

Non-GAAP Reporting following Debt Covenant Violations

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ABSTRACT: We examine the influence of creditor and investor scrutiny on firms' voluntary disclosure of non-GAAP earnings. We find that the likelihood of non-GAAP reporting declines sharply following a debt covenant violation. If, however, managers elect to provide a non-GAAP earnings disclosure following a covenant violation, we find that they report the non-GAAP figure less aggressively. Specifically, when firms disclose non-GAAP earnings in the quarter following a covenant violation, (1) they place it less prominently within the press release, (2) it is less likely to meet or beat analysts' forecasts when the GAAP number falls short, and (3) it is marginally less likely to exclude items that are incremental to what analysts exclude. Furthermore, the significant association between non-GAAP exclusions and future GAAP earnings disappears following the covenant violation, indicating improvement in exclusion quality. Finally, market participants react differently to non-GAAP earnings following creditor intervention. Specifically, analysts (investors) react more to non-GAAP (GAAP) information following a covenant violation, suggesting that analysts (investors) are more (less) willing to trust manager-adjusted earnings metrics in the presence of creditor scrutiny. Overall, our results are consistent with creditor intervention (accompanied by investor scrutiny) playing an important role and mitigating opportunism in managers' discretionary disclosures.

Keywords: Non-GAAP Earnings; Debt Contracting; Covenant Violation; Creditor Monitoring

1. INTRODUCTION

For over two decades, researchers have recognized that the earnings metrics used in debt contracting are different from standard GAAP earnings (Leftwich, 1983; El-Gazzar and Pastena, 1990). Contractual earnings metrics frequently exclude nonrecurring items from GAAP earnings in order to better measure firms' ability to make principle and interest payments. These creditor-defined earnings measures are important in helping lenders to calculate covenant ratios and allocate control rights. Managers often disclose similar non-GAAP earnings metrics in earnings press releases. These manager-disclosed earnings metrics represent an important form of voluntary disclosure. Managers often claim that non-GAAP earnings measures are informative because they better portray "core" operating performance than GAAP earnings (Bhattacharya et al., 2003). However, regulators argue that non-GAAP earnings metrics may reflect managerial opportunism, which could mislead investors (Rapoport, 2013). We explore how managers' voluntary public non-GAAP disclosures are affected by intervention from creditors who regularly use non-GAAP earnings metrics in debt contracts. Specifically, we investigate the following three related questions: (1) Does creditor intervention (accompanied by investor scrutiny) following debt covenant violations affect firms' propensity to provide non-GAAP disclosures? (2) Does the quality of non-GAAP reporting vary following covenant violations? (3) Do market participants perceive a change in the quality of non-GAAP reporting following creditor intervention?

Recent studies on creditor intervention suggest that creditors play an important governance role following a covenant violation and influence a variety of management actions (e.g., Chava and Roberts, 2008; Roberts and Sufi, 2009; Nini et al., 2012; Tan, 2013). Creditor intervention can affect firms' non-GAAP reporting behavior via increased monitoring of the borrower firm, which is manifested in creditors' information acquisition activities and increased scrutiny of borrowers' financial records and reports. When firms violate debt covenants, control rights shift to creditors. To properly exercise control rights and protect their claims, creditors scrutinize borrowers in order to acquire information and verify their financial standing. These activities are guaranteed by creditors' inspection rights, which are written in debt contracts and exist pervasively in practice (Tan, 2013).

Managers typically claim that they provide non-GAAP earnings to afford a clear measure of sustainable core operating performance (Bhattacharya et al., 2003). Recent evidence suggests that the non-GAAP earnings measures used in debt contracts are also created to better measure persistent operating performance. Li (2010) argues that earnings measures in debt contracts are more useful if they are better able to predict future performance and the borrower's ability to repay debt in the future. He finds that the earnings measures used in debt contracts frequently exclude transitory items from GAAP net income and argues that the exclusion of these items should improve the earnings measure's ability to predict future firm performance. Consistent with this argument, Dyreng et al. (2014) find that the non-GAAP earnings metrics used in performance covenants result in greater cash flow predictability than FASB GAAP earnings. We recognize that public non-GAAP earnings metrics and contractual earnings are used by different parties with different informational demands. However, prior evidence suggests that both earnings metrics attempt to capture "core earnings" and are constructed in similar fashions.

We argue that the increased monitoring and scrutiny that accompany creditor intervention may affect firms' public non-GAAP reporting. While it is possible for creditors to *directly* influence borrowers' public non-GAAP disclosures since creditors use similar non-GAAP earnings metrics in debt contracts, we do not suspect that creditors frequently intervene in this way. On the other hand, we feel that the mechanism behind borrower financial reporting decisions at the time of a debt covenant violation is more *indirect*. Daniels and Triantis (1995) describe the interactive corporate governance process as creditors closely monitor borrowers following debt covenant violations. While creditors use specially designed non-GAAP performance measures in evaluating borrowers' ability to make interest and principle payments, they are unlikely to be concerned with borrowers' *public* non-GAAP earnings disclosures. Nevertheless, the increased risk of creditor sanctions and the threat that they could exit the firm, provide important signals to other stakeholders. As a result, we predict that borrowers will feel pressure during the intervention period to avoid public disclosures that could be perceived to be aggressive because investors and other stakeholders (such as analysts) also monitor the firm closely following a debt covenant violation. Thus, while creditors possess the formal monitoring rights during the intervention period, we believe borrowers' behavior may be strongly influenced by their incentives to avoid the appearance of aggressive public disclosures when both creditors and other stakeholders are closely monitoring their performance.

We examine voluntary non-GAAP disclosures following debt covenant violations using a large hand-collected sample that combines both manager-disclosed non-GAAP earnings metrics and covenant violation information. The first dataset contains managers' non-GAAP earnings disclosures from publicly available press releases, extending the sample used by Bhattacharya et al. (2007) and Brown et al. (2012). Following prior studies, we calculate manager exclusions by comparing non-GAAP earnings with Compustat GAAP earnings and analysts' actual earnings from I/B/E/S. The second dataset contains Nini et al.'s (2012) debt covenant violation information for all U.S. publicly listed non-financial firms for the 1996-2007 period. Nini et al. (2012) search the SEC filings and identify for each firm-quarter whether a debt covenant violation has occurred. After screening for required control variables, our final firm-quarter panel dataset consists of 45,541 firm-quarters of 2,244 unique companies for the 1998-2006 period.

We hypothesize that increased scrutiny from creditors and other stakeholders will affect firms' voluntary disclosure choices. Firms can alter their non-GAAP disclosure by (1) changing the line items they exclude, (2) altering how the non-GAAP metric is presented, or (3) forgoing a non-GAAP disclosure all together. We first examine whether managers are less likely to provide non-GAAP earnings disclosures following a covenant violation. While prior research finds that they are informative to investors (Bhattacharya et al., 2003; Lougee and Marquardt, 2004), non-GAAP earnings disclosures are also often perceived to be opportunistic (Christensen et al., 2014). Facing heightened stakeholder scrutiny, managers may seek to avoid potential reputation costs by electing not to make a public disclosure that may be perceived to be aggressive. Hence, we argue that creditor scrutiny discourages managers from making voluntary non-GAAP disclosures that could be perceived to be aggressive. Using a probit analysis for the full quarterly sample, we find a significant decrease in the likelihood that a firm will disclose a non-GAAP earnings metric following a covenant violation. The results indicate that a firm is 3.5% less likely to disclose a non-GAAP number in the quarter following a covenant violation than during normal quarters. This effect is economically significant as it represents an 18.4% decrease from the unconditional mean quarterly non-GAAP reporting frequency. Thus, the results are consistent with the notion that creditor intervention arising from a debt covenant violation is associated with a decrease in non-GAAP reporting.

In reaction to increased monitoring from creditors and other stakeholders following a covenant violation, firms may elect to provide higher quality (less aggressive) non-GAAP disclosures rather than

forgoing them entirely. We hypothesize that if firms still choose to provide a non-GAAP earnings disclosure during the intervention period, then the voluntarily-disclosed non-GAAP number will be less aggressive and of higher quality. In order to explore this prediction, we conduct two sets of analyses. First, we examine whether firms become less aggressive in their non-GAAP reporting following a covenant violation. In particular, we consider three characteristics of non-GAAP disclosures that prior research has found to be related to aggressive reporting: (1) emphasis of the non-GAAP earnings measure relative to the GAAP earnings metric (Bowen et al., 2005); (2) the use of earnings exclusions in calculating non-GAAP earnings to move the firm from missing analysts' expectations based on GAAP operating earnings (Bhattacharya et al., 2003, 2004; Black and Christensen, 2009; Doyle et al., 2013); and (3) the magnitude of incremental exclusions made by managers beyond what analysts exclude (e.g., Black and Christensen, 2009; Brown et al., 2012; Black et al., 2014). We find that after a covenant violation, managers are 6.1% less likely to emphasize non-GAAP earnings relative to GAAP earnings within an earnings announcement. This evidence suggests that creditor intervention leads managers to focus more on GAAP earnings. We also find that managers are 8.6% less likely to report a non-GAAP earnings measure that meets or beats expectations when GAAP operating earnings falls short in the quarter after a covenant violation. This result suggests that managers' opportunistic use of non-GAAP exclusions to meet or beat benchmarks decreases after creditor intervention. Finally, we find a decrease in the incremental exclusions managers make relative to analysts' exclusions after a covenant violation. Though not statistically significant, a decrease in these exclusions is consistent with the notion that managers are less aggressive in the exclusions they make in calculating a non-GAAP earnings metric after creditors intervene.

Our second set of analyses examines the quality of exclusions. Following prior research, we consider managers' exclusions to be of higher quality if they are transitory rather than persistent in nature (Doyle et al., 2003; Kolev et al., 2008; Frankel et al., 2011). We find that after a covenant violation, managers' total exclusions are less predictive of future earnings, suggesting that they are primarily transitory item exclusions and are thus of higher quality. We then decompose total exclusions into below-the-line, special item, and recurring item exclusions. We find that the improvement in quality is concentrated in managers' recurring exclusions where they have more discretion. Further decomposing manager recurring exclusions into those made only by managers and those corroborated by analysts, we

find that the quality of exclusions improves in both categories. Overall, the results are consistent with our conjecture that the quality of non-GAAP earnings measures improves after creditor intervention.

Finally, we investigate market participants' perceptions of the quality of non-GAAP reporting after creditor intervention. If non-GAAP reporting quality improves following a covenant violation and market participants are aware of the increased quality, we expect their reaction to non-GAAP earnings to be stronger after a covenant violation. However, an opposing view is that, as performance deteriorates, managers may have incentives to disclose non-GAAP earnings more frequently and more aggressively following a covenant violation. The non-GAAP earnings literature generally finds that firms are more likely to disclose a non-GAAP earnings metric when they perform poorly (e.g., Bhattacharya et al., 2004; Lougee and Marquardt, 2004) or have incentives to meet or beat analysts' expectations (Bhattacharya et al., 2004). Providing a non-GAAP performance metric may help managers better explain their performance or portray a healthy financial image to investors. This view leads to predictions that are contrary to those based on the debt contracting and covenant violation literature. Therefore, how firms change their non-GAAP reporting policies in response to creditor intervention is an empirical question.

In order to answer this question, we first examine whether investors' reaction to unexpected earnings differs after a covenant violation. Our evidence suggests that after a covenant violation, investors view GAAP (but not non-GAAP) earnings to be more informative. We then investigate whether financial analysts' forecast revisions of future earnings differ after a covenant violation. In contrast to the investor reaction results, our evidence indicates that analysts view non-GAAP (but not GAAP) earnings to be more informative after a covenant violation. Analysts' reaction to non-GAAP earnings is consistent with our previous results suggesting that the quality of non-GAAP exclusions increases after a covenant violation.

We contribute to the extant literature in several ways. First, we extend the non-GAAP reporting literature by identifying creditor intervention as an important determinant of managers' non-GAAP reporting decisions. Prior studies in the non-GAAP reporting literature focus exclusively on equity market incentives and shareholders (e.g. Bhattacharya et al., 2003; Doyle et al., 2003; Bowen et al., 2005; Johnson and Schwartz, 2005; Bhattacharya et al., 2007; Brown et al., 2012). Our evidence, however, highlights the importance of creditors and debt financing arrangements in shaping corporate non-GAAP reporting. We connect the literature on contractual earnings modifications (e.g., Leftwich, 1983; El-Gazzar and Pastena,

1990) with the literature on non-GAAP earnings adjustments. Moreover, our evidence that creditor monitoring improves the quality of non-GAAP reporting complements recent studies on the effect of various intervening and monitoring mechanisms on the quality of non-GAAP reporting, such as SEC intervention (e.g., Marques, 2006; Kolev et al., 2008; Heflin and Hsu, 2008; Black et al., 2012) and board of director governance (Frankel et al., 2011).

Second, we contribute to the growing literature on the effect of creditor intervention on corporate disclosures. With respect to mandatory GAAP reporting, Tan (2013) finds that the transfer of control rights following a debt covenant violation makes GAAP earnings more conservative. With respect to management earnings guidance, Vashishtha (2014) documents that debt covenant violations result in a decrease in the frequency of earnings guidance. Our investigation is different from these two studies in several important ways. First, we examine firms' earnings announcement reporting strategies and the disclosure of actual earnings metrics as opposed to exploring future earnings forecasts or management's accounting choices. Second, we identify a new mechanism through which creditor intervention influences disclosure. We focus on the relation between contractual non-GAAP modifications and non-GAAP adjustments for external reporting, which has not been explored in prior research. Third, we provide new insights on voluntary disclosure. In addition to disclosure frequency, we document important evidence on the placement, content, and quality of non-GAAP earnings disclosures. We also investigate market participants' perceptions about the disclosure quality of non-GAAP earnings following creditor intervention.

More broadly, our research extends the literature examining covenant violations and the resolution of technical default. Early studies find that technical default is costly (Beneish and Press, 1993, 1995; Chen and Wei, 1993) and firms have an incentive to manipulate accounting choices to avoid covenant violations (e.g. Healy and Palepu, 1990; DeAngelo, DeAngelo and Skinner, 1994; Defond and Jiambalvo, 1994; Sweeney, 1994; Dichev and Skinner, 2002). Recent research, however, shifts the focus to creditor control rights and the effect of violating a covenant. We complement this new line of research, which documents that the transfer of control rights following a covenant violation influences a variety of corporate decisions, such as capital expenditures (Chava and Roberts, 2008), debt financing (Roberts and Sufi, 2009), acquisitions, payouts and CEO turnover (Nini et al., 2012).

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Covenants and Creditor Intervention: Theory, Practice and Empirical Evidence

Recognizing the incentive conflicts between managers and external financiers, theoretical research on financial contracting examines the design of an optimal contract that minimizes agency costs. In these studies, covenants play a crucial role in mitigating agency conflicts. For example, taking the incomplete contract approach, Aghion and Bolton (1992), among others,¹ show that an optimal contract resembles debt financing and allocates decision rights in a state contingent fashion. This type of contract has a covenant that is based on a public signal, which is imperfectly correlated with the underlying state. It gives decision rights to managers when the state signal is high and transfers the rights to outside financiers when the signal becomes low, which may be indicative of managerial moral hazard (e.g., empire building, assets substitution, diverting firm's cash flow, etc.). The rationale for covenants is therefore to optimally allocate control rights between the principal and the agent when appropriate.

To make the right decision when assuming power, it is crucial for outside financiers to become well-informed about the firm's actual state of nature (Tirole, 2006). Taking the costly state verification approach, prior research suggests that a low reported signal may be followed by a state of nature verification process by the financiers. In these models (e.g., Townsend, 1979; Diamond, 1984; Gale and Hellwig, 1985; Williamson, 1986; Winton, 1995), firms' cash flow (the actual state of nature) is hidden information and outside financiers will verify the reported income at a cost when it is below a certain level.

Two key insights can be drawn from these theoretical studies. First, when a state signal is low and agency conflict is severe, covenants transfer control rights to creditors, who then change from a passive corporate outsider to an active and tough principal to govern the firm and deal with the agency conflict. As noted by Shleifer and Vishny (1997) in their influential survey about corporate governance, creditors play an important governance role with their ability to exercise control during debt financing.² Second, creditors

¹ For example, Berglof and von Thadden (1994), Bolton and Scharfstein (1990), Dewatripont and Tirole (1994), Hart and Moore (1988, 1994, 1998), and Zender (1991).

² Shleifer and Vishny (1997) point out that although there is a great deal of theoretical research on debt governance, empirical research on this topic is scarce. In the accounting literature, Ball (2001) refers to creditor-based governance as "debt-induced governance". Nini, Smith and Sufi (2012) are among the first empirical studies to examine debt holder governance in the covenant violation setting. We contribute to this governance literature by examining debt holder's influence on non-GAAP reporting.

have a strong demand for information used to verify the actual state of nature of the firm in order to exercise control rights and protect their claims. During the default process, creditors scrutinize borrowers in order to “establish a clear inventory of all assets and liabilities and to assess the net value of the firm” (Bolton and Dewatripont, 2005 p. 190).

In practice, credit agreements typically contain a number of covenants. Borrowers are in technical default if they violate one or more covenants. Following a covenant violation, credit agreements grant lenders the contractual rights to accelerate outstanding loans and make them due immediately. However, empirical evidence indicates that lenders rarely call loans due to covenant violations, but instead prefer to grant waivers and renegotiate with borrowers (e.g., Beneish and Press, 1993; Chen and Wei, 1995; Gopalakrishnan and Parkash, 1995). During renegotiation (creditor intervention), creditors use their acceleration right as a threat to discipline managers and influence firm policies.

Following a covenant violation, creditors have the ability to affect firms’ disclosure policies through their information acquisition activities and scrutiny of borrowers’ financial reports and records. These scrutinizing activities are backed up by the inspection right written in the contract. Commonly specified as an affirmative covenant (Wight et al., 2009), the inspection right grants creditors universal access to firms’ books and records, properties and related personnel, and allows them to acquire additional information when necessary. According to Tan (2013), the inspection right is typically strengthened after a default event. Specific scrutinizing activities following a covenant violation may include (1) more detailed and frequent reporting from borrowers, (2) special audits of particular accounts or transactions, (3) the appointment of a chief restructuring officer to replace current management and to more closely monitoring the firm if necessary.³ Tan also finds anecdotal evidence that creditors may ask firms to restate their financial reports to increase allowances and recognize losses. In sum, creditors’ ability to scrutinize borrowers’ financial information after a covenant violation is granted by debt contracts and these types of scrutinizing activities are common in practice.

³ Unlike the practice of many other countries, in the U.S. a chief restructuring officer can be brought into the firm to provide consulting services even before a Chapter 11 petition.

Tailoring GAAP earnings for debt contracting purposes is prevalent in private debt contracts and has long been recognized in the literature (Leftwich, 1983; El-Gazzar and Pastena, 1990). Similar to how managers exclude certain items in public non-GAAP disclosures, creditors frequently require managers to exclude nonrecurring items when defining earnings in the debt contracts (Li, 2010; 2012). The calculation of contractual earnings almost always starts with GAAP net income, even when the benchmark variables are particular cash flow measures, such as operating cash flows, cash flows, cash flows from operation (Li, 2012). Dyreng et al. (2014) take their analyses one step further and examine realized contractual earnings. They find that 75% (100%) of the contractual earnings numbers in their sample are greater than EBITDA (NI), indicating that lenders often require adjustments beyond interest, taxes, depreciation, and amortization. The adjusted earnings metric in the contract is crucial for lenders to calculate covenant ratios and allocate control rights. Therefore, in reviewing firms' financial reports and detailed accounts following a covenant violation, creditors likely scrutinize every transaction that affects the calculation of contractual adjustments. These transactions are also the basis for managers to derive their non-GAAP earnings for external reporting.

Prior empirical research provides evidence on the governance role of creditor intervention. Chava and Roberts (2008) find that firms' capital expenditures decline after a covenant violation and this reduction is concentrated in firms with severe agency and information problems. Roberts and Sufi (2009) document a decrease in debt financing following a covenant violation. Nini et al., (2012) find that after a covenant violation, firms experience a decline in acquisition and payout activities, and are more likely to have CEO turnover. Firms' operating and stock price performance, on the other hand, improve following the covenant violation. Gao et al., (2014) document evidence suggesting that creditor intervention will trigger more audit effort, resulting in an increase in audit fees. More relevant to our study is a growing stream of research in accounting that identifies the effect of a covenant violation on corporate disclosure. Tan (2013) examines mandatory GAAP reporting and finds that firms' reported GAAP earnings become more conservative following lenders' scrutiny after a covenant violation and the conservatism effect persists in the long run. Vashishtha (2014) examines management forecasts. He finds that forecast frequency declines after a covenant violation.

Non-GAAP Earnings Disclosure

When managers provide their quarterly earnings press release, they often choose to voluntarily disclose an alternative profitability measure (non-GAAP earnings) along with the GAAP earnings figure. Because non-GAAP reporting is voluntary and not subject to audit, managers have substantial discretion over whether or not to disclose an adjusted profitability measure, what to disclose, and how to disclose. Therefore, the nature of non-GAAP reporting has been debated for well over a decade. On the one hand, managers and advocates of non-GAAP reporting argue that non-GAAP earnings metrics are informative to the public because they better portray “core” earnings performance to investors than GAAP earnings. On the other hand, regulators argue that these metrics can also reflect managerial opportunism and can be misleading to investors since they may overstate operating performance (Rapoport 2013).

Several studies find evidence that non-GAAP earnings are more informative and more representative of core earnings than GAAP earnings. For example, Bhattacharya et al., (2003) examine short window abnormal returns and analysts’ forecast revisions, and find that non-GAAP earnings provided by managers appear to be more informative and more persistent than GAAP earnings. Lougee and Marquardt (2004) find that firms with low GAAP earnings informativeness are more likely to provide non-GAAP earnings, consistent with managers attempting to inform investors. Bowen et al. (2005) examine the relative emphasis placed on GAAP earnings versus non-GAAP earnings in earnings press releases, and find that firms place greater relative emphasis on non-GAAP earnings when the GAAP number provides less value relevant information.

On the other hand, several studies also document evidence consistent with non-GAAP earnings reflecting managerial opportunism. For example, Bhattacharya et al. (2004) find that the frequency of non-GAAP reporting increases significantly when firms’ earnings and stock prices start to decline and that the disclosure of non-GAAP earnings may be motivated by managers’ incentives to meet or beat analysts’ expectations or to avoid earnings decreases. Lougee and Marquardt (2004) find that non-GAAP reporting is influenced by the direction of the GAAP earnings surprise. Bowen et al. (2005) also report that firms emphasize the earnings metric that portrays better performance. Doyle et al. (2013) document evidence suggesting that firms opportunistically define non-GAAP earnings to meet or beat analysts’ expectations.

Brown et al. (2012) find that investor sentiment is highly associated with managers' non-GAAP reporting behavior and that this behavior reflects management's opportunistic motives. Bhattacharya et al. (2007) examine who trades on non-GAAP earnings and find that less sophisticated investors are more likely to be influenced by and trade on non-GAAP information than more sophisticated investors. Similarly, Christensen et al. (2014) find that one class of sophisticated investors, short sellers, target firms that report non-GAAP earnings, suggesting that these disclosures may overstate performance and mislead investors.

Recent studies extend prior evidence on the opportunistic characteristics of non-GAAP reporting and investigate whether various intervening and monitoring mechanisms can help to curb managerial opportunism. Marques (2006) finds that the frequency of non-GAAP reporting significantly decreases following an SEC warning about non-GAAP earnings and subsequent to Regulation G. Kolev et al. (2008) find that the quality of non-GAAP exclusions becomes higher (more transitory) after the implementation of Reg G. Frankel et al. (2011) examine the effect of an independent board of directors on the quality of non-GAAP reporting, and find that the positive association between non-GAAP exclusions and future GAAP earnings becomes weaker when boards contain more independent directors, which suggests that having an independent board of directors is associated with improved non-GAAP reporting quality.

Hypotheses

Our first research question is: does the propensity to provide non-GAAP earnings information decrease after debt covenant violations? As discussed previously, following a covenant violation, control rights are shifted to creditors and enable them to scrutinize borrowers more closely. Creditor intervention can *directly* affect firms' non-GAAP reporting behavior through creditors' information acquisition activities and their scrutiny of borrowers' financial records and reports. Consider a renegotiation meeting between a lender and a manager following a covenant violation, where the manager presents the firm's financial reports and detailed records to the lender. Transactions that affect the firm's current and future performance will be scrutinized by the lender who wants to determine whether and how these transactions affect the calculation of contractual earnings. These transactions also form the basis for management's discretionary exclusions for public reporting. Creditors' examination (or the perceived possibility of creditor scrutiny) may lead managers to worry about how creditors will perceive their attempts to adjust

GAAP earnings beyond what is allowed under debt contracts since they want to avoid any potentially negative consequences from their public disclosures that could hurt their credibility and reputation among creditors. Therefore, creditor scrutiny places pressure on managers and may discourage discretionary non-GAAP disclosures—especially those that could be perceived to be aggressive.⁴

While it is possible for creditors to *directly* influence borrowers' public non-GAAP disclosures since creditors use similar non-GAAP earnings metrics in debt contracts, we do not suspect that creditors frequently intervene in this way. On the other hand, we feel that the mechanism behind borrower financial reporting decisions at the time of a debt covenant violation is more *indirect*. Daniels and Triantis (1995) describe the interactive corporate governance process as creditors closely monitor borrowers following debt covenant violations. While creditors use specially designed non-GAAP performance measures in evaluating borrowers' ability to make interest and principle payments, they are unlikely to be concerned with borrowers' *public* non-GAAP earnings disclosures. Nevertheless, the increased risk of creditor sanctions and the threat that they could exit the firm, provide important signals to other stakeholders. As a result, we predict that borrowers will feel pressure during the intervention period to avoid public disclosures that could be perceived to be aggressive because investors and other stakeholders (such as analysts) also monitor the firm closely following a debt covenant violation. Thus, while creditors possess the formal monitoring rights during the intervention period, we believe borrowers' behavior may be strongly influenced by their incentives to avoid the appearance of aggressive public disclosures when both creditors and other stakeholders are closely monitoring their performance. In line with these arguments, we state our first hypothesis as follows:

Hypothesis 1: Managers are less likely to provide non-GAAP earnings disclosures following a covenant violation.

Our second research question examines the quality of non-GAAP reporting when it does occur. Direct creditor scrutiny can improve the quality of the exclusion items for computing contractual earnings. To the extent that these exclusion items correlate with those used by management for public reporting,

⁴ It is important to note that we do not assume all non-GAAP disclosures are opportunistic, but simply note that opportunism is a possibility because managers have discretion over these disclosures. This argument also applies to informative managers, who may perceive creditor scrutiny to be costly and avoid disclosing following a covenant violation.

creditor intervention is likely to improve the quality of external non-GAAP reporting. Even if contractual exclusions do not correlate well with voluntary exclusions for external non-GAAP financial reporting, we predict that increased monitoring and scrutiny from both creditor and other stakeholders such as investors and analysts will provide a motivation for managers to avoid aggressive external non-GAAP disclosures. Thus, we predict that managers' non-GAAP reporting will become less aggressive (Hypothesis 2a) and more informative about future performance (Hypothesis 2b) following a covenant violation. This discussion leads to our second hypothesis regarding quality:

Hypothesis 2a: Conditional on providing a non-GAAP earnings metric following a covenant violation, managers will report a non-GAAP figure less aggressively.

Hypothesis 2b: Conditional on providing a non-GAAP earnings metric following a covenant violation, managers will report a non-GAAP figure that is more informative about future performance.

Finally, we examine whether market participants understand the implications of creditor intervention on corporate discretionary disclosure and whether they perceive a change in the quality of non-GAAP reporting. If non-GAAP reporting quality improves following a covenant violation and market participants are aware of this increase in quality, their reaction to non-GAAP earnings around the earnings announcement should be more pronounced after a covenant violation. This logic leads us to the following hypothesis:

Hypothesis 3: Market participants react more to non-GAAP earnings following a covenant violation.

II. DATA AND DESCRIPTIVE STATISTICS

Sample Selection

We hand collect a large and comprehensive sample of quarterly earnings press releases that contain a manager-adjusted non-GAAP earnings figure by searching the PR Newswire and Business Wire on LexisNexis for the period January 1998 to December 2006. Our sample extends the sample used in Bhattacharya et al. (2007) and Brown et al. (2012). We start from January 1998 since non-GAAP earnings were not widely reported prior to 1998 (see Bhattacharya et al., 2004, for a detailed analysis of time trends in non-GAAP reporting).

A typical press release in our sample contains a GAAP earnings per share (EPS) figure for the current quarter, a non-GAAP earnings number, and various other details deemed relevant by management. We include earnings releases in which the company discloses a non-GAAP earnings number that differs from the “bottom line” GAAP diluted EPS number disclosed in the same press release. We search the keywords “pro forma”, “pro-forma”, “proforma”, and other pro forma earnings nomenclatures commonly used by firms according to Wallace’s (2002) categorization.⁵ This search procedure retrieves 106,638 potential press releases. After carefully reading each press release, we find 13,909 releases containing a quarterly non-GAAP earnings number in addition to the GAAP number.

We obtain covenant violation information from a large, comprehensive debt covenant violation dataset used by Nini, Smith and Sufi (2012).⁶ The dataset contains all U.S. non-financial firms from fiscal year 1996 to 2007 with available SEC 10-Q and 10-K electronic filings and identifies for each firm-quarter from the filing whether a debt covenant violation has occurred. The violation sample consists of 262,673 firm-quarters with 10,537 unique firms.

We then combine the non-GAAP disclosure data with the covenant violation data. Our sample period starts in 1998 and ends in 2006. We drop firms that have never reported a non-GAAP figure over the entire sample period. To construct control variables, we also obtain financial statement data from Compustat, stock return data from CRSP, analyst forecast data from I/B/E/S, and institutional holdings information from Thomson-Reuters. The final full sample consists of 45,541 firm-quarters from 2,244 companies.⁷ We use it to test H_1 . All subsequent hypothesis tests restrict the sample to those firm-quarters in which managers disclose a non-GAAP number. We do so to ensure that our results are not affected by

⁵ Our other non-GAAP earnings nomenclatures search terms are: “earnings excluding,” “net income excluding,” “adjusted net income,” “adjusted loss,” “cash earnings,” “earnings before,” “free cash flow,” “normalized EPS,” “normalized earnings,” “recurring earnings,” “distributable cash flow,” “GAAP one-time adjusted,” “GAAP adjusted,” “cash loss,” AND NOT “pro forma,” “pro-forma,” or “proforma.” We exclude EBIT or EBITDA since these are reported as standard income statement items; also, these figures were reported long before the non-GAAP reporting trend began in the late 1990s.

⁶ The dataset is available at <http://faculty.chicagobooth.edu/amir.sufi/data.html> and we thank Professor Amir Sufi for making it available for download. The Data Appendix in Nini, Smith and Sufi (2012) describes in detail how the violation incidences are identified from SEC filings and the specific text-search algorithm.

⁷ We construct two alternative full samples and conduct robustness checks regarding the way to assign zero frequency of non-GAAP disclosure to the data. First, we keep all firms in the entire Sufi sample between 1998 and 2006, and assign zero disclosure frequency to all firm-quarters in which we do not observe a non-GAAP disclosure. This sample consists of 78,722 firm-quarters. Second, we keep all firm-quarters that follow the first appearance of a non-GAAP disclosure. This sample consists of 30,229 firm-quarters. Our frequency results are robust to the two alternative samples.

managers' decision to provide a non-GAAP disclosure (e.g., Doyle et al., 2003; Brown et al., 2012). We require a constant sample within each subsequent test and use the largest sample size possible. Table 1 summarizes the sample selection procedures.

Descriptive Statistics

Table 2 reports summary statistics of the variables used in the study. On average, managers disclose non-GAAP earnings in 19% of the firm-quarters (*NG*) and violate covenants in around 4% of firm-quarters (*VIOLATION*). When firms choose to disclose a non-GAAP earnings number, the average firm reports non-GAAP EPS (EPS_{NG}) of 21 cents. Comparing EPS_{NG} to the bottom line GAAP EPS figure, managers exclude an average of around 20 cents per share of expenses in total (*TOTALEXCL*). Total exclusions can be broken down into different components. This 20 cents per share is comprised of 1 cent per share, on average, of below-the-line exclusions (*BELOWLINE*), 10 cents of one-time "special item" exclusions (*SPECIALEXCL*) and 8 cents of recurring item exclusions (*MGRRECUR*). When further decomposing *MGRRECUR*, we find that 7 cents of the recurring exclusions are those that both managers and analysts agree upon (*ANLYRECUR*) while 1 cent represents incremental recurring expenses excluded by managers but not analysts (*INCRRECUR*). When managers exclude items that analysts are not willing to exclude, we view these exclusions as the most likely to be motivated by opportunistic motives.

Table 2 also provides descriptive information about other measures of firms' propensity to report non-GAAP numbers aggressively. On average, 45% of the non-GAAP earnings figures are reported before the corresponding GAAP figures within the earnings press release (*NGFIRST*). Post Reg G, firms are required to give their GAAP number at least equal prominence within the press release relative to the non-GAAP number. However, when firms disclose both numbers in the same paragraph, they can technically argue that the numbers have equal prominence. Nevertheless, *NGFIRST* captures which comes first (i.e. receives greater emphasis) even in the same paragraph. We also find that 39% of the non-GAAP EPS figures meet or beat analysts' expectations when the corresponding GAAP operating numbers fall short (*CONSENSUS*). Consistent with this evidence, we find that the mean forecast error based on non-GAAP earnings, FE_{NG} , is a positive 2 cents per share, while the corresponding forecast error based on GAAP

operating earnings, FE_{GAAP} , is a negative 5 cents per share. All other variables have distributions similar to those in prior studies.

Figure 1 plots the frequency of non-GAAP earnings disclosures in event time, where time 0 is the quarter when a firm violates a covenant. To obtain a clear visual image of the effect of covenant violations, a violation time-series is only included in the graphical analysis if no additional violations have occurred in the previous four quarters. The incidence of non-GAAP disclosures in the pre-event period (from t-4 to t-1) has an average frequency of around 15.2% per quarter. Consistent with H_1 , the frequency of non-GAAP disclosure declines sharply immediately following a violation. The average frequency drops from 16.3% one quarter prior to the violation to 13.8% by the first quarter after the violation (14% decrease from the quarterly mean) and to 12.7% by the second quarter after the violation (20% decrease from the quarterly mean). This sharp drop in disclosure frequency immediately following a covenant violation is our focus.

IV. RESULTS

Creditor Intervention and the Likelihood of Providing Non-GAAP Disclosures

We use probit analysis to test whether a covenant violation in the previous quarter affects a firm's propensity to disclose an adjusted earnings measure in the current quarter. We use the following probit model:

$$PROB(NG_{it} = 1) = \Lambda \left(\begin{array}{c} \beta_0 + \beta_1 VIOLATION_{it-1} + \sum_{j=2}^J \beta_j CONTROLS_{it} \\ + \delta_s + \mu_y + \tau_q + \varepsilon_{it} \end{array} \right), \quad (1)$$

where $\Lambda [.]$ is the probit cumulative distribution function. The dependent variable, NG_{it} , equals one if the firm provides a non-GAAP earnings disclosure in the current quarter and zero otherwise. $VIOLATION_{it-1}$ is equal to one if a firm experienced a covenant violation during the previous quarter and zero otherwise. $CONTROLS_{it}$ is a vector of control variables. δ_s is an industry effect. μ_y is a year effect. τ_q is a fiscal quarter effect; ε_{it} is an error term. The coefficient of interest is β_1 , which represents the impact of a covenant violation on the likelihood that a firm provides non-GAAP reporting. We expect β_1 to be significantly negative.

We include several control variables. First, we posit that a firm is more likely to provide a non-GAAP disclosure if it reports GAAP earnings that are disappointing or are affected by a one-time event. Thus, we include indicator variables that are equal to one if a firm experienced an operating loss (*GAAPLOSS*), did not meet the analyst consensus forecast (*NEGFE*), or experienced a one-time event (*SPECIALCHG*). We also expect that a firm that disclosed non-GAAP earnings in the previous quarter is more likely to provide a non-GAAP disclosure in the current quarter. Therefore, we control for NG_{t-1} , which equals one if the firm reported non-GAAP earnings in the previous quarter and zero otherwise. Our control variables also include firm size (*SIZE*), leverage (*LEVERAGE*), market-to-book ratio (*MTB*), earnings variability (*STDROA*), return on assets (*ROA*), stock returns (*RETURN*), percentage of institutional ownership (*%INST*) and litigation risk (*LITIGATE*), which are found in prior studies to affect firms' disclosure decisions. We define these variables in detail in the appendix.

We estimate equation 1 using our full quarterly sample and report results in Table 3. Column 1 presents the coefficients from the regression with the accompanying z -statistics. We cluster standard errors by firm and use heteroskedasticity-robust estimation. To facilitate economic intuition of the coefficients, we provide average marginal effects and their corresponding z -statistics in column 2. We estimate the average marginal effect by calculating marginal effects and standard errors for each observation, and then averaging across all observations.

The coefficient for our variable of interest *VIOLATION* is significantly negative at the 1% level ($\beta_1 = -0.179$, z -statistic = -3.80), which is consistent with H_1 . This evidence indicates that the likelihood of a firm providing a non-GAAP disclosure decreases in the quarter following a covenant violation. The average marginal effect is equal to -0.035, which indicates that a firm is 3.5% less likely to report non-GAAP earnings in the quarter following a covenant violation. This effect is economically significant as it represents an 18.4% decrease from the unconditional mean quarterly non-GAAP reporting frequency of 0.19. These results are consistent with Figure 1, which indicates a steep decline in non-GAAP disclosures following a covenant violation.

Control variables are consistent with our predictions and prior research. We find that having a one-time event (*SPECIALCHG*), a GAAP operating loss (*GAAPLOSS*), and missing the consensus analyst forecast (*NEGFE*) increase the likelihood that a firm will provide a non-GAAP disclosure. We also find a

positive coefficient on NG_{t-1} , indicating that a firm that provided a non-GAAP disclosure during the previous quarter is more likely to disclose one during the current quarter. Overall, the results suggest that firms are less likely to provide a non-GAAP disclosure following a debt covenant violation, even after controlling for firm characteristics and fixed effects.

Creditor Intervention and the Quality of Non-GAAP Disclosures

To this point, we find evidence consistent with managers being less likely to disclose non-GAAP earnings after a covenant violation. If managers still decide to disclose a non-GAAP number after a covenant violation, we predict that they will be less aggressive in their reporting. Thus, we explore the quality of managers' non-GAAP reporting following debt covenant violations. We conduct two sets of analyses. First, we examine whether firms become less aggressive with their non-GAAP disclosure decisions. In particular, we consider three characteristics of non-GAAP disclosures that prior research has found to be related to aggressive reporting. First, we consider whether managers choose to more prominently disclose non-GAAP earnings within an earnings press release (Bowen et al., 2005). Second, we investigate instances of when a non-GAAP number meets or beats the consensus analyst forecast while GAAP operating earnings falls short (Bhattacharya et al., 2003, 2004; Black and Christensen, 2009; Doyle et al., 2013). Third, we explore the magnitude of managers' incremental recurring exclusions (e.g., Black and Christensen, 2009; Brown et al., 2012; Black et al., 2014). We consider these exclusions to be the most aggressive of exclusions because they are recurring exclusions made by managers but not supported by analysts.

In examining the disclosure decisions made by managers after covenant violations, we restrict the sample to those firm-quarters in which managers disclose a non-GAAP number. We do this to ensure that our results are not affected by managers' decision to provide a non-GAAP disclosure (e.g., Doyle et al., 2003; Brown et al., 2012). We use the following three specifications to examine the aggressiveness of managers' non-GAAP disclosure decisions. We employ a probit analysis in equations 2 and 3 because the dependent variables are binary. In equation 4 we use an OLS regression because the dependent variable is continuous.

$$PROB(NGFIRST_{it} = 1) = \Lambda \left(\begin{array}{c} \beta_0 + \beta_1 VIOLATION_{it-1} + \sum_{j=2}^J \beta_j CONTROLS_{it} \\ + \delta_s + \mu_y + \tau_q + \varepsilon_{it} \end{array} \right), \quad (2)$$

$$PROB(CONSENSUS_{it} = 1) = \Lambda \left(\begin{array}{c} \beta_0 + \beta_1 VIOLATION_{it-1} + \sum_{j=2}^J \beta_j CONTROLS_{it} \\ + \delta_s + \mu_y + \tau_q + \varepsilon_{it} \end{array} \right), \quad (3)$$

$$INCRRECUR_{it} = \beta_0 + \beta_1 VIOLATION_{it-1} + \sum_{j=2}^J \beta_j CONTROLS_{it} + \delta_s + \mu_y + \tau_q + \varepsilon_{it}, \quad (4)$$

Table 4 reports results for equations 2, 3, and 4. We present the average marginal effects in columns 1 and 2 rather than coefficients for ease of interpretation. We report t -statistics based on standard errors that are clustered by firm and robust to heteroskedasticity. Column 1 reports the results for equation 2 and indicates a significantly negative association between $VIOLATION_{it-1}$ and $NGFIRST_{it}$. This result indicates that managers place non-GAAP disclosures less prominently within an earnings press releases after experiencing a covenant violation. The estimated average marginal effect is equal to -0.061 (t -statistic = -2.03). This evidence suggests that managers are 6.1% less likely to place a non-GAAP earnings measure before a GAAP earnings measure in a press release after experiencing a covenant violation.

Column 2 reports the results for equation 3. We find a significantly negative association between $CONSENSUS_{it}$ and $VIOLATION_{it-1}$. This evidence indicates that after a covenant violation, managers are less likely to disclose a non-GAAP earnings number that meets or beats the consensus analyst forecast while the GAAP earnings number falls short. The estimate for the average marginal effect is equal to -0.086 (t -statistic = -3.89). This result suggests that after a covenant violation managers are 8.6% less likely to disclose a non-GAAP earnings number that meets or beats analysts' expectations, while GAAP earnings do not. This result provides evidence consistent with managers being less likely to use non-GAAP adjustments to achieve earnings benchmarks after a covenant violation.

Column 3 of Table 4 presents the results for equation 4. We find a negative but statistically insignificant association between $INCRRECUR_{it}$ and $VIOLATION_{it-1}$. This result provides weak evidence that after covenant violations, managers make fewer recurring exclusions beyond those made by analysts. This evidence is consistent with managers being less aggressive with the exclusions they make after a debt covenant violations. To summarize, the results to this point suggest that after a covenant violation, when managers do decide to provide a non-GAAP disclosure, the non-GAAP disclosures are less aggressive, indicating an improvement in quality.

Our second set of analyses on non-GAAP reporting quality examine the quality of exclusions. Following prior research, we consider a non-GAAP exclusion to be of higher quality if they are transitory rather than persistent in nature (Doyle et al., 2003; Kolev et al., 2008; Frankel et al., 2011). In other words, an exclusion made this quarter is of higher quality if it is not predictive of future firm performance. In contrast, we consider an exclusion to be of low quality if it persists in future periods and is predictive of future firm performance. We follow prior studies that have examined the association between current exclusions and future GAAP operating earnings to measure exclusion quality (Kolev et al., 2008; Frankel et al., 2011; Brown et al., 2012). We use the following OLS regression to examine the effect of covenant violations on non-GAAP exclusion quality:

$$\begin{aligned}
FUTGAAP = & \beta_0 + \beta_1 EPS_{NGt} + \beta_2 EPS_{NGt} \times VIOLATION_{t-1} \\
& + \beta_3 EXCL_t + \beta_4 EXCL_t \times VIOLATION_{t-1} + \beta_5 VIOLATION_{t-1} \\
& + \sum_{j=6}^J \beta_j CONTROLS_{it} + \delta_s + \mu_y + \tau_q + \varepsilon_{it},
\end{aligned} \tag{5}$$

EXCL is a vector of the components of manager's non-GAAP exclusions and *CONTROLS* is a vector of control variables. The vector of exclusions varies depending on the model specification. Prior research has found that exclusions typically have a negative association with future performance. This evidence indicates that, on average, expenses that are excluded from non-GAAP earnings persist in future periods (suggesting that some managers exclude recurring items), resulting in lower future earnings. If exclusions are strictly made up of one-time items, we expect an insignificant coefficient on *EXCL*, and the interaction between *EXCL* and *VIOLATION*. However, a positive coefficient could indicate improved exclusion quality because it would suggest a decrease in the exclusions' persistence. We also examine whether exclusions are associated with future performance after a violation by testing whether the total coefficient for exclusions after violation ($\beta_3 + \beta_4$) is equal to zero.

Table 5 presents the OLS regression results for Equation 5. We examine three different models that vary based on the extent to which we have partitioned the exclusions. Model 1 estimates the predictability of total exclusion (*TOTALEXCL*). In model 2, we partition total exclusions into below-the-line (*BELOWLINE*), special item (*SPECIALEXCL*), and managers' recurring exclusions (*MGRRECUR*). In model 3, we further partition managers' recurring exclusions (*MGRRECUR*) into analysts' recurring

(*ANLYRECUR*) and managers' incremental recurring exclusions (*INCRRECUR*). In model 1, the coefficient for *TOTALEXCL* is significantly negative. This evidence indicates that in quarters not following a covenant violation, managers are, on average, more likely to exclude a higher proportion of recurring relative to transitory expenses. We find that the coefficient on the interaction between *TOTALEXCL* and $VIOLATION_{t-1}$ is significantly positive. This result suggests that the exclusions made by managers improve in quality immediately following a covenant violation. We also find that the *F*-test examining the relation between *TOTALEXCL* and *FUTGAAP* ($\beta_3 + \beta_4$) after a violation is insignificant. This result suggests that, on average, after a covenant violation, exclusions are of high quality because they are more likely to consist of transitory rather than persistent expenses. This mix of primarily transitory exclusions is not consistent with the mix prior to the covenant violation.

To isolate those exclusions that are most likely to reflect aggressive manager actions, we break the exclusions down into below-the-line (*BELOWLINE*), special item (*SPECIALEXCL*), and managers' recurring item exclusions (*MGRRECUR*). We expect managers' opportunistic use of exclusions to be more correlated with *MGRRECUR* because these are the exclusions above and beyond special items and below-the-line items. Column 2 in Table 5 presents the results with the exclusions broken down in this manner. Consistent with prior studies, we find that the coefficient on *MGRRECUR* is significantly negative. This evidence indicates that, on average, these exclusions are recurring expenses. The coefficient on the interaction between *MGRRECUR* and $VIOLATION_{t-1}$ is significantly positive. This evidence indicates that the recurring items excluded by managers are of higher quality after a covenant violation. We find that the coefficients on the interaction terms between $VIOLATION_{t-1}$ and *BELOWLINE* and *SPECIALEXCL* are not significant. This evidence suggests that the improvement in exclusion quality after a covenant violation is isolated in the manager recurring exclusions. We also find that the *F*-test examining the relation between *MGRRECUR* and *FUTGAAP* ($\beta_7 + \beta_{10}$) after a violation is insignificant. This result suggests that, on average, after a covenant violation, manager recurring exclusions are made up of transitory rather than persistent expenses, which was not the case prior to the covenant violation.

We further decompose manager recurring expenses into those exclusions also made by analysts (*ANLYRECUR*) and the incremental exclusions made by managers but not corroborated by analysts (*INCRRECUR*). We find that the main effects for both *ANLYRECUR* and *INCRRECUR* are significantly

negative indicating that, on average, these exclusions are recurring expenses. We find that the coefficients for the interaction terms of both of these variables with $VIOLATION_{t-1}$ are positive, which indicates that these exclusions increase in quality after a debt covenant violation. The coefficient for the interaction between $VIOLATION_{t-1}$ and $ANLYRECUR$ is significant at the 5% level ($t = 1.97$), and the interaction between $VIOLATION_{t-1}$ and $INCRRECUR$ is marginally significant ($t = 1.65$). We find that the F -tests examining the relation between $FUTGAAP$ and both $ANLYRECUR$ and $INCRRECUR$ after a violation are insignificant. This evidence suggests that, on average, after a covenant violation, analysts' recurring and managers' incremental exclusions are made up of transitory rather than persistent expenses, which was not the case prior to the covenant violation. In summary, we find evidence suggesting that the quality of non-GAAP disclosures drastically improves after a debt covenant violation and that the improvement is concentrated in managers' recurring exclusions.

Creditor Intervention and the Information Content of Non-GAAP Disclosures

To this point, we have found evidence suggesting that covenant violations lead to fewer non-GAAP disclosures, but those non-GAAP disclosures that are made are less aggressive and of higher quality. We next examine the effect of covenant violations on the information that non-GAAP disclosures provide to analysts and investors. We employ two ways to identify a change in information: (1) abnormal stock returns around earnings announcements and (2) analyst revisions of future earnings forecasts (Bhattacharya et al., 2003).

We first examine whether *investors* consider non-GAAP earnings to be more permanent after a covenant violation. To do so, we examine the relation between the earnings surprise and the cumulative size-adjusted abnormal return over the three-day window centered on the earnings announcement date (CAR). We expect a stronger stock price reaction to unexpected earnings, if investors perceive the unexpected earnings component to be more permanent. We consider the effect of a covenant violation on the investors' view of the permanence of unexpected non-GAAP earnings and GAAP earnings. We capture

the unexpected earnings component for each of these as their respective forecast error (FE_{NG} and FE_{GAAP}).⁸

We estimate the effect for each earnings metric individually and together using the following models:

$$CAR_t = \beta_0 + \beta_1 FE_{NGt} + \beta_2 FE_{NGt} \times VIOLATION_{t-1} + \beta_3 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (6)$$

$$CAR_t = \beta_0 + \beta_1 FE_{GAAPt} + \beta_2 FE_{GAAPt} \times VIOLATION_{t-1} + \beta_3 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (7)$$

$$CAR_t = \beta_0 + \beta_1 FE_{GAAPt} + \beta_2 FE_{NGt} + \beta_3 FE_{GAAPt} \times VIOLATION_{t-1} + \beta_4 FE_{NGt} \times VIOLATION_{t-1} + \beta_5 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (8)$$

where controls include $SIZE$, MTB , and $BETA$.

Panel A of Table 6 reports the results for equations 6 – 8. As expected, the coefficients on the main effects are significant in all specifications. Column 1 reports the results for equation 6. The coefficient for the interaction between FE_{NG} and $VIOLATION$ is positive but insignificant. This evidence indicates that investors do not view unexpected non-GAAP earnings to be more permanent after a covenant violation. This result is somewhat surprising since we find some evidence that non-GAAP earnings improve in quality after a covenant violation. Column 2 reports the results for equation 7. We find that the coefficient on the interaction between FE_{GAAP} and $VIOLATION$ is positive and statistically significant. This result provides evidence that, on average, investors perceive GAAP earnings to be more permanent after a covenant violation. The results are stronger for equation 8 which are reported in column 3. We find a positive and significant coefficient for the interaction between $VIOLATION$ and FE_{GAAP} , and a negative coefficient for the interaction between $VIOLATION$ and FE_{NG} . The results suggest that a covenant violation leads investors to rely more on GAAP earnings than non-GAAP earnings.

We next examine whether analysts view non-GAAP earnings as being a better measure of more permanent core earnings after a firm experiences a covenant violation. To do this, we examine the relation between analysts' revisions of one quarter ahead earnings forecasts and unexpected earnings. We expect that analysts will revise their future earnings forecasts, if they perceive the unexpected earnings component to be more permanent. In contrast, if analysts perceive the earnings surprise to be less permanent, we expect

⁸ We follow Bradshaw et al. (2014) in calculating FE_{NG} and FE_{GAAP} to avoid measurement error. Specifically, whenever GPS forecasts are available in I/B/E/S, we use these forecasts to calculate the GAAP forecast.

that they will not revise their forecasts. We consider the effect of a covenant violation on investors' perception of the permanence of unexpected non-GAAP earnings and unexpected GAAP earnings. We estimate the effect for each earnings metric both individually and together using the following models:

$$REVISION_t = \beta_0 + \beta_1 FE_{NGt} + \beta_2 FE_{NGt} \times VIOLATION_{t-1} + \beta_3 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (9)$$

$$REVISION_t = \beta_0 + \beta_1 FE_{GAAPt} + \beta_2 FE_{GAAPt} \times VIOLATION_{t-1} + \beta_3 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (10)$$

$$REVISION_t = \beta_0 + \beta_1 FE_{GAAPt} + \beta_2 FE_{NGt} + \beta_3 FE_{GAAPt} \times VIOLATION_{t-1} + \beta_4 FE_{NGt} \times VIOLATION_{t-1} + \beta_5 VIOLATION_{t-1} + CONTROLS + \varepsilon, \quad (11)$$

Panel B of Table 6 presents the results for equations 9 – 11. As expected, the main effects for forecast errors are significantly positive in all models. Column 1 reports the results for equation 9. We find a significantly positive coefficient on the $FE_{NG} \times VIOLATION$ interaction term. This evidence indicates that analysts view unexpected non-GAAP earnings to be more permanent after a covenant violation. This evidence suggests that non-GAAP disclosures become more informative to analysts after a covenant violation. Column 2 reports the results for equation 10. The coefficient on the $VIOLATION \times FE_{GAAP}$ interaction term is positive but not statistically significant. Column 3 reports the results for equation 11. The coefficient on the $FE_{NG} \times VIOLATION$ interaction between is statistically significant and greater than the coefficient on the $VIOLATION \times FE_{GAAP}$ interaction term. This result provides evidence that analysts believe that non-GAAP earnings increase in permanence after a covenant violation more so than do GAAP earnings. Overall, Panel B of Table 6 indicates that analysts view non-GAAP earnings to be more permanent or informative about future earnings after a covenant violation.

The contrasting results in Panel A and Panel B are interesting and provide insight into how the two classes of market participants react differently to the information content of non-GAAP disclosures in the presence of covenant violations. The differences in the way they respond, could be related to their relative level of sophistication (Bhattacharya et al., 2007). Our results suggest that after a covenant violation, managers are less opportunistic in their non-GAAP disclosures and provide higher quality disclosures. The results in Panel B of Table 6 suggest that analysts view non-GAAP earnings to be more permanent or better

predictors of future earnings after a covenant violation. This reaction appears to be rational, given our evidence that non-GAAP disclosures improve after a covenant violation. In contrast, our results in Panel A suggest that investors focus more on GAAP earnings and less on non-GAAP earnings after a covenant violation. There are several possible explanations for why this may be the case. For example, analysts may be more sophisticated than the average investor, allowing them to better understand the effects of covenant violations and creditor intervention on firm disclosure practices. Relatedly, investors may lose trust in managers' voluntary disclosures after a covenant violation. Another possible explanation is that the decrease in non-GAAP earnings disclosure we document after a covenant violation may lead to investors' focusing more on GAAP earnings rather than non-GAAP earnings.

V. DISCUSSION AND ADDITIONAL ANALYSES

Investors' Demand

We interpret the decrease in the frequency of non-GAAP disclosures after a covenant violation as an increased monitoring effect from creditors after control rights are transferred to them. One alternative explanation for this decrease is that the increased monitoring from creditors leads to decreased demand for these disclosures from investors. This alternative hypothesis is consistent with Vashishtha's (2014) arguments. He documents a decrease in management forecasts following a covenant violation. He argues that this decrease in disclosure is attributable to shareholders choosing not to duplicate banks' costly monitoring activities by delegating the monitoring role to banks. This action leads to decreased demand for disclosure because both banks and shareholders benefit from cost savings from reduced public disclosure. However, he does not provide direct evidence suggesting that investors' demand for disclosure decreases.

We provide evidence suggesting that our results are attributable to creditors' increased monitoring of borrowers' financial standing rather than a lower investor demand for information. Not only do we document a decrease in firms' propensity to provide non-GAAP disclosures. We also provide evidence that non-GAAP disclosures improve in quality, suggesting that increased creditor scrutiny improves disclosure. This improvement in quality is consistent with creditor monitoring. Further, our results in Table 6 suggest that investors and analysts use the information that managers disclose more not less when the firm is under

increased creditor monitoring after a debt covenant violation. This result differs from Vashishtha's (2014) finding that investors decrease their reliance on firms' voluntary public disclosures.

We also perform additional analyses examining the propensity of analysts to provide a non-GAAP earnings measure. Similar to managers, analysts commonly report a non-GAAP earnings to provide investors with a measure of firms "core" earnings. We argue that if investor demand for information about non-GAAP earnings decreases after a covenant violation, there will also be a decrease in the propensity of analysts' non-GAAP disclosures. We use the following model to test this conjecture. The model is the same as equation 1, but replaces the dependent variable of occurrences of management non-GAAP disclosures with occurrences of analysts issuing a non-GAAP earnings measure.

$$PROB(ANALYST\ NG_{it} = 1) = \Lambda \left(\begin{array}{c} \beta_0 + \beta_1 VIOLATION_{it-1} + \sum_{j=2}^J \beta_j CONTROLS_{it} \\ + \delta_s + \mu_y + \tau_q + \varepsilon_{it} \end{array} \right), \quad (12)$$

We report results for this probit model in Table 7. We find that the coefficient β_1 is not significant ($\beta_1 = 0.046$, z -statistic = 1.23). This result indicates that there is not a decrease in non-GAAP earnings measures provided by analysts after a covenant violation. In summary, this evidence suggests that our results are due to increased monitoring affecting disclosure and not due to a decrease in investor demand for information.

Specific Types of Exclusion Adjustments

Our regression results indicate that the quality of exclusion adjustments improves following a covenant violation and the improvement is associated with managers' recurring exclusions. These recurring exclusions, based on prior research, are more likely to be opportunistic in nature. We further explore which particular types of exclusions are associated with an improvement in the quality of non-GAAP earnings.

Table 8 compares the frequency of managers' non-GAAP exclusions before and after a covenant violation.⁹ We divide the adjustments into two broad categories: nonrecurring exclusions and recurring exclusions. Given our focus on recurring exclusions, we break recurring exclusions down further into five commonly used recurring adjustment items: (1) depreciation and amortization (*DEPRAMORT*), (2) stock-

⁹ Prior to Regulation G implemented in 2003, managers are not required to provide details on their adjustment items used to derive the non-GAAP earnings. Therefore, we do not have data on the actual magnitude of exclusion items, but are only able to calculate the frequency of exclusion items commonly disclosed by managers.

based compensation costs (*STOCKCOMP*), (3) tax-related items (*TAXCHG*), (4) research and development costs (*R&D*), and (5) interest-related items (*INTEXP*), ordered by their adjustment frequency.

For nonrecurring exclusions, we do not observe a significant change in frequency following a covenant violation. For recurring exclusions, we find that three out of five adjustment items experience a decline in frequency following a covenant violation (i.e., *DEPRAMORT*, *STOCKCOMP* and *R&D*). In particular, managers are significantly less likely to exclude stock-based compensation costs (*STOCKCOMP*) and research and development costs (*R&D*) after a covenant violation. Since creditors scrutinize both recurring and nonrecurring items that are used to derive the contractual earnings, and recurring items reported by managers are more likely to be opportunistic in nature, the decrease in the frequency of recurring item adjustments after the violation is consistent with creditor intervention helping to curb managerial opportunism. In untabulated analyses, we find that the decrease in nonrecurring exclusions is attributable to managers' disclosure decisions rather than to a change in the existence of the items that are excluded. Specifically, we find that firms are just as likely to have R&D costs and stock compensation costs in violation quarters as they are in non-violation quarters. These results suggest that the decrease in the frequency of R&D and stock compensation exclusions results from a managerial disclosure decision rather than from a change in underlying business activities.

Regression Discontinuity - A Refined Identification Approach

In the period surrounding a covenant violation, a firm's performance deteriorates and many other characteristics may also change simultaneously. We address an important identification question here. To what extent do we identify a covenant violation effect as opposed to an effect induced by other factors? Section 5.1 provides evidence that our results are a firm-specific effect, unrelated to a change in external demand for disclosure. We are also concerned that performance deterioration following covenant violations may explain our results. However, prior non-GAAP research documents that firms are generally *more likely* to disclose a non-GAAP earnings metric when they perform poorly (e.g., Bhattacharya et al., 2004; Lougee and Marquardt, 2004), when they do not meet analyst expectations with their GAAP earnings, and when they experience a one-time special item. Therefore, if performance deterioration is the underlying force affecting non-GAAP disclosure, we would expect to find a result opposite to ours (i.e., more non-GAAP

disclosures following a covenant violation). Moreover, through all our regressions, we have explicitly controlled for performance by including return on assets (*ROA*) and stock returns (*RETURN*) (one accounting and one non-accounting based measure, respectively).

Despite our efforts to rule out alternative explanations, unobserved confounding factors may influence our results in ways not explicitly controlled for in our models. To further isolate the effect of a covenant violation and creditor intervention from other potential confounds, we adopt a regression discontinuity approach used in recent covenant violation studies (e.g., Roberts and Sufi, 2009; Nini et al., 2012; Tan, 2013; Vashishtha, 2014). Specifically, we focus on estimating only the discontinuous shift in non-GAAP reporting policies occurring at the covenant thresholds by controlling for smooth functions of the variables that the covenants are typically written on. Under the assumption that any omitted correlated factors that affect non-GAAP disclosure evolve *continuously* with respect to the variables that covenants are written on, by controlling for smooth functions of the covenant variables, the point estimate on the *VIOLATION* indicator variable identifies the discontinuous causal effect of a covenant violation (Lee, 2008; Hahn et al., 2001).¹⁰ In other words, from a regression perspective, even if there are correlated omitted variables, as long as they do not exhibit precisely the same discontinuity as the treatment does, the treatment effect (creditor intervention) can be consistently estimated. This mild assumption for identification makes the regression discontinuity analysis more credible than typical “natural experiment” strategies, such as difference-in-differences or instrumental variables (Lee and Lemieux, 2010).

To operationalize the discontinuity analysis idea, we augment our regression models by adding *Covenant Controls* and *Higher Order Covenant Controls* to proxy for the smooth function of the covenant variables. Following Nini et al. (2012), our *Covenant Controls* consist of the current ratio (*CURRENT*), the leverage ratio (*LEVERAGE*), net worth (*NETWORTH*), the ratio of operating cash flow to lagged assets (*OCF*), and the ratio of interest expense to lagged assets (*INTEREST*), representing the most common ratios used in financial covenants. *Higher Order Covenant Controls* consists of square and third power terms of the variables labeled as *Covenant Controls*.

¹⁰ As Roberts and Sufi (2009) point out, the continuity assumption is valid as long as managers, in the absence of financial covenants, would not have chosen the exact same ratios and thresholds as creditors do to change their disclosure policy.

Table 9 reports the results from repeating our H_1 , H_{2a} and H_{2b} analyses using the regression discontinuity approach and find that our results are consistent in all tests.¹¹ Specifically, adding or dropping the covenant controls and their higher order polynomials from the regression has little impact on either the statistical significance or the magnitude of our coefficient of interest throughout all tests. This evidence suggests that an omitted correlated variable problem is not a major concern in this study.

VI. CONCLUSION

We investigate the influence of creditor intervention on firms' discretionary disclosure of non-GAAP earnings. Recent studies on creditor intervention suggest that creditors play an important governance role following a covenant violation to mitigate agency conflicts. In particular, creditors exercise their control rights during intervention and influence a variety of management actions. We explore how the nature of non-GAAP reporting varies with creditor intervention. Creditor intervention can affect firms' non-GAAP reporting behavior through creditors' information acquisition activities and scrutiny of the borrowers' financial reports and records following a covenant violation. Creditors may give increased attention to non-GAAP exclusions because the contractual earnings measure is typically calculated based on exclusions of nonrecurring items from GAAP earnings. Creditor scrutiny places pressure on managers and is likely to discourage disclosures that can be perceived to be aggressive and improve disclosure quality.

Consistent with our conjecture, we find that the likelihood of non-GAAP reporting declines sharply in the quarter following a debt covenant violation, suggesting that managers avoid disclosures when they experience extensive creditor scrutiny. Moreover, when managers decide to provide a non-GAAP disclosure in the quarter following a covenant violation, they are less likely to do so aggressively. Specifically, non-GAAP disclosures in the quarter following debt covenant violations are (1) placed less prominently within the press release than the GAAP number, (2) are less likely to meet or beat analyst forecasts on a non-GAAP basis when the GAAP number falls short, and (3) are marginally less likely to contain incremental recurring exclusions beyond what analysts exclude. Furthermore, the association

¹¹ The regression discontinuity design does not apply to hypothesis 3. Hypothesis 3 examines market reactions on the earnings announcement date and follows an event study approach.

between non-GAAP exclusions and future GAAP earnings disappears following the covenant violation indicating improvement in exclusion quality. Finally, market participants appear to react differently to non-GAAP earnings following creditor intervention. In particular, analysts (who are generally viewed to be sophisticated users of financial statement information) appear to trust the non-GAAP figure more when they know creditors are likely scrutinizing the financial statements while investors generally seem to rely more on the GAAP number following a debt covenant violation, consistent with the notion that they do not trust the non-GAAP number. Overall, our results are consistent with creditor intervention playing a governance role and mitigating opportunism in managerial discretionary disclosures.

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Appendix: Variable definitions

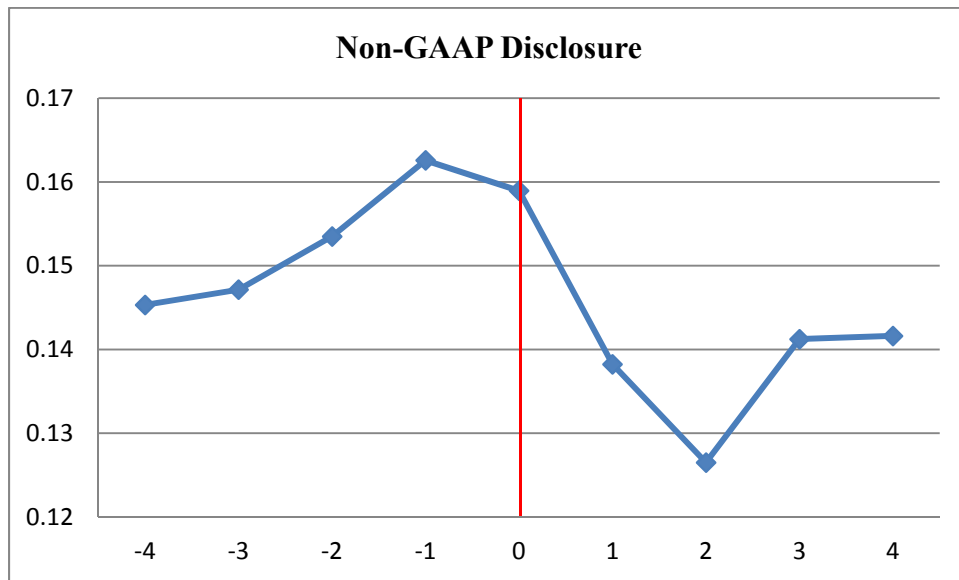
Primary variables:

NG	An indicator variable equal to 1 if a non-GAAP earnings measure is issued in the firm-quarter, 0 otherwise.
VIOLATION	An indicator variable equal to 1 if the firm-quarter is in a covenant violation, 0 otherwise.
EPS _{NG}	The manager adjusted (non-GAAP) diluted EPS from the press release.
EPS _{IBES}	The analyst adjusted diluted EPS from I/B/E/S.
EPS _{GAAPOP}	The GAAP diluted EPS from operations.
EPS _{BXI}	The GAAP diluted earnings before extraordinary items.
EPS _{AXI}	The GAAP diluted earnings after extraordinary items.
TOTALEXCL	Managers' total exclusions per share ($EPS_{NG} - EPS_{AXI}$).
MGRRECUR	Managers' total recurring exclusions per share ($EPS_{NG} - EPS_{GAAPOP}$).
INCRRECUR	Managers' incremental recurring exclusions per share ($EPS_{NG} - EPS_{IBES}$).
ANLYRECUR	Analysts' recurring exclusions ($EPS_{IBES} - EPS_{GAAPOP}$).
SPECIALEXCL	Special items exclusions per share ($EPS_{GAAPOP} - EPS_{BXI}$).
BELOWLINE	Below-the-line exclusions per share ($EPS_{BXI} - EPS_{AXI}$).
NGFIRST	An indicator variable equal to 1 if the non-GAAP earnings figure is reported before the GAAP figure within the earnings press release, 0 otherwise.
CONSENSUS	An indicator variable equal to 1 if the non-GAAP number meets or beats the mean analyst forecast while the GAAP operating earnings falls short, 0 otherwise.
FE _{NG}	Non-GAAP forecast error calculated as EPS_{NG} minus mean I/B/E/S EPS forecast, scaled by price five days prior to the non-GAAP earnings announcement.
FE _{GAAP}	GAAP forecast error calculated as EPS_{GAAPOP} minus mean I/B/E/S EPS forecast, scaled by price five days prior to the non-GAAP earnings announcement. For mean I/B/E/S EPS forecast, we use I/B/E/S GAAP forecasts whenever available.
CAR	Cumulative size adjusted abnormal returns over the three-day window centered on the non-GAAP earnings announcement date.
REVISION	The mean one-quarter-ahead analyst forecast using a 60-day window around the non-GAAP earnings announcement date, scaled by price five days prior to the announcement.
FUTGAAP	The sum of EPS_{GAAPOP} over the next four quarters starting from $t+1$.
ANALYST NG	An indicator variable equal to 1 if the IBES actual EPS reported by analysts is different from the GAAP operating income in the firm-quarter, 0 otherwise.

Controls:

SIZE	The nature logarithm of total assets (atq).
LEVERAGE	Total debt (dlcq + dlttq) / Total assets (atq).
MTB	Market value of equity (prccq x cshoq) / Book value of equity (seqq)
STDROA	Standard deviation of return on assets (ibq/atq) over at least 3 of the prior 8 quarters.
GAAPLOSS	An indicator variable equal to 1 if EPS_{GAAPOP} is negative, 0 otherwise.
SPECIALCHG	An indicator variable equals to 1 if special items (spiq) is non-zero, 0 otherwise.
NEGFE	An indicator variable equals to 1 if EPS_{GAAPOP} is less than the mean analyst forecast, 0 otherwise.
ROA	Return on assets (ibq/atq) of the current quarter.
RETURN	Cumulative monthly stock return over the current quarter.
%INST	Percentage of shares owned by the institutional investors as reported on the Thomson Reuters 13f Institutional Holdings database.
LITIGATE	An indicator variable equals to 1 for firms operating in the biotechnology (SIC 2833-2836; 8731-8734), computers (3570-3577; 7370-7374), electronics (3600-3674), and retailing (5200-5961) industries, 0 otherwise.
BETA	Stock beta calculated over day (-255, -2) period where day 0 is the non-GAAP disclosure date with at least 100 trading days' returns available.

Figure 1: The effect of a covenant violation on the frequency of non-GAAP earnings disclosures



Note: This figure plots the time-series of average non-GAAP disclosure frequency for violators before and after a covenant violation. To obtain a clear visual effect of covenant violations, a violation time-series is only included in the graphical analysis if no additional violations happened in the previous four quarters.

Table 1: Sample selection

	<u>Firm-quarters</u>
The covenant violation sample	262,673
Less: firm-quarters that are before 1/1/1998 and after 12/31/2006	(60,308)
Less: firm-quarters whose corresponding firms have never disclosed non-GAAP earnings over the entire sample period	(129,488)
Less: firm-quarters with no I/B/E/S coverage	(14,261)
Less: firm-quarters with missing controls variables	(4,184)
Full sample:	45,541

Note: This table describes our sample selection process. We start with the debt covenant violation sample from Nini, Smith, and Sufi (2012). We then impose the time period for which the non-GAAP disclosures have been collected (1/1/1998-12/31/2006). We also require that to be in our sample, a firm must have made at least one disclosure over the sample period. The full sample consists of 45,541 firm-quarters with or without non-GAAP disclosures, and has all necessary control variables. We use the full sample to test our H_1 . For subsequent hypothesis tests (H_{2a} , H_{2b} , and H_3), we restrict the sample to those firm-quarters in which managers disclose a non-GAAP number. We require a constant sample within each hypothesis test and use the largest sample size as possible.

Table 2: Summary statistics

	N	Mean	Standard Deviation	25 th Percentile	Median	75 th Percentile
Panel A: Variables of interest						
NG	45,541	0.19	0.39	0.00	0.00	0.00
VIOLATION	45,541	0.04	0.19	0.00	0.00	0.00
EPS _{NG}	8,380	0.21	0.33	0.02	0.16	0.36
TOTALEXCL	8,380	0.20	0.51	0.02	0.06	0.18
BELOWLINE	8,380	0.01	0.08	0.00	0.00	0.00
SPECIALEXCL	8,380	0.10	0.32	0.00	0.00	0.07
MGRRECUR	8,380	0.08	0.23	0.00	0.02	0.08
ANLYRECUR	8,380	0.07	0.22	0.00	0.01	0.07
INCRRECUR	8,380	0.01	0.04	0.00	0.00	0.00
NGFIRST	8,380	0.45	0.50	0.00	0.00	1.00
CONSENSUS	8,380	0.39	0.49	0.00	0.00	1.00
FUTGAAP	7,604	0.62	1.58	-0.16	0.48	1.42
FE _{NG}	10,001	0.02	0.08	-0.00	0.01	0.04
FE _{GAAP}	10,001	-0.05	0.20	-0.06	-0.00	0.03
CAR	10,001	0.00	0.10	-0.05	0.00	0.05
REVISION	6,847	-0.02	0.07	-0.03	-0.01	0.01
Panel B: Control variables						
SIZE	45,541	6.43	1.76	5.11	6.28	7.59
LEVERAGE	45,541	0.22	0.21	0.01	0.18	0.35
MTB	45,541	3.46	4.56	1.42	2.31	4.00
STDROA	45,541	0.03	0.06	0.01	0.01	0.03
GAAPLOSS	45,541	0.30	0.46	0.00	0.00	1.00
SPECIALCHG	45,541	0.43	0.49	0.00	0.00	1.00
NEGFE	45,541	0.41	0.49	0.00	0.00	1.00
ROA	45,541	-0.00	0.06	-0.01	0.01	0.02
RETURN	45,541	0.04	0.33	-0.13	0.03	0.19
%INST	45,541	0.58	0.27	0.38	0.61	0.79
LITIGATE	45,541	0.42	0.49	0.00	0.00	1.00
BETA	10,001	1.70	0.99	0.95	1.50	2.30

Note: This table provides descriptive statistics for variables used in this study. Number of observations for each variable varies across different hypothesis tests. We require a constant sample within each hypothesis test and use the largest sample size as possible. All variables are defined in the appendix.

Table 3: The effect of covenant violations on the likelihood of disclosing non-GAAP earnings

	Pr(NG _t = 1)			
	(1)		(2)	
	Coefficient	Z-stat	Average Marginal Effect	Z-stat
VIOLATION _{t-1}	-0.179***	(-3.80)	-0.035***	(-4.07)
SIZE _t	0.037***	(4.75)	0.008***	(4.74)
LEVERAGE _t	-0.129**	(-2.15)	-0.027**	(-2.16)
MTB _t	0.007***	(3.26)	0.001***	(3.26)
STDROA _t	0.220	(1.44)	0.046	(1.44)
GAAPLOSS _t	0.072***	(2.94)	0.015***	(2.90)
SPECIALCHG _t	0.480***	(23.63)	0.105***	(23.09)
NEGFE _t	0.213***	(12.03)	0.046***	(11.79)
ROA _t	0.109	(0.59)	0.023	(0.59)
RETURN _t	0.006	(0.22)	0.001	(0.22)
%INST _t	0.061	(1.37)	0.013	(1.37)
LITIGATE _t	0.130***	(3.08)	0.028***	(3.05)
NG _{t-1}	1.189***	(56.29)	0.350***	(47.42)
Constant	-2.394***	(-10.10)		
Year Effects	Yes			
Fiscal Quarter Effects	Yes			
Industry Effects	Yes			
Observations	45,541			
Pseudo R ²	0.2042			

Note: This table presents the effect of covenant violations on the likelihood of disclosing non-GAAP earnings. A probit regression of equation 1 is used. Robust z-statistics are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. All variables are defined in the appendix. Marginal effects and z-statistics are calculated for each observation and averaged over all observations.

Table 4: The effect of covenant violations on the aggressiveness of non-GAAP earnings disclosures

	(1) Pr(NGFIRST _t = 1)	(2) Pr(CONSENSUS _t = 1)	(3) INCRRECUR _t
VIOLATION _{t-1}	-0.061** (-2.03)	-0.086*** (-3.89)	-0.007 (-1.09)
SIZE _t	0.010** (2.27)	0.013*** (3.30)	-0.002** (-2.02)
LEVERAGE _t	0.009 (0.27)	-0.017 (-0.55)	0.023*** (2.82)
MTB _t	0.002* (1.77)	0.003** (2.01)	-0.000* (-1.85)
STDROA _t	-0.033 (-0.41)	0.043 (0.61)	0.006 (0.24)
GAAPLOSS _t	0.025* (1.95)	-0.062*** (-5.17)	0.001 (0.21)
SPECIALCHG _t	0.044*** (4.09)	-0.061*** (-5.71)	-0.006*** (-2.91)
NEGFE _t	0.027*** (2.70)	0.459*** (42.25)	-0.006** (-2.22)
ROA _t	-0.045 (-0.49)	-0.079 (-0.91)	-0.095 (-1.50)
RETURN _t	-0.013 (-1.00)	0.072*** (5.17)	0.011 (1.59)
%INST _t	0.018 (0.70)	0.048** (2.21)	0.002 (0.42)
LITIGATE	0.039* (1.91)	0.025 (1.17)	-0.005 (-1.57)
NGFIRST _{t-1}	0.364*** (23.22)		
CONSENSUS _{t-1}		0.115*** (9.76)	
INCRRECUR _{t-1}			0.254*** (4.83)
Constant			0.003 (0.29)
Year Effects	Yes	Yes	Yes
Fiscal Quarter Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Observations	8,380	8,380	8,380
Pseudo R ²	0.3361	0.2410	
Adjusted R ²			0.0132

Note: This table presents the effect of covenant violations on the aggressiveness of non-GAAP earnings disclosures. Columns (1) and (2) reports the average marginal effects and corresponding z-statistics from a probit regression of equations (2) and (3). Marginal effects and z-statistics are calculated for each observation and averaged over all observations. Column 3 reports the result for an OLS regression of equation 4. In all three models, robust z-statistics are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. All variables are defined in the appendix.

Table 5: The effect of covenant violations on the persistence of non-GAAP exclusions

		(1) FUTGAAP	(2) FUTGAAP	(3) FUTGAAP
EPS _{NGt}	β_1	3.128*** (13.40)	3.283*** (14.53)	3.255*** (14.38)
EPS _{NGt} × VIOLATION _{t-1}	β_2	2.581 (0.93)	2.793 (0.93)	2.845 (0.90)
TOTALEXCL _t	β_3	-0.692*** (-2.86)		
TOTALEXCL _t × VIOLATION _{t-1}	β_4	1.218** (2.27)		
BELOWLINE _t	β_5		0.569** (2.01)	0.572** (2.01)
SPECIALEXCL _t	β_6		0.024 (0.28)	0.023 (0.27)
MGRRECUR _t	β_7		-2.641*** (-4.66)	
BELOWLINE _t × VIOLATION _{t-1}	β_8		0.568 (0.44)	0.574 (0.41)
SPECIALEXCL _t × VIOLATION _{t-1}	β_9		0.592 (1.32)	0.605 (1.32)
MGRRECUR _t × VIOLATION _{t-1}	β_{10}		3.471** (2.28)	
ANLYRECUR _t	β_{11}			-2.768*** (-4.56)
INCRRECUR _t	β_{12}			-3.637*** (-5.17)
ANLYRECUR _t × VIOLATION _{t-1}	β_{13}			3.686** (1.97)
INCRRECUR _t × VIOLATION _{t-1}	β_{14}			3.880* (1.65)
VIOLATION _{t-1}	β_{15}	-0.805 (-1.38)	-0.938 (-1.40)	-0.956 (-1.39)
Constant	β_{16}	0.537 (1.00)	0.286 (0.62)	0.260 (0.58)
Controls		Yes	Yes	Yes
Year Effects		Yes	Yes	Yes
Fiscal Quarter Effects		Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes
H ₀ : $\beta_3 + \beta_4 = 0$		F = 1.065 p-value = 0.302		
H ₀ : $\beta_7 + \beta_{10} = 0$			F = 0.340 p-value = 0.560	
H ₀ : $\beta_{11} + \beta_{13} = 0$				F = 0.264 p-value = 0.608
H ₀ : $\beta_{12} + \beta_{14} = 0$				F = 0.011 p-value = 0.916
Observations		7,604	7,604	7,604
Adjusted R ²		0.3915	0.4261	0.4255

Note: This table presents the effect of covenant violations on the persistence of non-GAAP exclusions. It reports results for an OLS regression for three specifications of equation 5 that vary the extent to which exclusions are broken out. Robust t-statistics are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. For brevity, we do not report coefficients for controls which include SIZE, LEVERAGE, MTB, STDROA, GAAPLOSS, SPECIALCHG, NEGFE, ROA, RETURN, %INST, and LITIGATE. All variables are defined in the appendix.

Table 6: The effect of covenant violations on the market reaction to non-GAAP earnings disclosures

Panel A: Abnormal returns tests			
	(1)	(2)	(3)
	CAR _t	CAR _t	CAR _t
FE _{NGt}	0.227*** (12.05)		0.204*** (10.91)
FE _{GAApt}		0.056*** (6.80)	0.033*** (4.21)
FE _{NGt} × VIOLATION _{t-1}	0.010 (0.12)		-0.078 (-0.94)
FE _{GAApt} × VIOLATION _{t-1}		0.065* (1.89)	0.073** (2.03)
VIOLATION _{t-1}	-0.005 (-0.69)	0.002 (0.31)	0.005 (0.72)
Constant	-0.006 (-0.95)	-0.005 (-0.92)	-0.007 (-1.16)
Controls	Yes	Yes	Yes
Observations	10,001	10,001	10,001
Adjusted R ²	0.0247	0.0121	0.0290

Panel B: Analysts' forecast revision tests			
	(1)	(2)	(3)
	REVISION _t	REVISION _t	REVISION _t
FE _{NGt}	0.255*** (7.52)		0.235*** (7.20)
FE _{GAApt}		0.052*** (3.94)	0.028** (2.32)
FE _{NGt} × VIOLATION _{t-1}	0.595* (1.69)		0.465* (1.79)
FE _{GAApt} × VIOLATION _{t-1}		0.184 (1.30)	0.120 (1.10)
VIOLATION _{t-1}	-0.016 (-1.45)	-0.001 (-0.10)	-0.004 (-0.43)
Constant	-0.009 (-1.54)	-0.012* (-1.94)	-0.011* (-1.89)
Controls	Yes	Yes	Yes
Observations	6,847	6,847	6,847
Adjusted R ²	0.0594	0.0256	0.0654

Note: This table presents the effect of covenant violations on the market reaction to non-GAAP earnings disclosures. Panel A reports results for OLS regressions of equations 6, 7, and 8. Panel B reports results for OLS regressions of equations 9, 10, and 11. Robust t-statistics are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. For brevity, we do not report coefficients for controls which include SIZE, MTB, and BETA. All variables are defined in the appendix.

Table 7: The effect of covenant violations on the likelihood of analysts' non-GAAP adjustments

	Pr(ANALYST NG _t = 1)			
	(1)		(2)	
	Coefficient	Z-stat	Average Marginal Effect	Z-stat
VIOLATION _{t-1}	0.046	(1.23)	0.013	(1.23)
SIZE _t	0.053***	(7.02)	0.015***	(7.04)
LEVERAGE _t	-0.066	(-1.28)	-0.018	(-1.28)
MTB _t	0.001	(0.55)	0.000	(0.55)
STDROA _t	0.965***	(6.00)	0.269***	(6.00)
GAAPLOSS _t	0.028	(1.20)	0.008	(1.20)
SPECIALCHG _t	0.793***	(42.35)	0.240***	(40.96)
NEGFE _t	0.692***	(38.06)	0.207***	(37.72)
ROA _t	-0.001	(-0.01)	-0.000	(-0.01)
RETURN _t	0.067***	(3.00)	0.019***	(3.00)
%INST _t	-0.118***	(-2.79)	-0.033***	(-2.79)
LITIGATE	0.176***	(5.02)	0.050***	(5.01)
ANALYST NG _{t-1}	1.028***	(58.62)	0.333***	(57.75)
Constant	-1.870***	(-18.33)		
Year Effects	Yes			
Fiscal Quarter Effects	Yes			
Industry Effects	Yes			
Observations	44,947			
Pseudo R ²	0.2844			

Note: This table presents the effect of covenant violations on the likelihood of analysts' non-GAAP adjustments. The results are from a probit regression of equation 12. Robust z-statistics are clustered by firm. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. All variables are defined in the appendix. Marginal effects and z-statistics are calculated for each observation and averaged over all observations.

Table 8: The frequency (%) of non-GAAP adjustment categories for violation vs. non-violation firm-quarters

	Viol. Mean Freq.	Non-Viol. Mean Freq.	Diff. in Mean Freq.	t-Stat
<u>Nonrecurring Exclusions:</u>				
NONRECUR	0.544	0.520	0.024	0.80
<u>Recurring Exclusions:</u>				
DEPRAMORT	0.367	0.376	-0.009	-0.32
STOCKCOMP	0.256	0.321	-0.065	-2.29**
TAXCHG	0.181	0.150	0.031	1.44
R&D	0.046	0.073	-0.027	-1.73*
INTEXP	0.025	0.024	0.001	0.13
Viol. Obs.	281			
Non-Viol. Obs.	8,099			
Total Obs.	8,380			

Note: This table presents the frequency (%) of non-GAAP adjustments categories for violation vs. non-violation firm-quarters. NONRECUR is nonrecurring adjustment items. DEPRAMORT is depreciation and amortization. STOCKCOMP is stock-based compensation costs. TAXCHG is tax-related items. R&D is research and development costs. INTEXP is interest-related items.

Table 9: Regression Discontinuity - A Refined Identification Approach

	H ₁		H _{2a}		H _{2b}
	(1) Pr(NG _t = 1)	(2) Pr(NGFIRST _t = 1)	(3) Pr(CONSENSUS _t = 1)	(4) INCRRECUR _t	(5) FUTGAAP _t
VIOLATION _{t-1}	-0.030*** (-3.33)	-0.059** (-1.96)	-0.077*** (-3.34)	-0.011 (-1.48)	-1.005 (-1.47)
EPS _{NGt}					3.201*** (13.80)
EPS _{NGt} × VIOLATION _{t-1}					0.596** (2.06)
BELOWLINE _t					-0.037 (-0.42)
SPECIALEXCL _t					-2.531*** (-4.97)
MGRRECUR _t					3.352 (1.04)
BELOWLINE _t × VIOLATION _{t-1}					0.589 (0.46)
SPECIALEXCL _t × VIOLATION _{t-1}					0.534 (1.28)
MGRRECUR _t × VIOLATION _{t-1}					3.627** (2.22)
Covenant Controls	Yes	Yes	Yes	Yes	Yes
Higher Order Covenant Controls	Yes	Yes	Yes	Yes	Yes
Other Control Variables	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes
Fiscal Quarter Effects	Yes	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes	Yes
Observations	44,816	8,304	8,304	8,304	7,535
Adjusted R ²				0.0164	0.4296
Pseudo R ²	0.2064	0.3406	0.2449		

Notes: This table reports the robustness of our results for hypothesis 1, 2a and 2b by implementing a regression discontinuity design. Covenant Controls consists of current ratio (CURRENT), leverage ratio (LEVERAGE), net worth (NETWORTH), the ratio of operating cash flow to lagged assets (OCF), and the ratio of interest expense to lagged assets (INTEREST), representing the most common ratios used in financial covenants. Higher Order Covenant Controls consists of square and third power terms of the variables labeled as Covenant Controls. All other variables are defined previously and in the appendix.