descriptive snapshot of the likelihood of disclosing a non-GAAP earnings amount across all four quartiles.

INSERT TABLE 3 ABOUT HERE

We find the coefficient on *Strong Controls* is negative and significant (p-value < 0.01), while the coefficient on the *Weak Controls* is positive and significant (p-value = 0.011) and insignificant in columns 4 and 5, respectively. In untabulated results, we find that the coefficient on *Strong Controls* is significantly different than the coefficient on *Weak Controls* in column 5 (p-value < 0.01). These results suggest that strong controls constrain the decision to provide non-GAAP reporting, on average. In terms of economic significance, there is a 2 percent decrease in the likelihood of reporting non-GAAP earnings when controls are strong.[11]

IV. RESULTS

The primary tests of our hypotheses begin on Table 4, which reports the results of estimating equation (2) in the sample disclosing non-GAAP earnings with *Income Dec NG* and *Aggressive NG* as the dependent variables in columns 1 and 2, respectively. Recall that we predict that strong controls will increase the likelihood of reporting an income decreasing non-GAAP amount and decrease the likelihood of reporting an aggressive non-GAAP amount.

In column 1, the coefficient on *Strong Controls* is positive and significant (p-value <0.01), while the coefficient on the *Weak Controls* is insignificant. This is consistent with strong controls increasing informative non-GAAP reporting. In terms of economic significance, there is a 2.3-percentage point increase in the likelihood of management reporting income-decreasing non-GAAP earnings when controls are strong. Relative to the sample mean of 0.168, this represents a

[11] We use the "margins" command in Stata to calculate the predicted probability holding control variables at their means.

13.7 percent increase in the likelihood of reporting income-decreasing non-GAAP earnings. Similarly, we find *Strong Controls* is negatively associated with aggressive non-GAAP reporting in column 2, suggesting that strong controls constrain opportunistic non-GAAP reporting. This represents a 2.1 percentage point decrease in the likelihood of reporting aggressive non-GAAP earnings when controls are strong or a 12.5 percent decrease relative to the sample mean.

INSERT TABLE 4 ABOUT HERE

Provision of non-GAAP earnings conditional on managerial incentives

Next, we estimate equation (2) within our *Opportunistic Incentives* subsample (*GAAP Just Miss*=1) and our *Informational Incentives* subsample (*LQ GAAP*=1). Table 5 reports the results. We again limit our sample to firm-quarters reporting non-GAAP earnings.

INSERT TABLE 5 ABOUT HERE

Table 5, Panel A reports results using the *Opportunistic Incentives* subsample, with *Income Dec NG* and *Aggressive NG* as the dependent variables in columns 1 and 2, respectively. The coefficient on *Strong Controls* is positive and significant within the *Income Dec NG* model and negative and significant within the *Aggressive NG* model, as expected. The coefficient on Weak *Controls* is not significant in either model.

Table 5, Panel B reports results within our *Informational Incentives* subsample. We find that the coefficient on *Strong Controls* is positive and significant in the *Income Dec NG* model, as predicted, suggesting that strong controls encourage managers to respond to informativeness incentives to provide a more predictable earnings amount, even when it results in lower earnings. In sum, analyses using ex ante expectations of managerial non-GAAP reporting incentives are consistent with strong controls both constraining opportunistic and increasing the disclosure of informative non-GAAP earnings amounts, consistent with H1a and H1b.

Predictiveness of non-GAAP versus GAAP earnings

In our third specification, we examine whether strong controls increase the relative predictiveness of non-GAAP over GAAP earnings. We estimate the associations between one year ahead quarterly earnings and cash flows and both non-GAAP and GAAP earnings, across firm-quarters we estimate have strong and weak disclosure controls. We expect that firms with strong controls will have more predictive non-GAAP earnings than firms with weak controls. Additionally, we draw inferences about the benefits of ICFR and disclosure controls by examining the relative predictiveness of GAAP earnings, non-GAAP earnings, and exclusions.

Table 6 presents our predictiveness results. Panel A reports the results when future operating earnings (*Operating Earnings*$_{q+4}$) is the dependent variable and Panel B reports the results when future cash flows from operations (*CFO*$_{q+4}$) is the dependent variable.

INSERT TABLE 6 ABOUT HERE

In both Panels A and B, we find that *NG Earnings* are significant predictors of future performance, regardless of controls quality. In addition, we find that the coefficient on *NG Earnings* is significantly greater than the coefficient on *GAAP Earnings* across all models, providing evidence that non-GAAP earnings are incrementally predictive of future earnings irrespective of control quality, consistent with managers' contentions that non-GAAP earnings are decision useful. From an economic perspective for strong control observations, $1.00 of current year non-GAAP earnings is associated with $0.83 of one year ahead operating earnings, as compared to only $0.33 for GAAP earnings, an economically meaningful improvement. Additionally, non-GAAP earnings in firm-quarters we estimate have strong controls have a significantly stronger association with future performance than non-GAAP earnings in firm-quarters we estimate have weak controls, providing some evidence that firms with strong controls

provide more informative non-GAAP earnings disclosures. Specifically, we find that the coefficient on non-GAAP earnings in our sample of firm-quarters with strong controls is significantly higher (chi^2 = 9.26; p-value < 0.01 in Panel A and chi^2 = 4.14; p-value = 0.042 in Panel B) than the coefficient on non-GAAP earnings for firm-quarters with weak controls. This effect of strong controls on non-GAAP earnings supports both ICFR and disclosure controls being a driver of high-quality non-GAAP earnings, as the predictiveness of non-GAAP earnings is a function of both the quality of GAAP earnings, directly affected by ICFR, and exclusion amounts and calculations governed by disclosure controls.

We examine differences in predictiveness of GAAP earnings and exclusions to provide further evidence about ICFR and disclosure controls. With respect to ICFR, we find that GAAP earnings are more predictive of future performance for firms with strong than weak controls (chi^2 = 13.47; p-value < 0.01 in Panel A and chi^2 = 18.41; p-value < 0.01 in Panel B), consistent with beneficial effects of strong ICFR on GAAP reporting quality. Next, because we predict that disclosure controls should also decrease opportunistic use of non-GAAP earnings, we examine the relative predictiveness of exclusions between firms with strong and weak controls. We find a positive coefficient on *Exclusions* in all models in Panel A, and do not find a significant difference between the *Exclusions* coefficient for firm-quarters with strong controls compared to firm-quarters with weak controls. In terms of economic significance, $1.00 of exclusions is predictive of $0.08 of operating earnings and $0.05 of operating cash flows in *t+1*.

In Table 6 Panel C, we estimate a firm fixed effects model and use interactions between the non-GAAP variables (i.e. *NG Earnings* and *Exclusions*) and *Strong Controls* to address whether within-firm variation in the strength of controls affects non-GAAP earnings. Column 1 (2) reports results using *Operating Earnings*$_{t+1}$ (*CFO*$_{t+1}$) as the dependent variable. In the

operating earnings specification, we find a negative and significant coefficient on the interaction between *Exclusions* and *Strong Controls,* suggesting that when firms implement strong controls, non-GAAP exclusion persistence decreases, consistent with disclosure controls reducing the opportunistic use of non-GAAP earnings. However, we do not find a significant result on the interaction between *NG Earnings* and *Strong Controls*. Because firm fixed effects may absorb "good" effects of consistently strong controls on non-GAAP earnings (Jennings, Kim, Lee and Taylor 2023), including audit committee structure, management structure, tone at the top, etc., we use this firm-fixed effects model in addition to our primary analysis.

Taken as a whole, non-GAAP earnings are more predictive of future earnings than the corresponding GAAP amount in all samples, suggesting that reported non-GAAP earnings are on average informative, regardless of control quality. We find evidence of beneficial effects of ICFR via improved GAAP earnings, and of both ICFR and disclosure controls via the overall improvement in non-GAAP predictiveness over GAAP earnings, consistent with H2 and H3. Additionally, our firm fixed effects analysis provides some evidence that improved disclosure controls are associated with less predictive exclusions, consistent with H3. However, the insignificant difference in exclusion predictiveness between firms with strong and weak controls in the primary tests does not support H3. This suggests there is potential for firms to further improve the quality of the non-GAAP earnings via improved disclosure controls.

Sensitivity Analyses

Opportunistic and Informational Subsamples

Parallel to our non-GAAP provision results, we next examine the relationship between control quality and the quality of non-GAAP earnings within our *Opportunistic* and *Informational Incentives* subsamples. In untabulated analyses, we examine the non-GAAP predictiveness results

within the *Opportunistic* and *Informational Incentives* subsamples using future operating earnings and cash flows from operations as the dependent variables, respectively. Consistent with Table 6 results, we find non-GAAP earnings are more predictive of future performance than GAAP earnings. Comparing strong to weak control firms, we find that the coefficient on non-GAAP earnings for strong control firms is larger than the coefficient on non-GAAP earnings for weak control firms when using future operating earnings and cash flows as the dependent variables. This is consistent with strong controls improving the quality of non-GAAP reporting.

Special Items

The existence of special items is indicative of complex accounting, a known determinant of control weaknesses (e.g., Ashbaugh-Skaife, Collins, and Kinney [2007]). Further, special items are frequent exclusions in non-GAAP earnings calculations, and thus are also a determinant of non-GAAP earnings provision. Ultimately, these relationships could induce a mechanical relation between our control quality proxy and the provision of non-GAAP earnings. To address this concern, we analyze our Table 4 results separately for firm-quarters with and without special items.

In untabulated results, we find similar results in firm quarters without special items. This continues to support the conclusion that strong controls constrain opportunistic non-GAAP reporting. In addition, we find that strong controls are associated with a lower likelihood of aggressive non-GAAP reporting when special items are present and weak controls are associated with a higher likelihood of aggressive non-GAAP reporting when special items are absent. Taken together, we do not find evidence of a mechanical relationship.

Corporate Governance

Prior research finds that board independence limits opportunistic non-GAAP reporting (Frankel et al. [2011]). To address whether our results are driven by board quality, we re-estimate

our results in Table 6 including controls for board independence, audit committee size, and whether the CEO is the board chair. While the addition of these control variables reduces our sample by 1,647 observations, we continue to find similar results as those in Table 6 (untabulated).

V. CONCLUSIONS

Recent work suggests that non-GAAP earnings are informative. However, regulators continue to be concerned about their opportunistic use. Because non-GAAP earnings are voluntary disclosures with little standardization and regulation, understanding how these on average informative results are obtained is important. In this study, we examine whether strong controls are one mechanism by which firms achieve informative non-GAAP earnings.

In summary, we find evidence that strong controls are associated with higher quality non-GAAP earnings. We find that firms with strong controls are less likely to disclose a non-GAAP number at all, and when they do it is less likely to be aggressive and more likely to be informative. Furthermore, results suggest that controls limit the ability of managers to act on opportunistic incentives and encourage managers to provide informative non-GAAP disclosures when GAAP earnings is less predictable. Finally, we interestingly find that non-GAAP earnings are more predictive of future performance than GAAP earnings irrespective of controls quality, with evidence that firms with strong controls experience a larger relative increase in predictiveness than firms with weak controls. While we do find some evidence of a difference in the relative predictiveness of exclusions for strong versus weak control firms, our results also suggest that there is room for improvement in disclosure controls over non-GAAP earnings. Our results should be of interest to both the SEC and the PCAOB as they debate whether to increase auditor oversight over non-GAAP earnings, as our results suggest that internal monitoring mechanisms appear to both constrain opportunistic and encourage informative use of non-GAAP earnings disclosures.

REFERENCES

ASHBAUGH-SKAIFE H.; D. COLLINS; and W. KINNEY. “The discovery and reporting of internal control deficiencies prior to SOX-mandated audits.” *Journal of Accounting and Economics* 44(1/2) (2007): 166-192.

ASHBAUGH-SKAIFE, H., D. COLLINS, W. KINNEY, and R. LAFOND. “The effect of SOX internal control deficiencies and their remediation on accrual quality.” *The Accounting Review* 83(1) (2008): 217-250.

AUDIT ANALYTICS. “Long Term Trends in Non-GAAP Disclosures: A Three-Year Overview” (2018). https://blog.auditanalytics.com/long-term-trends-in-non-gaap-disclosures-a-three-year-overview/

BENIESH, M. D.; M. B. BILLINGS; and L. D. HODDER. “Internal control weaknesses and information uncertainty.” *The Accounting Review* 83(3) (2008): 665-703.

BENTLEY, J. W.; T. E. CHRISTENSEN; K. H. GEE; and B. C. WHIPPLE. "Disentangling Managers’ and Analysts’ Non-GAAP Reporting." *Journal of Accounting Research* 56(4) (2018): 1039-1081.

BHASKAR, L. S.; J. H. SCHROEDER; and M. L. SHEPARDSON. “Integration of internal control and financial statement audits: Are two audits better than one?” *The Accounting Review* 94(2) (2019): 53-81.

BHATTACHARYA, N.; E. L. BLACK; T. E. CHRISTENSEN; and R. D. MERGENTHALER. "Empirical Evidence on Recent Trends in Pro Forma Reporting." *Accounting Horizons* 18(1) (2004): 27-43.

BLACK, E. L., and T. E. CHRISTENSEN. “Policy implications of research on non-GAAP reporting.” *Research in Accounting Regulation* 30(1) (2018): 1-7.

BLACK, E. L.; T. E. CHRISTENSEN; J. T. CIESIELSKI; and B. C. WHIPPLE. “Non-GAAP reporting: Evidence from academia and current practice?” *Journal of Business, Finance & Accounting* 45(3-4) (2018): 259-294.

BROWN, N. C.; T. E. CHRISTENSEN; W. B. ELLIOTT; and R. D. MERGENTHALER. "Investor Sentiment and Pro Forma Earnings Disclosures." *Journal of Accounting Research* 50(1) (2012): 1-40.

CHAN, K. C.; B. FARRELL; and P. LEE. “Earnings management of firms reporting material internal control weaknesses under Section 404 of the Sarbanes-Oxley Act.” *Auditing: A Journal of Practice & Theory* 27(2) (2008): 161-179.

CHRISTENSEN, B. E; S. S. NEUMAN; and S. C. RICE. “The loss of information associated with binary audit reports: Evidence from auditors’ internal control and going concern opinions.” *Contemporary Accounting Research* 36 (2019): 1461-1500.

CHRISTENSEN, T. E.; H. PEI; S. PIERCE; and L. TAN. “Non-GAAP reporting following debt covenant violations.” *Review of Accounting Studies* 24 (2019): 629-664.

COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION (COSO). “Internal Control – Integrated Framework Executive Summary.” (2013). https://www.coso.org/Pages/ic.aspx

DAVIDSON, O.; E. GOMEZ; F. HEFLIN; and D. WALLACE. “An empirical investigation of non-GAAP exclusion quality indicators.” Working paper, 2020. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3669816.

DEFOND, M. L., and C. S. LENNOX. “Do PCAOB inspections improve the quality of internal control audits*?” Journal of Accounting Research* 55(3) (2017): 591-627.

DELOITTE. “Controls and non-GAAP measures.” *Heads Up* 23(21) (2016). https://dart.deloitte.com/USDART/obj/vsid/402816
DELOITTE. “Roadmap: Non-GAAP financial measures and metrics”. (2023). https://dart.deloitte.com/USDART/home/publications/roadmap/non-gaap-financial-measures
DONELSON, D. C.; M. S. EGE; and J. M. MCINNIS. “Internal control weaknesses and financial reporting fraud.” *Auditing: A Journal of Practice & Theory* 36(3) (2017): 45-69.
DOYLE, J. T.; W. GE; and S. MCVAY. “Accruals quality and internal control over financial reporting.” The Accounting Review 82(5) (2007a): 1141-1170.
DOYLE, J.; W. GE; and S. MCVAY. “Determinants of weaknesses in internal control over financial reporting.” *Journal of Accounting and Economics* 44(1/2) (2007b): 193-223.
DOYLE, J. T.; J. N. JENNINGS; and M. T. SOLIMAN. "Do managers define non-GAAP earnings to meet or beat analyst forecasts?" *Journal of Accounting and Economics* 56(1) (2013): 40-56.
ENTWISTLE, G. M.; G. D. FELTMAN; and C. MBAGWU. "Financial Reporting Regulation and the Reporting of Pro Forma Earnings." *Accounting Horizons* 20(1) (2006): 39-55.
FAN, Y.; A. BARUA; W. CREADY; and W. THOMAS. “Managing earnings using classification shifting: Evidence from quarterly special items.” *The Accounting Review* 85(4) (2010): 1303-1323.
FENG, M.; C. LI; and S. MCVAY. “Internal control and management guidance.” *Journal of Accounting and Economics* 48 (2009): 190-209.
FENG, M.; C. LI; S. E. MCVAY; and H. SKAIFE. “Does ineffective internal control over financial reporting affect a firm’s operations? Evidence from firms’ inventory management.” *The Accounting Review* 90(2) (2015): 529-557.
FRANKEL, R.; S. MCVAY; and M. SOLIMAN. “Non-GAAP earnings and board independence.” *Review of Accounting Studies* 16 (2011): 719-744.
GE, W.; A. KOESTER; and S. MCVAY. “Benefits and costs of Sarbanes-Oxley Section 404(b) exemption: Evidence from small firms’ internal control disclosures.” *Journal of Accounting and Economics* 63(2/3) (2017): 358-384.
HAMMERSLEY, J. S.; L. A. MYERS; and J. ZHOU. “The failure to remediate previously disclosed material weaknesses in internal controls.” *Auditing: A Journal of Practice & Theory* 31(2) (2012): 73-111.
HARP, M. L., and B. G. BARNES. “Internal control weaknesses and acquisition performance.” *The Accounting Review* 93(1) (2018): 235-258.
HEFLIN, F. and C. HSU. "The impact of the SEC's regulation of non-GAAP disclosures." *Journal of Accounting and Economics* 46(2) (2008): 349-365.
JENNINGS, J.; J. M. KIM; J. LEE; and D. TAYLOR). “Measurement error, fixed effects, and false positives in accounting research.” *Review of Accounting Studies.* (2023) https://doi.org/10.1007/s11142-023-09754-z.
JENSEN, M. C., and W. H. MECKLING. “Theory of the firm: Managerial behavior, agency costs and ownership structure.” *Journal of Financial Economics* 3(4) (1976): 305-360.
JO, K. M., and S. YANG. "SEC Comment Letters on Firms' Use of Non-GAAP Measures: The Determinants and Firms' Responses." *Accounting Horizons*. 34(2) (2020): 167-184
KIM, J. B.; B. Y. SONG; and L. ZHANG. “Internal control weakness and bank loan contracting: Evidence from SOX Section 404.” *The Accounting Review* 86(4) (2011): 1157-1188.

KPMG. “Reporting non-GAAP financial and operational measures: Four steps companies can take to mitigate risk”. (2018). https://institutes.kpmg.us/global-enterprise/articles/2018/non-GAAP-financial-and-operational-measures.html

LAI, S.-M.; C.-L. LIU; and T. WANG. “Increased disclosure and investment efficiency.” *Asia-Pacific Journal of Accounting & Economics* 21(3) (2014): 308-327.

LEUNG, E., and D. VEENMAN. “Non-GAAP earnings disclosure in loss firms.” *Journal of Accounting Research* 56(4) (2018): 1083-1137.

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

MILLER, B. P.; A. SHENEMAN; and B. WILLIAMS. “The impact of control systems on corporate innovation.” *Contemporary Accounting Research* 39(2) (2022): 1425-1454.Working paper, 2018. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3013355

MYLLYMAKI, E.-R. “The persistence in the association between Section 404 material weaknesses and financial reporting quality.” *Auditing: A Journal of Practice & Theory* 33(1) (2014): 93-116.

PUBLIC COMPANY ACCOUNTING OVERSIGHT BOARD (PCAOB). Steven B. Harris Q&A: Standard Setting Initiatives at the 2017 International Institute on Audit Regulation. (2016). Washington D.C. https://pcaobus.org/news-events/speeches/speech-detail/q-a-pcaob-standard-setting-initiatives_676

RICE, S. C., and D. P. WEBER. “How effective is internal control reporting under SOX 404? Determinants of the (non-)disclosure of existing material weaknesses.” *Journal of Accounting Research* 50(3) (2012): 811-843.

RICE, S. C.; D. P. WEBER; and B. WU. “Does SOX 404 have teeth? Consequences of the failure to report existing internal control weaknesses.” *The Accounting Review* 90(3) (2015): 1169-1200.

SECURITIES AND EXCHANGE COMMISSION (SEC). “Certification of disclosure in companies’ quarterly and annual reports.” (2002), Washington DC. https://www.sec.gov/rules/2002/08/certification-disclosure-companies-quarterly-and-annual-reports

SECURITIES AND EXCHANGE COMMISSION (SEC). “Conditions for use of non-GAAP measures.” (2003). Washington D. C. https://www.sec.gov/rules/2003/03/conditions-use-non-gaap-financial-measures

SECURITIES AND EXCHANGE COMMISSION (SEC). “Management’s report on internal control over financial reporting and certification of disclosure in exchange act periodic reports - Frequently asked questions.” (2007). Washington, D.C. https://www.sec.gov/oca/controlfaq.htm

SECURITIES AND EXCHANGE COMMISSION (SEC). Mary Jo White Keynote Address at the 2015 AICPA National Conference: “Maintaining High-Quality, Reliable Financial Reporting: A Shared and Weighty Responsibility.” (2015). Washington, D. C. https://www.sec.gov/news/speech/keynote-2015-aicpa-white

SECURITIES AND EXCHANGE COMMISSION (SEC). Compliance & Disclosure Interpretations – Non-GAAP financial measures. (2018). Washington, D.C. https://www.sec.gov/corpfin/non-gaap-financial-measures

SECURITIES AND EXCHANGE COMMISSION (SEC). Wesley R. Bricker Remarks before the 2019 Baruch College Financial Reporting Conference: Aiming towards the future. (2019). New York, NY. https://www.sec.gov/news/speech/speech-bricker-050219.

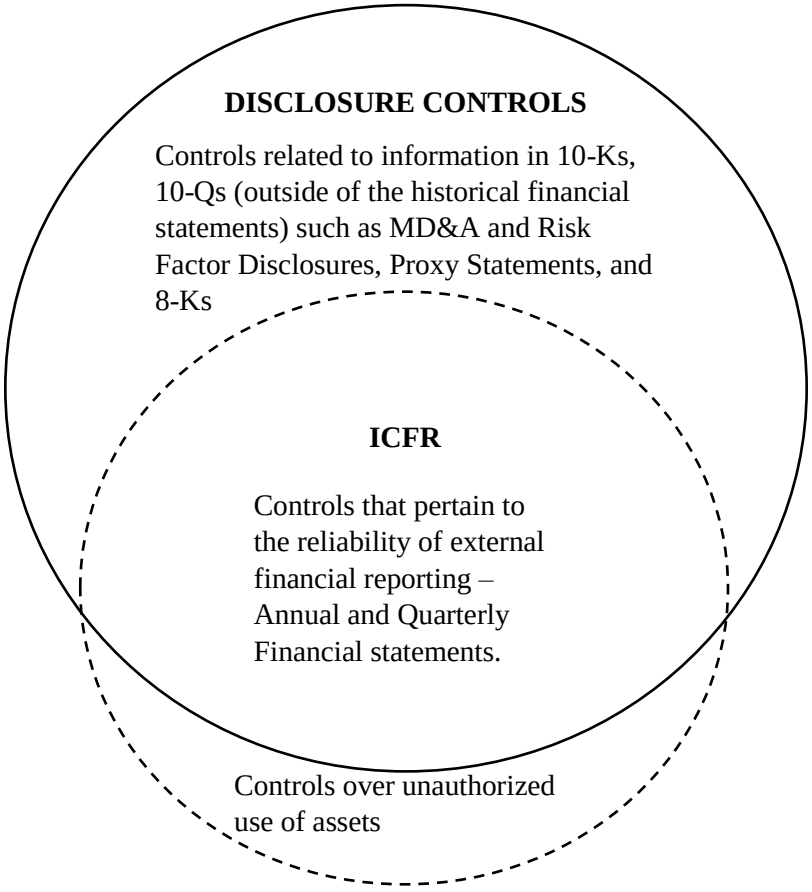
SECURITIES AND EXCHANGE COMMISSION (SEC). Accounting and auditing enforcement – Release No. 4391. (2023a). https://www.sec.gov/files/litigation/admin/2023/33-11166.pdf

SECURITIES AND EXCHANGE COMMISSION (SEC). Accounting and auditing enforcement – Release No. 4469. (2023b). https://www.sec.gov/files/litigation/admin/2023/33-11251.pdf

SEETHARAMAN, A.; X. WANG; and S. ZHANG. "An Empirical Analysis of the Effects of Accounting Expertise in Audit Committees on Non-GAAP Earnings Exclusions." *Accounting Horizons* 28(1) (2014): 17-37.

FIGURE 1
Disclosure Controls and Internal Controls over Financial Reporting

SOX 302 Disclosure Controls – Controls designed to ensure information required in reports filed under the Securities Exchange Act of 1934 is recorded, processed, summarized, and reported on a timely basis.



SOX 404 Internal Controls over Financial Reporting – A process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes.

The above figure provides information regarding the overlapping nature of disclosure controls and ICFR as regulatorily defined by the SEC and the PCAOB. These controls also fit within the COSO framework, which includes controls over operational effectiveness and efficiency, compliance with laws and regulations, and the reliability of financial reporting (COSO [2013]). ICFR is generally considered to be a subset of COSO-based financial reporting controls (with some exceptions and overlap with other categories), whereas Disclosure controls include controls related to both financial reporting and compliance with laws and regulations.

APPENDIX A	
Variable	*Definition*
NG Dependent Variables	
NG	1 if management reports a non-GAAP earnings number in quarter q, 0 otherwise.
Income Dec NG	1 if the management reported non-GAAP EPS is less than the GAAP EPS (EPSPXQ) in quarter q, 0 otherwise.
Aggressive NG	1 if the management reported non-GAAP earnings number is greater than Operating EPS (OEPSXQ), 0 otherwise.
Earnings Measures	
NG EPS	Non-GAAP EPS number reported in the Bentley et al. 2018 dataset.
NG Earnings	(*NG EPS** CSHFD)/ATQ
Exclusion	The difference between *GAAP Earnings* and *NG Earnings*.
GAAP Earnings	(EPSFXQ*CSHFDQ)/ATQ
CFO	Quarterly Cash Flows from Operations / ATQ
Operating Earnings	(OEPSXQ * CSHFDQ) / ATQ
Controls Variables	
MW302	1 if the firm reports ineffective controls under SOX 302 in quarter q, 0 otherwise.
MW404	1 if the firm reports ineffective controls under SOX 404 in year t, 0 otherwise.
Ineffective Controls	1 if *MW302*=1, *MW404*=1 or the current quarter financial statements are subsequently restated, 0 otherwise.
Prob Ineffective Controls	The probability the firm has a material weakness in quarter q based on the model in Appendix B.
Strong Controls	1 if *Prob Ineffective Controls* falls within the first quartile, 0 otherwise.
2Q Controls	1 if *Prob Ineffective Controls* falls within the second quartile, 0 otherwise.
3Q Controls	1 if *Prob Ineffective Controls* falls within the third quartile, 0 otherwise.
Weak Controls	1 if *Prob Ineffective Controls* falls within the fourth quartile, 0 otherwise.
Incentive Variables	
GAAP Just Miss	1 if the firm reports GAAP earnings that miss the consensus analyst GAAP forecast by $0.05 or less, 0 otherwise.
HQ GAAP	1 if the absolute difference between analyst consensus GAAP earnings forecast and reported GAAP earnings is less than $0.05, 0 otherwise.
LQ GAAP	1 if the absolute difference between analyst consensus GAAP earnings forecast and reported GAAP earnings is greater than or equal to $0.05, 0 otherwise.
Control Variables	
M&A	1 if the firm discloses acquisition activity (AQEPSQ), 0 otherwise.
AGrowth	$(ATQ_q-ATQ_{q-1})/ ATQ_{q-1.}$
Amended Filing	1 if the firm discloses an amended 10-Q or 10-K filing in quarter q, 0 otherwise.
Announce Restate	1 if the firm announced a restatement in quarter q, 0 otherwise.
ARInv	(RECTQ-INVTQ)/ATQ.
Auditor Resigned	1 if the auditor-initiated resignation, 0 otherwise.

Big4	1 if the firm is audited by a Big 4 auditor, 0 otherwise.
Foreign	1 if the firm reports foreign revenue (FCAQ), 0 otherwise.
Intangibles	INTANQ/ATQ.
Integrated	1 if the firm received a 404(b) opinion in year t, 0 otherwise.
Leverage	LTQ/ATQ.
Lit	1 if the firm's industry is in the following SIC codes: 2833-2836, 3570-3577, 3600-3674, 5200-5961, 7370-7374, 0 otherwise.
LnAge	Natural logarithm of the firm's age.
LnAssets	Natural logarithm of total assets (ATQ).
LnBSeg	Natural logarithm of the number of business segments.
LnMVE	Natural logarithm of (CSHOQ * PRCCQ).
Loss	1 if IBQ is less than 0, 0 otherwise.
MBR	(CSHOQ*PRCCQ)/(ATQ-LTQ).
Nontimely Filer	1 if the firm-quarter is included in the Audit Analytics NonTimely Filer database, 0 otherwise.
Restructure	1 if RCAQ is nonzero, 0 otherwise.
Sales Growth	$(SALE_q\text{-}SALE_{q\text{-}4})/ SALE_{q\text{-}4.}$
Special	1 if the firm reports special items (SPIQ), 0 otherwise.
Std ROA	Rolling standard deviation of ROA over the previous 3-8 quarters. ROA defined as IBQ/ATQ.

APPENDIX B

Ineffective Disclosure Controls (DC) Probability

Dependent Variable =	*Ineffective Controls*	
	Estimate	Chi^2
MW302 $_{q-1}$	2.178***	(26.37)
MW404$_{t-1}$	1.302***	(14.59)
Integrated	0.268***	(3.04)
LnMVE	-0.136***	(-2.60)
LnAge	0.151***	(3.17)
LnBSeg	0.042	(0.64)
Foreign	0.306***	(3.97)
M&A	0.224***	(3.62)
Restructure	0.344	(1.48)
ARInv	0.379***	(4.56)
Agrowth	1.074***	(2.60)
CFO	0.205***	(4.05)
Loss	-0.006	(-1.43)
MBR	-0.080	(-0.68)
Lit	0.204**	(2.49)
Big4	0.681***	(5.82)
Auditor Resigned	0.448***	(5.25)
Announce Restate	-0.311	(-0.85)
Intercept	2.178***	(26.37)
Qrtr-Yr FE	Yes	
Industry FE	Yes	
Clustered Std Errors	By Firm	
N	67,776	
Area under ROC curve	0.728	
Pseudo R-Squared	0.149	

***, **, * indicate significance at the 1, 5, and 10% levels (two-tailed), respectively. We estimate the probability of having at least one (disclosed or undisclosed) material weakness in internal controls. All variables are defined in Appendix A. Results in the paper are based on quarter-year regressions. For brevity, we report the pooled regression with quarter-year indicators below. All continuous variables are winsorized at the 1 and 99 percent levels. We use logistic regression with robust standard errors clustered by firm. Fixed effects utilized for quarter-years and industry (2 digit SIC). All variables are defined in Appendix A.

TABLE 1

Panel A: Sample Selection 2004-2018

Firm-quarters included in the Bentley et al. 2018 data	131,867
Less: Firm-quarters with missing Audit Analytics and Compustat data	(41,648)
Less: Financial/Utility firm-quarters	(22,443)
Full Sample	67,776
Less: Firm-quarters that do not report non-GAAP	(41,522)
Final Sample	26,254

Panel B: Frequencies by Control Quality

	N	Mean *Prob Ineffective Controls*	*Ineffective Controls*	% *Ineffective Controls*	*NG*	% *NG*
Strong Controls	16,944	0.063	0	0.00%	6,711	39.61%
2Q Controls	16,944	0.112	0	0.00%	6,285	37.09%
3Q Controls	16,944	0.172	0	0.00%	6,565	38.75%
Weak Controls	16,944	0.331	11,503	67.89%	6,693	39.50%
	67,776	0.169	11,503	16.97%	26,254	38.74%

Panel C: Frequencies by Quarter

	N	Mean *Prob Ineffective Controls*	*Ineffective Controls*	% *Ineffective Controls*	*NG*	% *NG*
First Quarter	16,767	0.177	2,975	17.74%	6,098	36.37%
Second Quarter	17,983	0.180	3,236	17.99%	6,826	37.96%
Third Quarter	17,391	0.176	3,065	17.62%	6,646	38.22%
Fourth Quarter	15,635	0.142	2,227	14.24%	6,684	42.75%
	67,776	0.169	11,503	16.97%	26,254	38.74%

Panel D: Convergent Validity Tests – 10-K and 10-Q Lags

	Accelerated Filers			Non-Accelerated Filers		
	N	Mean *10-K Lag*	Mean *10-Q Lag*	N	Mean *10-K Lag*	Mean *10-Q Lag*
Strong Controls	4,043/10,268	58.229	34.485	725/1,905	69.503	38.548
2nd Quartile	3,457/10,684	61.144	35.364	704/2,099	71.882	38.141
3rd Quartile	2,707/11,599	62.810	35.905	504/2,134	73.325	37.837
Weak Controls	2,889/11,004	73.873	39.075	603/2443	83.818	41.511
		63.396	36.549		74.327	39.266

TABLE 1 continued

Panel E: Convergent Validity Tests – Disclosure Control Comments in SEC Comment Letters

	N	SEC Comment Letter	Disclosure Control Comment	% with Disclosure Control Comment
Strong Controls	16,944	766	68	8.88%
2nd Quartile	16,944	760	79	10.39%
3rd Quartile	16,944	546	57	10.44%
Weak Controls	16,944	522	109	20.88%
	67,776	2,594	313	12.07%

This table presents our sample selection process in Panel A. Panel B presents the frequencies of material weaknesses (*Ineffective Controls*) and non-GAAP reporting (*NG*) by quartile of *Prob Ineffective Controls*, while Panel C presents the frequencies of *Ineffective Controls* and *NG* by fiscal quarter. Panels D and E present convergent validity tests of our control quality proxy. All variables are defined in Appendix A. *Prob Ineffective Controls* is based on the regression detailed in Appendix B.

TABLE 2

Panel A: Descriptive Statistics

	N	Mean	Std	P25	Median	P75
Income Dec NG	26,254	0.168	0.374	0.000	0.000	0.000
Aggressive NG	26,254	0.675	0.468	0.000	1.000	1.000
Strong Controls	26,254	0.256	0.436	0.000	0.000	1.000
Weak Controls	26,254	0.255	0.436	0.000	0.000	1.000
Operating Earnings$_{q+4}$	26,254	0.005	0.031	0.000	0.010	0.020
CFO$_{q+4}$	26,254	0.022	0.034	0.008	0.023	0.039
NG Earnings	26,254	0.013	0.022	0.005	0.014	0.024
Exclusion	26,254	-0.012	0.031	-0.013	-0.005	-0.001
GAAP Earnings	26,254	0.001	0.043	-0.003	0.009	0.019
Special	26,254	0.702	0.458	0.000	1.000	1.000
Loss	26,254	0.289	0.453	0.000	0.000	1.000
LnMVE	26,254	7.434	1.743	6.193	7.335	8.586
MBR	26,254	3.476	4.553	1.445	2.341	4.030
Intangibles	26,254	0.245	0.218	0.046	0.197	0.398
Lit	26,254	0.395	0.489	0.000	0.000	1.000
NG$_{q-1}$	26,254	0.830	0.376	1.000	1.000	1.000
Std ROA	26,254	0.023	0.033	0.005	0.011	0.025
LnAssets	26,254	7.326	1.769	6.012	7.265	8.532
Leverage	26,254	0.523	0.231	0.356	0.528	0.674
Sales Growth	26,254	0.523	0.231	0.356	0.528	0.674

TABLE 2 Continued

Panel B: Correlations

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	*Income Dec NG*																		
(2)	*Aggressive NG*	**-0.488**																	
(3)	CFO_{q+4}	**0.028**	**-0.016**																
(4)	$Operating\ Earnings_{q+4}$	**0.045**	**-0.097**	**0.506**															
(5)	*Strong Controls*	**0.035**	**0.019**	**0.038**	**0.046**														
(6)	*Weak Controls*	**-0.026**	-0.002	**-0.066**	**-0.054**	**-0.342**													
(7)	*NG Earnings*	**-0.030**	**0.050**	**0.471**	**0.611**	**0.053**	**-0.066**												
(8)	*Exclusions*	**0.328**	**-0.202**	**0.110**	**0.252**	**0.019**	**-0.029**	**0.201**											
(9)	*GAAP Earnings*	**0.229**	**-0.125**	**0.331**	**0.511**	**0.040**	**-0.054**	**0.667**	**0.852**										
(10)	*Special*	**-0.067**	**-0.147**	0.006	**0.079**	**-0.047**	**0.065**	0.000	**-0.049**	**-0.032**									
(11)	*Loss*	**-0.209**	**0.153**	**-0.256**	**-0.441**	**-0.061**	**0.082**	**-0.542**	**-0.458**	**-0.632**	**0.017**								
(12)	*LnMVE*	**0.048**	**-0.064**	**0.232**	**0.335**	**0.261**	**-0.160**	**0.345**	**0.186**	**0.321**	**0.119**	**-0.340**							
(13)	*MBR*	**-0.054**	**0.079**	**0.112**	**0.090**	**0.098**	**-0.064**	**0.155**	**-0.016**	**0.063**	**-0.059**	**-0.034**	**0.213**						
(14)	*Intangibles*	**-0.127**	**0.107**	**0.019**	**0.107**	**0.019**	**0.040**	**0.129**	**0.021**	**0.085**	**0.209**	**-0.104**	**0.119**	-0.004					
(15)	*Lit*	**-0.173**	**0.314**	**-0.028**	**-0.082**	**0.062**	0.000	**0.050**	**-0.108**	**-0.059**	**-0.101**	**0.110**	**-0.101**	**0.128**	**0.101**				
(16)	*Std ROA*	0.011	**0.053**	**-0.144**	**-0.266**	**-0.030**	**0.042**	**-0.252**	**-0.344**	**-0.399**	**-0.043**	**0.315**	**-0.304**	-0.006	**-0.161**	-0.003			
(17)	*LnAssets*	**0.098**	**-0.151**	**0.152**	**0.255**	**0.206**	**-0.122**	**0.178**	**0.182**	**0.233**	**0.199**	**-0.273**	**0.882**	**-0.014**	**0.092**	**0.104**	**-0.300**		
(18)	*Leverage*	**0.073**	**-0.145**	**0.013**	**0.020**	**0.066**	**-0.014**	**-0.112**	-0.005	**-0.061**	**0.158**	0.006	**0.208**	**0.108**	-0.007	**0.017**	**-0.023**	**0.399**	
(19)	*Sales Growth*	**0.025**	**0.043**	**0.059**	**0.021**	0.004	**0.030**	**0.146**	**0.083**	**0.137**	**-0.094**	**-0.091**	**0.031**	**0.132**	**0.045**	0.004	0.012	**-0.080**	**-0.073**

Panel A (B) presents the descriptive statistics (correlation matrix) of the variables used in our analyses using the non-GAAP reporting sample of 26,254 firm-quarters. Bold indicates significance at the 5% level. Continuous variables are winsorized at the 1 and 99 percent levels. All variables are defined in Appendix A.

TABLE 3

Controls Quality and the Provision of Non-GAAP Reporting

	(1)		(2)		(3)		(4)		(5)	
	Estimate	z-stat	Estimate	z-stat	Estimate	z-stat	Estimate	z-stat	Estimate	z-stat
Strong Controls	-0.166***	(-4.81)							-0.150***	(-4.26)
2nd Quartile			-0.045	(-1.48)						
3rd Quartile					0.093***	(2.88)				
Weak Controls							0.091**	(2.56)	0.057	(1.55)
Special	1.306***	(35.91)	1.315***	(36.25)	1.315***	(36.26)	1.309***	(35.93)	1.302***	(35.70)
Loss	0.224***	(5.26)	0.228***	(5.36)	0.229***	(5.38)	0.224***	(5.27)	0.222***	(5.20)
LnMVE	0.196***	(14.10)	0.188***	(13.63)	0.189***	(13.76)	0.190***	(13.70)	0.196***	(14.09)
MBR	-0.002	(-0.78)	-0.002	(-0.88)	-0.002	(-0.86)	-0.002	(-0.83)	-0.002	(-0.75)
Intangibles	0.694***	(6.11)	0.699***	(6.15)	0.701***	(6.17)	0.693***	(6.10)	0.689***	(6.07)
Lit	0.521***	(6.68)	0.501***	(6.43)	0.508***	(6.53)	0.504***	(6.46)	0.520***	(6.68)
NG_{q-1}	3.542***	(78.12)	3.546***	(78.20)	3.545***	(78.21)	3.546***	(78.11)	3.542***	(78.08)
Std ROA	-0.662*	(-1.70)	-0.712*	(-1.83)	-0.686*	(-1.76)	-0.713*	(-1.83)	-0.671*	(-1.72)
Intercept	-5.867***	(-21.05)	-5.810***	(-20.60)	-5.846***	(-21.08)	-5.893***	(-20.36)	-5.909***	(-20.67)
Qrtr-Yr FE	Yes		Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes		Yes	
Clustered Std Err	By Firm		By Firm		By Firm		By Firm		By Firm	
N	67,776		67,776		67,776		67,776		67,776	
Pseudo R^2	0.504		0.504		0.504		0.504		0.504	

***, **, * indicate significance at the 1, 5, and 10% levels (two-tailed), respectively. This table investigates the association between non-GAAP reporting and control quality using logistic regressions with robust standard errors clustered by firm. *NG* indicates that management reported a non-GAAP earnings number. To measure internal controls quality, we use the quartile cutoffs of the probability of a material weakness (*Prob Ineffective Controls*) from the regression outlined in Appendix B, where the lowest quartile (*Strong Controls*) represents strong controls and the highest quartile *(Weak Controls*) represents the weak controls. Fixed effects (FE) utilized for quarter-years and industry (2 digit SIC). We use the full sample of 67,776. All continuous variables are winsorized at the 1 and 99 percent levels. All variables are defined in Appendix A.

TABLE 4

Incentives, Controls Quality the Provision of Non-GAAP Reporting				
Dependent Variable=	*Income Dec NG*		*Aggressive NG*	
	(1)		(2)	
	Estimate	z-stat	Estimate	z-stat
Strong Controls	0.194***	(3.46)	-0.127**	(-2.45)
Weak Controls	0.008	(0.15)	0.016	(0.30)
Special	-0.292***	(-5.19)	-0.822***	(-15.22)
Loss	-2.148***	(-23.25)	0.822***	(14.15)
LnMVE	-0.038*	(-1.80)	-0.023	(-1.08)
MBR	-0.027***	(-4.02)	0.021***	(3.50)
Intangibles	-1.145***	(-6.64)	1.117***	(5.82)
Lit	-0.889***	(-7.18)	1.571***	(12.19)
NG_{q-1}	-0.396***	(-7.62)	0.837***	(16.50)
Std ROA	8.366***	(11.08)	-1.322*	(-1.71)
Intercept	0.327	(0.83)	-0.460	(-0.69)
Controls	Yes		Yes	
Qrtr-Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Clustered Std Err	By Firm		By Firm	
N	26,254		26,254	
Pseudo R-Squared	0.162		0.185	
Strong Controls vs. *Weak Controls* coefficient comparison (Chi^2 test statistic)				
	6.62***		4.53**	

***, **, * indicate significance at the 1, 5, and 10% levels (two-tailed), respectively. This table investigates the association between non-GAAP reporting and control quality. We use two variations of non-GAAP reporting: *Income Dec NG* and *Aggressive NG* in Columns 1 and 2, respectively. *Income Dec NG* indicates that the non-GAAP earnings number reported is less than GAAP. *Aggressive NG* indicates that the non-GAAP earnings number reported is greater than operating earnings. To measure internal controls quality, we use the quartile cutoffs of the probability of a material weakness (*Prob Ineffective DC*) from the regression outlined in Appendix B, where the lowest quartile (*Strong Controls*) represents strong controls and the highest quartile *(Weak Controls*) represents weak controls. We limit the sample to only observations that report non-GAAP (i.e. *NG*=1), resulting in a final sample of 26,254. All continuous variables are winsorized at the 1 and 99 percent levels. We use logistic regressions with robust standard errors clustered by firm. Fixed effects (FE) utilized for quarter-years and industry (2 digit SIC). All variables are defined in Appendix A.

TABLE 5

Panel A: Opportunistic Incentives and NG Subsample				
Dependent Variable=	*Inc Dec NG*		*Aggressive NG*	
	(1)		(2)	
	Estimate	z-stat	Estimate	z-stat
Strong Controls	0.439*	(1.80)	-0.311**	(-2.15)
Weak Controls	0.247	(1.14)	0.038	(0.30)
Controls	Yes		Yes	
Qrtr-Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Clustered Std Err	By Firm		By Firm	
N	3,669		3,669	
Pseudo R-Squared	0.192		0.271	
Strong Controls vs. *Weak Controls* coefficient comparison (Chi^2 test statistic)				
	0.41		4.24**	

Panel B: Informational Incentives and NG Subsample				
Dependent Variable=	*Inc Dec NG*		*Aggressive NG*	
	(1)		(2)	
	Estimate	z-stat	Estimate	z-stat
Strong Controls	0.193***	(2.88)	-0.087	(-1.43)
Weak Controls	-0.015	(-0.22)	0.068	(1.10)
Controls	Yes		Yes	
Qrtr-Year FE	Yes		Yes	
Industry FE	Yes		Yes	
Clustered Std Err	By Firm		By Firm	
N	14,919		14,919	
Pseudo R-Squared	0.187		0.149	
Strong Controls vs. *Weak Controls* coefficient comparison (Chi^2 test statistic)				
	6.02**		4.23**	

***, **, * indicate significance at the 1, 5, and 10% levels (two-tailed), respectively. This table investigates the association between non-GAAP reporting and disclosure control quality in subsamples of non-GAAP reporting firms with opportunistic incentives (Panel A) and firms with informational incentives (Panel B). We use two variations of non-GAAP reporting: *Income Dec NG* and *Aggressive NG* in columns 1 and 2, respectively. *Income Dec NG* indicates that the non-GAAP earnings number reported is less than GAAP. *Aggressive NG* indicates that the non-GAAP earnings number reported is greater than operating earnings. To measure internal controls quality, we use the quartile cutoffs of the probability of a material weakness (*Prob Ineffective Controls*) from the regression outlined in Appendix B, where the lowest quartile (*Strong Controls*) represents strong controls and the highest quartile *(Weak Controls*) represents weak controls. For Panel A, we measure opportunistic incentives using whether the firm just misses meeting analyst expectations of GAAP earnings (*GAAP Just Miss*). This results in a sample of 3,669 firm-quarters. For Panel B, we measure usefulness incentives using whether analyst expectations of GAAP earnings greatly differ from reported GAAP earnings (*LQ GAAP*). This results in a sample of 14,919 firm-quarters. All continuous variables are winsorized at the 1 and 99 percent levels. We use logistic regressions with robust standard errors clustered by firm. Fixed effects (FE) utilized for quarter- years and industry (2 digit SIC). All variables are defined in Appendix A.

TABLE 6

Panel A: Future Operating Earnings Regression Results

Sample=	***Full NG Sample***				***Strong Controls***				***Weak Controls***			
	(1)		(2)		(3)		(4)		(5)		(6)	
	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
NG Earnings	0.757***	(32.05)			0.829***	(22.13)			0.678***	(19.85)		
Exclusions	0.075***	(5.26)			0.075***	(2.92)			0.082***	(3.23)		
GAAP Earnings			0.259***	(15.47)			0.334***	(12.14)			0.211***	(8.94)
LnAssets	0.002***	(11.10)	0.003***	(11.58)	0.002***	(7.95)	0.003***	(7.99)	0.002***	(5.93)	0.002***	(6.25)
Leverage	0.005***	(3.35)	-0.001	(-0.54)	0.007***	(2.74)	0.000	(0.02)	0.003	(1.10)	-0.000	(-0.05)
Loss	-0.004***	(-5.52)	-0.011***	(-13.48)	-0.002	(-1.32)	-0.006***	(-4.04)	-0.004***	(-3.45)	-0.010***	(-8.60)
MBR	0.000	(1.57)	0.000***	(4.89)	0.000	(0.14)	0.000**	(2.47)	0.000*	(1.69)	0.000***	(2.81)
Sales Growth	-0.005***	(-5.02)	-0.002**	(-2.27)	-0.003	(-1.57)	-0.002	(-0.96)	-0.005***	(-2.86)	-0.002	(-1.37)
Std ROA	-0.047***	(-4.08)	-0.039***	(-2.67)	-0.040**	(-1.97)	-0.057**	(-1.98)	-0.068***	(-3.60)	-0.064***	(-2.91)
Intercept	-0.009**	(-2.49)	-0.010***	(-2.69)	-0.010	(-1.23)	-0.008	(-1.23)	-0.010**	(-2.03)	-0.011*	(-1.90)
Qrtr-Yr FE	Yes		Yes		Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes		Yes		Yes	
Clustered Std Err	By Firm		By Firm		By Firm		By Firm		By Firm		By Firm	
N	26,254		26,254		6,711		6,711		6,693		6,693	
Adj R^2	0.455		0.338		0.547		0.416		0.372		0.277	
NG Earnings vs. *GAAP Earnings* coefficient comparison (Chi^2 test statistic)					703.39***				234.99***			
											174.68***	
NG Earnings coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*												
											9.26***	
Exclusions coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*												
											0.050	
GAAP Earnings coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*												
											13.47***	

TABLE 6 Continued

Panel B: Future CFO Regression Results

Sample=	***Full NG Sample***				***Strong Controls***				***Weak Controls***			
	(1)		(2)		(3)		(4)		(5)		(6)	
	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
NG Earnings	0.705***	(30.22)			0.767***	(23.06)			0.669***	(18.07)		
Exclusions	0.019	(1.58)			0.048**	(2.24)			0.032	(1.51)		
GAAP Earnings			0.203***	(12.91)			0.298***	(13.03)			0.172***	(7.97)
LnAssets	0.001***	(4.45)	0.002***	(6.84)	0.001***	(3.40)	0.002***	(5.14)	0.002***	(3.99)	0.002***	(4.60)
Leverage	0.004**	(2.38)	-0.002	(-0.83)	0.007***	(2.70)	0.001	(0.18)	-0.001	(-0.20)	-0.004	(-1.13)
Loss	0.001	(1.27)	-0.006***	(-7.00)	0.002*	(1.72)	-0.001	(-0.85)	0.001	(0.90)	-0.006***	(-4.56)
MBR	0.000***	(5.84)	0.001***	(8.26)	0.000***	(3.33)	0.001***	(4.66)	0.001***	(2.63)	0.001***	(3.42)
Sales Growth	-0.001	(-0.97)	0.001	(1.44)	0.002	(1.26)	0.003	(1.52)	-0.002	(-1.21)	0.001	(0.35)
Std ROA	-0.034***	(-3.12)	-0.025*	(-1.82)	-0.044**	(-2.35)	-0.059**	(-2.24)	-0.032*	(-1.72)	-0.027	(-1.24)
Intercept	-0.016	(-0.79)	-0.018	(-0.91)	-0.055	(-1.64)	-0.053	(-1.54)	-0.002	(-0.12)	-0.002	(-0.16)
Qrtr-Yr FE	Yes		Yes		Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes		Yes		Yes	
Clustered Std Err	By Firm		By Firm		By Firm		By Firm		By Firm		By Firm	
N	26,254		26,254		6,711		6,711		6,693		6,693	
Adj R^2	0.287		0.188		0.389		0.285		0.252		0.172	
NG Earnings vs. *GAAP Earnings* coefficient comparison (Chi^2 test statistic)	742.59***				278.67***				205.37***			
NG Earnings coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*	4.14**											
Exclusions coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*	0.26											
GAAP Earnings coefficient comparison (Chi2 test statistic) – *Strong Controls* vs. *Weak Controls*	18.41***											

TABLE 6 Continued

Panel C: Firm Fixed Effects Regression				
Dependent Variable=	*Operating Earnings$_{t+1}$*		*CFO$_{t+1}$*	
	(1)		(2)	
	Estimate	z-stat	Estimate	z-stat
NG Earnings	0.420***	(13.80)	0.395***	(11.27)
Exclusions	0.034**	(2.54)	-0.004	(-0.30)
Strong Controls	0.000	(0.55)	-0.001**	(-1.98)
*NG Earnings * Strong Controls*	0.015	(0.47)	0.012	(0.39)
*Exclusions * Strong Controls*	-0.050**	(-2.27)	0.007	(0.34)
Controls	Yes		Yes	
Qrtr-Year FE	Yes		Yes	
Industry FE	No		No	
Firm FE	Yes		Yes	
Clustered Std Err	By Firm		By Firm	
N	26,254		26,254	
Adj R^2	0.585		0.381	

***, **, * indicate significance at the 1, 5, and 10% levels (two-tailed), respectively. This table investigates the association between earnings persistence of non-GAAP earnings and control quality. We limit the sample to only firm-quarters with non-GAAP earnings. This results in a sample of 26,254 firm-quarters. We examine the persistence of non-GAAP earnings (*NG Earnings*) and GAAP earnings (*GAAP Earnings*) across firm-quarters we estimate have higher and lower-quality disclosure controls. To measure internal controls quality, we use the quartile cutoffs of the probability of a material weakness (*Prob Ineffective Controls*) from the regression outlined in Appendix B, where the lowest quartile (*Strong Controls*) represents strong controls and the highest quartile *(Weak Controls*) represents weak controls. All continuous variables are winsorized at the 1 and 99 percent levels. We use OLS regressions with robust standard errors clustered by firm. Fixed effects (FE) utilized for quarter-years and industry (2 digit SIC) in Appendix A and B and for quarter-years and firms in Appendix C. All variables are defined in Appendix A.