

The effects of internal control weaknesses on non-GAAP reporting quality

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ABSTRACT

I investigate the effects that the existence and disclosure of internal control weaknesses (ICW's) have on managers' non-GAAP reporting quality. The results show that (1) firms that have had at least one negative SOX § 404 ICW audit report have a significantly worse non-GAAP reporting quality than firms that always had clean ICW reports, (2) the quality of non-GAAP reporting becomes better after the first-time disclosure of ICW reports and (3) firms that remediate their ICW's immediately following the first-time disclosure of ICW's have a better-quality non-GAAP reporting than firms that do not remediate. In addition, I find that the behavior of converting GAAP losses into non-GAAP profits is associated with a better-quality non-GAAP reporting in ICW-firms and this behavior changes after the disclosure of ICW's. Overall, the results are indicative of non-GAAP reporting behavior being influenced by the existence and disclosure of ICW's.

Keywords: non-GAAP reporting, internal control weaknesses, managerial opportunism, agency theory.

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1. Introduction

Sarbanes-Oxley Act (SOX) was passed in 2002 to protect stakeholders from financial fraud and has been in force for almost 20 years. The most expensive requirement of the SOX for larger public companies to implement has been SOX section 404, which requires managers and external auditors to document, test and report on company's internal controls over financial reporting.¹ The negative consequences of having material weaknesses in the internal control system (ICW's) range from having a higher likelihood of reported misstatements, errors and earnings management to increased probability of financial statement fraud (Chalmers et al., 2019).

The disclosure of ICW's in company's annual report is known to increase the scrutiny and monitoring of companies' management activities by the outside stakeholders and this has an effect of restricting managers' freedom of action (Chalmers et al., 2019). Firms strive to remediate the reported ICW's quickly, since this is in the best interest of investors and because of the negative consequences to the firm and management that follows the disclosure.

Non-GAAP reporting is a reporting practice which is also governed by SOX Regulation G, where managers exclude certain items from company's GAAP earnings, in order to better inform the investors about company's core earnings. This is usually done by excluding non-recurring special items, but managers frequently also exclude recurring non-cash items (Black et al., 2018). When reported, managers' non-GAAP earnings will appear in company's 8-K quarterly reports.

Since non-GAAP reporting does not fall under auditable financial statements and managers are relatively free to select the items to be excluded, it could be used as a tool to influence investors' perceptions of company's earnings opportunistically. Indeed, researchers have found that managers use non-GAAP reporting to opportunistically meet earnings benchmarks for personal gain (Doyle et al., 2013, Black et al., 2013).

This thesis brings together two different research streams and investigates the effects that the existence and disclosure of ICW's have on managerial non-GAAP reporting quality and aggressiveness, specifically the research question of this thesis is as follows:

¹ Sarbanes-Oxley 101 (website), <https://www.sarbanes-oxley-101.com/SOX-404.htm>

Does having internal control weaknesses affect firms' non-GAAP reporting quality and aggressiveness and does the disclosure of internal control weaknesses lead to firms adjusting their non-GAAP reporting behavior.

Three hypotheses are used to answer the research question. The first hypothesis investigates whether the quality of non-GAAP reporting is different in firms that have at least once had a negative internal control report, relative to firms that have always had clean reports. I predict that there is a difference but make no predictions on the direction of the effect due to conflicting evidence in academic literature. I use propensity-score matched sample to test the first hypothesis and demonstrate that firms that have had at least one negative internal control report in the past have significantly worse quality non-GAAP reporting than firms that always had clean reports. In addition to using the predictive ability of non-GAAP EPS and items excluded from non-GAAP EPS to test the quality of non-GAAP reports, I also investigate if managers use benchmark meeting-or-beating behavior with the help of non-GAAP reporting. The first benchmark is represented by managers meeting or marginally beating analysts' EPS forecasts using non-GAAP earnings and the other is represented by managers using non-GAAP earnings to turn the GAAP-based losses into profits. In both cases I find that ICW firms are significantly more likely to meet or beat benchmarks using non-GAAP reporting than non-ICW firms. I also find evidence that this behavior of converting losses to profits using non-GAAP earnings possibly serves an informative role instead of opportunistic one in firms that have had ICW's disclosed during the sample period (ICW-firms).

Second and third hypothesis investigate if managers change their non-GAAP reporting behavior following the first-time disclosure of ICW's and if there is a change in the non-GAAP reporting behavior in firms that remediate their ICW's compared to firms that do not. Based on my analysis I expect that there is an effect following the disclosure, but again I am not making predictions on the direction of this change. Using the same tests as in testing hypothesis 1, I demonstrate that the quality of non-GAAP reporting improves in the year of disclosure of the first negative ICW report and firms are less likely to beat analysts' forecasts. I also investigate if the reporting behavior changes in the longer timeframe following the first-time disclosure of ICW's and demonstrate that the overall quality of non-GAAP reporting and benchmark-beating behavior improves after the

disclosure, suggesting that the effects of disclosure on non-GAAP reporting are more permanent in nature.

My test results also suggest that non-GAAP reporting quality improves in firms that remediate their first-time ICW's when compared with firms that do not, however there is no evidence of change in benchmark beating behavior in such firms. Further investigation seems to indicate that the increase in quality in remediating firms is linked to the severity and pervasiveness of ICW's.

Additional tests reveal that firms' likelihood to release non-GAAP reports increases after the disclosure of first-time ICW's. I demonstrate by using firms' use of positive discretionary accruals, that this increased likelihood to issue non-GAAP reports by firms following the disclosure of first-time ICW's does not seem to be opportunistic in nature, because my tests reveal that positive discretionary accruals and non-GAAP frequency do not have increased substitution effect after the disclosure of ICW's, also my test results show that non-GAAP quality increases after the disclosure.

The underlying theories supporting my research topic are agency theory and triangle of fraud framework. Agency theory suggests that managers are agents to shareholders and when the information asymmetry between these two parties is high, managers start acting self-servingly to the detriment of shareholders. Using this concept, non-GAAP reporting represents a potential tool for managers to act to the detriment of relevant stakeholders and the ICW's acts as an opportunity or pressure to use this tool. The triangle of fraud framework purports that there are three components that need to come together for fraud to happen: pressure (or incentive) to engage in fraud, opportunity, and rationalization. Although this thesis will not try to investigate the rationalization that managers might have for conducting opportunistic non-GAAP reporting and non-GAAP reporting is not outrightly fraud, it is still important to have the aspects of these two theories in mind when investigating managerial opportunism.

Overall, the results of my tests indicate that although the firms that have had ICW's have worse quality and more aggressive non-GAAP reporting, the disclosure of ICW's has a disciplining effect on managers and this effect is long-lasting.

To my knowledge, this is the first time that such an effect of ICW's on non-GAAP reporting quality and reporting has been researched and I believe that this topic is relevant to various outside

stakeholders, and should be particularly important to investors, policymakers, and corporate governance bodies, since non-GAAP reporting is a tool that managers can utilize to either better inform or mislead the stakeholders. Although reporting on ICW's and non-GAAP reporting are two different strands of financial reporting concepts, they are apparently inter-related and the way that reporting on ICW's has an influence over non-GAAP reporting could be used to develop future control methods to keep opportunistic reporting under control and to motivate more informative financial reporting practices, hence this thesis contributes to the better understanding of the consequences that ICW reporting has on managerial non-GAAP reporting quality.

Most of the research into non-GAAP reporting quality has been done by using analysts' non-GAAP earnings data from I/B/E/S database as proxies for managerial non-GAAP reporting, whereas I use a dataset compiled and developed by Bentley et al. (2018), that better captures the aggressiveness of managerial non-GAAP reporting, being compiled directly from firms' 8-K filings.

The rest of the thesis is organized as follows. Chapter 2 discusses academic writings on ICW reporting and non-GAAP reporting and demonstrates how this thesis fits in with what is known about both subjects. Chapter 3 explains the hypothesis development process and chapter 4 describes the steps taken to build the final sample for hypothesis testing. Chapter 5 describes the sample data and chapter 6 shows how the research design together with propensity score matching was developed, this chapter also describes the results of hypotheses tests. In chapter 7 I develop additional tests to corroborate my main tests results and I draw my conclusions in chapter 8, while chapters 9 and 10 contain references and appendices, respectively.

2. Literature review

2.1 Material weaknesses of internal control

In the context of the current thesis, it is important to demonstrate what effects are associated with ICW's (1) before the disclosure of existing ICW's, (2) after the disclosure of ICW's and (3) after the remediation (or non-remediation) of ICW's. It is expected that the opportunities and incentives

for managers to engage in non-GAAP reporting are different at each stage, hence this information is useful for hypothesis development.

Evidence has shown that the disclosure of ICW's has several negative consequences for companies disclosing them, arising mainly from external stakeholder scrutiny and agency problems (Chalmers et al., 2019). Those effects are in addition to negative effects already present in firms that have existing ICW's but have not yet disclosed them. After the remediation of the disclosed ICW's it would be appropriate to expect the reversal of those negative effects, but the existing academic literature gives somewhat contradictory evidence with regards to the length of time it takes for the actual remediation effect to take place, with some negative effects taking multiple years to reverse (Schneider et al., 2009). The literature review below will describe the ICW reporting process and the consequences of ICW's to firms. This section will describe the background of SOX ICW reporting and its effects, using a timeline of events (before, after the disclosure of ICW's and after the remediation has taken place).

2.2 Background of ICW reporting

Multiple high-profile corporate scandals at the turn of the century and the resulting decline in investor confidence led to the passing of Sarbanes-Oxley Act (SOX) by the U.S. government in 2002. SOX applies to all publicly traded companies in the U.S. and their subsidiaries, as well as to all foreign listed companies that do business with U.S. companies. The quality and effectiveness of internal controls (IC) over financial reporting is an important part of SOX and these qualities are of paramount importance to ensure that all companies are producing reliable, accurate and truthful financial information, thus ensuring the safety of investors and the financial system.

Section 302 of SOX relates to quarterly management reporting on the IC, requiring managers to assess the effectiveness of the procedures and systems that produce financial information, whereas section 404 of SOX relates to requirement for the management to report annually on the effectiveness of IC and on any material weaknesses (ICW) arising from the IC system. The auditors must also report and attest to the managers' assessment and report on the efficiency of IC system. A weakness is material if the likelihood of a serious misstatement occurring in the financial reports is high. An adverse ICW opinion indicates that there exists a significant deficiency in firms' financial

reporting system and previous researchers have found that such firms suffer from a multitude of adverse consequences because of those deficiencies (Chalmers et al., 2019).

Research has also shown that some firms are more prone to having ICW's than others. For example, smaller and younger firms, firms reporting smaller return on assets and operating losses, those with higher business complexity and those with higher sales growth and restructuring activities are more likely to also have ICW's (Ge and McVay, 2005; Ashbaugh-Skaife, 2007).

Approximately 37% of ICW's of firms that reported them were found to be pervasive, entity-level weaknesses, including "tone-at-the-top" control weaknesses (Doyle et al., 2007a), these types of ICW's are associated with subsequent slow remediation of ICW's following the disclosure (Jaggi et al., 2013).

2.3 Before the disclosure of ICW's

Management must assess the internal controls over financial reporting annually and present their findings to the Audit Committee and the Board of Directors. Any material weaknesses that are discovered will be disclosed in the 10-K financial report and a public company's external auditor must also disclose his/her findings regarding ICW's in company's financial report.

The managers of firms that have ICW's that have not yet been disclosed tend to act more self-servingly due to agency problems and financial reporting system of such firms suffers from errors, producing unreliable output (Schneider et al., 2009).

Prior research has demonstrated that firms with ICW's engage in more earnings management than firms without ICW's (Schneider et al., 2009). Firms with ICW's have lower earnings quality (as proxied by accounting restatements) and engage more in earnings management (proxied by discretionary accruals) than firms that do not have existing ICW's (Ashbaugh-Skaife et al., 2008; Lu et al., 2011; Myllymäki, 2014). While misstatements can result from unintentional errors as well as manipulation, increased discretionary accruals in ICW firms point directly to more opportunistic behavior.

Firms with existing ICW's tend to be less conservative in financial reporting than firms without ICW's and become more conservative after the disclosure of ICW's (Goh and Li, 2011), which is an indication that financial reporting quality might also improve after the disclosure.

Several research articles involving ICW's document the effects of ICW's on the accuracy of management earnings guidance (provided by the managers of ICW reporting firms) and analysts' earnings forecast accuracy. Analysts get their information partly from managers' forecasts and guidance reports and Christensen et al. (2011) concluded that management guidance plays an important role in guiding the analysts' forecasts. Clinton et al. (2014), Xu and Tang (2012) and Feng et al. (2009) find that the management earning guidance is less accurate in companies with existing ICW's and they determine that this is the key reason why the analysts' forecast accuracy is also lower, and the dispersion is greater (Clinton et al., 2014). Pinello and Ashbaugh-Skaife (2008) found that firms with ICW's had a greater analyst forecast dispersion and were less likely to meet or just beat analysts' forecasts. Furthermore, these firms also had a larger management forecast error and earnings guidance dispersion. Taken together, firms that had existing ICW's had less predictable earnings and this predictability improved after the firms had remediated their ICW's Pinello and Ashbaugh-Skaife (2008).

Other researchers have also found evidence that random noise and errors, not opportunism, in financial reporting system resulted in the low predictability of earnings forecasts (Feng et al.,2009).

While most of the existing academic literature points to the evidence that the reason for less inaccurate analysts' forecasts and management earnings guidance is unintentional errors arising from ICW's in financial reporting system, there is also some evidence that managers use their earnings forecasts as a tool to manipulate earnings. Louis et al. (2013) and Athanasakou et al. (2008) found that managers use their earnings guidance as an earnings management tool to meet or beat earnings benchmarks.

Managers in ICW firms tend to behave in an exceedingly self-serving and opportunistic manner, owing to internal control overrides and weak corporate culture (Pinello and Ashbaugh-Skaife, 2008). Ashbaugh-Skaife, Veenman and Wangerin (2013) found that the profitability of insider trading was higher in companies with existing ICW's, and that this profitability decreased after the ICW's were remediated. The authors contributed this effect to greater opportunity for the managers

to act with self-interest when the type of ICW's present were related to entity-level "weak tone at the top" weaknesses.

Executives in companies that have existing ICW's earn higher compensation due to greater agency problems arising from entity-level weaknesses in the company (Paletta and Alimehmeti, 2018). Under optimal circumstances managerial compensation would be set by the board of directors in order to maximize shareholder value, but in ICW firms the managers seem to be more able to influence their own level of compensation.

Donelson et al. (2017) were the first researchers to provide evidence of significant relationship between future accounting fraud revelation and existing ICW's and authors concluded that it was the pervasive entity-wide control weaknesses that allowed the managers the opportunity to engage in fraudulent acts. The researchers specifically concluded that it was the opportunity to commit fraud and not specific management characteristics that lead to the increased fraudulent acts. Using robustness tests the authors also established that it was the *existence* of the ICW's and not the disclosure of these weaknesses that were associated with greater future fraud revelation.

There is some evidence that the investors anticipate the disclosure of ICW's. For example, Li et al. (2016) found that ICW firms had 13% lower valuation in the year *before* the disclosure of ICW's, because the investors had already anticipated the negative information resulting from ICW's - this might have implications on the disclosure effect of the ICW's, making the effect less pronounced due to a smaller surprise effect.

Using the value of corporate cash holdings and capital expenditures as proxies, Qi et al. (2017) found that investors anticipate that managers of firms with existing ICW's tend to use liquid assets more frequently for self-serving purposes and therefore the investors discount the value of such assets. The findings mentioned above could mean that a significant proportion of investors and important stakeholders are already aware of the seriousness of ICW's before their official disclosure.

In conclusion, the existence of ICW's seem to point to a higher probability of agency conflict and increased managerial opportunistic behavior. Because the level of external scrutiny is lower than after the disclosure of ICW's, managers could potentially reach their earnings targets without

having to use non-GAAP reporting methods, although stakeholders could potentially already be aware of serious ICW's before their disclosure.

2.4 After the Disclosure

After a company has disclosed ICW's, it can be expected that the scrutiny by the external stakeholders increases significantly, since the increased possibility of errors and fraud in financial statements is exposed and this has an effect of making stakeholders more cautious (Chalmers et al, 2019). This effect is expected in addition to the effect of existing ICW's already having an adverse influence on financial reporting (that is, before the disclosed ICW's have been remediated).

Investors as well as creditors generally receive the news of ICW disclosure negatively. The research by Ashbaugh-Skaife et al. (2009) showed that the cost of equity increased significantly after the ICW disclosure and of Gupta and Nayar (2007) demonstrated that ICW disclosures were significantly associated with subsequent negative stock price reaction and those effects were reversed after the remediation of ICW's.

Elbannan (2009) investigated the credit ratings of firms that disclosed ICW's and concluded that these firms had worse credit ratings than the firms without ICW's. There are also negative consequences for managers in firms that have disclosed ICW's. Li, Sun and Ettredge (2009) investigated the CFO turnover in firms reporting first-time ICW's and found that CFOs were more likely to lose their position following the adverse ICW opinion.

Cheng et al. (2013) examined the relationship between over- and underinvestment in ICW-declaring firms and found that after the disclosure of ICW's the tendency to over- or underinvest decreased significantly, the authors found evidence that this behavior was mainly due to increased external monitoring and scrutiny which led to this reduction of agency conflict and moral hazard.

Sun (2016) documents that companies that receive their first adverse ICW opinion significantly reduce their investments during the year of disclosure of ICW's and that the investments increase again in the year following the remediation of ICW's. In addition, Sun (2016) also finds that the investments that decreased the most after the adverse ICW opinion were classified as being riskier, such as investments relating to acquisitions and R&D expenses. Sun (2016) attributed this effect to

increased external monitoring that resulted from the adverse ICW opinion, leading companies to reduce riskier investments. Clinton et al. (2014) document that the number of analysts following a firm drops after the firm has disclosed ICW's- they contribute this to analysts viewing the companies as not being able to produce reliable information about their earnings and hence becoming more risky targets to analyze.

ICW disclosing companies also engage more in earnings manipulation using real activities (real earnings management, RM). Examples of RM involves using aggressive sales discounts to achieve higher sales, overproduction and cutting discretionary expenditures and it is used to achieve higher earnings in the current periods at the expense of equally lower earnings in the following period (Roychowdhury, 2006). Manipulation of real activities is a method of earnings management that is more difficult for external auditors to detect, and the research has shown that RM is used by the managers as a substitute for accruals management (Järvinen and Myllymäki 2016).

Järvinen and Myllymäki (2016) investigated the effect of ICW's on earnings management and found that companies use more manipulation of real activities (such as inventory overproduction) after they had disclosed ICW's in the previous year. It was suggested that managers shift to real earnings management from other types of earnings management techniques due to increased shareholder scrutiny resulting from the ICW disclosure. Zang (2012) also investigated whether the costs associated with discretionary accruals management were associated with managers using more real earnings management as the result and determined that managers used accrual earnings management and real earnings management as substitutes.

Taken together, the disclosure of ICW's appears to be leading to increased scrutiny by different stakeholders that acts as a restraining mechanism for managers who indulge in self-serving behavior and managers seem to move on to using more "opaque" earnings management methods such as RM.

2.5 After the remediation of ICW's

Most researchers that have investigated the effects of the existence and disclosure of ICW's on various firm outcomes, have determined that the negative effects are significantly reversed in the year that the company receives a "clean" ICW report (Chalmers et al., 2019). However, there is still evidence that the actual remediation takes longer.

Myllymäki (2014) finds that pervasive ICW's were related to increased financial reporting misstatements and that this increase in misstatements continue for two years after the remediation of ICW's. She proposes that the remediation of ICW's is strongly tied to the culture and the governance characteristics of the company that reports them. Also, because ICW's are shown to be more financially distressed and have a greater risk of bankruptcy, it is unlikely that such negative effects could be removed effectively in a short period of time. When policies have been implemented in companies for a longer period, changing these policies requires a significant amount of time (Kotter, 1995)- it is possible that some entity level and pervasive ICW's remain unchanged, even when the auditors have attested to managers' assessment of ICW's being removed. Documenting the persistence of ICW's in the financial reporting system, Klamm (2012) determined that serious ICW's also predicted future ICW's.

Because more pervasive ICW's, such as weak "tone at the top" managerial culture is associated with managerial opportunistic behavior, it is possible that this also affects the managers' opportunistic non-GAAP earnings reporting and some of the possible effects resulting from ICW existence and disclosure still remain for a longer period after the "all clear" ICW opinion.

2.6 Non-GAAP reporting

Managers and analysts exclude items from within-GAAP earnings and present them in order to be more informative about the future prospects and profitability of a firm. By excluding transitory items from the aggregated GAAP earnings, non-GAAP earnings can become more informative about the core performance of a company.

Managers sometimes use non-GAAP reporting for opportunistic and self-serving purposes in order to meet or beat a certain pre-determined earnings benchmark. The research literature has usually associated such opportunistic reporting with managers excluding recurring items from within-GAAP reported earnings (Doyle et al., 2003). However, excluding recurring items such as stock-

based compensation and depreciation for the purpose of non-GAAP reporting is not always a sign of opportunistic behavior. More recent academic evidence is emerging that non-GAAP reports can become more informative under certain circumstances, when managers exclude certain recurring items from within-GAAP earnings (Whipple, 2015).

External auditors have a limited responsibility for non-GAAP reporting. They must read and consider the information presented in firms' 8-K reports, but these reports do not form a part of audited financial reports and external auditors do not form an opinion or conduct any tests on them.² This is the reason why it is easier for managers to act more opportunistically when using non-GAAP reporting.

Regulation G in 2003 was the first regulation issued by the Securities and Exchange Commission (SEC) regarding non-GAAP reporting and required public companies using non-GAAP reports to reconcile these reports to the most comparable GAAP-measure (Baumker et al., 2014).

Research has shown that the quality of non-GAAP reports increased following the issuing of Regulation G (Doyle et al., 2013) and Black et al. (2018) provided evidence that non-GAAP reporting frequency increased significantly between 2009 and 2014 in all business industries. This study also found that items to be excluded from within—GAAP earnings increased in number and magnitude during the same period (Black et al., 2018).

Distinction must be made between non-GAAP earnings issued by managers and the earnings and forecasts issued by analysts. Analysts-issued non-GAAP earnings are available from I/B/E/S database and are called “street” earnings. Research has shown that these two metrics differ from each other to a certain degree and I/B/E/S database excludes managers' lower-quality non-GAAP numbers and using I/B/E/S data as a proxy significantly underestimates managers' more aggressive reporting (Bentley et al., 2018). Manager's non-GAAP reporting influences analysts' non-GAAP numbers and the fact that SEC has addressed specifically manager-issued reports in their regulations means that standard setters believe that these reports influence external assessment of performance (Bentley et al., 2018). Also, Bhattacharya et al. (2003) discovered that investors found manager-adjusted non-GAAP reports to be more informative than GAAP earnings.

² See PCAOB Auditing Standard 2710: Other Information in Documents Containing Audited Financial Statements

Other users, such as creditors and company's internal evaluation committees are also users of non-GAAP reports. For example, Christensen et al. (2019) found that the likelihood of non-GAAP reporting decreases and the quality, measured by the predictive ability of non-GAAP exclusions, increases after debt covenant violations. This propensity to issue less opportunistic non-GAAP reports was found to be more evident in companies that had stronger investor protection mechanisms in place, suggesting that the reason for this change in this reporting behavior was attributable to increased creditor scrutiny. Isidro and Marques (2013) found evidence of compensation incentives having an influence on the likelihood of managers issuing non-GAAP earnings.

There has been a long debate among researchers whether managers use non-GAAP reporting to better inform stakeholders or for their own self-serving purposes (Black et al., 2018). Some researchers suggest that managers exclude one-time items from non-GAAP earnings to give a more accurate picture of firms' core operations (Lougee and Marquardt, 2004; Curtis et al., 2014). Leung and Veenman (2018) found evidence that non-GAAP reports provided by loss firms were highly informative, while the items excluded from GAAP earnings were not. Lougee and Marquardt (2004) also provided early evidence that non-GAAP earnings were more informative when within-GAAP earnings informativeness was low and that investors found non-GAAP earnings reports to be more useful when that was the case.

On the contrary, other researchers such as McVay (2006) and Black and Christensen (2009) found that managers deliberately manipulate non-GAAP earnings figures to mislead investors. Isidro and Marques (2015) studied the propensity of companies to use non-GAAP reporting to meet or beat earnings benchmarks and found that managers use more non-GAAP reporting when within-GAAP earnings miss the earnings benchmarks and when that happened, the non-GAAP earnings were more likely to meet or beat these earnings benchmarks. Using a sample of large European companies, the study found that those companies that used non-GAAP earnings to meet or beat the earnings benchmarks more often were based in countries with more sophisticated financial markets, more efficient law enforcement and strong investor protection.

While the managers in those countries faced stronger pressure to meet earnings benchmarks, more efficient enforcement, threat of litigation and increased scrutiny surrounding within-GAAP earnings

meant that the managers found it more difficult to reach the desired GAAP benchmarks using earnings manipulation and hence had to resort to alternative non-GAAP reporting methods.

The same study also found that companies in countries with stronger law enforcement and investor protection were more likely to exclude recurring expenses (R&D and depreciation) from non-GAAP earnings. This practice is often associated with more aggressive and opportunistic non-GAAP reporting (Black and Christensen, 2009).

Similarly, Doyle et al. (2013) investigates the companies using the non-GAAP earnings to beat analysts' estimates and finds that managers define non-GAAP earnings to meet or beat earnings forecasts when the ability to manipulate within-GAAP earnings is constrained and that analysts cannot fully unwind the tactics used by the managers and cannot always anticipate the exclusions used by the managers in the non-GAAP earnings. The evidence also points to non-GAAP reporting sometimes being used by the managers as a substitute to discretionary accruals and cash flows to meet or beat analysts' forecasts (Doyle et al., 2013). According to Lougee and Marquardt (2004), managers were found to be using non-GAAP reporting more often when within-GAAP earnings missed the benchmark.

Kyung et al. (2019) investigated the relationship between companies voluntarily adopting clawback provisions and the subsequent frequency and quality of non-GAAP reporting.

Clawback provisions allow companies to recover incentive compensation that was awarded to managers after the occurrence of a pre-defined event, such as restatements relating to financial reporting. Kyung et al. (2019) discovers that non-GAAP reporting frequency increases and its quality decreases after the adoption of clawback provisions, indicating increased opportunistic use of non-GAAP reporting. The authors suggest that the main reason for this shift in non-GAAP reporting behavior is that managers choose between GAAP and non-GAAP reporting to achieve their reporting objectives and shift to non-GAAP reporting when the cost of within-GAAP reporting earning management is high (as would be the case with clawback provisions).

Taken together, it appears that there is evidence for and against managerial opportunistic behavior that is associated with non-GAAP reporting. One of the reasons for the opportunistic use of non-GAAP earnings is managers' wanting to meet or beat analysts' forecasts and internal earnings benchmarks. The other reason is the desire to mislead relevant stakeholders about the true nature of

company's performance. Managers use non-GAAP reporting more opportunistically in situations, where within-GAAP informativeness is low and they sometimes use it as a substitute for other types of earnings management.

Managerial use of non-GAAP reports to convert GAAP losses into profit is not always done for opportunistic reasons however, and loss firms use this technique to better inform investors (Leung and Veenman, 2018).

3. Hypothesis Development

3.1. Quality of non-GAAP reporting in firms with ICW's

The first hypothesis relates to the effect that the existence of ICW's has on managerial opportunistic non-GAAP reporting. It would be useful to examine this issue by comparing non-GAAP reporting quality in firms that have had at least one negative ICW report with non-GAAP reporting quality in firms that have always had a clean SOX § 404 audit report.

I expect that there is a difference in non-GAAP reporting quality and aggressiveness between the two groups of companies, since the existence of ICW's have multiple negative implications on firm outcomes- there seems to be especially a greater propensity to manipulate financial figures for opportunistic reasons and a greater likelihood that an environment exists in such organizations which tolerates opportunistic behavior and produces unreliable information. This seems to suggest that non-GAAP reporting is more aggressive and has a worse quality in ICW firms. However, as described in the literature review section of this thesis, the disclosure of ICW's has a disciplining effect on opportunistic behavior and firms that have ICW's could manipulate financial reports without having to resort to using non-GAAP reporting. Therefore, there seems to be two opposing directions that could result in the quality of non-GAAP reporting being either better or worse in ICW firms. It is suggested that mistakes in the financial reporting system of such firms could make it harder for managers to estimate to beat analysts' forecasts (Pinello and Ashbaugh-Skaife, 2008), but previous studies have used I/B/E/S non-GAAP earnings figures in such analyses, whereas this

thesis uses the original managers' non-GAAP earnings that has been deemed to be more aggressive and opportunistic in nature (Bentley et al., 2018).

According to Klamm et al. (2012), both the entity-level weaknesses and certain account-level weaknesses are predictors of future ICW's in the same firm, so if non-GAAP reporting is affected due to existing ICW's, these effects on reporting could possibly last longer in such firms, even if the first-time ICW's were remediated by the firm. I propose my first, non- directional hypothesis:

H1: The quality of non-GAAP reporting in firms that disclose ICW's is different from the quality of non-GAAP reporting in firms that have never disclosed ICW's.

3.2. Time before the disclosure of ICW's

Theoretically, the existence of ICW's (before the disclosure) should increase the opportunities for managers to engage in opportunistic non-GAAP reporting. Research has found that the existence of ICW's is negatively related to the independence of the board of directors (Chen et al., 2017) and Frankel, McVay and Soliman (2011) also found that the quality of managerial non-GAAP reporting increased, when the board independence was high. In addition, Isidro and Marques (2013) established that managerial non-GAAP reporting became less aggressive, when the board characteristics were stronger.

The increased tendency for managers to engage in acts of fraud in ICW-firms seem to be pointing to an environment where the opportunities to act self-servingly exist. This is also supported by academic evidence documenting the increased profitability of insider trading in ICW-firms (Chalmers et al., 2019).

Whether the existence of ICW's increases the incentives for managers to use non-GAAP reporting in an opportunistic manner is a matter of debate. Prior literature has found that managers tend to use opportunistic non-GAAP reporting as a substitute for accruals management when the increased scrutiny or previous overuse of accrual earnings management has caused the managers to decrease the usage of accrual management (Black et al. 2018). Since the external scrutiny before the disclosure of ICW's is smaller than after the disclosure, I speculate that the incentives for managers

to use non-GAAP reporting as a substitute for accrual management are decreased. Managers could be using the within-GAAP measures and accruals management without having to worry about external scrutiny and hence they do not have to resort to using non-GAAP earnings management. The higher level of ongoing accrual management before the disclosure of ICW's seems to be the indication of this. On the other hand, the managers could be using the opportunistic non-GAAP reporting *in addition* to accrual management or when the previous over-usage of accrual management has set limits to its further use.

A further incentive for managers to use aggressive non-GAAP methods could be that the managerial compensation benchmarks are known to be associated with non-GAAP metrics and compensation committees sometimes use non-GAAP earnings to set the level of compensation for managers (Curtis et al.,2014). Since the existence of ICW's is associated with higher levels of executive compensation, it can be speculated that the managers have self-servingly manipulated the non-GAAP earnings for the promise of higher compensation. Kyung et al. (2019) however found that there was no association between the level of non-GAAP reporting and managerial incentive compensation, so the evidence on the subject is conflicting.

Previous research has indicated that firms having ICW's have greater analyst and management forecast errors. If managers are acting opportunistically, it would be reasonable to expect that they could also manipulate the management earnings forecast data to more easily meet or beat the benchmarks later, but this does not seem to be the case in ICW-firms. Some of the research evidence points to unintentional errors in ICW firms financial reporting and operating systems and managers relying on lower quality inputs when forming earnings forecasts. There is also some evidence against this proposal however, as Louis et al. (2013) found evidence that analysts sacrifice their forecast accuracy for informativeness by removing discretionary earnings management items from management guidance reports. If the analysts' forecasts are inaccurate because of the opportunistically determined management guidance forecasts, it could also lead to managers opportunistically excluding items from within-GAAP reports to reach their targets.

Overall, the existing evidence seems to be clear about managers having more opportunities to act in a more self-serving manner before the disclosure of ICW's but is somewhat conflicting with regards to the incentives managers would have to engage in opportunistic non-GAAP earnings management. If the managers can use the within-GAAP methods with relative impunity before the

disclosure of ICW's, then why would they have to resort to using more opaque methods such as manipulating non-GAAP earnings? However, managers could perhaps still be using non-GAAP earnings exclusions to meet benchmarks for opportunistic reasons, because some evidence points to ICW firms using real earnings management even before the disclosure of ICW's and managers could be using similarly opaque non-GAAP methods for the same purpose. (Järvinen and Myllymäki, 2016).

The incentives for earnings management could still be significantly higher in companies experiencing ICW's because research has shown that such firms are more likely to be financially distressed, have operating losses and have a higher risk of bankruptcy (Doyle, Ge and McVay, 2007), although these types of firms could also potentially use more higher-quality non-GAAP reporting because of the low informativeness of their within-GAAP earnings. These firms also have fewer independent boards of directors and less independent boards are associated with lower quality non-GAAP earnings (Frankel et al., 2011).

3.3 After the disclosure of ICW's

After the firms have disclosed their ICW's, it could be expected that the scrutiny by external stakeholders increases, and it becomes more difficult for managers to use traditional earnings management techniques. There is some evidence that managers try to compensate by using more opaque earnings management techniques, because discretionary accrual management would form part of the audited financial statements and there would be a pressure to move on to more undetectable earnings management techniques.

There is an increase in the real earnings management techniques after the disclosure of ICW's and the research has indicated that discretionary accrual management and RM are substitutes. As there is also evidence that non-GAAP earnings management and discretionary accrual management could be substitutes (Doyle et al., 2013), then it would be appropriate to assume that managers would try to compensate with increasing non-GAAP earnings management after increased monitoring resulting from ICW disclosures.

Kyung et al. (2019) established in their research that managers move from within-GAAP earnings management to more opportunistic non-GAAP reporting after the adoption of clawbacks because of

the reduced discretion in within-GAAP reporting. Since it could be argued that the disclosure of ICW's has a similarly restrictive effect on managers' more public earnings management incentives as clawback adoption, then it could be that managers move on to substitute this with opaquer methods.

Still, it could be that the increased external scrutiny after ICW disclosure might involve all aspects of financial reporting, including the non-GAAP reporting. In this case the effect of ICW disclosure would have the opposite effect on managerial non-GAAP reporting, causing its quality to rise. It can be expected that after the disclosure of ICW's managers would be extremely careful with any type of false reporting, since research has shown increased probability of managers losing their positions following the ICW disclosures (Li, Sun and Ettredge, 2009). After the disclosure, managers could also assume (or the investors could perceive) that the informativeness of within-GAAP earnings is low, in which case the managers would be expected to start using more higher-quality non-GAAP earnings (Lougee and Marquardt, 2004; Leung and Veenman, 2018).

As described earlier, the level of accounting conservatism increases after the disclosure of ICW's. Heflin et al. (2014) in their research paper linked together the research streams of non-GAAP reporting and accounting conservatism and established that when within-GAAP conditional conservatism level was high, the quality of exclusions used to calculate non-GAAP earnings was increasingly higher (the exclusions had a smaller association with future income). Since the conservativeness of GAAP earnings has been shown to increase after the ICW disclosure, it is possible that the non-GAAP earnings quality will increase because of this.

Considering the above arguments for and against the improvement of quality in non-GAAP reporting after the disclosure, I propose my second hypothesis in a non-directional form:

H2: The quality of non-GAAP reporting in the period after the first-time disclosure of ICW's is different from the quality of non-GAAP disclosure in the period before the first-time disclosure of ICW's.

3.4 After the remediation of ICW's

If the disclosure of ICW's affects managers' non-GAAP reporting quality, it could also be likely that non-GAAP reporting quality varies according to whether the firms remediate their first-time ICW's or not. The quality of non-GAAP reports could improve in the year when the firm remediates the first-time ICW's if the managers perceive that opportunism in non-GAAP reporting is detectable by the stakeholders and managers want to appear as if they are acting with integrity. At the same time, it is also likely that non-GAAP reporting in firms that do not remediate their first-time ICW's do not change their non-GAAP reporting quality or that the quality of reporting becomes worse. It is probable that if non-GAAP reporting quality is affected by the disclosure of ICW's, this influence would be reflected in the year following the disclosure of first-time ICW's depending on whether the firms remediate the ICW's. Due to conflicting evidence in the previous academic literature, I propose my third hypothesis also as non-directional:

H3: The quality of non-GAAP reporting in firms that remediate their ICW's that are reported for the first time is different from the quality of non-GAAP reporting in firms that do not remediate their first-time ICW's.

4. Sample selection

I use the I/B/E/S database for analysts' EPS forecasts and Audit Analytics database is used to collect data on SOX section 404 ICW disclosures. The sample period is from 2004 to 2019, because 2004 was the first year when the firms started disclosing ICW's under SOX § 404 and 2019 is the year when the data that I use for collecting managerial non-GAAP reporting ends. Compustat North America database is used to collect data on control variables and on other firm-specific variables. I use the database compiled by Bentley et al. (2018)³ for managerial non-GAAP reporting details - this database is constantly updated and is publicly available. First, managers' non-GAAP reporting database is merged with Compustat quarterly database- this is because managers' non-GAAP database only contains quarterly reporting data. All the non-GAAP earnings and exclusion amounts are then added together to form yearly values, and this can then be merged with Compustat yearly database.

³ The managerial non-GAAP data set is publicly available at <https://sites.google.com/view/kurthgee/data>

Compustat yearly database will then be merged in STATA with previously merged quarterly data and then with I/B/E/S, Audit Analytics and with other databases (Audit Analytics audit opinions database for going concern opinions, Compustat segments database for segment information and Compustat yearly database from 1950 to calculate firm age). Wharton Research Data Services (WRDS) system is used to gain access to the databases above. After deleting the missing variables and deleting financial companies the final sample contains 13,265 unique firm-years and 2,741 unique firms. Financial firms will be excluded because these companies have a higher leverage and more strict financial regulation to follow than the rest of the industries.

All the continuous variables will then be winsorized at the bottom and top 2%.

[Table 1](#) summarizes the sample selection and database merging process. After the merging and the removal of missing variables and financial firms the remaining sample contains data from 2005 to 2018.

5. Descriptive statistics

Out of the 13,265 firm-years in the total sample, 4,607 observations belong to a group classified as “*ICWfirm*”, i.e., these observations are either a firm-years belonging to firms that have had at least one negative ICW report during the sample period. From those 4,607 observations, 733 firm-years represent either the first-time disclosure year of ICW’s or the year following the disclosure year.

[Table 2](#) summarizes the statistical features between the two groups of sample firms- the ones that belong to the group that have had at least one ICW reported during the sample period and those that have not (control firms). It is clear by looking at the t-test results that the magnitude of non-GAAP exclusions is not statistically different between the two groups, but the size of the reported non-GAAP earnings and the propensity to issue non-GAAP earnings figures is significantly greater in control firms, relative to treated firms. However, it is the ICW-firms that have a significantly greater propensity to report non-GAAP earnings figures that are greater than GAAP earnings (represented by variable *posexclusion*).

ICW-firms are more likely to report earnings losses, whereas control firms are predictably bigger and have stronger financial indicators (greater Altman's z-score, more positive earnings, and greater future income). ICW-firms also report significantly more positive discretionary accruals, have a greater propensity to receive a going concern opinion and carry more inventory.

These differences between the two groups demonstrates the necessity to match the sample firms, using the propensity score matching method.

[Table 3a](#) demonstrates the increase of companies using non-GAAP exclusions and issuing non-GAAP EPS figures over the sample period. Managers' propensity to issue non-GAAP reports has risen from 39% in 2005 to 59.22% in 2018 and reporting of non-GAAP EPS figures that are larger than GAAP EPS has risen from 33% to 55.59% over the same period.

Sample companies, having first seen a decrease in negative ICW audit reports between 2005 to 2009, have since then gradually been increasing from 2.10% in 2010 to 7.22% per year in 2018. Pearson correlation matrix among future income and independent variables used for hypotheses testing is presented in [table 3b](#) (variable definitions are available in [appendix A](#)). There are a few cases of high correlation in the matrix (correlation coefficient higher than 0.7). For example, variable *Loss* and *ROA* are significantly negatively correlated, while variables *LogMC* and *lnAssets* are significantly positively correlated- this is not a problem because these variable pairs are not used together in the same regression. Variables *Biggrowth* and *SalesGrowth* are correlated positively because these variables are both based on the growth of sales figures, but again these variables are not used in the same regression. Overall, these results suggest that the data used for hypotheses testing in this does not suffer from collinearity.

6. Research design and test results

6.1 Propensity score matching

I use similar covariates to Järvinen and Myllymäki (2016) to match ICW- firms with a control group of companies that never had a negative ICW audit report. These covariates will be used to create pairs of treated and untreated companies that are similar along the chosen parameters, which will then be used to test hypothesis 1.

The chosen sixteen covariates represent the complexity of firm structure (number of business segments and number of foreign segments, or if the firm has recently gone through restructuring or acquisition process), financial health of the firm (Altman’s z-score, return on assets, leverage or if the firm has experienced a loss) and general firm parameters, such as size, age and if the firm operates in litigious industry. The two-sided t-test that was used to estimate descriptive differences between the treatment and control group demonstrates that the two groups differ along these parameters ([table 2](#)). The complete list of covariates used for propensity score matching can be found in [appendix A](#).

I run a logistic regression (equation 1) with a binary variable *ICWfirm* as the dependent variable and will also add fixed effects for year and industry to estimate the model, the results of this test are shown in [table 5](#):

$$Pr(ICWfirm) = \alpha_0 + \beta_1Leverage + \beta_2ROA + \beta_3Auditorchange + \beta_4Foreignsegments + \beta_5Sqrtsegment + \beta_6Acquisition + \beta_7restruct + \beta_8Loss + \beta_9Inventory + \beta_{10}Goingconcern + \beta_{11}Biggrowth + \beta_{12}Litigation + \beta_{13}LogMC + \beta_{14}BIG4 + \beta_{15}Zscoredecile + \beta_{16}ln_firmage + \delta Industry\ and\ year\ fixed\ effects + e$$

(eq1)

I find that foreign segments and a recent change of auditing firm are strongly associated with firms that have their ICW’s disclosed. Also, younger and smaller firms, as well as firms with recent restructuring expenses and a higher level of inventory have a greater likelihood of being a discloser of ICW’s. On the other hand, having a higher leverage and receiving a going concern audit opinion does not seem to significantly affect the likelihood of being an ICW-firm. Overall, the results are in line with previous academic literature – firm size, age, financial indicators, level of risk and complexity determine the likelihood of firm experiencing and reporting internal control weaknesses.

Next, I estimate the propensity scores and match the treated firms with control firms using *gmatch* or “greedy matching” function on STATA. This command matches the treated and control firms using the closest matches, then moves to next suitable match until there are no more matches available. I also want the matched pairs to be industry- and year specific since the data that I’m using is panel data.

To do this I create a second propensity score which equals the first propensity score multiplied by the combined industry-year variable. This will ensure that all the matched companies also share the same industry and year.

I match the treated and control firms by propensity scores, using a caliper of 0.01 which should ensure that differences in propensity scores of matched pairs are minimal.

The matching procedure results in 1,996 matched firm-years, out of which half are firms that have had at least once a negative ICW report and others are control firms.

To establish if the propensity score matching was successful, I conduct a test to compare the mean values of the treated and untreated observations and the test results are shown in [table 6](#). The two-tailed t-test confirms that with the exceptions of covariates *Loss* and *Goingconcern* (both are significant at 10% level), significant difference does not exist between the covariates. This means that the two groups of observations are similar along the selected covariates and the propensity score matching was largely successful.

6.2 Variables used

Different dependent variables have been used by the academics to test the quality of non-GAAP earnings and exclusions in prior literature. According to Kyung et al. (2019) and Kolev et al. (2008), using future cash flows is not best suited for this purpose because of the mechanical relation that exists between some types of current exclusions and future cash flows (such as expenses incurred, but not yet paid). Hence, I select future income (variable *FutrInc*) as my main dependent variable to test non-GAAP reporting quality, but I corroborate my test results with future cash flows in robustness tests.

I use the same set of control variables for all tests, except when testing for benchmark beating behavior where I use an additional control variable representing positive discretionary accruals (*PosDA*)- this control variable equals one if positive discretionary accruals were reported and equals zero otherwise. Similar control variable is used as a proxy for accruals manipulation by Doyle et al. (2013) and Kyung et al. (2019) in tests involving benchmark beating, making sure that this type of earnings management is not the driving force behind the results.

The main control variables include volatility of earnings (*Earningsvol*) because prior research has found that firms with less predictable earnings (such as highly volatile earnings) may demand more alternative types of financial information (Lougee and Marquardt, 2004). Larger firm size is related to increased costs of opportunistic reporting (Kyung et. al, 2019), therefore I include natural logarithm of total assets (*lnAssets*) to represent firm size as one of my control variables. I also select market-to-book ratio (*MTB*) and sales growth (*SalesGrowth*), because prior research has found negative relation between sales growth and future performance and because market-to-book ratio is found to be positively correlated with increased non-GAAP reporting (Lougee and Marquardt, 2004 and Kyung et al., 2019). Full descriptions of all the control variables are available in [appendix A](#).

6.3 Testing of hypothesis 1.

I am looking at the effects of ICW's on managerial non-GAAP reporting quality by using only the firms that disclose their ICW's for the *first time*. This because research has shown that the serious ICW's are a strong predictor of future ICW's and to avoid any confounding factors that might arise from firms' previous ICW disclosures (Järvinen and Myllymäki, 2016).

The possibility of reverse causality is minimal, since it is unlikely that managerial non-GAAP reporting methods will have significant effect on firms' ICW disclosures. I have selected two methods to investigate managerial non-GAAP reporting: (1) the predictive ability of managerial non-GAAP EPS on future performance and (2) the likelihood of managers meeting or beating earnings benchmarks with non-GAAP earnings. To test hypothesis 1, I adopt the following two regression designs:

$$FutrInc = \alpha_0 + \beta_1 ICW_{firm} + \beta_2 NGexclusions + \beta_3 NGeps + \beta_4 ICW_{firm} \times NGeps + \beta_5 ICW_{firm} \times NGexclusions + \beta_6 MTB + \beta_7 SalesGrowth + \beta_8 lnAssets + \beta_9 Earningsvol + \beta_{10} ROA + e$$

(eq2)

$$Prob(MB) = \alpha_0 + \beta_1 ICW_{firm} + \beta_2 NGexclusions + \beta_3 ICW_{firm} \times NGexclusions + \beta_4 PosDA + \beta_5 MTB + \beta_6 SalesGrowth + \beta_7 lnAssets + \beta_8 Earningsvol + \beta_8 ROA + e$$

(eq3)

The dependent variable is either future income at time $t+1$ (following Kolev et al.,2008) in equation 2 or a dummy variable that equals 1 if earnings benchmark is beaten and zero otherwise in equation 3. The two earnings benchmarks are coded *MB2* and *LossConvert*. *MB2* equals one if managers' non-GAAP earnings figures collected from 8-k files database marginally meets or beats analysts' median earnings forecast figure published in I/B/E/S database for the same period and will equal zero otherwise. *LossConvert* equals one if managers' non-GAAP earnings figure from 8-K filings is greater than zero and when within-GAAP earnings figure for the same period is negative.

Variable *ICWfirm* equals one if the observation is of a firm that has had at least one negative ICW audit report during the sample period and will equal zero otherwise and *NGexclusions* represent the yearly managers' non-GAAP exclusions, which is calculated by subtracting yearly within-GAAP EPS from non-GAAP EPS figures. Interaction variables β_4 and β_5 distinguish between the control group (companies that ever had a negative ICW report) and the treatment group in equation 2, the complete list of control variables used can be found in [appendix A](#). Out of the total sample of 13,265 firm-years, 4,607 firm years belong to firms that have had at least one negative ICW report and the rest belong to firms with clean ICW audit reports. I use only the sample that has been matched using propensity score matching, because I'm testing the difference between ICW firms and firms that have never had a negative ICW report.

The results of regression analyses are displayed in tables [7a](#) and [7b](#). Starting with equation 3, the coefficient for *NGexclusions* is negative and highly significant- this confirms that the non-GAAP exclusions are not transitory, but are likely to recur in the following year. These results are in line with the results of Doyle et al. (2003) and Kolev et al. (2008). Interaction coefficient for *NGexclusions x ICWfirm* is not significant, meaning that non-GAAP exclusions do not have significantly different predictive power for future income in ICW-firms.

Coefficient for *NGeps* in equation 2 is highly significantly positive, suggesting that non-GAAP EPS reported by managers is highly predictive of income in the following year and the interaction variable *ICWfirm x NGeps* in [table 7a](#) is marginally negatively significant - this indicates that firms that have had at least once had a negative ICW audit report, report non-GAAP earnings that have significantly smaller predictive ability of future income than firms that have always received a clean ICW audit report.

I also run the joint significance test between variable *NGeps* and the interaction term *ICWfirm x NGeps* and find that it is also highly significant.

Turning to the test results of benchmark beating behavior in [table 7b](#), the interaction term $ICW_{firm} \times NG_{exclusions}$ in equation 3 is significant and positive for both outcome variables- one of which is *LossConvert* and the other *MB2*. This result seems to suggest that firms that have had at least one negative ICW report in the past also tend to act more aggressively when compared to firms that always had a clean ICW report, by using the non-GAAP earnings to meet or just beat analysts' median earnings forecasts. Interpreting ICW firms' tendency to convert GAAP losses into profits is not as straightforward, due to somewhat conflicting academic evidence.

It is not clear if converting losses into non-GAAP profits represents opportunistic behavior in the context of this thesis, because although Black and Christensen (2009) have suggested that it represents opportunistic behavior, Leung and Veenman (2018) found evidence that loss converting firms have better-quality non-GAAP reporting than other firms. Using non-GAAP reporting in those firms gives managers an opportunity to better inform the shareholders about the future prospective performance of the firm that occurred losses— this is done by excluding certain items from GAAP earnings to signal the strength of future cash flows- the purpose of this is to better inform investors, not to mislead them (Leung and Veenman, 2018). It is therefore important to conduct a further test on loss converting firms in the current sample to see if the quality of non-GAAP reporting is different in these firms when compared to the rest of the sample, before any further conclusions can be drawn on the nature of the main test results contained in this thesis. It is possible that ICW-firms use loss converting more often than others to signal the strength of future cash flows due to investors perceiving the GAAP earnings in such firms to be less informative- this theory is supported by Lougee and Marquardt (2004), who concluded that firm managers turn to non-GAAP reporting when the GAAP earnings are perceived to be non-reliable by the investors.

I run multiple tests using future operating cash flows and future income as dependent variables to see if loss converting firms have better-quality non-GAAP reporting and find that results are conflicting. Using future income as the dependent variable, all the tests show insignificant results for the quality of non-GAAP reporting in loss converting firms in comparison to the rest of the sample. I use two different samples to test my assumptions, one of which contains only ICW-firms (firms that have had at least one negative ICW report) and the other is the propensity-matched sample of ICW- and control firms. However, when I use future operating cash flows as the

dependent variable, I get a significant result when using ICW- only firms, where non-GAAP earnings are significantly more informative of future operating cash flows than the rest of the observations in the sample. The formula of this test is represented in equation 4.

$$Foancf = \alpha_0 + \beta_1 LossConvert + \beta_2 NGexclusions + \beta_3 NGeps + \beta_4 LossConvert \times NGeps + \beta_5 LossConvert \times NGexclusions + \gamma Controls + \delta Industry \text{ and year fixed effects} + e$$

(eq4)

The results of this test are displayed in [table 4](#). Coefficient for *NGeps* is positive and highly significant at 1% level, which indicates that in ICW-firms non-GAAP earnings are highly predictive of future operating cash flows. Specifically, \$1 increase in non-GAAP earnings is associated with \$57.53 increase in future cash flows. Interaction variable *LossConvert*NGeps* is also significant at 5% level with the coefficient value of 60.33, which means that in ICW-firms that convert GAAP losses to non-GAAP profits, \$1 of non-GAAP earnings are approximately \$60 more predictive of future cash flows than firms that do not convert losses. Coefficient for variable *NGexclusions* is significant and negative, meaning that items excluded by the managers from the GAAP earnings are not transitory, but are highly likely to reoccur in the following year. Interaction variable *LossConvert * NGexclusions* is not significant, meaning that the predictive ability for loss converting firms is not significantly different from firms that do not convert losses.

The results are confirmed with joint significance test, which also shows significant effect suggesting that loss converting firms that have had at least one negative ICW audit report, engage in better-quality non-GAAP reporting than other firms in the sample.

Concluding, it appears that ICW- firms tend to use loss converting with non-GAAP reports as a tool to signal the prospects of their firms and for those firms, loss converting seems to serve an informative purpose, rather than an opportunistic one. Perhaps this is so because investors perceive the GAAP earnings of ICW-firms to be more unreliable than firms that have not had ICW's, so managers use non-GAAP reporting as a tool to inform investors of future prospects when losses occur. This informative signaling is then reduced after the first-time disclosure of ICW's, because managers become overly cautious after this event (as is shown by the results of my other two main

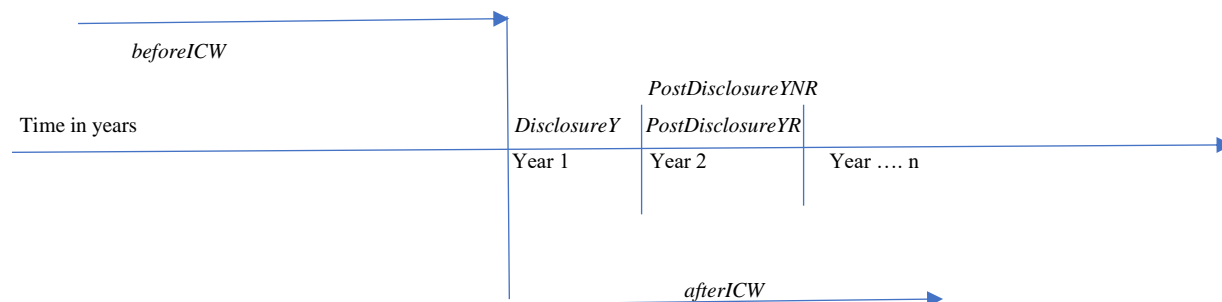
tests, that use *MB2* and *FutrInc* as dependent variables), which could be an unintended result of ICW disclosure.

To conclude, the results to test hypothesis 1 are somewhat conflicting. Using propensity-score matched sample, I demonstrate that ICW-firms seem to act more opportunistically by reporting lower-quality non-GAAP EPS figures and by meeting or beating analysts’ forecasts more aggressively than control firms- this is mostly in line with prior academic evidence that indicates that ICW-firms tend to use financial reporting more opportunistically. On the other hand, these firms seem to be using non-GAAP reporting to convert GAAP losses into profits and my tests indicate that this could be done for the purpose of better informing the stakeholders.

6.3. Testing of hypothesis 2

To test if the first-time disclosure of ICW’s influences managers’ non-GAAP reporting quality, I create five variables using my sample data. With one variable representing the period before the disclosure of first-time ICW’s (*beforeICW*) and four variables represent time period after the disclosure (*DisclosureY*, *PostDisclosureYR*, *PostDisclosureYNR* and *afterICW*). Two of these variables (*beforeICW* and *afterICW*) represent the long-term time horizon and other three represent two years immediately following the disclosure. Figure 1 describes the time variables that I selected to test the hypotheses.

Figure 1. Timeline of ICW reporting. Variable *DisclosureY* is the year of disclosure and *PostDisclosureYR/ PostDisclosureYNR* represent the year after the disclosure of ICW report (depending on if the firm remediated the control weaknesses or not). Variables *beforeICW* and *afterICW* represent all the firm-years before and after the disclosure of ICW’s, respectively.



I use short and long- term time variables because research has suggested that first-time ICW disclosures predict future ICW disclosures and that especially entity-level ICW's take a longer period to remediate, meaning that if non-GAAP reporting is influenced by ICW disclosures, these effects could linger on beyond a year or two after the disclosure.

Like testing hypothesis 1, I use a linear regression formula with the dependent variable being future income (*FutrInc*) in equation 5, but instead of using independent variable *ICWfirm*, I now use the time variable *afterICW* in the regression- this represents all the firm years after the first-time disclosure of ICW's. The sample to test hypotheses 2 and 3 include only firms that are designated as *ICWfirm*. Variables of interest in equation 5 are β_4 and β_5 , which represent the interaction effect between variable *afterICW* and non-GAAP EPS and non-GAAP exclusions, respectively. All the control variables used in this test are same as the ones used for testing hypothesis 1 in equation 2. Unlike when testing for hypothesis 1, I'm using industry and year fixed effects when performing regression analysis to test for hypotheses 2 and 3, since the sample used to test hypothesis 1 was matched using propensity score and the pairs of treatment and control group variables are already matched using the same year and industry type.

$$FutrInc = \alpha_0 + \beta_1 afterICW + \beta_2 NGexclusions + \beta_3 NGeps + \beta_4 afterICW \times NGeps + \beta_5 afterICW \times NGexclusions + \gamma Controls + \delta Industry \text{ and year fixed effects} + e$$

(eq5)

$$Prob (MB) = \alpha_0 + \beta_1 afterICW + \beta_2 NGexclusions + \beta_3 afterICW \times NGexclusions + \gamma Controls + \delta Industry \text{ and year fixed effects} + e$$

(eq6)

The results of this test are displayed in [table 8a](#). Although the interaction term *afterICW x NGexclusions* is insignificant, the other variable of interest *afterICW x NGeps* is positive and highly significant. Adding this effect to the effect of *NGeps*, which is also positive and significant it is suggested that the quality of non-GAAP reporting improves after the first-time disclosure of ICW's. This effect is confirmed when I run the joint significance between *NGeps* variable and interaction term, which is also highly significant. The result seems to be consistent with the prediction for hypothesis 2, which proposed that non-GAAP reporting quality changes after the first-time

disclosure of ICW's and it seems to indicate that the increased scrutiny by the stakeholders also influences managers' tendency to use non-GAAP reporting for more benevolent purposes. Unlike the increased real activities manipulation that appeared to increase after the first-time disclosure of ICW's (Järvinen and Myllymäki, 2016), non-GAAP earnings become more informative, which suggests that managers are more careful with using non-GAAP reporting and do not use non-GAAP reporting as an alternative to more auditable earnings management techniques. These results also indicate that managers react by improving the quality of non-GAAP reporting in reaction to some events that increase external scrutiny (after the disclosure of ICW's or after the debt covenant violations (Christensen et al., 2019)) and by using non-GAAP reporting more opportunistically following other types of external disclosure, such as after the adoption of clawbacks (Kyung et al., 2019).

These underlying events that increase scrutiny are different in nature of course, with ICW disclosures and debt covenant disclosures both happening *after* a negative event revelation and clawbacks being put in place as a precautionary measure, which could partly be a reason for the different response from managers regarding non-GAAP reporting quality.

The above results regarding the longer-term effects of first-time ICW disclosure are then corroborated with the tests that use benchmark beating as dependent variables and the results of which are presented in [table 8b](#). It is apparent that variables of interest (*afterICW x NGexclusions*) in binary regressions that use *MB2* and *LossConvert* as outcome variables are marginally significant and negative, meaning that the probability of both meeting or marginally beating analysts' consensus EPS forecasts with using non-GAAP exclusions and converting GAAP losses to non-GAAP profits is significantly decreased in ICW-firms in the longer term after the first-time disclosure of ICW's.

I also include more immediate short-term effects of possible ICW disclosure on non-GAAP reporting as part hypothesis 2 testing. I'm looking at how the disclosure year of first-time ICW's might affect the quality and aggressive usage of non-GAAP reporting. To test this effect, I include in my sample only the firm years of ICW-firms that are before the disclosure and the disclosure year itself. The interaction variable *DisclosureY x nonGAAP* then represents the change of quality of non-GAAP reporting in the year of disclosure, relative to the time period before the disclosure. The results of linear regression are shown in [table 9a](#). Coefficient for *NGexclusions* is negative and significant, indicating that items excluded from GAAP earnings are non-transitory in nature and the

coefficient for *NGeps* is positive and significant, suggesting that non-GAAP earnings are highly predictive of future income. These results are again similar to Kolev et al. (2008) and Kyung et al. (2018). Interaction variable *DisclosureY x NGexclusions* is non-significant, while the interaction variable *DisclosureY x NGeps* is highly positively significant, the interpretation of which is that non-GAAP earnings become more informative in the year of the first time ICW disclosure than before.

Turning to the results of binary regression that uses my two benchmark beating variables in [table 9b](#), it is clear that in the year of first-time disclosure the probability of managers meeting or marginally beating analysts' forecast with non-GAAP exclusions is significantly lower than before. The results for loss converters are non-significant, indicating that the year of disclosure itself has no effect on managers propensity to convert losses.

Overall, the results show that managers react to the first-time disclosure of ICW by improving the quality of non-GAAP reporting and this effect is strong both in short- and long term. Firms also tend to beat analysts' forecasts less aggressively both immediately after the disclosure and in the longer term. The probability of loss converting using non-GAAP earnings is shown to be significantly higher in the longer term following the disclosure, but not in the year of disclosure itself. Based on these results, there seems to be enough information to accept hypothesis 2.

A possible interpretation of these results is that there is a significant disciplining effect on the managers following the first-time disclosure of ICW's and they react by becoming more cautious with using non-GAAP reporting opportunistically, instead they improve the quality of non-GAAP reporting. Provided that loss converting with using non-GAAP earnings in ICW-firms is informative in nature (as is indicated in my previous test), it is likely that loss-converting managers become overly cautious following the first-time disclosure of ICW's and stop providing stakeholders with valuable information contained in non-GAAP earnings of such firms – this could be an unintended consequence of the first-time ICW disclosure.

6.5 Testing of hypothesis 3

My final hypothesis proposes that there is a difference in the quality of non-GAAP reporting in firms that remediate their first-time ICW's immediately following the disclosure, compared to firms that do not remediate. For this test I select a sample with firm-years of companies that remediate

their ICW's immediately after the disclosure (*PostDisclosureYR*) and firm-years of firms that do not remediate (*PostDisclosureYNR*). This sample contains 389 firm-years and I use it to run three different regressions, similar to testing both hypothesis 1 and 2 . Equation 7 is used to test the predictive power of non-GAAP earnings in remediating firms and equation 8 is used to test benchmark beating behavior.

$$FutrInc = \alpha_0 + \beta_1 PostDisclosureYR + \beta_2 NGexclusions + \beta_3 NGeps + \beta_4 PostDisclosureYR \times NGeps + \beta_5 PostDisclosureYR \times NGexclusions + \beta_6 MTB + \beta_7 SalesGrowth + \beta_8 \ln Assets + \beta_9 Earningsvol + \beta_{10} ROA + \delta Industry \text{ and year fixed effects} + e$$

(eq7)

$$Prob(MB) = \alpha_0 + \beta_1 PostDisclosureYR + \beta_2 NGexclusions + \beta_3 PostDisclosureYR \times NGexclusions + \beta_4 MTB + \beta_5 SalesGrowth + \beta_6 \ln Assets + \beta_7 Earningsvol + \beta_8 ROA + \beta_9 PosDA + \delta Industry \text{ and year fixed effects} + e$$

(eq8)

The results of linear regression that uses future income as the dependent variable is presented in [table 10](#). The coefficient for interaction term *PostDisclosureYR*NGexclusions* is significant and positive (1.025) at 1% level, while the coefficient for *NGexclusions* is significant and negative (-0.737), indicating that non-GAAP exclusions are significantly less predictive of future income that remediate their first-time ICW's immediately following the disclosure, compared to firms that do not remediate. Non-GAAP earnings have a significantly stronger predictive ability of future income in remediating firms when compared to non-remediating firms in the year following the disclosure of ICW's- this is represented by a significant and positive coefficient of *NGeps* , together with a significant and positive interaction coefficient of *PostDisclosureYR*NGeps*.

The binary regression results that use *LossConvert* and *MB2* as dependent variables both yield insignificant results, which indicates that there is no difference in the probability of meeting or beating the chosen benchmarks between the firms that immediately remediate their first-time ICW's and firms that do not. Overall, there seems to be enough evidence to partially accept hypothesis 3, since non-GAAP exclusions in remediating firms are less likely to contain recurring items, but there is no difference in propensity to meet or beat analysts' earnings forecasts using non-GAAP earnings between those firms. The same mechanisms that influence the speed of remediation of ICW's also

seem to affect the managers' non-GAAP reporting decisions. There is little academic research published on the reasons behind the speed of ICW remediation, however Hammersley et al. (2012) found that pervasiveness and the number of individual ICW's reported is related to slow ICW remediation. I create a variable *CountICWstrength*, which is based on the data obtained from Audit Analytics database to represent the level of pervasiveness of ICW's – the number of times the firm has had a negative ICW report, multiplied by the number of individual weaknesses.

Analysing the *CountICWstrength* variable, out of 4607 firm-years that have had at least one negative ICW report, 1807 firm-years had one negative ICW report, the maximum value of *CountICWstrength* is 97.

I then run a linear regression test that uses future income as the dependent variable again, this time I use two ICW strength variables as independent variables: one variable if the value of *CountICWstrength* is higher than 2 (*highICW1*, 1,937 firm-years) and the other if *CountICWstrength* is higher than 10 (*highICW2*, 377 firm-years). My objective is to test whether the severity and pervasiveness of ICW's is related to managers reporting better-quality non-GAAP earnings in firms that remediate their ICW's faster. The results of these two linear regressions are presented in [table 11](#). When *CountICWstrength* is higher than 2, one dollar of non- GAAP earnings is associated with 10 cents worth of less future income than the rest of the ICW-firms- this result is significant at 10% level, but when *CountICWstrength* is higher than 10, the corresponding predictive ability of non-GAAP earnings is 34 cents less than other ICW firms (significant at 1%). I conclude that the better-quality non-GAAP reporting in firms that remediate ICW's quickly is at least partly attributable to the level of severity and pervasiveness of ICW's. Jaggi et al. (2013) found in their research that the post-disclosure period in ICW firms with more severe and pervasive ICW's is related to increased conservatism and Heflin et al. (2015) suggested that increased conservatism is associated with better-quality non-GAAP reporting.

$$FutrInc = \alpha_0 + \beta_1 highICW + \beta_2 NGexclusions + \beta_3 NGeps + \beta_4 highICW \times NGeps + \beta_5 highICW \times NGexclusions + \beta_6 MTB + \beta_7 SalesGrowth + \beta_8 \ln Assets + \beta_9 Earningsvol + \beta_{10} ROA + \delta_{Industry} \text{ and } \delta_{year} \text{ fixed effects } + e$$

(eq9)

My findings are not supportive of these research results, since in my tests non-GAAP earnings' quality decreases with the level of severity and pervasiveness of ICW's, suggesting that increased conservatism is at least not directly related to non-GAAP reporting quality in ICW firms. My findings support that managers' opportunistic use of non-GAAP reporting increases with the level of severity of ICW's and although the disclosure and post-disclosure period of first-time ICW's have an overall beneficial effect on non-GAAP reporting quality, the quality differs between firms in the post-disclosure period depending on the severity of ICW's and on the speed at which the firm remediates its ICW's.

6.6 Discussion of results

Testing hypothesis 1, I use a sample of ICW- and control firms that have been matched using propensity score matching and find that firms that have had at least one negative ICW audit report have a significantly worse non-GAAP reporting quality than firms that have always had a clean ICW report. This result is generally consistent with academic literature, which has documented increased tendency for opportunistic behavior in ICW-firms (Donelson et al., 2017; Paletta and Alimehmeti, 2018; Schneider et al., 2009). In addition, my tests show that ICW- firms engage more in meeting or beating analysts' EPS forecasts with using non-GAAP reporting than the control firms. Although this result is in line with the theory that ICW-firms tend to act more opportunistically, it contradicts the study results of Pinello and Ashbaugh-Skaife (2008), which suggests that ICW-firms are *less* likely to meet or beat analysts' forecasts than firms without ICW's. The authors of this study concluded that ICW-firms missed analysts' forecasts more often than other firms, because of higher likelihood of unintentional errors in financial reporting system led to analysts' forecasts becoming more inaccurate, which in turn made it more difficult for managers to meet these forecasts. Feng et al. (2009) also supported these results, finding that unintentional errors in ICW-firms made analysts' forecasts more unpredictable. The results of my tests are more in line with Athanasakou et al., (2009), who proposed that managers may manipulate management forecasts to mislead analysts to make meeting forecast targets more attainable. This theory is also supported by ICW-firms having a corporate culture that is more enabling of manipulative behavior.

My third test of hypothesis 1 suggests that ICW-firms are also more likely to convert GAAP losses into non-GAAP profits than firms with clean ICW audit reports. This would at first appear to be a sign of opportunistic behavior, similar to managers meeting or beating analysts' forecasts- however study results by Leung and Veenman (2018) suggest that such loss converting might be an indication of a more benevolent and informative managerial behavior. Following this, I run multiple tests on loss converting firms and find that loss converters' non-GAAP earnings quality is significantly better in ICW-firms, relative to control group. There could be several explanations for this result, but the most likely reason behind the higher likelihood of loss converting firms using better-quality non-GAAP reporting in ICW-firms is that investors might perceive GAAP earnings to be less informative in ICW-firms (especially after the disclosure of ICW's in such firms). Managers are aware of this and might try to compensate by offering alternative information sources, using non-GAAP reporting. It has been documented that investors value non-GAAP reporting more when the GAAP earnings are for some reason perceived as being uninformative (Lougee and Marquadt, 2004).

Testing hypothesis 2, I find that the disclosure of first time ICW's leads to firms reacting to the increased scrutiny that results from this by changing their non-GAAP reporting behavior. The predictive power of non-GAAP earnings in relation to future income improves immediately following the first-time ICW disclosure, this effect is also observed in the longer term, signifying the magnitude of benevolent effects that ICW disclosure potentially has on non-GAAP reporting. I corroborate this improvement of non-GAAP quality with my second test that uses benchmark *MB2* that represents managers' aggressive and opportunistic behavior and demonstrate that the likelihood of meeting or beating benchmark *MB2* significantly decreases in ICW-firms following the first-time disclosure. Again, these results are supported by academic literature, that document the disciplining effects that ICW disclosure has on managerial opportunistic behavior.

An interesting result is the decrease of loss converting following the disclosure of first- time ICW's, provided that this behavior in ICW-firms is more altruistic relative to non-ICW firms.

I interpret this change in behavior as a sign of managers becoming overly cautious following the disclosure, which is the result of increased scrutiny. Even though the nature of loss converting is more informative in ICW-firms, these beneficial effects can be cancelled – this could indicate an unwanted result of ICW reporting and could be perhaps addressed by the regulators and firm boards in the future.

I also test hypothesis 3 and find that although there is no significant difference in benchmark beating behavior between ICW-firms that remediate their first-time ICW's and those who do not, the quality of non-GAAP earnings is better in ICW-firms that remediate quickly.

Following academic literature that suggests that the speed of ICW remediation and the severity and pervasiveness of reported ICW's are negatively related, I construct and run further tests with variables that represent the pervasiveness and severity of ICW's. I find evidence that the quality of non-GAAP earnings becomes worse with the increasing severity and pervasiveness of ICW's, and I conclude that the same mechanisms that influence the remediation of ICW's also play a role in non-GAAP reporting decisions and that the speed of remediation of ICW's and the quality of non-GAAP reporting might be positively related.

These results demonstrate the possible dynamics between ICW- reporting and managers' use of non-GAAP reporting- the opportunistic use of non-GAAP reporting seems to change in response to existence and disclosure of ICW's largely in a similar way that opportunistic earnings management methods do.

7. Additional tests

I run additional tests to corroborate my main test results in this thesis. One of the metrics that has frequently been used in academic literature to investigate non-GAAP reporting is the likelihood of firms releasing non-GAAP earnings. Multiple academic writers have found that the likelihood of companies reporting non-GAAP earnings is inversely related with non-GAAP earnings quality (Christensen et al., 2019, Kyung et al., 2018, Lougee and Marquardt, 2004) and it is suggested to be an indication of opportunistic use of non-GAAP earnings. Based on these findings, I should then see the likelihood of non-GAAP reporting decreasing when the quality of non-GAAP reporting increases (such as after the disclosure of first-time ICW's).

I create the variable *NGpropensity* that equals one if the company reports non-GAAP earnings during the year and zero if it does not. I then run multiple binary regressions with *NGpropensity* as the dependent variable, using the same independent and control variables that were used to test the main hypotheses.

$$\begin{aligned}
\text{Prob (NGpropensity)} = & \alpha_0 + \beta_1\text{afterICW} + \beta_2\text{MTB} + \beta_3\text{SalesGrowth} + \beta_4\ln\text{Assets} + \beta_5\text{Earningsvol} \\
& + \beta_6\text{ROA} + \delta\text{Industry and year fixed effects} + e
\end{aligned}
\tag{eq10}$$

I do not find that ICW-firms are more or less likely to report non-GAAP earnings than control firms, when I use propensity score matched sample similar to testing hypothesis 1.

However, I find that when I use a sample containing only ICW-firms to test the likelihood of non-GAAP reporting that the likelihood increases after the disclosure of first-time ICW's. Using year fixed effects in the regression analysis should prevent false positive results due to frequency of non-GAAP reporting having increased over time.

The results of this test are displayed in [table 12](#), showing that coefficient for *afterICW* is positive and significant at 10% level. This indicates that firms are more likely to report non-GAAP earnings after the first-time disclosure of ICW's. These results are not consistent with prior literature where it was suggested that the likelihood of non-GAAP reporting and quality are negatively related.

I run a further test, similar to Kyung et al. (2018) that uses positive discretionary accruals to test if the likelihood of non-GAAP reporting and the use of discretionary accruals are substitutes.

$$\begin{aligned}
\text{Prob (NGpropensity)} = & \alpha_0 + \beta_1\text{afterICW} + \beta_2\text{PosDA} + \beta_3\text{PosDA} \times \text{afterICW} + \beta_4\text{MTB} + \\
& \beta_5\text{SalesGrowth} + \beta_6\ln\text{Assets} + \beta_7\text{Earningsvol} + \beta_8\text{ROA} + \delta\text{Industry and year fixed effects} + e
\end{aligned}
\tag{eq11}$$

There is academic evidence that the likelihood of using positive discretionary accruals to manipulate earnings is higher in ICW-firms (Ashbaugh-Skaife et al., 2008), but this likelihood decreases after the disclosure of ICW's due to increased scrutiny (Järvinen and Myllymäki, 2016). I first test if using positive accruals and non-GAAP reporting are substitutes in ICW firms and then test if there is a change in this effect after the first-time disclosure of ICW's. I expect to see a significant and negative effect in ICW-firms as per Ashbaugh -Skaife et al. (2008) due to previous evidence of there being a substitution effect between accruals management and my own test results for hypothesis 2.

I run this binary regression using variable *NGpropensity* as the dependent variable and the results are reported in [table 13](#). While the coefficient for positive discretionary accruals is negative and highly significant as expected, the interaction coefficient *afterICW*PosDA* is not significant,

suggesting that there is no difference in the substitution effect after the disclosure of ICW's compared to other observations in the sample. These results suggest that increased non-GAAP reporting after the disclosure of ICW's is potentially not opportunistic in nature, since I would have also expected to see an increased substitution effect after the disclosure.

Overall, these results are not consistent with prior literature that suggests that likelihood and quality of non-GAAP reporting are negatively related. Instead, the increased likelihood of non-GAAP reporting together with increased quality might be a sign that managers are concerned about the increased scrutiny resulting from the disclosure of ICW's and want to use non-GAAP reporting as an alternative reporting tool more frequently, knowing that relevant stakeholders value information contained in non-GAAP earnings more when the GAAP earnings are perceived as being a weak performance measure (as could be the case after the first-time disclosure of ICW's).

8. Conclusion

The objective of SOX ICW reporting is to inform relevant stakeholders of underlying weaknesses in firms' financial reporting system that could indicate the existence of managerial opportunism, unintentional errors, or fraud. The overall purpose of non-GAAP reporting is to better inform the stakeholders about the true value of earnings, when within-GAAP earnings are perceived to be unreliable indicators of performance. There is also evidence, that managers use non-GAAP reporting as a tool of opportunism and self-serving behavior.

I use this thesis to bring together the concepts of ICW reporting and non-GAAP reporting with the help of three hypotheses and find that (1) ICW- firms are more likely to meet or beat analysts' forecasts and have a worse non-GAAP reporting quality than control firms (2) ICW-firms' non-GAAP reporting quality becomes better and the likelihood to meet or beat analysts' forecasts decreases after the disclosure of first-time ICW's (3) ICW firms that remediate their first-time ICW's following the disclosure have a better quality non-GAAP reporting relative to firms that do not remediate. Therefore, all three hypotheses can be accepted. In addition, I find that loss converting using non-GAAP earnings is potentially more informative in ICW-firms and that ICW-firms in general tend to use this type of loss converting more than firms with a clean ICW audit report, but this tendency decreases significantly following the first-time disclosure of ICW's. Finally, I find that firms that remediate their first-time ICW's immediately following the first-time

disclosure have a better-quality non-GAAP reporting than firms that do not remediate and additional tests reveal that this tendency could be related to the severity and pervasiveness of individual ICW's.

In additional tests I find that firms react to first-time disclosure of ICW's by increasing the frequency of non-GAAP reporting, and that accruals management and non-GAAP reporting does not have an increased substitution effect in the period following first-time disclosure of ICW's. This increase in reporting frequency contradicts the findings in some academic papers that suggest that the quality and frequency of non-GAAP reporting are negatively related, since my tests indicate more frequent non-GAAP reporting together with increased non-GAAP reporting quality following the disclosure of ICW's.

This thesis contributes to the understanding of dynamics between ICW reporting and non-GAAP reporting. I use propensity-score matching to test hypothesis 1 to make sure that the ICW- and control firms do not differ along relevant parameters, which should make the test results more reliable. I also use managers' non-GAAP earnings that are collected from 8-K reports, this is possible thanks to a large database compiled by Bentley et al. (2018) and is a better representation of managerial aggressive reporting than non-GAAP figures collected from I/B/E/S database. Firm boards overseeing the management, accounting regulation bodies and investors could potentially benefit from the findings in this thesis, since it indicates how managers use non-GAAP reporting in ICW-firms and how the disclosure and remediation of ICW's affects this behavior. In addition, the test results add to the evidence that ICW-firms that use non-GAAP reporting to convert losses are not acting opportunistically but might be signaling their future financial prospects instead.

This thesis suffers from some weaknesses. First, the period *afterICW* reflects all the firm years after the disclosure of first-time ICW's and does not consider the subsequent ICW disclosures (if there are any). Any subsequent ICW disclosures during the sample period could influence the interpretation of the test results in this thesis, because these also likely influence managers' non-GAAP reporting behavior. Future research could potentially investigate if non-GAAP reporting behavior also changes following the subsequent ICW disclosures.

Secondly, pseudo r-squared values for binary regression tests that use MB2 as the dependent variable are very low, ranging from 0.05 to 0.076. Therefore, these models are not very

representative and could be suffering from an omitted variable bias. There is a same issue with logistic regression that was used before propensity score matching that has a pseudo r-squared value of only 0.06. I experimented with different variables, trying to come up with a more representative models, but was unsuccessful in doing that.

Finally, I cannot conclusively say, why the non-GAAP reporting quality is different in ICW-firms and following first-time ICW disclosure. I can only observe the results and try to fit them in with the existing academic literature that investigates similar topics. Future research could potentially investigate what are the exact mechanisms that drive non-GAAP reporting behavior in response to internal control weaknesses.

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10. Appendix A: Variable definitions

Dependent variables

VARIABLE	Description	SOURCE
FutrInc_{t+1}	Operating income in the following year (item <i>EPSFX</i> from COMPUSTAT).	COMPUSTAT
Foanct_{t+1}	Cash flows from operating activities in the following year (item <i>OANCF</i> from COMPUSTAT).	COMPUSTAT
MB2	Dummy variable that equals one if variable <i>NGeps</i> equals or beats analysts' median EPS forecast by up to 2 cents and within-GAAP yearly earnings per share is smaller than median analysts' yearly estimate (item MEDEST). Zero if otherwise.	I/B/E/S Historic Summary
LossConvert	Dummy variable that equals one if managers' non-GAAP EPS value is greater than zero and within-GAAP EPS is less than zero.	COMPUSTAT / Managers' non-GAAP reporting Database
NGpropensity	Dummy variable that equals one if managers' non-GAAP EPS yearly value is greater than zero.	Managers' non-GAAP reporting database

Independent variables

VARIABLE	Description	SOURCE
NGexclusions	Managers' yearly non-GAAP exclusions (managers' own yearly earnings per share minus within-GAAP earnings per share).	COMPUSTAT / managers' non-GAAP earnings per share figures collected from 8-K filings
NGeps	Managers' yearly non-GAAP earnings per share figures.	Managers' non-GAAP earnings per share figures collected from 8-K filings

DisclosureY	Dummy variable that equals 1 if the observation belongs to a firm that has internal control weaknesses reported for the first time, in the year of disclosure. It equals zero otherwise.	Audit Analytics
PostDisclosureYR	Dummy variable that equals 1 if the observation belongs to a firm that has internal control weaknesses reported for the first time, one year after the disclosure and no internal control weaknesses are reported. It equals zero otherwise.	Audit Analytics
PostDisclosureYNR	Dummy variable that equals 1 if the observation belongs to a firm that has internal control weaknesses reported for the first time, one year after the disclosure and internal control weaknesses are reported again. It equals zero otherwise.	Audit Analytics
ICWfirm	Dummy variable that equals 1 if the observation belongs to a firm that has had a negative internal control report at least once during the whole sample period and zero if otherwise.	Audit Analytics
afterICW	Dummy variable that equals 1 if the observation belongs to a firm that had internal control weaknesses reported for the first time, in the period after the first-time disclosure of internal control weaknesses. It equals zero otherwise.	Audit Analytics
beforeICW	Dummy variable that equals 1 if the observation belongs to a firm that had internal control weaknesses reported for the first time, in the period before the first-time disclosure of internal control weaknesses. It equals zero otherwise.	Audit Analytics
highICW1	Dummy variable that equals 1 if variable <i>CountICWstreth</i> is greater than 2, it equals zero otherwise.	Audit Analytics
highICW2	Dummy variable that equals 1 if variable <i>CountICWstreth</i> is greater than 10, it equals zero otherwise.	Audit Analytics
CountICWstrength	The number of times the company has had a negative ICW report during the sample period multiplied by the number of individual ICW's reported.	Audit Analytics

Variables used for propensity score matching

VARIABLE	Description	SOURCE
ILeverage	Total debt last year scaled by total assets.	COMPUSTAT
IROA	Return on assets last year scaled by total assets.	COMPUSTAT
Auditorchange	Dummy variable that equals 1 if the audit firm is different from the last year and zero if otherwise.	Audit Analytics
Foreignsegments	Dummy variable that equals 1 if the firm had overseas segments and zero if otherwise.	COMPUSTAT Segments
Sqrtsegment	Square root of the number of firms' segments.	COMPUSTAT Segments
restruct	Dummy variable that equals 1 if the company had restructuring costs and zero otherwise.	COMPUSTAT
Acquisition	Dummy variable that equals 1 if the company had acquisitions last year, as indicated by the Audit Analytics ICW report. Zero if otherwise.	Audit Analytics
Inventory	Inventory divided by total assets.	COMPUSTAT
Loss	Dummy variable that equals 1 if the net income was negative.	COMPUSTAT
Goingconcern	Dummy variable that equals 1 if the company received a going concern opinion and zero if otherwise.	Audit Analytics (audit opinions)
BIG4	Dummy variable that equals 1 if the company's auditing firm is one of the four largest auditing firms and zero if otherwise.	Audit Analytics
Biggrowth	Dummy variable that equals 1 if the company's sales growth from last year belongs to the highest quarter and zero if otherwise.	COMPUSTAT
Litigation	Dummy variable that equals 1 if the company's industry is litigious, based on SIC codes. Zero if otherwise.	COMPUSTAT
LogMC	The natural logarithm of market capitalization.	COMPUSTAT
Zscoredecile	Decile rank of Altman's Z-score.	COMPUSTAT

In_firmage	Natural logarithm of company's age, based on when it first appeared on COMPUSTAT database.	COMPUSTAT
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Control variables

VARIABLE	Description	SOURCE
SalesGrowth	Growth of sales over one year.	COMPUSTAT
EarningsVolatility	Standard deviation of ROA over two years.	COMPUSTAT
InAssets	Natural logarithm of total assets.	COMPUSTAT
Lev	The amount of debt in long-term debt and in current liabilities, divided by total assets.	COMPUSTAT
MTB	Market-to book value of assets- the closing price of stock at the end of the fiscal year, divided by the book value of equity.	COMPUSTAT
ROA	Return on assets, defined as income before extraordinary items, divided by average total assets.	COMPUSTAT
Specialitems	Defined as earnings per share from operations minus earnings per share less the extraordinary items.	COMPUSTAT
PosDA	Dummy variable equal to one if the discretionary accruals (calculated using modified Jones model) are greater than zero. It equals zero otherwise.	COMPUSTAT

Appendix B: Tables

Table 1. Sample selection process.

	Unique firm-quarters	Unique firms
Compustat quarterly database 2004- 2019	721,507	23,445
Less: managers' non-GAAP reporting database and firm-quarters 1-3	-681,321	-16,694
Merged quarterly databases	40,186	6,751
	Unique firm-years	Unique firms
Compustat yearly database 2004-2019	198,918	16,329
Less: merged with Compustat quarterly / non-GAAP database merged previously	-158,755	-9,590
Less: merged with Audit Analytics	- 8,616	-1,621
Less: merged with IBES (summary history)	-3,899	-408
Less: merged with Audit Analytics (audit opinions)	-3,217	-183
Less: merged with Compustat Segments	-3211	-514
Total after merging:	21,220	4,013
Less: deleting financial firms	-2,596	-422
Less: deleting missing variables	-5,124	-807
Less: firms-years where disclosure and pre-disclosure year is the same	-47	-6
Less: ICW-firms that do not have pre- and after first-time ICW disclosure data	-188	-37
Final sample 2005-2018:	13,265	2,741

Table 1 describes the sample selection process. Merging process involves creating regression variables for hypothesis testing. The final sample of 13,265 firm-years will be used for propensity score matching. I drop observations after merging databases that are (1) missing (2) financial firms (3) not conforming to the criteria for time variable measurement during and after the first-time disclosure of ICW's. The first part of the sample selection process involves merging the quarterly Compustat database and the quarterly non-GAAP reporting database. After this, yearly non-GAAP earnings and exclusion figures are calculated and all the firm quarters 1-3 are deleted, leaving only quarter 4- this is because it could then be merged with other databases that use yearly data.

Table 2. Descriptive statistics before propensity score matching.

VARIABLES	ICWfirm = 0 (8,658 firm-years)					ICWfirm = 0 (4,607 firm-years)					t-stat	p-value
	mean	p50	sd	min	max	mean	p50	sd	min	max		
FutrInc	1.333	1.112	2.581	-5.464	8.213	0.681	0.598	2.162	-5.461	8.212	15.312	0.000***
Litigation	0.343	0.000	0.482	0.000	1.000	0.342	0.000	0.473	0.000	1.000	0.573	0.298
LogMC	7.452	7.365	1.753	4.172	11.253	6.773	6.681	1.441	4.172	11.253	24.031	0.000***
lnAssets	7.244	7.167	1.791	3.935	10.902	6.721	6.572	1.502	3.932	10.904	17.812	0.000***
Lev	41.735	40.468	21.321	7.141	99.612	41.873	39.722	21.622	7.142	99.611	-0.363	0.363
SalesGrowth	0.146	0.082	0.299	-0.441	1.283	0.125	0.073	0.285	-0.443	1.281	2.341	0.010**
ROA	0.767	4.491	15.682	-58.283	23.355	0.352	3.423	14.681	-58.281	23.351	1.503	0.071
Earningsvol	3.048	1.273	4.576	0.034	22.802	3.482	1.522	4.973	0.031	22.802	-5.011	0.000***
Loss	0.279	0.000	0.440	0.000	1.000	0.304	0.000	0.463	0.000	1.000	-2.953	0.000***
MTB	3.785	2.502	4.507	-4.824	22.343	3.051	2.081	3.801	-4.822	22.344	9.824	0.000***
Inventory	0.081	0.055	0.105	0.000	0.402	0.102	0.072	0.112	0.000	0.402	-8.031	0.000***
Biggrowth	0.221	0.000	0.423	0.000	1.000	0.223	0.000	0.411	0.000	1.000	1.061	0.143
NOA	3.599	694.357	7.265	-52.382	32.401	1.551	383.701	3.515	-52.381	32.411	21.892	0.000***
PosDA	0.151	0.000	0.357	0.000	1.000	0.172	0.000	0.382	0.000	1.000	-4.241	0.000***
Zscore	4.601	3.129	4.692	-0.292	23.119	4.253	2.991	4.303	-0.292	23.113	4.264	0.000***
NGexclusions	0.384	0.000	0.894	-0.924	4.273	0.371	0.000	0.882	-0.924	4.271	0.081	0.474
NGeps	0.950	0.150	1.522	-0.522	6.141	0.671	0.062	1.202	-0.521	6.143	11.651	0.000***
Specialitems	0.111	0.011	0.433	-0.872	2.142	0.123	0.011	0.421	-0.873	2.141	-1.104	0.141
Goingconcern	0.000	0.000	0.085	0.000	1.000	0.014	00.000	0.104	0.000	1.000	-1.821	0.031*
Sqrtsegment	2.227	1.732	1.092	0.000	4.243	2.282	2.000	1.046	0.000	4.243	-3.364	0.000***
Foreignsegments	5.656	3.000	7.275	0.000	80.000	6.911	5.000	8.617	0.000	105.000	-8.441	0.000***
NGpropensity	0.545	1.000	0.501	0.000	1.000	0.521	1.000	0.501	0.000	1.000	1.906	0.021*
posexclusion	0.474	0.000	0.502	0.000	1.000	0.493	0.000	0.501	0.000	1.000	-2.647	0.000***

Table 2 shows the descriptive statistics of covariates before propensity score matching, including the two-tailed t-test- it shows the differences between mean values of the treated and untreated observations (two extreme right-hand columns). Descriptive statistics of firms that have had at least 1 negative ICW report during the sample period (*ICWfirm*) are shown on the right, while the firms that have always had a clean ICW report are on the left. This test is used to demonstrate that ICW-firms and control firms differ along important parameters, which indicates the necessity to use propensity score matching to match the ICW-firms with control firms. * Indicates significance level at 5 percent, ** at 1 percent, *** at 0.1 percent.

Table 3a. Descriptive statistics.

Year	Percentage of firms reporting non-GAAP earnings	Percentage of firms reporting non-GAAP earnings that are greater than GAAP earnings	Percentage of firms receiving negative ICW audit reports
2005	39%	33%	16%
2006	43.60%	38.35%	7.17%
2007	40.04%	35.66%	5.20%
2008	47.03%	48.60%	3.72%
2009	47.28%	49.11%	2.63%
2010	52.85%	45.66%	2.10%
2011	54.68%	48.49%	2.86%
2012	57.01%	53.86%	3.63%
2013	57.40%	53.82%	3.78%
2014	59.55%	56.64%	5.47%
2015	58.39%	59.48%	5.50%
2016	55.17%	56.41%	6.63%
2017	61.28%	49.92%	4.72%
2018	59.22%	55.59%	7.22%

Table 3a reports descriptive statistics. The right-hand column shows the percentage of companies receiving a negative ICW audit report per financial year and the column on the left shows the percentage of companies reporting non-GAAP earnings per financial year. Middle column shows percentage of firms reporting non-GAAP earnings that are greater than GAAP earnings, per financial year.

Table 3b. Pearson correlation matrix.

(1) FutrInc	1																	
(2) NGeps	0.462	1																
(3) NGexclusions	-0.021	0.327	1															
(4) PosDA	-0.001	-0.060	-0.180	1														
(5) epsfx	0.709	0.515	-0.274	0.109	1													
(6) Earningsvol	-0.267	-0.177	0.131	0.056	-0.357	1												
(7) SalesGrowth	-0.043	-0.005	-0.059	0.068	0.007	0.084	1											
(8) lnAssets	0.411	0.474	0.192	-0.123	0.445	-0.313	-0.089	1										
(9) ROA	0.434	0.258	-0.166	0.119	0.613	-0.473	-0.020	0.347	1									
(10) MTB	0.103	0.077	-0.003	-0.006	0.066	0.046	0.141	-0.029	-0.026	1								
(11) IROA	0.198	0.134	0.069	-0.001	0.227	-0.386	-0.187	0.305	0.663	-0.145	1							
(12) ILeverage	-0.240	-0.266	-0.144	0.137	-0.257	0.354	0.127	-0.629	-0.375	0.136	-0.547	1						
(13) Auditorchange	-0.044	-0.059	-0.013	0.019	-0.054	0.065	0.010	-0.109	-0.037	-0.005	-0.042	0.103	1					
(14) Foreignsegments	0.086	0.103	0.058	0.034	0.097	-0.067	-0.076	0.135	0.134	-0.025	0.101	-0.123	0.001	1				
(15) Sqrtsegment	0.100	0.059	-0.011	0.007	0.113	-0.108	-0.064	0.132	0.129	-0.083	0.109	-0.114	-0.005	-0.011	1			
(16) restruct	0.017	0.208	0.171	-0.060	-0.021	-0.003	-0.145	0.194	-0.012	-0.053	0.052	-0.124	-0.035	0.195	0.050	1		
(17) Loss	-0.460	-0.300	0.240	-0.112	-0.662	0.401	-0.007	-0.325	-0.723	0.012	-0.407	0.289	0.044	-0.088	-0.123	0.039	1	
(18) Acquisition	0.028	0.097	0.053	0.009	0.054	-0.078	0.087	0.069	0.069	-0.045	0.079	-0.067	0.013	0.051	0.072	0.041	-0.059	1
(19) Inventory	0.096	-0.015	-0.031	0.221	0.098	-0.090	-0.082	-0.062	0.139	-0.081	0.115	-0.017	0.017	0.187	0.067	0.070	-0.109	
(20) Goingconcern	-0.084	-0.053	-0.001	0.022	-0.102	0.192	0.017	-0.105	-0.253	-0.007	-0.256	0.198	0.020	-0.033	-0.028	-0.013	0.136	
(21) BIG4	0.131	0.162	0.080	-0.086	0.122	-0.101	-0.065	0.342	0.050	0.030	0.060	-0.271	-0.191	0.054	0.032	0.120	-0.070	
(22) Biggrowth	-0.100	-0.058	-0.024	0.074	-0.078	0.145	0.722	-0.132	-0.087	0.138	-0.159	0.147	0.017	-0.065	-0.077	-0.156	0.084	
(23) Litigation	-0.157	-0.037	0.045	-0.001	-0.185	0.175	0.102	-0.249	-0.205	0.152	-0.188	0.201	0.004	-0.004	-0.126	-0.006	0.186	
(24) LogMC	0.497	0.497	0.126	-0.111	0.517	-0.280	0.008	0.873	0.368	0.226	0.220	-0.523	-0.113	0.138	0.078	0.114	-0.370	
(25) Zscoredecile	0.146	-0.018	-0.199	0.126	0.200	-0.063	0.114	-0.324	0.304	0.255	0.057	0.075	0.006	0.065	-0.059	-0.168	-0.238	
(26) ln_firmage	0.239	0.154	0.020	0.001	0.231	-0.133	-0.117	0.233	0.179	-0.017	0.114	0.168	-0.017	0.121	0.126	0.045	-0.184	

Table 3b shows the Pearson correlation matrix among future income and independent variables used in regression analyses. Correlations higher than 0.700 or lower than -0.700 are bolded.

Table 4. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating cash flows (Foanf).

Foanf	
	Coef.
LossConvert	-89.181*** (-2.85)
NGexclusions	-53.453*** (-4.71)
NGeps	57.534*** (8.72)
LossConvert x NGexclusions	11.001 (0.54)
LossConvert x NGeps	60.331** (2.26)
MTB	15.031*** (8.73)
lnAssets	239.42*** (47.99)
Earningsvol	6.602*** (4.44)
SalesGrowth	-54.563** (-2.25)
ROA	-1.034** (-1.97)
Constant	-1370.00*** (-17.69)
Fixed effects	Yes
N	4,607
R-sq	0.43
adj. R-sq	0.43
Joint significance test results :	Coef. t-stat
NGexclusions + LossConvert x NGexclusions = 0	-42.4 (-2.46)***
NGeps + LossConvert x NGeps = 0	117.86 (4.48)***

Table 4 shows the results of linear regression with future operating cash flows (*Foanf*) as the dependent variable- it tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future operating cash flows in loss converting firms. This sample contains only firms designated as *ICWfirm*, with 4,607 firm-years. Variable *LossConvert* equals 1 if non-GAAP earnings are greater than zero and the corresponding GAAP earnings are less than zero. It equals zero otherwise. Variable *NGeps* and interaction variable *LossConvert* NGeps* are both significant and positive, indicating improvement of quality in non-GAAP reporting for loss converting firms. Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Two bottom rows show joint significance test results. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 5. Logistic regression for propensity score matching

ICWfirm					
	Coef.	St.err.	t-value	p-value	Sig
IROA	0.937	0.179	5.24	0.000	***
ILeverage	-0.039	0.178	-0.22	0.827	
Auditorchange	0.295	0.099	2.99	0.003	***
Foreignsegments	0.025	0.003	9.43	0.000	***
Sqrtsegment	0.055	0.018	2.99	0.003	***
restruct	0.121	0.042	2.91	0.004	***
Loss	0.151	0.052	2.88	0.004	***
Acquisition	0.131	0.055	2.39	0.017	**
Inventory	0.318	0.200	1.60	0.111	***
Goingconcern	0.224	0.222	1.01	0.313	
BIG4	-0.376	0.056	-6.71	0.000	***
Biggrowth	0.087	0.049	1.77	0.077	*
Litigation	0.095	0.044	2.16	0.031	**
LogMC	-0.313	0.016	-20.17	0.000	***
Zscoredecile	-0.05	0.009	-5.46	0.000	***
ln_firmage	-0.798	0.080	-9.91	0.000	***
Constant	-0.087	0.309	-0.28	0.779	
Number of obs	13,265				
Pseudo r-squared	0.06				
Chi-square	950.38				
Prob > chi2	0.00				
Fixed effects	Yes				

Table 5 presents the logistic regression for propensity score matching with *ICWfirm* as the dependent variable. * Indicates significance level at 10%, ** at 5%, *** at 1%, based on two-tailed t-test. This regression uses 16 independent variables that represent the financial characteristics that are associated with firms that have reported ICW's. The descriptions of all the variables are available in [appendix A](#). The sign of the coefficient and t-values indicate the strength and direction of the effect on how these variables are related to firms that have had at least one negative ICW report during the sample period. This binary regression also uses year and industry fixed effects.

Table 6. Covariate balance test following propensity score matching.

<u>Variables</u>	<u>ICWfirm 0</u>	<u>ICWfirm 1</u>	<u>t-stat</u>	<u>p-score</u>
	<u>n=998</u>	<u>n=998</u>		
	<u>mean</u>	<u>mean</u>		
Litigation	0.605	0.605	0.500	0.000
LogMC	7.037	7.040	-0.040	0.484
Loss	0.384	0.349	1.625	0.052*
restruct	0.346	0.336	0.472	0.319
Inventory	0.049	0.047	0.644	0.260
Biggrowth	0.276	0.283	-0.349	0.364
Zscoredecile	6.135	6.195	-0.518	0.302
BIG4	0.856	0.843	0.813	0.208
Auditorchange	0.039	0.037	0.234	0.408
Acquisition	0.109	0.110	-0.072	0.472
Goingconcern	0.007	0.014	-1.535	0.062*
Sqrtsegment	2.131	2.145	-0.339	0.319
Foreignsegments	5.669	5.527	0.471	0.319
ln_firmage	2.620	2.615	0.329	0.371
IROA	0.050	0.046	-0.565	0.286
ILeverage	0.113	0.120	-0.829	0.204

Table 6 shows the two-tailed t-test of the covariate balance between the treated and non-treated firms after propensity score matching. This sample uses 1,996 firm-years that represent pairs of ICW- and control firms that have been matched using propensity score matching. All the paired firm-years also share the same year and a similar industry type. The t-test results between the mean values of treatment- and control group show insignificant results, except in the case of variables *Loss* and *Goingconcern*, that are significant at 10% level. Overall, it can be concluded that propensity matching procedure has been largely successful, based on mainly non-significant values between the mean values of two groups. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent.

Table 7a. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating income (FutrInc) in ICW-firms.

FutrInc	
	Coef.
ICWfirm	-0.042 (-0.44)
NGexclusions	-0.285*** (-4.18)
NGeps	0.667*** (12.96)
ICWfirm x NGexclusions	-0.119 (-1.24)
ICWfirm x NGeps	-0.128* (-1.89)
MTB	0.043*** (4.36)
lnAssets	0.173*** (5.54)
Earningsvol	-0.010 (-0.50)
SalesGrowth	-0.328** (-2.55)
ROA	0.033*** (12.31)
Constant	-0.860*** (-3.86)
N	1,996
R-sq	0.34
adj. R-sq	0.34
Joint significance test results :	
NGexclusions + ICWfirm x NGexclusions = 0	Coef. t-stat -0.404 (-5.59)***
NGeps + ICWfirm x Ngeps = 0	0.540 (10.11)***

Table 7a shows the linear regression results with *FutrInc* (operating income in the following year) as the dependent variable. It tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future income in ICW-firms, compared to non-ICW firms. Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 1,996 firm-years that were obtained from propensity- score matching. Variable *ICWfirm* equals 1 if the company has had at least one negative ICW report during sample period and zero otherwise. Coefficient for *NGeps* is positive and significant, indicating that non-GAAP earnings are highly predictive of future income. Interaction variable *ICWfirm*NGeps* is negative and significant at 5% level, indicating that non-GAAP earnings have significantly smaller predictive power of future income than non-ICW firms. Two bottom rows show joint significance test results. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 7b. Binary regression testing the likelihood of firms meeting or beating benchmarks *LossConvert* and *MB2* in ICW-firms.

	LossConvert	MB2
	Coef.	Coef.
ICWfirm	-0.114 (-1.08)	-0.062 (-0.59)
NGexclusions	0.606*** (10.53)	0.145** (2.10)
ICWfirm x NGexclusions	0.192** (2.50)	0.182** (2.13)
PosDA	-0.675*** (-3.21)	-0.515*** (-2.80)
MTB	-0.029** (-2.52)	-0.005 (-0.43)
SalesGrowth	0.124 (0.88)	-0.093 (-0.57)
ROA	-0.002 (-0.69)	0.010** (2.65)
Earningsvol	-0.018* (-1.79)	-0.010 (-1.06)
lnAssets	-0.182*** (-5.17)	-0.068* (-2.11)
Constant	-0.284 (-1.16)	-1.015*** (-4.23)
N	1,996	1,996
pseudo-R-sq	0.25	0.05

Table 7b shows the binary regression results with *LossConvert* and *MB2* as the dependent variables. It tests the likelihood of ICW-firms meeting or beating benchmark variables *MB2* and *LossConvert* using non-GAAP exclusions. Variable *MB2* equals 1 if non-GAAP exclusions meet or marginally beat analysts' earnings forecast and GAAP earnings misses the forecast. Variable *LossConvert* equals 1 if non-GAAP earnings are greater than zero and corresponding GAAP earnings are smaller than zero. It equals zero otherwise. Complete description of independent variable *NGexclusions* and control variables *PosDA*, *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used in this test consists of 1,996 firm-years that were obtained from propensity- score matching. Variable *ICWfirm* equals 1 if the company has had at least one negative ICW report during sample period and zero otherwise. Left-hand column of table 7b shows the results of *LossConvert* as the dependent variable and right-hand column shows the results of *MB2* as the dependent variable. In both columns the interaction variables are positive and significant, indicating that ICW-firms are more likely to meet or beat both benchmarks than non-ICW firms. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 8a. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating income (FutrInc) in ICW-firms after the first- time disclosure of ICW's.

FutrInc	
	Coef.
afterICW	-0.170** (-2.56)
NGexclusions	-0.344*** (-6.20)
NGeps	0.417*** (9.09)
afterICW x NGexclusions	0.027 (0.40)
afterICW x NGeps	0.262*** (5.00)
MTB	0.065*** (8.82)
lnAssets	0.105*** (4.92)
Earningsvol	-0.016** (-2.46)
SalesGrowth	-0.134 (-1.30)
ROA	0.034*** (14.98)
Constant	-0.549* (-1.68)
Fixed effects	Yes
N	4,607
R-sq	0.27
adj. R-sq	0.27
Joint significance test results	
NGexclusions + afterICW x NGexclusions = 0	-0.317 (-7.25)***
NGeps + afterICW x NGeps = 0	0.678 (21.60)***

Table 8a shows the linear regression results with *FutrInc* (operating income in the following year) as the dependent variable. It tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future income in ICW-firms after the disclosure of first-time ICW's, compared to period before the disclosure. Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 4,607 firm-years that represent ICW-firms (firms that have had at least one negative ICW report). Variable *afterICW* equals 1 if the observation is any of the firm-years following the disclosure of first-time ICW's. Coefficient for *NGeps* is positive and significant, indicating that non-GAAP earnings are highly predictive of future income. Interaction variable *afterICW*NGeps* is positive and significant at 1% level, indicating that non-GAAP earnings have significantly higher predictive power after the disclosure of first-time ICW's. Two bottom rows show joint significance test results.* Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 8b. Binary regression testing the likelihood of firms meeting or beating benchmarks *LossConvert* and *MB2* in ICW-firms after the first-time disclosure of ICW's.

	LossConvert	MB2
	Coef.	Coef.
afterICW	0.198*** (2.62)	0.121 (1.54)
NGexclusions	0.699*** (0.05)	0.302*** (6.06)
afterICW x NGexclusions	-0.096* (1.79)	-0.118* (-1.96)
PosDA	-0.596*** (-4.81)	-0.315*** (-2.94)
SalesGrowth	-0.016 (-0.15)	-0.092 (-0.68)
lnAssets	-0.099*** (-4.06)	-0.035 (-1.43)
Earningsvol	-0.011* (-1.71)	-0.014 (-1.63)
ROA	-0.008*** (-3.22)	0.004 (1.29)
MTB	-0.029*** (-3.18)	0.005 (0.55)
Constant	-0.850** (-2.27)	-1.409*** (-6.24)
Fixed effects	Yes	Yes
N	4,607	4,607
pseudo-R-sq	0.26	0.05

Table 8b shows the binary regression results with *LossConvert* and *MB2* as dependent variables. It tests if the likelihood of ICW-firms meeting or beating benchmark variables *MB2* and *LossConvert* using non-GAAP exclusions is different after the first-time disclosure of ICW's, compared to period before the disclosure. Variable *MB2* equals 1 if non-GAAP exclusions meet or marginally beat analysts' EPS forecast and the corresponding GAAP EPS misses the forecast. Variable *LossConvert* equals 1 if non-GAAP earnings are greater than zero and the corresponding GAAP earnings are less than zero. It equals zero otherwise. Complete description of independent variable *NGexclusions* and control variables *PosDA*, *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 4,607 firm-years that represent ICW-firms (firms that have had at least one negative ICW report). Variable *afterICW* equals 1 if the observation is one of all firm-years following the disclosure of first-time ICW's. The left-hand column of table 7b shows the results of *LossConvert* as the dependent variable and the right-hand column shows the results of *MB2* as the dependent variable. In both columns the interaction variables are negative and marginally significant, indicating that ICW-firms are less likely to meet or beat both benchmarks after the first-time ICW disclosure, compared to period before the disclosure. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 9a. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating income (FutrInc) in ICW-firms in the year of disclosure.

FutrInc	
	Coef.
DisclosureY	-0.219* (-1.69)
NGexclusions	-0.355*** (-6.06)
NGeps	0.410*** (8.34)
DisclosureY x NGexclusions	-0.067 (-0.55)
DisclosureY x NGeps	0.347*** (3.47)
MTB	0.066*** (6.07)
lnAssets	0.137*** (4.28)
Earningsvol	-0.012 (-1.36)
SalesGrowth	-0.174 (-1.25)
ROA	0.033*** (10.45)
Constant	-0.739** (0.36)
Fixed effects	Yes
N	2,220
R-sq	0.24
adj. R-sq	0.23
Joint significance test results :	Coef. t-stat
NGexclusions + DisclosureY x NGexclusions = 0	-0.423 (-3.74)***
NGeps + DisclosureY x NGeps = 0	0.757 (8.26)***

Table 9a shows the linear regression results with *FutrInc* (operating income in the following year) as the dependent variable. It tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future income in ICW-firms in the year of disclosure of first-time ICW's, compared to period before the disclosure. Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 2,220 firm-years that represent all the firm years belonging to category *ICW-firm*, minus the firm-years that represent time following the disclosure year. Variable *DisclosureY* equals 1 if the observation is the year of the disclosure of first-time ICW's and is zero otherwise. Coefficient for *NGeps* is positive and highly significant, indicating that non-GAAP earnings are highly predictive of future income. Interaction variable *DisclosureY*NGeps* is positive and significant at 1% level, indicating that non-GAAP earnings have a significantly higher predictive power in the year of disclosure of first-time ICW's, compared to period before. Two bottom rows show joint significance test results. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 9b. Binary regression testing the likelihood of firms meeting or beating benchmarks *LossConvert* and *MB2* in ICW-firms in the year of first-time disclosure of ICW's.

	MB2	LossConvert
	Coef.	Coef.
DisclosureY	0.122 (0.81)	0.355*** (2.70)
NGexclusions	0.248*** (4.54)	0.724*** (14.28)
DisclosureY x NGexclusions	-0.274* (-1.75)	-0.092 (-0.98)
PosDA	-0.381** (-2.27)	-0.472*** (-2.83)
MTB	0.007 (0.49)	-0.042*** (-2.71)
SalesGrowth	-0.247 (-1.27)	0.098 (0.66)
Earningsvol	0.012 (1.07)	-0.024** (-2.18)
lnAssets	0.032 (0.86)	-0.096*** (-2.34)
ROA	0.010 (1.07)	-0.010** (-2.58)
Constant	-2.151*** (-5.49)	-0.879** (-2.14)
Fixed effects	Yes	Yes
N	2,220	2,220
pseudo-R-sq	0.08	0.30

Table 9b shows the binary regression results with *LossConvert* and *MB2* as dependent variables, testing if the likelihood of ICW-firms meeting or beating benchmark variables *MB2* and *LossConvert* using non-GAAP exclusions is different in the year of first-time disclosure of ICW's, compared to the period before the disclosure. Variable *MB2* equals 1 if non-GAAP exclusions meet or marginally beat analysts' EPS forecast and the corresponding GAAP earnings misses the forecast. Variable *LossConvert* equals 1 if non-GAAP earnings are greater than zero and the corresponding GAAP earnings are smaller than zero. It equals zero otherwise. Complete description of independent variable *NGexclusions* and control variables *PosDA*, *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 2,220 firm-years that represent all the firm years belonging to category *ICW-firm*, minus the firm-years following the disclosure year. Variable *DisclosureY* equals 1 if the observation is the year of the disclosure of first-time ICW's, it equals zero otherwise. The left-hand column of table 9b shows the results of *MB2* as dependent variable and right-hand column shows the results of *LossConvert* as the dependent variable. In the left-hand column the interaction variable is negative and marginally significant, indicating that ICW-firms are less likely to meet or beat benchmark *MB2* in the year of first-time ICW disclosure, compared to a period before the disclosure. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 10. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating income (FutrInc) in the year following the first-time disclosure of ICW's.

FutrInc	
	Coef.
PostDisclosureYR	-0.212 (-0.92)
NGexclusions	-0.737*** (-3.45)
NGeps	0.387** (2.09)
PostDisclosureYR x NGexclusions	1.025*** (3.88)
PostDisclosureYR x NGeps	0.338* (1.66)
MTB	0.078*** (2.81)
lnAssets	0.121* (1.68)
Earningsvol	-0.028 (-1.39)
SalesGrowth	0.326 (0.87)
ROA	0.038*** (5.29)
Constant	-0.419 (-0.79)
N	389
R-sq	0.40
adj. R-sq	0.36

Joint significance test results	Coef.	t-stat
NGexclusions + PostDisclosureYR x NGexclusions = 0	0.288	(1.77)*
NGeps + PostDisclosureYR x NGeps = 0	0.725	(6.62)***

Table 10 shows the linear regression results with *FutrInc* (operating income in the following year) as the dependent variable. It tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future income in ICW-firms that remediate their ICW's in the year following the disclosure of first-time ICW's, compared to firms that do not remediate ICW's in that year. Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#).

Sample used consists of 389 firm-years that represent firm years belonging to categories *PostDisclosureYR* and *PostDisclosureYNR*. Variable *PostDisclosureYR* equals 1 if the observation is a firm-year following the disclosure of first-time ICW's where the firm has remediated the ICW's and variable *PostDisclosureYNR* equals 1 if the observation is a firm-year following the disclosure, where the firm has not remediated the ICW's (equals zero otherwise). Variable *NGexclusions* is highly significantly negative, meaning that non-GAAP exclusions are not transitory, but are likely to occur in the following year. Interaction variable *PostDisclosureYR*NGexclusions* is highly significant and positive and the sum of two coefficients equals less than coefficient of *NGexclusions* - it can be interpreted that non-GAAP exclusions are significantly more transitory in firms that remediate their first time ICW's in the year following first-time disclosure than in firms that do not remediate (this indicates that the quality of exclusions is better in firms that remediate).

(Table 10, continued from previous page)

Variable *NGeps* is highly significant and positive and interaction variable *PostDisclosureYR *NGeps* is marginally significant and positive, meaning that non-GAAP earnings are more predictive of future income in firms that remediate, compared to firms that do not remediate.

* Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses. Two bottom rows show joint significance test results.

Table 11. Linear regression testing the predictive power of non-GAAP earnings and exclusions on future operating income (FutrInc) in firms that have a high score of ICW seriousness and pervasiveness.

FutrInc	Model with highICW1 as independent variable	Model with highICW2 as independent variable
	Coef.	Coef.
highICW	-0.150** (-2.30)	0.008*** (0.07)
NGexclusions	-0.347*** (-7.86)	-0.326*** (-8.79)
NGeps	0.629*** (19.94)	0.613*** (22.02)
highICW x NGexclusions	0.044 (0.65)	-0.018 (-0.15)
highICW x NGeps	-0.102* (-1.96)	-0.342*** (-2.90)
MTB	0.065*** (8.82)	0.067*** (9.03)
lnAssets	0.088*** (4.07)	0.095*** (4.43)
Earningsvol	-0.015** (-2.42)	-0.015** (-2.39)
SalesGrowth	-0.142 (-1.37)	-0.135 (-1.31)
ROA	0.034*** (15.22)	0.034*** (15.24)
Constant	-0.425 (-1.28)	-0.546* (-1.66)
Fixed effects	Yes	Yes
N	4,607	4,607
R-sq	0.27	0.27
adj. R-sq	0.27	0.27
Joint significance test results:	Coef.	t-stat
NGeps + highICW1 x NGeps = 0	0.526	(11.54)***
NGeps + highICW2 x NGeps = 0	0.270	(2.32)**

Table 11 shows the linear regression results with *FutrInc* (operating income in the following year) as the dependent variable. It tests the predictive power of non-GAAP earnings and non-GAAP exclusions on future income in ICW-firms, in firms that have more pervasive and serious ICW's (observations marked as *highICW1* and *highICW2*), compared to the rest of ICW-firms.

Complete description of independent variables *NGeps* and *NGexclusions* and control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 4,607 firm-years that represent all the firm years belonging to category *ICW-firm*. Variable *highICW1* equals 1 if variable *CountICWstreth* is greater than 2 and variable *highICW2* equals 1 if variable *CountICWstreth* is greater than 10. Variable *CountICWstreth* equals the number of times the firm has had a negative ICW reported during observation period, multiplied by number of individual weaknesses reported. Left-hand column describes test results with *highICW1* as the dependent variable, and the right-hand column represents results of test that uses *highICW2* as the dependent variable.

(Table 11, continued from previous page)

Coefficient of variable *NGeps* is highly significant and positive, indicating that non-GAAP earnings are highly predictive of future income.

Interaction variable in test that uses *highICW1* as the independent variable is marginally significant and negative (-0.102), meaning that firms that have a ICW seriousness score (CountICWstrength) higher than 2, have significantly lower-quality non-GAAP earnings than other ICW firms.

Interaction variable in test that uses *highICW2* as the independent variable is highly significant and negative (-0.342), meaning that firms that have a ICW seriousness score (CountICWstrength) higher than 10, have significantly lower-quality non-GAAP earnings than other ICW firms and firms that have ICW seriousness score greater than 2. Overall, the results of these two tests indicate that non-GAAP earnings quality is lower, the more pervasive and serious are the reported ICW's.

Two bottom rows show joint significance test results. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 12. Binary regression testing if the likelihood of firms' propensity to report non-GAAP earnings is different after the first-time disclosure of ICW's.

NGpropensity	
	Coef.
afterICW	0.071* (1.74)
MTB	-0.003 (-0.70)
SalesGrowth	0.046 (0.59)
Earningsvol	0.003 (0.65)
lnAssets	0.215*** (15.20)
ROA	0.021*** (11.94)
Constant	-1.591*** (-6.90)
Fixed effects	Yes
N	4,607
Pseudo R-sq	0.10

Table 12 shows the binary regression results with *NGpropensity* as the dependent variable. Variable *NGpropensity* equals 1 if non-GAAP earnings are greater than zero, it equals zero otherwise. Complete description of control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 4,607 firm-years that represent firm years belonging to the category *ICWfirm*. The coefficient for *afterICW* is marginally significant and positive, indicating that the likelihood to report non-GAAP earnings increases in ICW-firms after the disclosure of first-time ICW's. * Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

Table 13. Binary regression testing if the substitution effect between firms reporting positive discretionary accruals and firms reporting non-GAAP earnings is different after the first-time disclosure of ICW's.

NGpropensity	Coef.
afterICW	0.056 (1.26)
PosDA	-0.404*** (-5.01)
afterICW x PosDA	0.087 (0.83)
MTB	-0.004 (-0.65)
SalesGrowth	0.066 (0.85)
Earningsvol	0.006 (1.33)
lnAssets	0.203*** (14.17)
ROA	0.024*** (12.89)
Constant	-1.453*** (-6.21)
Fixed effects	Yes
N	4,607
pseudo-R-sq	0.11

Table 13 shows the binary regression results with *NGpropensity* as the dependent variable. Variable *NGpropensity* equals 1 if non-GAAP earnings are greater than zero, it equals zero otherwise. Complete description of control variables *SalesGrowth*, *MTB*, *Earningsvol*, *ROA* and *lnAssets* can be found in [appendix A](#). Sample used consists of 4,607 firm-years that represent firm years belonging to the category *ICWfirm*. The coefficient for *PosDA* is negative and highly significant, meaning that in ICW-firms' positive discretionary accruals and reporting non-GAAP earnings are substitutes. Interaction variable *afterICW* PosDA* is not significant, indicating that in the period following the first-time disclosure if ICW's, the substitution effect between managers' likelihood to report non-GAAP earnings and positive discretionary accruals is not different from the strength of the substitution effect before the first-time disclosure of ICW's.

* Indicates significance level at 10 percent, ** at 5 percent, *** at one percent. T- statistics in parentheses.

