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Essays on the influence of accounting regulation on non-GAAP reporting

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Abstract

ESSAYS ON THE INFLUENCE OF ACCOUNTING REGULATION ON NON-GAAP REPORTING

by

Hrishikesh Desai

Advisers: Professors Ian Gow, Michael Davern, and Matthew Pinnuck

The regulatory landscape for non-GAAP reporting has been evolving due to changes in the U.S. SEC's interpretations of regulations affecting non-GAAP disclosures. My dissertation, which is structured around the following essays, focusses on the influence of these changes in the regulatory landscape on specific aspects of non-GAAP disclosures. In the first essay, I examine how a 2010 change in the regulatory landscape for non-GAAP reporting affects the use of non-GAAP measures used for executive compensation contracting. In the second essay, I examine how a 2016 change in the regulatory landscape affects how managers make non-GAAP exclusion decisions. The results from this research provide evidence to regulators of the intended and unintended consequences of their rulemaking.

Essay 1:

I examine whether the regulation of non-GAAP disclosures constrains efficient compensation contracting. I use the regulatory shock of the January 2010 update by the U.S. SEC to its interpretive guidance on non-GAAP disclosures, which some believe relaxed the bar for non-GAAP reporting. Using a difference-in-differences estimation approach, I find that firms with strong incentives to use non-GAAP measures in CEO incentive plans started using more of these measures after the guidance update to those that did not. I also find that this increase was more pronounced among firms with a higher propensity to fail a non-GAAP regulatory test in fiscal years 2010-11, which was relaxed after the update. Based on the history of regulations affecting the use of non-GAAP performance metrics and

their specific applicability to non-GAAP measures used for contracting and valuation, I conclude that these effects are largely an unintended consequence of SEC rulemaking.

Essay 2:

I examine how managers make non-GAAP exclusion decisions depending on the type of regulatory guidance provided and their disclosure motivations. I use the U.S. SEC's May 2016 interpretive guidance update, in which it provided specific examples of types of non-GAAP disclosures that could be misleading, to vary the level of detail in the guidance. Results of a 2 x 2 between-subjects experiment on 132 managers having an accounting/finance background provide strong evidence that managers choose to exclude an ambiguous charge in constructing a non-GAAP measure when provided with a more detailed type of guidance relative to a broader one since it lowers their decision uncertainty. I also find some evidence that managers choose to exclude the ambiguous charge when given an informativeness goal by top management as compared to an opportunism goal since the informativeness goal triggers their epistemic motivation. One of my key results is that these inferences hold only at low levels of process accountability. Finally, I also find that managers with a goal of informativeness make more 'normative' exclusion decisions when given a more detailed guidance as opposed to a broader one. I do not find similar or contrary evidence for managers with a goal of opportunism.

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Essay 1

The influence of regulation affecting non-GAAP reporting on executive compensation contracting

1. Introduction

Compensation committees use accounting measures in CEO compensation plans not only for target-setting but also to explain the pay for performance relation. Compensation committees have the flexibility to make adjustments to performance metrics to ensure that incentive compensation plans evaluate CEOs' skills and effort and to accurately capture their influence on firm performance (Banker and Datar, 1989; Hölmstrom, 1979; Lambert and Larcker, 1987). Some of these adjusted accounting measures (hereafter referred to as 'non-GAAP measures') fall under the scope of the U.S. Securities and Exchange Commission's (SEC's) regulations influencing non-GAAP reporting, depending on how they are used in CEO incentive plans. Prior research has not examined how these regulations affect compensation contracting in constraining firms' contracting choices. I use a shock to these regulations to explore whether they constrain firms' contracting choices.

Regulations affecting non-GAAP reporting include Regulation G, Regulation S-K Item 10(e), and the SEC staff's interpretations (also known as the SEC's Compliance and Disclosure Interpretations or C&DIs).¹ In January of 2010, the SEC relaxed its position on non-GAAP disclosures through an update to its C&DIs. Prior to the 2010 C&DI update, the SEC's C&DIs imposed significant administrative burdens (compliance costs) on firms disclosing non-GAAP measures by requiring several justifications for the use of non-GAAP measures that excluded items that met the SEC's definition of recurring.

Thus, firms using non-GAAP measures in CEO incentive plans that came under the scope of the regulations related to non-GAAP reporting would have been constrained prior to the C&DI update in using non-GAAP measures that were difficult to justify or that required adjustment of certain

¹ See Appendix A for an explanation of the regulation/rules applicable to non-GAAP disclosures.

‘ambiguous’ items that were non-recurring in their compensation committees’ view but recurring in the SEC’s view. Specifically, compensation committees with an efficient contracting motive would not be able to include certain non-GAAP measures, which were adjusted based on their preferences, in CEO compensation plans even though these types of measures were to have a higher informational content vis-à-vis the unadjusted GAAP measures since they exclude items that are not relevant to the firm’s core business operations or that are not reflective of CEO’s performance (Bradshaw, Christensen, Gee, and Whipple, 2018; Bradshaw and Sloan, 2002; Lougee and Marquardt, 2004). In the 2010 C&DI update, the SEC, among other things, removed these justification requirements and also lowered the bar on the adjustment/exclusion of recurring items (Kyung and Weintrop, 2016; SEC, 2016a, 2016b). I argue that the lower regulatory bar following the 2010 C&DI update was a signal to firms that the SEC would allow greater flexibility in defining performance measures.

The regulation of non-GAAP performance metrics applies to non-GAAP measures used in CEO incentive plans if they are used to explain the ‘pay for performance’ relation. However, they do not apply if non-GAAP measures are used only for target-setting purposes.² It is not uncommon for firms to highlight non-GAAP measures in contracting to more clearly explain the link between pay and performance (Richman and Hermsen, 2016), thus bringing these measures within the scope of the regulations. Further, these regulations would also affect firms if they use the same non-GAAP measures for contracting and valuation (Black, Black, Christensen, and Gee, 2020) since non-GAAP measures used in earnings announcements and annual reports for valuation purposes also come under the scope of the regulations (Coleman and Usvyatsky, 2016; SEC, 2016a).

I argue that firms that, prior to the C&DI update, used non-GAAP measures in CEO incentive plans to explain the pay for performance relation or used the same measures for valuation purposes that they also used for target-setting would be constrained by regulations affecting non-GAAP performance

² In its 2006 revised executive compensation disclosure rules, the SEC amended Item 402 (Executive compensation) of Regulation S-K to introduce Instruction 5 to Item 402(b) which stated that non-GAAP measures just used to set targets would not be subject to Reg G and Item 10(e) requirements (SEC, 2006). For these measures, firms had to only provide disclosure of how the ‘target’ number is calculated from their audited financial statements. Moreover, in its July 2011 C&DI update, the SEC specifically clarified that Instruction 5 to Item 402(b) is limited to non-GAAP measures that are only used for target-setting (SEC, 2016a).

metrics. I focus on firms that use non-GAAP measures in CEO incentive plans and fall under the scope of regulations that constrain the use of non-GAAP performance metrics (hereafter referred to as ‘regulated non-GAAP firms’). On the other hand, firms that either use only GAAP measures in CEO incentive plans over the entire sample period or use non-GAAP measures only for target-setting prior to the C&DI update would not be constrained by these regulations since they don’t affect them. These firms that use non-GAAP measures in CEO incentive plans that do not fall under the scope of SEC regulations regarding non-GAAP performance metrics are a part of the ‘control group.’ I predict that the 2010 C&DI update results in an increase in the use of non-GAAP measures in CEO compensation plans for firms that use non-GAAP measures in CEO incentive plans that fall under the scope of SEC regulations as opposed to those that do not fall under the scope of SEC regulations. This expectation is based on the compensation committees of regulated non-GAAP (control) firms (not) being constrained from achieving a first-best contracting outcome before the C&DI update but not after (Feltham and Xie, 1994). Moreover, as explained previously, I predict an increase in non-GAAP reporting after the implementation of the new C&DIs because of the lower cost of compliance imposed by the SEC C&DIs.

It is important to empirically examine this research question because the predicted increase would not take place if the cost of compliance imposed by the SEC C&DIs on firms was ‘fixed’ in nature and remained unchanged after the C&DI update or if compensation committees did not have a sufficiently strong efficient contracting motive. Prior executive compensation research also suggests that accounting-based performance measures could be used for efficient contracting (DeAngelis and Grinstein, 2015; Grey, Stathopoulos, and Walker, 2013; Wan, 2014) or rent extraction (Abernethy, Kuang, and Qin, 2015; Morse, Nanda, and Seru, 2011, 2014). Prior non-GAAP ‘valuation’ research, however, finds that the primary motive for non-GAAP reporting in earnings press releases is to inform investors, though an economically significant number of firms engage in aggressive non-GAAP reporting (Black, Christensen, Ciesielski, and Whipple, 2018; Curtis, McVay, and Whipple, 2014; Whipple, 2015).

I also develop cross-sectional tests to explore differences in the increased use of non-GAAP measures in response to the C&DI update with a focus on firms whose compensation committees had a greater underlying demand for using non-GAAP measures in CEO compensation plans for efficient contracting. Prior to the C&DI update, the regulation of non-GAAP reporting included a ‘two-year look-back and look-forward test,’ which forbid firms from eliminating items identified or labelled as non-recurring, infrequent, or unusual from non-GAAP measures when the nature of the item was reasonably likely to recur within two years, or there was a similar item in the prior two years. This test was relaxed after the C&DI update.

Due to the uncertainty in firms’ business environments (Bricker, 2016), I argue that compensation committees would have found it difficult to adjust certain ‘ambiguous’ charges or gains, which were non-recurring in their view, from non-GAAP performance measures prior to the C&DI update if they risked failing the aforementioned test. However, after the C&DI update, compensation committees could exclude these types of items in calculating their non-GAAP measures as long as they were not described incorrectly (i.e., as non-recurring, infrequent, or unusual). Thus, I argue that regulated non-GAAP firms that either would have failed the ‘look-back’ test or were likely to fail the ‘look-forward’ test or both in 2010-11 by the inclusion of these ambiguous items would have a greater underlying demand to use non-GAAP measures that adjust for these items as opposed to other firms after the C&DI update.

I refer to regulated non-GAAP firms that fail or are likely to fail the aforementioned tests due to the exclusion of restructuring expenses (goodwill impairments) as ‘restructuring firms’ (‘goodwill impairing firms’) and regulated non-GAAP firms that do not have these exclusion items as ‘non-restructuring firms’ (‘non-impairing firms’). I identify ‘restructuring expenses’ and ‘goodwill impairment’ charges as ambiguous items at a risk of failing the tests because restructuring charges in particular, though announced in one year, may be spread across several years (Shumsky, 2017), while goodwill impairments are write-offs that depend on economic conditions, government policies, technology, etc., and are difficult to predict (Hayn and Hughes, 2006; Li, Shroff, Venkataraman, and Zhang, 2011). Thus, I predict that, within regulated non-GAAP firms, the increase in the use of non-

GAAP measures in CEO incentive plans in response to the update is more pronounced for restructuring (goodwill impairing) firms as opposed to non-restructuring (non-impairing) firms.

I use a novel hand-collected data set, which captures the number of non-GAAP measures used by S&P 500 and Midcap 400 firms in the Compensation Discussion & Analysis (CD&A) section of proxy statements, where firms disclose non-GAAP measures used for contracting purposes, over the period from 2007 to 2017. This dataset also includes information about whether or not the non-GAAP measure falls under the scope of the regulations, depending on whether or not the firm provides a reconciliation in the proxy statement or the earnings announcement and annual report, which is a Reg G requirement.

After controlling for all other determinants that might affect the use of non-GAAP measures by a firm, I find strong evidence of an increase in the use of non-GAAP measures in CEO incentive plans by firms that use non-GAAP measures in these plans that fall under the scope of SEC regulations prior to the 2010 C&DI update vis-à-vis those that use them but not under the scope of SEC regulations. The magnitude of the statistically significant increase in the former group of firms is ~ 28% in the fiscal years 2010 and 2011 vis-à-vis the fiscal year 2009. I also find, within regulated non-GAAP firms, strong evidence of this increase being more pronounced for restructuring (goodwill impairing) firms vis-à-vis non-restructuring (non-impairing) firms. These results suggest a significant change in contracting choices of firms following the 2010 C&DI update.³

My evidence makes a significant contribution to the executive compensation and the non-GAAP disclosure literatures. This is the first study to examine how regulations affecting the use of non-GAAP performance metrics affect the use of non-GAAP measures for contracting. Extant research has only examined the influence of these regulations on non-GAAP measures used for ‘valuation’ (Kyung

³ The SEC requires companies to engage in a principles-based discussion on “*specific items of corporate performance used to set compensation policies and make compensation decisions*” (Benderly, Daley, Sue Morgan, Durbin, & Reinholdtsen, 2010). Though the CD&A isn’t specific to accounting performance measures used in CEO incentive pay, but the types of measures used to determine awards are generally covered since the 2006 SEC revised disclosure rules came into effect (Bloomfield, 2018, M. Charvet & R. Russell of Shartsis Friese LLP, personal communication, December 19, 2019; SEC, 2006). Thus, the results reflect a change in contracting choice and not a change in disclosure.

and Weintrop, 2016).⁴ Given the significant change in the implementation of regulations due to the SEC C&DI update, the consequences for efficient compensation contracting should be examined and better understood. Further, there is a paucity of research on contracting motives behind the use of non-GAAP measures since prior research has almost exclusively focussed on the valuation motives for the use of non-GAAP measures in earnings press releases.⁵ My cross-sectional analysis also provides indirect evidence on efficient contracting, which is difficult to obtain empirically.

I also conclude that the influence of regulation on non-GAAP measures disclosed in proxy statements is, to some extent, an unintended consequence of SEC rulemaking. I have two main reasons for making this prediction: First, these regulations have applied to ‘valuation’ non-GAAP measures since 2003 when they were enacted. However, they started affecting ‘contracting’ non-GAAP measures only after these measures started being disclosed in proxy statements from 2007 onwards. Second, these regulations never significantly changed in spirit until the 2010 SEC C&DI update, suggesting that they were never specifically tailored to regulate non-GAAP measures used for contracting.

My results are useful to regulators, such as the SEC, because it enables them to determine how changes in their regulations over time have influenced the use of non-GAAP measures in executive compensation disclosures. These results can guide future regulation influencing the use of non-GAAP performance metrics by policymakers and their interpretations by the SEC staff. My results are also relevant to analysts and investors since they inform them of how the relation between CEO pay and firm performance was affected because of this change in contracting practice. This information is important, especially for investors, given the fact that the SEC has adopted ‘Say-on-Pay’ voting rules in 2011 based on Section 951(a) of the Dodd Frank Act that require shareholder voting to approve the compensation package for firms’ CEOs. I also believe that my study is timely since the Council of

⁴ Kyung and Weintrop (2016) examined the influence of the 2010 SEC C&DI update on non-GAAP measures used in earnings press releases and found that it exacerbated aggressive non-GAAP reporting.

⁵ Prior research makes a distinction between the valuation and incentive contracting (stewardship) roles of accounting information (Banker, Huang, and Natarajan, 2009; Bushman, Engel, and Smith, 2006). However, prior studies on non-GAAP disclosures have largely taken a ‘valuation’ approach and examined non-GAAP measures reported in earnings press releases (Bentley, Christensen, Gee, and, Whipple, 2018; Beyer, Cohen, Lys, and Walther, 2010; Black et al., 2018; Curtis et al., 2014; Whipple, 2015). These studies typically explored whether managers excluded items from the GAAP measure to convey a more informative measure of performance to investors or to meet/beat strategic earnings benchmarks (e.g., analyst consensus estimates).

Institutional Investors (CII) petitioned the SEC in April 2019 to make regulations affecting non-GAAP performance metrics applicable to non-GAAP measures used for target-setting in executive compensation plans (Bertsch and Mahoney, 2019; CII, 2019).

2. Overview and Institutional Setting

Adjusted accounting measures or non-GAAP measures are customized accounting measures that include or exclude financial statement items from the directly comparable GAAP financial measure. Examples of non-GAAP measures include measures of income that exclude one or more expense or revenue items such as EBITDA (earnings before interest, taxes, depreciation and amortization).

2.1 Contracting demand for non-GAAP performance measures

There is an underlying demand to use adjusted or non-GAAP performance measures by firm compensation committees in incentive compensation plans if existing plans are sub-optimal due to the inadequacy of GAAP metrics to measure CEO performance. This prediction follows Hölmstrom's (1979) Informativeness principle, which suggests that, in principle, executive pay should be based on any signal that is incrementally informative about whether the executive has taken actions that maximize shareholder value. Prior research has found that non-GAAP measures have a higher information content than GAAP measures (Albring, Cabán-García, and Reck, 2010; Bentley et al., 2018; Bradshaw et al., 2018; Bradshaw and Sloan, 2002; Collins, Li, and Xie, 2009; Entwistle, Feltham, and Mbagwu, 2010; Lougee and Marquardt, 2004; Venter, Emanuel, and Cahan, 2014; Wieland, Dawkins, and Dugan, 2013) since they exclude items that are not relevant to the firm's core business operations or that are not reflective of CEO's performance.

Moreover, their motive to use non-GAAP measures in incentive compensation plans is also consistent with Banker and Datar (1989), who find evidence suggesting that more sensitive, less noisy performance measures (such as non-GAAP measures in this case) will be more heavily weighted in optimal contracts (Lambert and Larcker, 1987).⁶ It is also along the lines of what Feltham and Xie

⁶ Lambert and Larcker's (1987) evidence on the choice of performance measures in incentive contracts indicated that this choice was related to the noise inherent in the measure and the sensitivity of the measure to managerial actions.

(1994) demonstrate in their analytical model that a first-best contracting outcome can only be achieved when performance measures are perfectly congruent, and that less congruent or noisy measures (such as the GAAP metrics in this case) would induce sub-optimal effort from managers.

Baber, Kang, and Kumar (1998) also find that the weight on earnings in compensation is increasing in earnings persistence, and from prior research, we learn that non-GAAP measures are more persistent than GAAP measures. Even in the debt contracting setting, Kraft (2014) finds that rating agencies made extensive adjustments to GAAP numbers reported on the balance sheets, income statements, and cash flow statements to include off-balance sheet finance as debt in the determination of leverage ratios and prevent the understatement of the default risk of firms.

2.2 The regulation of non-GAAP metrics and firms' contracting choices

The SEC began regulating non-GAAP disclosures in 2003 by implementing Regulation G and modifying Regulation S-K Item 10(e) rules pursuant to Section 401(b) of the Sarbanes-Oxley (SOX) Act of 2002. Though there have been no changes to the aforementioned regulations, the SEC staff interpretations of these regulations have changed twice, once in 2010 and then in 2016, as the SEC has tried to manage the trade-off between increasing the informativeness of these disclosures whilst reducing the opportunism in them. SEC staff interpretations do not have the force of law. However, they often function as de facto regulation because firms would want to comply with the interpretive guidance to mitigate future legal issues with the SEC (Kyung and Weintrop, 2016). Bond, Czernkowski, Lee, and Loyeung (2017) recently expressed the view that the costs and benefits associated with these changes in SEC interpretive guidance needed to be better understood.

2.2.1 The 2010 SEC interpretive guidance update

I focus on the 2010 SEC C&DI update. In January 2010, the SEC's Division of Corporate Finance (DCF) updated its C&DIs related to the use of non-GAAP measures (SEC, 2016a, 2016b) and signalled substantially increased flexibility regarding the inclusion of these measures in SEC filings subject to Item 10(e) of Regulation S-K. Specifically, the SEC allowed registrants to make adjustments that they deem appropriate for recurring items, including those that did not meet the prior 'non-recurring,

infrequent, or unusual' requirements. For example, regarding an item that is likely to recur within two years, the revised C&DI states:

“It would not be appropriate to state that a charge or gain is non-recurring, infrequent or unusual unless it meets the specified criteria. The fact that a registrant cannot describe a charge or gain as non-recurring, infrequent or unusual, however, does not mean that the registrant cannot adjust for that charge or gain.”

The specified criteria in the first italicized statement previously is the ‘two-year look-back and look-forward’ test, which is discussed in detail in Appendix A.

Prior to the 2010 C&DI update, the SEC interpretive guidance imposed significant administrative burdens (compliance costs) on firms adjusting for recurring items in SEC filings. The revised Item 10(e) interpretation (the second italicized statement from the previous paragraph) signalled more flexibility as it clarified that the recurring item prohibition for SEC filings is based on the description of the item adjusted, not its nature (i.e., firms were allowed to exclude recurring items as long as they were not described as non-recurring, infrequent, or unusual).

The prior guidance also stated, *“companies must meet the burden of demonstrating the usefulness of any measure that excludes recurring items, especially if the non-GAAP financial measure is used to evaluate performance.”* It also stated that whether a measure that eliminates a recurring item is acceptable depends on the relevant facts and circumstances and that this type of a measure *“more likely would be permissible if management reasonably believes it is probable that the financial impact of the item will disappear or become immaterial within a near-term finite period.”* The prior guidance also stated that adjusting for recurring items could be misleading unless five interpretive disclosure requirements were met.⁷ The 2010 C&DI update eliminated the afore-mentioned statements and requirements in the prior guidance that discouraged the use of non-GAAP measures and, overall,

⁷ The prior guidance called for disclosure about (i) the manner in which management uses this type of measure, (ii) the economic substance behind its decision to do so, (iii) the material limitations of using the measure as opposed to the comparable GAAP measure, (iv) how management compensates for these limitations, and (v) the reasons why management believes the measure provides useful information to investors.

appeared to reflect a general outlook that management should be able to provide investors with non-GAAP measures that it believes are appropriate, as long as they are accompanied by adequate disclosures about the adjustments and a reconciliation to the most comparable GAAP measures. I provide additional details about relaxations in the 2010 C&DI update in Appendix A.

2.3 The applicability of regulations to non-GAAP measures used for contracting

2007 was the first year in which accounting performance measures were disclosed by firms in the CD&A section of proxy statements. These regulations have limited applicability to proxy statements, unlike earnings press releases or annual reports, depending on how firms use non-GAAP measures in these statements (Coleman and Usvyatsky, 2016; SEC, 2016a). As discussed previously, firms typically disclose non-GAAP measures in the CD&A section of proxy statements not only to set target levels but also to explain the pay for performance relation. The second purpose also involves using non-GAAP measures in any relative performance evaluation schemes, to justify any discretionary adjustments to pay, and other similar purposes.

In its 2006 revised executive compensation disclosure rules, the SEC introduced Instruction 5 to Item 402(b), which states that non-GAAP measures just used to set targets will not be subject to Reg G and Item 10(e) requirements. However, non-GAAP measures presented in the CD&A or any other part of the proxy statements for purposes other than just target-setting come under the scope of the regulations affecting non-GAAP reporting since they apply to non-GAAP disclosures in all SEC filings (SEC, 2016a). It is not uncommon for firms to use non-GAAP measures to reveal the link between pay and performance (Richman and Hermsen, 2016), thus bringing these measures under the scope of the regulations. Further, if firms use the same non-GAAP measures for both contracting and for valuation, they would be affected by the regulations no matter what. Non-GAAP measures used for valuation purposes in earnings releases or annual reports come under the scope of these regulations, as explained previously. Prior studies find empirical evidence suggesting that many firms use the same non-GAAP measures for compensation contracting and in earnings announcements (Black et al., 2020).⁸

⁸ They analyse non-GAAP EPS measures used by S&P 1500 firms from 2009 to 2015.

To summarize, firms that, prior to the C&DI update, used non-GAAP measures in CEO incentive plans to explain the pay for performance relation or used the same measures for valuation purposes that they also used for target-setting would be affected by the regulations. I refer to these firms, which use non-GAAP measures in CEO incentive plans that fall under the scope of SEC regulations, as ‘regulated non-GAAP firms.’ On the other hand, firms that either used only GAAP measures in CEO incentive plans over the entire sample period or used non-GAAP measures only for target-setting prior to the C&DI update would not be affected by these regulations. I refer to these firms, which use non-GAAP measures in CEO incentive plans but not under the scope of SEC regulations, as ‘control firms.’

2.4 The influence of the SEC C&DI update on the use of non-GAAP measures for contracting

I argue that firms that used non-GAAP measures in CEO incentive plans that came under the scope of the regulations (i.e., regulated non-GAAP firms) would have been constrained prior to the C&DI update in using non-GAAP measures that were difficult to justify. They would also be constrained if the non-GAAP measures involved the adjustment of certain ‘ambiguous’ items that might have been non-recurring in their compensation committees’ view but recurring in the SEC’s view. They would be constrained even if these adjustments lead to a non-GAAP measure with greater informational content.

Based on the prior discussion, the compliance costs for non-GAAP reporting following the 2010 SEC C&DI update were lower as these justification requirements were removed, and the bar on the adjustment of items that were recurring in the SEC’s view was lowered. Thus, regulated non-GAAP firms were signalled that the SEC was allowing them flexibility in defining their performance measures. I expect these firms to (not) experience difficulty in achieving a first-best contracting outcome before (after) the C&DI update (Feltham and Xie, 1994). After the guidance update, there was an impetus for the compensation committees of these firms with the motivation to make their incentive plans ‘informative’ of CEO skills and fit to either shift from GAAP to non-GAAP measures or add more (relevant) non-GAAP measures to incentive plans to better capture firm performance.

Thus, I predict that the 2010 C&DI update resulted in an increase in the use of non-GAAP measures in CEO compensation plans for firms that use non-GAAP measures in CEO incentive plans that are subject to SEC regulations (regulated non-GAAP firms) as opposed to those that use them but

not under the scope of SEC regulations (control firms) prior to the C&DI update. This predicted change in contracting is consistent with a large body of research in the executive compensation area as discussed previously.

Recent anecdotal evidence, based on how frequently the term “non-GAAP” appeared in proxy statements, also suggests that there was a significant increase in the number of proxy statements using non-GAAP measures in incentive compensation plans after 2009 (Coleman and Usvyatsky, 2016; Lahart, 2016; Schnurr, 2016).⁹ This discussion leads to my prediction in hypothesis 1:

H1: *The use of non-GAAP measures increased in response to the 2010 SEC C&DI update for firms that use them in CEO incentive compensation plans that fall under the scope of SEC regulations compared to those that use them but not under the scope of SEC regulations.*

It is important to empirically examine this phenomenon for two reasons. First, the predicted increase would not happen if the cost of compliance imposed by the SEC C&DIs on firms was ‘fixed’ in nature and remained unchanged after the C&DI update. Thus, my results would help in determining the nature of the costs imposed by the SEC C&DIs. I expect these costs to apply differently to regulated non-GAAP and control firms because they constrain the former but not the latter. I do not expect control firms to be affected by these costs because these firms do not use any non-GAAP measures to explain pay for performance, perhaps as a matter of policy, despite these measures having higher information content vis-à-vis GAAP measures.¹⁰

Second, the predicted increase would not happen if compensation committees did not have a sufficiently strong efficient contracting motive. Prior accounting research has found that the motivation behind the disclosure of non-GAAP measures by managers could be to either ‘inform’ or to ‘mislead’ investors. Specifically, prior non-GAAP research finds that the dominant motive of non-GAAP

⁹ With respect to non-GAAP measures used in earnings press releases, prior studies have found that their use reduced temporarily after Reg G (Entwistle, Feltham, and Mbagwu, 2006; Heflin and Hsu, 2008; Marques, 2006; Nichols, Gray, and Street, 2005) but then started increasing from the year 2007 onwards (Black et al., 2018; Webber, Nichols, Street, and Cereola, 2013).

¹⁰ It could be argued that control firms don’t use non-GAAP measures before the C&DI update to explain pay for performance due to the costs imposed by the SEC regulations. However, the decision to not use non-GAAP measures for ‘regulated’ contracting purposes seems to be more of a matter of policy than choice in these firms. My results also corroborate this argument by indicating that control firms did not increase their non-GAAP use in contracting after the regulatory bar was lowered through the guidance update. I also discuss this in Section 5.

reporting in earnings press releases is to inform investors, though an economically significant number of firms engage in aggressive non-GAAP reporting (Bentley et al., 2018; Beyer et al., 2010; Black et al., 2018; Curtis et al., 2014; Whipple, 2015). Moreover, prior executive compensation research that segregates performance measures into whether they are accounting-based or market-based also finds mixed evidence (Edmans, Gabaix, and Jenter, 2017; Frydman and Jenter, 2010) over whether ‘accounting-based’ performance measures are used for rent extraction (Abernethy et al., 2015; Morse et al., 2011, 2014) or efficient contracting (De Angelis and Grinstein, 2015; Grey et al., 2013; Wan, 2014).

2.5 Firms with a greater underlying demand to use non-GAAP measures after the update

To understand the underlying efficient contracting motive behind the increased use of non-GAAP measures in response to the 2010 SEC C&DI update more clearly, I develop cross-sectional hypotheses based on firm-level differences in compensation committee motives. Specifically, I focus on regulated non-GAAP firms whose compensation committees had a greater underlying demand for using non-GAAP measures in CEO compensation plans for efficient contracting. These firms are a subset of the regulated non-GAAP firms that, I argue, are constrained by the regulations more than the others from using certain non-GAAP measures in compensation contracting before the C&DI update.

As discussed previously, prior to the C&DI update, firms were prohibited by the SEC from eliminating items identified or labelled as non-recurring, infrequent, or unusual from non-GAAP measures, when the nature of the charge or gain was so that it was reasonably likely to recur within two years or there was a similar charge or gain in the prior two years (i.e., items that failed the ‘two-year look-back and look-forward test’). Thus, compensation committees that wanted to adjust certain charges or gains, which were non-recurring in their view, from non-GAAP performance measures that came under the scope of the regulations would not have been able to do so prior to the C&DI update due to the possibility that these items might fail the test.

The SEC Chief Accountant Wesley Bricker, in his keynote address before the 2016 AICPA conference, said that “*it is important to keep in mind that businesses operate in uncertain environments*”

in the context of non-GAAP disclosures (Bricker, 2016). Due to this uncertainty, the ‘recurring’ nature of some charges or gains that arise in the course of firms’ business operations might be ambiguous or unclear. A Wall Street Journal article by Shumsky (2017) discusses how the distinction between a one-time expense and a recurring expense could be clouded for certain financial statement line items. One example is ‘expenses relating to restructuring plans,’ which are announced in one year but then bleed across several years. Restructuring expenses, even though the firm management views them as non-recurring or infrequent or unusual, are quite likely to fail the two-year look-back and look-forward test due to the inherent uncertainty about the time horizon and success of restructuring plans when they are announced and then implemented by the firm management.

Another example of ambiguous charges is ‘goodwill impairments,’ which are charges that need to be recorded against earnings after identifying that acquired assets associated with the goodwill have not performed as per expectations set at the time of acquisition. Under U.S. GAAP, goodwill has to be tested for impairment at least annually or if events or changes in circumstances indicate that the carrying amount of an asset obtained in an acquisition may not be recoverable (Beatty and Weber, 2006). Since goodwill is affected by events that are hard to predict such as changes in economic conditions, changes in government policies, changes in technology or market competition, etc. (Comiskey and Mulford, 2010; Li et al., 2011), it is difficult to ex-ante determine whether goodwill impairment would be a recurring or a non-recurring charge in a particular year.

Hayn and Hughes (2006) also acknowledge the difficulty in predicting goodwill write-offs and find that, on average, there is a time lag of three to four years between the deterioration in the performance of the acquired business that gave rise to the goodwill and the actual write-down of that goodwill. Even in the context of examining GAAP modifications made in the calculation of debt covenants, Armstrong, Guay, and Weber (2010) conclude that it is unclear as to why some covenants include goodwill while others exclude it (Frankel, Seethamraju, and Zach, 2008; Holthausen and Watts, 2001). Thus, along the same lines as restructuring expenses, even though the firm management views goodwill impairment charges as non-recurring or infrequent or unusual, they are also quite likely to fail the two-year look-back and look-forward test.

After the 2010 C&DI update, since the SEC allowed the exclusion of recurring items as long as they were not described incorrectly (i.e., as non-recurring, infrequent, or unusual), compensation committees that wanted to use non-GAAP performance measures that excluded ambiguous charges such as restructuring expenses or goodwill impairments were in a position to freely do so provided they did not use any incorrect descriptions for these items. Thus, I argue that firms that either would have failed the ‘look-back’ test or were likely to fail the ‘look-forward’ test or both in 2010-11 fit the category of firms likely to have a greater underlying demand to use non-GAAP measures that adjust for such ambiguous charges post the 2010 C&DI update vis-à-vis other firms. If the criterion for failing the aforementioned tests is with respect to restructuring expenses (goodwill impairment charges), I refer to those regulated non-GAAP firms that were likely to fail these tests as restructuring firms (goodwill impairing firms) and those regulated non-GAAP firms that were not likely to fail these tests as non-restructuring firms (non-impairing firms).

My arguments are based on the premise that if the C&DI update never happened, these restructuring (goodwill impairing) firms would not have been able to freely adjust for ambiguous restructuring expenses (goodwill impairment charges) in 2010-11 due to the possibility that they may run afoul of the SEC guidance. My arguments are also consistent with the SEC guidance imposing a certain cost of compliance on firms, which reduced after the C&DI update. I specifically choose fiscal years 2010 and 2011 because the influence of the SEC C&DI update would be most strongly identified in these two years as they are closest to the update, and compensation committees might respond to the update either immediately (2010) or with a lag (2011).

If the compensation committees of restructuring (goodwill impairing) firms had the motivation to make incentive plans ‘informative’ of CEO skills and fit, they had the incentive to include more (relevant) non-GAAP measures that adjust for these ambiguous charges (which in their view are non-recurring) in response to the 2010 C&DI update. This logic implies that they would want to reduce the costs of a poor fit. It is also in line with my previous efficient contracting arguments (Banker and Datar, 1989; Hölmstrom, 1979; Lambert and Larcker, 1987). Further, these firms would also have low GAAP earnings informativeness due to the inclusion of these unusual charges (Curtis et al., 2018) and prior

‘valuation’ non-GAAP research has also found that firms with low GAAP earnings informativeness are more likely to disclose non-GAAP earnings than other firms (Bentley et al., 2018; Black and Christensen, 2009; Lougee and Marquardt, 2004).

This discussion leads to my prediction in hypothesis 2a(b):

H2a(b): *The increase in the use of non-GAAP measures in CEO incentive plans in response to the 2010 SEC C&DI update in firms that use these measures under the scope of SEC regulations is more pronounced for restructuring (goodwill impairing) firms vis-à-vis non-restructuring (non-impairing) firms.*

It is important to note that I do not consider another commonly excluded item, stock-based compensation, as an ‘exclusion’ item of interest because the SEC’s position so far has been to allow firms’ practice of excluding this item when reporting non-GAAP measures. The SEC seems to accept firms’ arguments that this item is ‘non-cash’ and has not sought to ban or challenge non-GAAP measures adjusting for it under Item 10(e) of Reg S-K (Ernst & Young, 2016; Russell, 2016).

Even in its recent May 2016 C&DI update, the SEC suggested that presenting a non-GAAP performance measure that excludes “*normal, recurring, cash operating expenses necessary to conduct the company’s business*” may be potentially misleading (SEC, 2016a). Thus, the SEC has continued to remain silent on the exclusion of normal recurring ‘non-cash’ operating expenses (such as stock-based compensation) from non-GAAP measures (Graber and Flow, 2016). With respect to stock-based compensation adjustments, the SEC’s position may also be because the mandate for firms to begin recognizing stock compensation expense in 2006 (SFAS 123R) was controversial (Christensen, 2012). Moreover, prior studies also suggest that stock-based compensation is excluded mainly for aggressive and not informative reasons (Barth, Gow, and Taylor, 2012; Black and Christensen, 2009).

3. Sample

3.1. Sample selection and choice of the time period

To test my hypotheses, I hand collect data on the number of non-GAAP measures used by non-financial, non-utility, and non-quasi-regulated firms included in the S&P Largecap 500 and Midcap 400 indices in their CEO incentive compensation plans over the period from 2007 to 2017. My sample period begins from 2007 because this is the first year in which performance measures used in incentive plans were disclosed by firms in the CD&A. My sample period begins after the SEC's adoption of the revised compensation disclosure rules in December 2006. Also, it covers some of the post-2010 executive compensation disclosure reforms that came into effect on the passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act (hereafter referred to as "the Dodd-Frank Act") in addition to the change in SEC C&DI in 2010.¹¹ I exclude firm-years pertaining to firms with proxy statements filed before they entered the index or after they exited the index since an entry or an exit from an S&P index can significantly affect firm characteristics and their disclosure motives.

I begin the hand-collection process by using data from Equilar, Inc. that pertains to accounting-based performance measures that are used in CEO incentive compensation plans. Since Equilar only includes performance equity and bonus data based on disclosures in the plan-based awards table in firm proxy statements, I manually collect and incorporate data on accounting-based performance measures that were used in making 'discretionary' incentive payments to the CEO (these are either partially or fully made at the discretion of the board of directors) or if these measures were used as part of some 'relative performance evaluation' scheme in deciding CEO incentive payments. I follow a two-step process in classifying an accounting-based performance measure into GAAP or non-GAAP: (i) check if the description of the measure includes the words "GAAP" or "non-GAAP", and if not, then (ii)

¹¹ Some of the provisions of the Dodd-Frank Act that the SEC has adopted and are currently in effect are: disclosure of whether the CEO is independent from the Chairman of the Board or if are they the same individual and also the reason for the firm choosing this type of structure (SEC, 2009), say-on-pay vote (SEC, 2011) to approve the compensation package for a firm's named executive officers (CEO, CFO, and top three most other highly compensated executives), independence and conflict of interest requirements for Board compensation committees (SEC, 2012), pay-ratio disclosures (SEC, 2015). The SEC has also proposed rules for Pay v. Performance disclosure in accordance with Section 953(a), Recovery of executive compensation (clawback) in accordance with Section 954, Employee hedging in accordance with Section 955, Compensation Structure Reporting in accordance with Section 956(a) and Prohibition on certain compensation arrangements in accordance with Section 956(b). It is to be noted that the SEC Dodd-Frank rulemaking does not directly target performance measures used in CEO incentive plans.

check how the measure is calculated and if certain financial statement line items are indicated to be “adjusted” or “excluded” from it – which would indicate that it is a non-GAAP measure. An example of this procedure has been provided in Appendix C.

Then, using the WRDS SEC Analytics suite, I construct a database that provides, for each firm-year, the relevant hyperlinks to the following: the proxy statement, the relevant 8-K earnings release, and the 10-K annual report. I only incorporate that 8-K current report for a firm-year that corresponds to events specified in Item 2.02 (Result of Operations and Financial Condition) and Item 9.01 (Financial Statements and Exhibits). I impose this restriction because firms almost always report and reconcile their non-GAAP measures in 8-K filings that are earnings releases.

I exclude firm-years without valid proxy statements or earnings press releases.¹² Using this database, I check if the non-GAAP measures used in CEO incentive plans are reconciled either in the proxy statement or in the 8-K/10-K filings. The reconciliation of a non-GAAP measure in the proxy statement or the 8-K/10-K filings or both is an indication that the measure comes under the scope of the regulations affecting non-GAAP reporting.¹³ Firms generally provide a reconciliation table (in most cases) or a paragraph or line detailing the non-GAAP adjustments in the proxy statement or the 8-K/10-K filing if a non-GAAP measure is reconciled in these disclosures (See Appendix C for more details).

As discussed previously, these regulations affect non-GAAP measures used in proxy statements for purposes other than just target-setting - these measures are reconciled in the proxy statement itself. They also affect non-GAAP measures used in the CD&A just for target setting if they are the same as those used in 8-K earnings releases or 10-K annual reports - these measures are reconciled in these 8-K or 10-K filings and the proxy statement may provide a prominent cross-reference to the relevant pages in those filings.

¹² The proxy statements in these firm-years pertain to special general meetings, meeting delays, CEO turnover, etc., and do not contain the CD&A section that details the performance measures used in CEO incentive compensation plans.

¹³ In some cases, I observe that certain non-GAAP measures may not explicitly be reconciled in the proxy statement or the 8-K/10-K filings, but their components may be reconciled. For example, the 3M company uses an EVA type non-GAAP measure termed as ‘Economic profit’ in its CEO incentive plans. Though the company does not explicitly reconcile this non-GAAP measure in any of its filings, the individual components of this measure (e.g., Adjusted Net income and Average Debt & Equity) are reconciled – thus, allowing investors to understand the adjustments made and compare it to a GAAP measure.

I also exclude firm-years from my sample in which firms experienced CEO turnover since new/retiring CEOs are, in most cases, not eligible for the usual incentive compensation grants if they are with the firm only for a part of the year. Finally, I exclude firm-years from my sample in which firms, prior to the C&DI update, used some non-GAAP measures for target-setting (without using the same measures for ‘valuation’) and others for explaining pay for performance relation in the CD&A since it is unclear how regulations affect these firms. My final sample comprises 718 firms (5,056 firm-years). I divide this sample into a regulated non-GAAP sample and a control sample.

3.1.1 Regulated non-GAAP and control firms

My *regulated non-GAAP* sample comprises 583 firms (4,377 firm-years) that reconciled, either in the proxy statement itself or the 8-K/10-K filings or both, a non-GAAP measure from their CEO incentive plans if used in any year over the sample period. My *control* sample comprises 135 firms (679 firm-years), in which either only GAAP measures were used in CEO incentive plans over the entire sample period or if non-GAAP measures were used in any year, they were not reconciled in either the proxy statement or the 8-K/10-K filings.

As discussed previously, we know that the regulated non-GAAP firms are those that use non-GAAP measures in CEO incentive plans that fall under the scope of SEC regulations versus control firms are those that use non-GAAP measures in CEO incentive plans that are not subject to regulation. The unreconciled non-GAAP measures used by control firms in their proxy statements for target setting are also different to those used in their 8-K/10-K filings (Black et al. (2020) also find similar evidence in their sample). Of the 4,377 (679) regulated non-GAAP (control) firm-years, 3,879 (242) firm-years have non-GAAP measures used in CEO incentive plans while the remaining 498 (437) firm-years don’t. Table 1 provides a summary of the sample selection process. Appendix D provides an overview of the classification of firms into the regulated non-GAAP and the control groups.

3.2 Descriptive statistics

Table 2 provides descriptive statistics for my full sample. I find that the median sample firm uses two non-GAAP measures in its CEO incentive plans. By incentive plan type, I find that the median sample

firm uses one non-GAAP measure in its short-term CEO incentive plan and none in its long-term CEO incentive plan. This result is consistent with prior empirical evidence that accounting-based measures are more frequently used in short-term vis-à-vis long-term incentive plans (Ittner, Larcker, and Rajan, 1997).

In Table 3, I report independent groups t-tests to compare the differences in means between the regulated non-GAAP and the control sample groups. I find that the mean number of non-GAAP measures used in CEO incentive plans (*Num*) is significantly higher (t-statistic: 27.52***) for the regulated non-GAAP group (1.75) vis-à-vis the control group (0.48) of sample firms. I find similar evidence for the mean number of non-GAAP measures used in both short- and long-term CEO incentive plans.

I also analyse differences between the regulated non-GAAP and the control groups of firms based on variables from prior research that might be related to their use of non-GAAP measures. From Table 3, I note that both groups of firms have similar characteristics in terms of discretionary accruals (*Accruals*) and earnings volatility (*Earnings_vol*). However, I find that there are significant differences between regulated non-GAAP firms and control firms in some respects. For example, regulated non-GAAP firms, on average, have higher levels of CEO incentive compensation (*Incentive*), lower *CEO_tenure*, lower cash flow from operations (*CFO*), higher intangible assets (*Intan_intensity*), higher *Leverage*, larger size based on total assets (*Ln_assets*), less ‘loss’ years (*Loss*), lower stock return volatility (*StockRet_vol*), higher likelihood of having hired the services of a compensation consultant (*Comp_consult*), and more non-financial measures being used in CEO incentive plans (*NF_mes*) vis-à-vis the control firms.¹⁴ Appendix E provides detailed definitions of all the variables.

¹⁴ In an un-tabulated analysis, I use *Ln_sales* and *Ln_mcap* as alternative proxies for firm size and find that the results are similar. I also use *NegE_traj* and *NegAb_ret* as proxies for poor firm performance (in addition to *Loss*) and find that both groups are similar in terms of negative earnings trajectories and annual cumulative abnormal stock returns, respectively. Moreover, I also find that regulated non-GAAP firms, on average, have higher R&D expenditures (*R&D_Inv*), and have higher pay complexity (*Pay_complex*) vis-à-vis control firms. However, I find that there are no significant differences between the two groups in terms of diversification (*Diversify*).

4. Research Design, Tests, and Results

4.1 Tests of H1: The use of non-GAAP measures in CEO incentive plans after the update

4.1.1 Univariate analysis

I begin by presenting some preliminary descriptive statistics on the number of non-GAAP measures used in CEO incentive plans for both regulated non-GAAP and control firms by fiscal year. Since the 2010 SEC C&DI update took place on January 11, 2010, I expect to see a significant increase in the use of non-GAAP measures as predicted in H1 mainly in fiscal years 2010 (if compensation committees respond immediately to the C&DI update) or 2011 (if compensation committees respond to the C&DI update with a lag) or both. Based on the analyses presented in Table 4 Panel A, I find a statistically significant increase in the mean non-GAAP measures used in CEO incentive plans in response to the 2010 C&DI update in the fiscal year 2010 vis-à-vis the fiscal year 2009 for regulated non-GAAP firms. The magnitude of this increase is ~ 22.6% percent in the fiscal year 2010 vis-à-vis the fiscal year 2009. I also note an additional statistically significant increase of 8.9% in the fiscal year 2011 vis-à-vis the fiscal year 2010 for these firms. For control firms, I do not find evidence of a statistically significant increase in the number of non-GAAP measures used in CEO incentive plans in response to the 2010 C&DI update in these years.

From Table 4 Panel B, I also note a statistically significant increase in the mean non-GAAP measures used in CEO incentive plans in response to the C&DI update in both the fiscal years 2010 and 2011 (combined) vis-à-vis the fiscal year 2009 for regulated non-GAAP firms. I also note that the magnitude of the increase, in this case, is even stronger (~ 27.7%) since I take into account those firms whose compensation committees responded to the C&DI update with a lag. For control firms, I again do not find any evidence of a statistically significant increase.

To test H1, I estimate the average regulation effect from a difference-in-differences (DID) analysis. In Table 4 Panel B, I present the analysis carried out for regulated non-GAAP and control groups of firms for the fiscal 2009 (pre-) and the fiscal 2010 and 2011 combined (post-) periods. The null hypothesis is that SEC regulation has no effect. I find that the DID t-statistic is statistically

significant and rejects the null hypothesis when the outcome variable is *Num* in column (a) and *Num_ST* in column (b). However, it is not statistically significant when the outcome variable is *Num_LT* in column (c). Thus, I conclude that evidence from the univariate tests suggests a statistically significant increase in the use of non-GAAP measures in (mainly short-term) CEO incentive plans for fiscal years ending after the 2010 C&DI update for firms that use these measures (regulated non-GAAP firms) as compared to those that use them, but not under the scope of SEC regulations (control firms) – consistent with my prediction in H1. However, the regulation effect is better identified in the following multivariate regression analysis (which includes covariates) due to a reduced omitted variable bias and residual variance.¹⁵

I believe that the parallel trends assumption for a DID analysis, which requires that the trend in the outcome variable for both regulation and control groups during the pre-regulation era be similar, is satisfied here because there seems to be no significant year-over-year change in the number of non-GAAP measures used in CEO incentive plans from fiscal years 2007-09, except for some very weak evidence of an increase for regulated non-GAAP firms in the fiscal year 2008 vis-à-vis the fiscal year 2007.

4.1.2 Multivariate regression analysis

The 2010 SEC C&DI update affects non-GAAP measures in proxy statements filed for the first time after January 11, 2010. To test whether there is an increase in the use of non-GAAP measures in response to this C&DI update, I construct the following two indicator variables: *Regulated* and *Post*.

Regulated is an indicator variable that equals one if a firm belongs to the regulated non-GAAP sample and zero if it belongs to the control sample. From the prior discussion, we know that regulated non-GAAP (control) firms are those that use non-GAAP measures within (outside of) the scope of SEC regulations in CEO incentive plans prior to the 2010 C&DI update and are, thus, (un-) affected by regulations affecting non-GAAP reporting.

¹⁵ I do not analyse CEO turnover years separately since only 16 firms in my final sample experienced CEO turnover in fiscal year 2009 (before the C&DI update). Thus, there is insufficient sample size to draw any meaningful conclusions.

Post equals one for firm fiscal years ending after January 11, 2010, until December 8, 2015 (i.e., before the influence of the 2016 SEC C&DI update begins from December 9 onwards) and zero otherwise (i.e., the fiscal years ending before January 11, 2010). The 2016 SEC C&DI update took place on May 17, 2016. However, unlike the 2010 SEC C&DI update, this update in which the SEC tightened its position on non-GAAP measures was quite expected by firms (Harmon, 2016a, 2016b) due to several SEC pronouncements before the guidance revision: SEC Chair Mary Jo White on December 9, 2015 (White, 2015), PCAOB Chair James R. Doty on March 14, 2016 (Doty, 2016), SEC Commissioner Kara M. Stein on March 14, 2016 (Stein, 2016), and SEC Chief Accountant James Schnurr on March 22, 2016 (Schnurr, 2016). See Appendix B for details of these pronouncements. I, therefore, consider the influence of the 2016 C&DI update to start following the earliest SEC pronouncement date of December 9, 2015, before the actual guidance revision.

The key dependent variable (*Num*) is the number of non-GAAP measures used by firms in the CEOs' short-term and long-term incentive plans. If any non-GAAP measures are multi-period (for example, 3-Year adjusted EPS growth used by Amgen, Inc.), they are included in the total count of non-GAAP measures in each year over which they measure performance. I estimate the baseline economic model in 1 for the full sample and a significantly positive coefficient on β_3 suggests that there was an increase in the use of non-GAAP measures in response to the 2010 SEC C&DI update for regulated non-GAAP firms as compared to control firms – consistent with H1.

$$\begin{aligned}
 Num_{it} = & \beta_0 + \beta_1 \times Regulated_{it} + \beta_2 \times Post_{it} + \beta_3 \times Regulated_{it} \times Post_{it} + \beta \times Controls_{it} \\
 & + \varepsilon
 \end{aligned}
 \tag{1}$$

To determine whether the increase in the use of non-GAAP measures as predicted in H1 is more significant in the CEO's short-term or long-term incentive plans or both, I repeat the regression in model 1 with the following dependent variables: *Num_ST* and *Num_LT*, which indicate the number of non-GAAP measures used in the CEO's short- and long-term incentive plans, respectively.

Following prior non-GAAP research, I control for certain ‘firm characteristics’ variables that may play a role in the determination of the number of non-GAAP measures used by firms in CEO incentive plans (Bettis, Bizjak, Coles, and Kalpathy, 2010; Black and Christensen, 2009; Bowen, Davis, and Matsumoto, 2005; Lougee and Marquardt, 2004): *Accruals* (discretionary accruals in year *t*, measured using the modified Jones (1991) model proposed in Dechow, Sloan, and Sweeney, 1995), *CEO_tenure* in years (a proxy for CEO power following Abernethy et al., 2015; Berger, Ofek, and Yermack, 1997; Cadman, Carter, and Hillegeist, 2010; Curtis et al., 2018; Cyert, Kang, and Kumar, 2002; Morse et al., 2011, 2014), *CFO* (cash flow from operations in year *t*), *Earnings_vol* (standard deviation of prior three years of GAAP net income scaled by average total assets in year *t*), *Intan_intensity* (measured as the level of intangibles scaled by total assets in year *t*), *Leverage* (measured as the ratio of debt to common equity in year *t*), *Ln_assets* (logged total assets as a proxy for firm size), *Loss* (indicator variable that equals one if GAAP net income is less than zero in year *t*), and *StockRet_vol* (standard deviation of daily stock returns over year *t*).¹⁶ Data on the firm-characteristics control variables is obtained from Compustat (Execucomp) and CRSP.

I also control for the following compensation-related control variables that might affect the use of non-GAAP measures in CEO incentive plans: *Comp_consult* (an indicator variable that equals one if the firm hired the services of a compensation consultant and zero otherwise) and *NF_mes* (indicator variable that equals one if CEO’s incentives are partly based on non-financial performance measures).¹⁷ Data on the compensation-related control variables is either obtained from Equilar or hand-collected from proxy statements.

¹⁶ I include *Earnings_vol* as a control variable because firms that have a high degree of variability in GAAP earnings are found to be more prone to using non-GAAP measures to measure CEO performance as the GAAP measures are too noisy and thus, less relevant (Curtis et al., 2018). I also include *Intan_intensity* as a control variable because higher intangibles may lead to larger differences between underlying economic events and GAAP earnings (Collins, Maydew, and Weiss, 1999; Curtis et al., 2018; Lev and Zarowin, 1999).

¹⁷ Ittner et al. (1997) suggest that firms may choose to contract on non-financial measures if financial measures are a noisy signal of performance. Thus, I include *NF_mes* as a control variable since that would affect the number of non-GAAP financial measures used. I also include *Comp_consult* as a control variable since Murphy and Sandino (2020) find that firms using consultants compensate their CEOs using more complex incentive plans, and this might affect the number of non-GAAP measures used in CEO incentive plans.

Since one of the key independent variables (*Regulated*) *Post* is constant across firms (years) within years (firms), year (firm) fixed effects are excluded from the analyses. However, I include a year *trend* variable that is set to one in the initial sample year and is increasing by one for every year thereafter. I also include industry (2-digit SIC codes) fixed effects in the analyses to control for any industry norms in executive pay (Shalev, Zhang, and Zhang, 2013).¹⁸ I double cluster standard errors by industry and year to ensure that they are robust to simultaneous correlation along two dimensions – industry and time (Thompson, 2011).

In Table 5, I report results from estimating the regression in model 1 using ordinary least squares. I find that the coefficient on β_3 is significantly positive in all columns, which suggests that there was a significant increase in the use of non-GAAP measures in both short- and long-term CEO incentive plans for fiscal years ending after the 2010 C&DI update for firms that use these measures, but that fall under the scope of SEC regulations (regulated non-GAAP firms) – consistent with my prediction in H1. I also find that the increase in the use of non-GAAP measures in CEO incentive plans is greater in firms with higher intangibles intensity and in those that hired a compensation consultant. These results are in line with prior studies. Interestingly, I also find that the increase in the use of non-GAAP measures is less in firms with high CEO power as proxied by *CEO_tenure*.

4.1.3 Robustness checks

From Table 2, the dependent variables can be considered to be censored at zero, and thus, the OLS regression model may not be appropriate in this case. Thus, as a robustness check (un-tabulated), I estimate the equations using a Tobit regression model, and the results are qualitatively the same. From Table 2, we can also note that the dependent variables are positively skewed to some extent (non-normally distributed) and, thus, in the form of count variables that follows a Poisson distribution. Therefore, I also estimate the equations (un-tabulated) using a Poisson regression model since it can be argued that an OLS regression model is not appropriate here. I find that the results are qualitatively the

¹⁸ The GAAP measures of firms in certain high technology industries are found to have limited value to investors due to the fast-changing nature of the industries in which they operate and thus, firms in these industries are more prone to using non-GAAP measures to better capture CEO performance (Amir and Lev, 1996; Balkin, Markman, and Gomez-Mejia, 2000; Berger, 2005).

same using a Poisson regression model, with the goodness-of-fit Chi-squared test statistics suggesting that this model is a good choice.

I also find that the results remain qualitatively the same even if alternative firm size variables such as *Ln_mcap* (logged market capitalization in year t) and *Ln_sales* (logged total sales in year t) are included in the model instead of *Ln_assets*. Though *CEO_tenure* is the most widely used proxy for CEO power in the literature and has been found to be associated with the use of non-GAAP measures (Curtis et al., 2018), I also include the following alternative CEO power proxies to ensure robustness (Morse et al., 2011, 2014) and find that the results are qualitatively the same: *Power_index* (constructed by awarding the CEO one point for being the chair of the board and two points for being the chair of the board and also the president of the company - it captures the extent to which a CEO can direct board initiatives and disallow a board to have an in-training next-in-line candidate if any disagreement arises), *Insider_%* (percentage of board members that are insiders - it captures the level of CEO entrenchment and the degree to which the board is unable to counter the CEO) and *CEO_hire%* (percentage of the board appointed during CEO's tenure - it captures the extent to which a board member may feel obligated towards the CEO). Data on these CEO power proxies is obtained from Institutional Shareholder Services (ISS) and ExecuComp.

I also find that the results are unchanged if I include the following alternative firm performance proxies instead of *Loss*: *NegE_traj* (indicator variable that equals one if the GAAP earnings in year t are less than those in year t-1), and *NegAb_ret* (indicator variable that equals one if the firm's annual cumulative abnormal stock return in year t is negative, where abnormal return is defined as the firm's stock return minus CRSP value-weighted return). I also include the following alternative proxies for firm performance following Morse et al. (2011, 2014): standardized accounting returns (*zROA*), a proxy for short-term performance, and standardized stock returns (*zRstock*), a proxy for long term performance.¹⁹ Moreover, since the use of performance measures in a period could be affected by

¹⁹ Standardization is done by subtracting industry mean and then dividing by the industry standard deviation, where the industry mean and standard deviation are determined based on two-digit SIC codes. ROA is calculated as EBIT (earnings before interest and tax) divided by average total assets.

current as well as lagged performance, I also include lags of the afore-mentioned short-term and long-term performance measure proxies, $zROA_{t-1}$ and $zRstock_{t-1}$. I find that the results remain qualitatively the same upon the inclusion of these variables in the baseline model.

Moreover, I find that the results are qualitatively unchanged after including the following less widely used control variables from prior research that may influence the use of non-GAAP measures in CEO incentive plans: *Diversify* (measured as the total number of business segments in year t – firms with more business segments may have the need to use more segment non-GAAP measures to capture performance), *R&D_Inv* (measured as the total research and development expenditure in year t - firms that significantly invest in R&D are known to have warped GAAP earnings (Clinch, 1991; Francis and Schipper, 1999; Lev and Zarowin, 1999) and, thus, may use more non-GAAP measures), and *Pay_complex* (following Murphy and Sandino (2020), it is calculated as the natural logarithm of the sum of one plus the values of five indicator variables indicating whether the CEO pay package includes discretionary bonus, formula-based bonus, restricted shares vesting over time, performance shares, or stock options).

I also note that the coefficient on none of these variables is statistically significant, except the one on *Pay_complex*, which is significantly positive. However, I do not include *Pay_complex* in my main model because it can introduce bias and affect causal inferences by creating an alternative path through which the complexity of the compensation contract affects the use of non-GAAP measures in CEO incentive plans (Gow, Larcker, and Reiss, 2016; Swanquist and Whited, 2018). Finally, I also find that the results hold after including interactions of the *Post2010* variable with all the control variables in the baseline model 1.

4.2 Tests of H2a(b): The use of non-GAAP measures in CEO incentive plans by restructuring (goodwill impairing) firms after the update

To test H2a(b), Restructuring (Goodwill impairing) firms are identified based on the *Restruc_firm* (*GwImp_firm*) variable taking a value of one if a regulated non-GAAP firm failed either the two-year ‘look-back’ test or was likely to fail the two-year ‘look-forward’ test or both in 2010-11. The

compensation committees of these firms would not have been able to use non-GAAP performance measures, which come within the scope of these regulations, that adjust for these ‘ambiguous’ restructuring expenses (goodwill impairment charges) prior to the 2010 C&DI update due to the risk of them running afoul of the SEC guidance. Had the 2010 C&DI update never happened, the compensation committees of these firms would continue to not be able to use the aforementioned non-GAAP performance measures in 2010 (2011) if there were similar charges incurred in either one of the fiscal years 2008-09 (2009-10) or if there was a possibility of similar charges coming up in either one of the fiscal years 2011-12 (2012-13) or both.

4.2.1 Restructuring firms

Restructuring firms that would have failed the two-year ‘look-back’ test in 2010 (2011) are identified based on whether they had restructuring expenses in either of the past two years, 2008 (2009) or 2009 (2010). Restructuring firms that were likely to fail the two-year ‘look-forward’ test in 2010 (2011) are identified in terms of a higher propensity to restructure based on three criteria: high leverage, high financial distress risk, asset upsizings and downsizings. Ofek (1993) finds that higher leverage in a firm’s capital structure affects its operational decisions pertaining to asset restructuring and employee lay-offs. His results are in line with Jensen (1989), who argues that highly leveraged firms are more likely to restructure when performance deteriorates due to lenders exerting pressure to lay-off employees or to sell or liquidate assets. I identify high levered firms by doing a median split by two-digit SIC code and fiscal year on *Leverage* (the ratio of debt to common equity) and constructing an indicator variable that equals one if the value of *Leverage* is above the median in year *t* and zero otherwise.

On similar lines, prior studies argue that firms in financial distress have a higher propensity to restructure (Koh, Durand, Dai, and Chang, 2015; Pennings and Sleuwaegen, 2002) since lenders might receive a higher value from selling assets as compared to the value derived from continued operations of those assets in these firms (Schary, 1991). I identify firms with high financial distress risk by doing a median split by two-digit SIC code and fiscal year on *O-score* (determined based on the Ohlson’s

(1980) O-score model) and constructing an indicator variable that equals one if the value of *O-score* is above the median in year *t* and zero otherwise. *O_score* is widely used as a strong indicator of financial distress in prior research (Begley, Ming, and Watts, 1997; Franzen, Rodgers, and Simin, 2007; Hillegeist, Keating, Cram, and Lundstedt, 2004).

Corporate asset shocks are also indicative of firms engaging in restructuring as firms that upsize through large acquisitions or downsize through divestitures (sell-offs, management buyouts, or equity carve-outs, or spin-offs) are likely to incur restructuring charges (Cook, Fu, and Tang, 2016; Denis and Shome, 2005; Hoskisson and Johnson, 1992; Johnson, Hoskisson, and Hitt, 1993; Simmonds, 1990). Following these prior studies, I identify asset upsizing (downsizing) firms as those firms that undergo an increase (decrease) of at least 10% in the book value of total assets or total employees in year *t* but no increase (decrease) in any of the previous three years.²⁰ It is to be noted that the aforementioned four criteria to determine whether a firm has a higher propensity to restructure are applied to fiscal years 2011 (2012) and 2012 (2013) to determine if a restructuring firm was likely to fail the two-year ‘look-forward’ test in 2010 (2011).

Taking the example of Amgen Inc., the company would have failed the two-year look-back test in 2010-11 since it had restructuring charges in both fiscal years 2008 and 2009. Further, it had a higher propensity to restructure in 2010-11 based on satisfying the aforementioned *high leverage* criteria in fiscal years 2012 and 2013. Thus, the company was also likely to fail the two-year look-forward test in 2010-11. I find that post the 2010 C&DI update (in the fiscal year 2010), the company included an additional ‘Adjusted EPS’ non-GAAP performance measure in the CEO’s long-term equity incentive plan that excluded restructuring expenses. It did not include a performance measure adjusting for restructuring expenses prior to the fiscal year 2010.

²⁰ Some of these studies use a 25% cut-off instead of a 10% cut-off. However, due to the very low number of firms that qualify the 25% cut-off in my sample, I do not use this threshold.

4.2.2 Goodwill impairing firms

Goodwill impairing firms that would have failed the two-year ‘look-back’ test in 2010 (2011) are identified based on whether they had goodwill impairment charges in either of the past two years, 2008 (2009) or 2009 (2010). I identify goodwill impairing firms that were likely to fail the two-year ‘look-forward’ test in 2010 (2011) as those with a higher propensity to impair goodwill based on whether firms’ goodwill scaled by total assets (i.e., *Gw_intensity*) in 2011-12 (2012-13) is above the median [split by fiscal year] and their market to book ratio (i.e., *MTB*) below the median [split by two-digit SIC code and fiscal year] in either of the past three to four years, 2007 (2008), 2008 (2009), or 2009 (2010), and zero otherwise.

This identification process is based on a U.S. goodwill impairment study by Duff & Phelps, LLC (2018), which finds that companies with a low market to book ratio (i.e., low *MTB*) and a higher relative importance of goodwill to overall asset base (i.e., high *Gw_Intensity*) would be at a greater risk of impairment. This study states that a low market to book ratio is “likely to create challenges in supporting the Step 0 “more-likely-than-not” (greater than 50% likelihood) conclusion that the fair value of a reporting unit is not less than its carrying amount, required for a qualitative assessment” (p. 8).²¹ Ramanna and Watts (2010) also use the market to book ratio as a market indicator of goodwill impairment (Li et al., 2011). I lag the market to book ratio by three to four years in line with Hayn and Hughes (2006), who find that there is a time lag of three to four years between the deterioration in the performance of the acquired business that gave rise to the goodwill and the actual goodwill write-off. Non-restructuring (Non-impairing) firms are identified based on the *Restruc_firm* (*GwImp_firm*) variable, taking values of zero.

Taking the example of L Brands Inc. (formerly, Limited Brands Inc.), the company would have failed the two-year look-back test in 2010 (2011) since it had goodwill impairments in both fiscal years 2008-09 (2009-10). Moreover, it had a higher propensity to impair goodwill in 2011-12 (2012-13) based

²¹ Under U.S. GAAP’s accounting model for goodwill, a qualitative test (known as Step 0) was introduced in 2011.

on satisfying the aforementioned high *Gw_intensity* criteria in these years and the low *MTB* ratio criteria in either of the past three to four fiscal years, 2007 (2008), 2008 (2009), or 2009 (2010). Thus, the company was also likely to fail the two-year look-forward test in 2010-11. I find that post the 2010 C&DI update (in the fiscal year 2011), the company included an additional ‘Adjusted Operating Income’ non-GAAP performance measure in the CEO’s long-term equity incentive plan that excluded goodwill impairment charges. It did not include a performance measure adjusting for these charges prior to the fiscal year 2011.

Appendix D provides an overview of the classification of regulated non-GAAP firms into the various restructuring (goodwill impairing) and non-restructuring (non-impairing) firm categories.

4.2.3 Multivariate regression analysis

To test H2a, I estimate the baseline economic model in equation 2 below using ordinary least squares.

$$\begin{aligned}
 Num_{it} = & \beta_0 + \beta_1 \times Regulated_{it} + \beta_2 \times Post_{it} + \beta_3 \times Restruc_firm_{it} \\
 & + \beta_4 \times Regulated_{it} \times Post_{it} + \beta_5 \times Regulated_{it} \times Restruc_firm_{it} \\
 & + \beta_6 \times Restruc_firm_{it} \times Post_{it} + \beta_7 \times Regulated_{it} \times Restruc_firm_{it} \times Post_{it} \\
 & + \beta \times Controls_{it} + \varepsilon
 \end{aligned}
 \tag{2}$$

A significantly positive coefficient on β_7 in model 2 is consistent with H2a. To test H2b, the *Restruc_firm* variable is substituted with the *GwImp_firm* variable; all else the same. Since the *Restruc_firm* and the *GwImp_firm* variables are constant across years within firms, firm fixed effects are excluded from the analyses. The control variables (except in cases of overlap with the *Restruc_firm* or the *GwImp_firm* variables) are the same as those used to estimate model 1. I include industry fixed effects in the analysis, and standard errors are double-clustered by industry and year.

In Table 6 Panel A, I report results from estimating the above equation 2. I find that the coefficient on β_7 in Panel A is significantly positive in all columns. Thus, I conclude that there is strong evidence of an increase in the use of non-GAAP measures in CEO incentive plans in response to the

2010 SEC C&DI update in regulated non-GAAP firms being more pronounced for restructuring firms vis-à-vis non-restructuring firms - consistent with H2a. In Table 6 Panel B, I report the result from estimating equation 2 with the *GwImp_firm* variable substituted for the *Restruc_firm* variable. I find that the coefficient on β_7 in Panel B is significantly positive. Thus, I find strong evidence that the increase in the use of non-GAAP measures in CEO incentive plans in response to the 2010 SEC C&DI update in regulated non-GAAP firms is more pronounced for goodwill impairing firms vis-à-vis non-impairing firms - consistent with H2b.

These results are broadly consistent with the argument that compensation committees that use non-GAAP measures in CEO incentive plans that fall under the scope of SEC regulations included additional non-GAAP measures, which they were perhaps constrained from using earlier, in these plans in response to the 2010 SEC C&DI update to contract more efficiently with the CEO.

4.2.4 Robustness checks

I apply the robustness checks from Section 4.1.3 to the estimation of model 2 and note that the results are qualitatively unchanged. I also determine whether the actual failure of the ‘look-back’ test or the potential failure of the ‘look-forward’ test in 2010-11 is mainly driving results in the previous section. First, I re-estimate equation 2 by redefining the *Restruc_firm* (*GwImp_firm*) variable to equal one if firms had restructuring expenses (goodwill impairment charges) in either of the past years, 2008-10, and zero otherwise. I find that the three-way interaction coefficient on β_7 is not statistically different from zero in both cases. Thus, I do not find evidence suggesting that restructuring (goodwill impairing) firms were more likely to include non-GAAP measures in CEO incentive plans in response to the 2010 C&DI update if they were likely to fail the two-year ‘look-back’ test in 2010-11 as compared to non-restructuring (non-impairing) firms.

I re-estimate equation 2 by redefining the *Restruc_firm* (*GwImp_firm*) variable to equal one if firms had a higher propensity to fail the two-year ‘look-forward’ test based on each of the aforementioned criteria in either of the years, 2010 or 2011, and zero otherwise. I find that the three-way interaction coefficient on β_7 is significantly positive in all cases. Thus, I conclude that the potential

failure of the two-year ‘look-forward’ test is mainly driving the results from the previous section. This conclusion may result from the higher uncertainty resulting from the application of the ‘look-forward’ test as it is more abstract as opposed to the ‘look-back’ test. However, I do note that the re-estimation result for the two-year ‘look-forward’ test is weaker in magnitude and significance than the combined result in the previous section – suggesting that the ‘look-back’ test has some role to play.

Finally, I acknowledge a potential limitation of these results from Section 4.2.3. A restructuring (goodwill impairing) firm’s decision to use a non-GAAP measure in CEO incentive plans after the C&DI update may influence, to some extent, whether that measure would come under the scope of the regulations affecting non-GAAP reporting and thus ultimately, whether this type of firm would be affected by the SEC non-GAAP C&DIs (i.e., the *Restruc_firm* or the *GwImp_firm* variable may influence the *Regulated* variable). However, a two-way interaction analysis with *Restruc_firm* (*GwImp_firm*) and *Post2010* is not possible here since we only need to include firms from the regulated non-GAAP sample (i.e., those whose non-GAAP measures come under the scope of these regulations - firms for which the *Regulated* variable takes a value of one) in the analysis.

5. Conclusion

I conclude that the regulation of non-GAAP performance measures constrained firms’ contracting choices. Using a shock to these regulations resulting from the 2010 SEC C&DI update, I find evidence of a significant increase in the use of non-GAAP measures in CEO incentive plans after the C&DI update for firms that, prior to the C&DI update, use these measures, which came under the scope of the regulations. This result also leads me to conclude that the (compliance) costs imposed by these regulations decreased after the C&DI update as firms were allowed greater freedom in defining their own performance measures.

I also find some evidence that this increase is due to the underlying efficient contracting motive of compensation committees. My arguments with respect to the efficient contracting motive are corroborated by strong evidence that firms that use non-GAAP measures, which came under the scope of the regulations, and that had a higher propensity of failing the SEC’s ‘two-year look-back and look-

forward' test in fiscal years 2010-11 included more non-GAAP measures in their CEO incentive plans after the C&DI update. These firms would be less likely to include non-GAAP measures that adjust for some 'ambiguous' charges prior to the C&DI update due to the risk of them running afoul of the SEC C&DIs, which watered-down this particular test in the update.

Since regulations affecting the use of non-GAAP performance measures were enacted in 2003 with a focus on non-GAAP measures disclosed in earnings press releases or annual reports and remained unchanged in spirit until the 2010 C&DI update while affecting 'contracting' non-GAAP measures only after they were disclosed in proxy statements from 2007 onwards, I conclude that the aforementioned influence of these regulations on non-GAAP measures used for contracting is largely an unintended consequence of SEC rulemaking.

My study has some limitations. First, one can argue that the significant increase in the use of non-GAAP measures in CEO incentive plans for the regulated non-GAAP firms does not indicate the extent of shareholder support for these contracts or whether the resulting contracts are more effective at attracting and retaining the best CEOs. This limitation is on account of the difficulty in obtaining direct empirical evidence on efficient contracting.

Second, one can argue that, perhaps, control firms do not use non-GAAP measures to explain pay for performance because the regulations also constrain them. Moreover, since regulated non-GAAP firms use non-GAAP measures before the C&DI update for certain contracting purposes that bring them under the scope of the regulations, one can argue that they do not allow the constraints to inhibit their use of non-GAAP measures. However, as discussed previously, the reason behind controls firms not using non-GAAP measures for 'regulated' contracting purposes before the C&DI update may be due to these firms having a policy of using non-GAAP measures in contracting for limited purposes only. Alternatively, they may have a preference for not having these measures come under the regulatory lens. My evidence, which suggests that control firms do not significantly increase their use of non-GAAP measures after the C&DI update, also clarifies that control firms were not constrained from using non-GAAP measures before the guidance update.

My results also reinforce evidence from prior studies that there is an underlying contracting demand for non-GAAP measures. This evidence is important because, historically, the SEC has been concerned about the opportunism in non-GAAP measures. This concern has resulted in the SEC tightening its position on the use of non-GAAP measures in its May 2016 C&DI update (Graber and Flow, 2016; PwC, 2016; SEC, 2016a, 2016b). Future research can explore as to how this 2016 C&DI update has affected the motives of compensation committees to use non-GAAP measures in CEO incentive plans (Shumsky, 2017).

Table 1: Sample selection

Panel A. Full sample	# of firm-years
S&P Largecap 500 & Midcap 400 firms from 2007 to 2017	15,576
Less: Those belonging to certain industries: financial institutions (SIC 6000-6999), utilities (4800-4999), and other quasi-regulated industries (4000-4499 & >=8000)	(5,185)
Less: Those pertaining to firms with proxy statements filed before they entered the index or after they exited the index	(1,813)
Less: Those without valid proxy statements or earnings press releases	(2,277)
Less: Those in which firms experienced CEO turnover	(286)
Less: Those pertaining to firms that, prior to the 2010 C&DI update, used some non-GAAP measures for target-setting (without using the same measures for 'valuation') and others for explaining pay for performance relation in the CD&A ²²	(959)
Total	5,056
Panel B. Regulated non-GAAP sample (No. of firms: 583)	4,377
Those in which non-GAAP measures are used in CEO incentive plans	3,879
Those in which no non-GAAP measures are used in CEO incentive plans	498
Panel C. Control sample (No. of firms: 135)	679
Those in which non-GAAP measures are used in CEO incentive plans	242
Those in which no non-GAAP measures are used in CEO incentive plans	437

This table describes the sample selection procedures in Panel A. Panels B and C provide additional information on the characteristics of the regulated non-GAAP and the control samples, respectively. I define Regulated (Control) firms as those that use non-GAAP measures in CEO incentive within (outside of) the scope of SEC regulations plans prior to the 2010 C&DI update. To elucidate further, regulated non-GAAP firms used non-GAAP measures to explain the pay for performance relation, or they used the same non-GAAP measures that they used for target-setting also for valuation purposes in earnings announcements and annual reports. These firms were, thus, affected by regulations influencing non-GAAP reporting. Control firms either used only GAAP measures in CEO incentive plans over the entire sample period, or they used non-GAAP measures only for target-setting and were, thus, unaffected by the regulations. A non-GAAP measure, if used by regulated (control) firms' CEO incentive plans in year t prior to the C&DI update, is (not) reconciled as it is (not) subject to Reg G.²³

²² It is unclear how the regulations affect these types of firms.

²³ Note that, for regulated non-GAAP firms, some of the non-GAAP measures used for 'valuation' (i.e., reported in the firms' 8-K or 10-K filings) may end up being the same as the non-GAAP measures used in their CEO incentive plans. Thus, these measures are anyways affected by the regulations and reconciled in those filings with or without a cross-reference to them in the proxy statements. However, for control firms, note that the non-GAAP measures, if reported in the firms' 8-K or 10-K filings, are not the same as the non-GAAP measures used in their CEO incentive plans. Thus, these measures are not affected by the regulations, and therefore not reconciled at all.

Table 2: Descriptive statistics

Variable	N	Mean	S.D.	Quantiles				
				Min	0.25	Median	0.75	Max
<u>Key dependent variables:</u>								
<i>Num</i>	5,056	1.58	1.20	0.00	1.00	1.00	2.00	7.00
<i>Num_ST</i>	5,056	1.31	1.03	0.00	1.00	1.00	2.00	7.00
<i>Num_LT</i>	5,056	0.53	0.80	0.00	0.00	0.00	1.00	5.00
<u>Key independent variables:</u>								
<i>Post</i>	4,195	0.59	0.49	0.00	0.00	1.00	1.00	1.00
<i>Regulated</i>	5,056	0.87	0.34	0.00	1.00	1.00	1.00	1.00
<u>Firm characteristics variables:</u>								
<i>Accruals</i>	4,149	-0.01	0.07	-0.96	-0.04	-0.01	0.02	0.64
<i>CEO_tenure</i>	5,039	11.24	7.52	0.00	5.99	10.00	14.37	55.00
<i>CFO</i>	5,056	1.65	4.33	-3.15	0.24	0.49	1.29	81.27
<i>Earnings_vol</i>	5,055	0.04	0.05	0.00	0.01	0.02	0.04	0.91
<i>Intan_intensity</i>	5,056	0.25	0.21	0.00	0.06	0.21	0.38	0.91
<i>Leverage</i>	5,056	1.05	7.42	0.00	0.15	0.41	0.78	329.42
<i>Ln_assets</i>	5,056	8.62	1.24	5.59	7.70	8.47	9.38	12.84
<i>Loss</i>	5,056	0.11	0.31	0.00	0.00	0.00	0.00	1.00
<i>StockRet_vol</i>	5,022	0.02	0.01	0.00	0.01	0.02	0.03	0.09
<u>Other control variables:</u>								
<i>Comp_consult</i>	5,056	0.94	0.24	0.00	1.00	1.00	1.00	1.00
<i>NF_mes</i>	5,056	0.36	0.48	0.00	0.00	0.00	1.00	1.00

This table presents descriptive statistics for the variables of interest used in my tests for the full sample. All variables are defined in Appendix E.

Table 3: Comparison of regulated non-GAAP and control groups of firms

Variables	Regulated sample			Control sample			T-tests of means	
	N	Mean	S.D.	N	Mean	S.D.	t-stat	ρ
<i>Incentive</i>	4,362	7.54	7.21	677	5.15	5.24	8.30***	0.00
<u>Key dependent variables:</u>								
<i>Num</i>	4,377	1.75	1.17	679	0.48	0.72	27.52***	0.00
<i>Num_ST</i>	4,377	1.45	1.02	679	0.41	0.63	25.72***	0.00
<i>Num_LT</i>	4,377	0.58	0.83	679	0.15	0.46	13.35***	0.00
<u>Firm characteristics variables:</u>								
<i>Accruals</i>	3,613	-0.01	0.07	536	-0.01	0.08	-1.37	0.17
<i>CEO_tenure</i>	4,362	10.90	7.44	677	13.41	7.67	-8.13***	0.00
<i>CFO</i>	4,377	1.59	3.28	679	2.05	8.38	-2.59***	0.00
<i>Earnings_vol</i>	4,377	0.04	0.06	678	0.04	0.04	-0.44	0.66
<i>Intan_intensity</i>	4,377	0.26	0.21	679	0.14	0.17	14.81***	0.00
<i>Leverage</i>	4,377	1.14	7.96	679	0.53	1.14	1.98**	0.05
<i>Ln_assets</i>	4,377	8.69	1.22	679	8.17	1.30	10.25***	0.00
<i>Loss</i>	4,377	0.10	0.30	679	0.13	0.33	-1.78*	0.08
<i>StockRet_vol</i>	4,348	0.02	0.01	674	0.02	0.01	-7.24***	0.00
<u>Other control variables:</u>								
<i>Comp_consult</i>	4,377	0.96	0.20	679	0.79	0.41	17.71***	0.00
<i>NF_mes</i>	4,377	0.38	0.49	679	0.24	0.43	7.30***	0.00

This table presents the results of independent-samples t-tests of means on the variables of interest to determine the nature and extent of differences between the regulated non-GAAP and the control groups of sample firms. The regulated non-GAAP (control) group comprises firms that use non-GAAP measures in CEO incentive plans within (outside of) the scope of SEC regulations prior to the 2010 C&DI update and is, thus, (un-) affected by the regulations. *, **, *** indicate statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in Appendix E.

Table 4: Panel A. Number of non-GAAP measures used in CEO incentive plans by fiscal year

F yr	Regulated firms						Control firms					
	# f	N	Mean	% c	Med	t-stat	# f	N	Mean	% c	Med	t-stat
2006	315	354	1.12	-	1.00	-	65	22	0.34	-	0.00	-
2007	400	506	1.27	-	1.00	-	77	33	0.43	-	0.00	-
2008	412	569	1.38	8.7%	1.00	1.68*	76	34	0.45	4.7%	0.00	0.17
2009	402	551	1.37	-0.7%	1.00	-0.15	69	32	0.46	2.2%	0.00	0.14
2010	404	678	1.68	22.6%	1.00	4.18***	65	35	0.54	17.4%	0.00	0.60
2011	389	713	1.83	8.9%	2.00	2.00**	56	29	0.52	-3.7%	0.00	-0.15
2012	407	769	1.89	3.3%	2.00	0.73	53	25	0.47	-9.6%	0.00	-0.34
2013	402	797	1.98	4.8%	2.00	1.15	53	28	0.53	12.8%	0.00	0.40
2014	412	847	2.06	4.0%	2.00	0.87	50	30	0.60	13.2%	0.00	0.46
2015	415	909	2.19	6.3%	2.00	1.57	51	28	0.55	-8.3%	0.00	-0.33
2016	367	840	2.29	4.6%	2.00	1.12	60	30	0.50	-9.1%	0.00	-0.35
2017	52	125	-	-	-	-	4	1	-	-	-	-

Panel A of this table presents descriptive statistics for the number of non-GAAP measures used in both short- and long-term CEO incentive plans (*Num*) by the regulated non-GAAP and the control groups of sample firms. These statistics are presented for the full sample.²⁴ The regulated non-GAAP (control) group comprises firms for which the *Regulated* variable takes a value of one (zero). Regulated non-GAAP firms are those that use non-GAAP measures in CEO incentive plans within (outside of) the scope of SEC regulations prior to the 2010 C&DI update and are, thus, (un-) affected by the regulations. ‘F yr’ indicates fiscal year, ‘# f’ indicates the number of firms, ‘N’ indicates the number of non-GAAP measures, ‘% c’ indicates the y-o-y change in the mean number of non-GAAP measures, and ‘Med’ indicates the median number of non-GAAP measures. ‘t-stat’ presented in the last column is the t-statistic with respect to independent-samples t-tests conducted to determine if there is a statistically significant difference between the mean non-GAAP measures used in a given year vis-à-vis the previous year. *, **, *** indicate statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in Appendix E.

²⁴ It is to be noted that the fiscal year 2006 is not comparable with other fiscal years because it excludes firms that had their fiscal year endings before the 2006 SEC revised disclosure rules came into effect on November 7, 2006. Moreover, the fiscal year 2017 is also not comparable with other fiscal years in this table due to insufficient data.

Table 4: Panel B. Difference-in-Differences estimation

O.V.	(a) <i>Num</i>			(b) <i>Num_ST</i>			(c) <i>Num_LT</i>		
Sample	Full sample			Full sample			Full sample		
	T	C	T - C	T	C	T - C	T	C	T - C
<u>Fiscal 2009</u>									
N	402	69		402	69		402	69	
Mean	1.37	0.46	0.91	1.18	0.44	0.74	0.40	0.15	0.26
S.E.			0.10			0.10			0.08
t- stat			8.70***			7.82***			3.15***
<u>Fiscal 2010 and 2011</u>									
N	793	121		793	121		793	121	
Mean	1.75	0.53	1.23	1.50	0.49	1.02	0.55	0.13	0.42
S. E.			0.08			0.07			0.06
t- stat			16.24***			14.83***			7.23***
Diff-in-Diff (DID)									
DID			0.32			0.27			0.16
S. E.			0.13			0.12			0.10
t-stat			2.47**			2.34**			1.58

Panel B of this table presents results from a difference-in-differences estimation to determine the average regulation effect. The DID estimation is carried out for the regulated non-GAAP and control groups of firms for the fiscal 2009 (pre-) and the fiscal 2010 and 2011 (post-) periods combined. The regulated non-GAAP (control) group comprises of firms for which the *Regulated* variable takes a value of one (zero). Regulated non-GAAP firms are those that use non-GAAP measures in CEO incentive plans within (outside of) the scope of SEC regulations prior to the 2010 C&DI update and are, thus, (un-) affected by the regulations. The outcome variable (O. V.) is *Num* in column (a), *Num_ST* in column (b), and *Num_LT* in column (c), respectively. The analysis is carried out on the full sample. The null hypothesis is that the regulation has no effect. Standard errors are double-clustered by industry and year in parentheses. *, **, *** indicate statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in Appendix E.

Table 5: 2010 C&DI update and the use of non-GAAP measures in CEO incentive plans

D.V.	(1) <i>Num</i>	(2) <i>Num</i>	(3) <i>Num_ST</i>	(4) <i>Num_ST</i>	(5) <i>Num_LT</i>	(6) <i>Num_LT</i>
<i>Regulated</i>	0.884*** (0.051)	0.601*** (0.093)	0.772*** (0.045)	0.607*** (0.077)	0.256*** (0.037)	0.017 (0.064)
<i>Post</i>	0.138** (0.053)	-0.149** (0.062)	0.149*** (0.049)	-0.011 (0.072)	-0.003 (0.034)	-0.185*** (0.047)
<i>Regulated × Post</i>	0.458*** (0.073)	0.431*** (0.073)	0.311*** (0.064)	0.260*** (0.062)	0.225*** (0.049)	0.261*** (0.040)
<i>Accruals</i>		0.441 (0.331)		0.087 (0.353)		0.428** (0.174)
<i>CEO_tenure</i>		-0.014** (0.005)		-0.007 (0.004)		-0.010** (0.003)
<i>CFO</i>		-0.041** (0.013)		-0.035** (0.012)		-0.011 (0.007)
<i>Earnings_vol</i>		0.057 (0.399)		0.124 (0.315)		-0.256* (0.137)
<i>Intan_intensity</i>		0.190*** (0.025)		0.117*** (0.024)		0.124*** (0.020)
<i>Leverage</i>		0.506** (0.198)		0.384 (0.217)		0.266 (0.198)
<i>Ln_assets</i>		0.001 (0.002)		0.002 (0.002)		0.002 (0.002)
<i>Loss</i>		-0.009 (0.133)		0.025 (0.137)		-0.078* (0.040)
<i>StockRet_vol</i>		-5.278* (2.587)		-3.495 (2.402)		-3.229** (1.390)
<i>Comp_consult</i>		0.230* (0.117)		0.166 (0.099)		0.197** (0.079)
<i>NF_mes</i>		0.048 (0.068)		0.082 (0.056)		0.013 (0.064)
<i>Trend</i>		0.059*** (0.016)		0.044*** (0.013)		0.022* (0.010)
<i>Constant</i>	0.408*** (0.035)	-1.060*** (0.221)	0.339*** (0.033)	-0.662** (0.240)	0.141*** (0.024)	-0.738*** (0.129)
Observations	4,195	3,424	4,195	3,424	4,195	3,424
Industry FE	No	Yes	No	Yes	No	Yes
R ²	0.177	0.277	0.150	0.215	0.048	0.151
Adjusted R ²	0.176	0.269	0.149	0.207	0.047	0.142

This table examines if there is an increase in the use of non-GAAP measures in CEO incentive plans in response to the 2010 SEC guidance update for firms that use non-GAAP measures subject to SEC regulation prior to the update and were, thus, affected by the regulations (regulated non-GAAP firms). In this table, I report results from estimating the following OLS regression model:

$$Num_{it} = \beta_0 + \beta_1 \times Regulated_{it} + \beta_2 \times Post_{it} + \beta_3 \times Regulated_{it} \times Post_{it} + \beta \times Controls_{it} + \varepsilon$$

The dependent variable (D. V.) is *Num* in columns (1) and (2), *Num_ST* in columns (3) and (4), and *Num_LT* in columns (5) and (6), respectively. The independent variable of interest is the interaction term between *Regulated* and *Post*. For parsimony, I do not tabulate coefficients for my estimated fixed effects. Standard errors are double clustered by industry and year in parentheses. *, **, *** indicate statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively. A diagrammatic overview of the classification of firms into the regulated non-GAAP and the control groups is provided in Appendix D. All variables are defined in Appendix E.

Table 6: Panel A. 2010 C&DI update and the use of non-GAAP measures in CEO incentive plans by restructuring firms versus non-restructuring firms

	(1)	(2)	(3)
<i>Criterion for failing the two-year 'look-back' test</i>		<i>Restructuring expenses</i>	
<i>Propensity of failing the two-year 'look-forward' test</i>	<i>High leverage</i>	<i>High financial distress risk</i>	<i>Asset upsizings & downsizings</i>
D.V.: Num			
<i>Regulated</i>	0.605*** (0.107)	0.540*** (0.106)	0.654*** (0.064)
<i>Post</i>	-0.043 (0.099)	-0.038 (0.079)	-0.088 (0.097)
<i>Restruc_firm</i>	-0.140 (0.147)	-0.026 (0.166)	0.050 (0.138)
<i>Regulated × Post</i>	0.173 (0.094)	0.149 (0.117)	0.199* (0.093)
<i>Regulated × Restruc_firm</i>	0.064 (0.142)	0.109 (0.187)	-0.072 (0.141)
<i>Restruc_firm × Post</i>	-0.137 (0.127)	-0.154 (0.089)	-0.044 (0.136)
<i>Regulated × Restruc_firm × Post</i>	0.400*** (0.116)	0.497*** (0.152)	0.338** (0.127)
<i>Accruals</i>	0.443 (0.333)	0.413 (0.309)	0.430 (0.350)
<i>CEO_tenure</i>	-0.014** (0.005)	-0.013** (0.005)	-0.014** (0.005)
<i>CFO</i>	-0.042*** (0.012)	-0.035** (0.013)	-0.040** (0.013)
<i>Earnings_vol</i>	0.051 (0.390)	-0.075 (0.437)	-0.034 (0.362)
<i>Intan_intensity</i>	0.474** (0.190)	0.462** (0.196)	0.472** (0.196)
<i>Ln_assets</i>	0.191*** (0.026)	0.188*** (0.026)	0.184*** (0.024)
<i>Loss</i>	-0.007 (0.133)	-0.023 (0.134)	-0.002 (0.136)
<i>StockRet_vol</i>	-5.354 (2.950)	-5.625* (2.874)	-5.401* (2.898)
<i>Comp_consult</i>	0.224* (0.112)	0.212 (0.117)	0.212 (0.119)
<i>NF_mes</i>	0.054 (0.069)	0.051 (0.062)	0.046 (0.071)
<i>Trend</i>	0.054** (0.017)	0.048** (0.020)	0.048** (0.018)
<i>Constant</i>	-0.998*** (0.219)	-0.986*** (0.209)	-0.988*** (0.248)
Observations	3,424	3,424	3,424
Industry FE	Yes	Yes	Yes
R ²	0.281	0.293	0.281
Adjusted R ²	0.273	0.285	0.274

Table 6: Panel B. 2010 C&DI update and the use of non-GAAP measures in CEO incentive plans by goodwill impairing firms versus non-impairing firms

<i>Criterion for failing the two-year 'look-back' test</i>	<i>Goodwill impairment charges</i>
<i>Propensity of failing the two-year 'look-forward' test</i>	<i>High Gw_intensity & Low MTB</i>
D.V.: Num	
<i>Regulated</i>	0.673*** (0.090)
<i>Post</i>	-0.164** (0.056)
<i>GwImp_firm</i>	0.248 (0.234)
<i>Regulated × Post</i>	0.340*** (0.099)
<i>Regulated × GwImp_firm</i>	-0.226 (0.232)
<i>GwImp_firm × Post</i>	0.037 (0.058)
<i>Regulated × GwImp_firm × Post</i>	0.226** (0.071)
<i>Accruals</i>	0.289 (0.364)
<i>CEO_tenure</i>	-0.014** (0.005)
<i>CFO</i>	-0.040*** (0.012)
<i>Earnings_vol</i>	-0.158 (0.365)
<i>Leverage</i>	0.001 (0.002)
<i>Ln_assets</i>	0.197*** (0.022)
<i>Loss</i>	-0.015 (0.131)
<i>StockRet_vol</i>	-6.045* (2.972)
<i>Comp_consult</i>	0.235* (0.122)
<i>NF_mes</i>	0.044 (0.066)
<i>Trend</i>	0.052** (0.016)
<i>Constant</i>	-1.037*** (0.180)
Observations	3,424
Industry FE	Yes
R ²	0.280
Adjusted R ²	0.272

Panel A of this table reports results from estimating the following regression model using ordinary least squares. The key dependent variable is *Num*. The independent variable of interest is the three-way interaction term between *Regulated*, *Restruc_firm*, and *Post*.

$$\begin{aligned} Num_{it} = & \beta_0 + \beta_1 \times Regulated_{it} + \beta_2 \times Post_{it} + \beta_3 \times Restruc_firm_{it} + \beta_4 \times Regulated_{it} \times Post_{it} \\ & + \beta_5 \times Regulated_{it} \times Restruc_firm_{it} + \beta_6 \times Restruc_firm_{it} \times Post_{it} \\ & + \beta_7 \times Regulated \times Restruc_firm_{it} \times Post_{it} + \beta \times Controls_{it} + \varepsilon \end{aligned}$$

Restruc_firm equals one if a firm failed either the two-year ‘look-back’ test or was likely to fail the two-year ‘look-forward’ test in 2010-11 and zero otherwise. Firms that would have failed the ‘look-back’ test in 2010 (2011) are identified based on whether they had *restructuring expenses* in either of the past two years, 2008 (2009) or 2009 (2010). Firms that were likely to fail the ‘look-forward’ test in 2010 (2011) are identified in terms of a higher propensity to restructure based on *high leverage* in column (1), *high financial distress risk* in column (2), *asset upsizings and downsizings* in column (3).

Panel B of this table reports results from estimating the following regression model using ordinary least squares. The key dependent variable is *Num*. The independent variable of interest is the three-way interaction term between *Regulated*, *GwImp_firm*, and *Post*.

$$\begin{aligned} Num_{it} = & \beta_0 + \beta_1 \times Regulated_{it} + \beta_2 \times Post_{it} + \beta_3 \times GwImp_firm_{it} + \beta_4 \times Regulated_{it} \times Post_{it} \\ & + \beta_5 \times Regulated_{it} \times GwImp_firm_{it} + \beta_6 \times GwImp_firm_{it} \times Post_{it} \\ & + \beta_7 \times Regulated \times GwImp_firm_{it} \times Post_{it} + \beta \times Controls_{it} + \varepsilon \end{aligned}$$

GwImp_firm is an indicator variable that equals one if a firm failed either the two-year ‘look-back’ test or was likely to fail the two-year ‘look-forward’ test in 2010-11 and zero otherwise. Firms that would have failed the ‘look-back’ test in 2010 (2011) are identified based on whether they had *goodwill impairment charges* in either of the past two years, 2008 (2009) or 2009 (2010). Firms that were likely to fail the ‘look-forward’ test in 2010 (2011) are identified in terms of a higher propensity to impair goodwill based on *goodwill intensity* and lagged *market to book ratio*.

For parsimony, I do not tabulate coefficients for my estimated fixed effects. Standard errors are double-clustered by industry and year in parentheses. *, **, *** indicate statistical significance (two-tailed) at the 0.10, 0.05, and 0.01 levels, respectively. A diagrammatic overview of the classification of regulated non-GAAP firms into the restructuring (goodwill impairing) and the non-restructuring (non-impairing) groups is provided in Appendix D. All other variables are defined in Appendix E.

Appendix A: Regulations applicable to non-GAAP measures

- Reg G

For periods ending after March 28, 2003, Reg G applies to all public disclosures including earnings releases. Reg G requires that, if a firm discloses non-GAAP earnings in any public communication, it (a) must disclose the most directly comparable GAAP earnings number, (b) must disclose a clearly understandable quantitative reconciliation of the non-GAAP number to the directly comparable GAAP number, and (c) may not present non-GAAP earnings in ways that mislead investors (SEC, 2003).

- Item 10(e) rules

The amendments to Item 10 of Reg S-K prohibit, from SEC filings, non-GAAP measures that exclude ‘non-recurring items’, if firm reports or is likely to report the same or similar items in the previous or following two years (Clarke, Sassalos, and Schmitt, 2003; SEC, 2003). I refer to this Item 10(e) requirement as the ‘two-year look-back and look-forward test’. Item 10(e) also requires disclosure of reasons as to why registrant’s management believes that the presentation of the non-GAAP measure provides useful information to investors regarding the registrant’s financial condition and results of operations (SEC, 2003).

Some additional relaxations in the 2010 SEC C&DI update:

- It eliminated uncertainty in non-GAAP disclosures by corroborating that there is no prohibition against disclosing a non-GAAP measure that is not used by management in managing its business;
- It made it easier for foreign private issuers to include non-GAAP measures in their SEC filings that would otherwise be prohibited by Item 10(e) if they are required or “expressly permitted” by the standard setter that is responsible for establishing GAAP used in the company’s primary financial statements included in its SEC filings; and
- It made it easier to report segment non-GAAP measures, for example, by omitting the statement that “*it would be difficult to demonstrate that segment measures other than those reported to the chief operating decision maker as contemplated in the GAAP standard would be useful to investors*” and by increasing flexibility regarding disclosure of product revenues.

Appendix B: SEC pronouncements prior to the 2016 SEC C&DI update (Harmon, 2016a, 2016b)

- SEC Chair Mary Jo White on December 9, 2015 (White, 2015)

In her keynote address at the 2015 AICPA Conference, Chair White stated that “*By some indications, non-GAAP measures are used extensively and, in some instances, may be a source of confusion.*” She also indicated the need to ensure that the current rules are “*sufficiently robust in light of current market practices.*”

- PCAOB Chair James R. Doty on March 14, 2016 (Doty, 2016)

In reviewing the status of the audit during a budget presentation to the SEC, Mr. Doty stated that “*Warning signs abound. Companies’ use of unaudited and non-GAAP metrics proliferate.*”

- SEC Commissioner Kara M. Stein on March 14, 2016 (Stein, 2016)

At a PCAOB budget meeting, she quoted “some in the industry” as referring to customized adjustments to GAAP measures as “*earnings before bad stuff.*” She also stated that “*this is a trend that we all need to focus on.*”

- SEC Chief Accountant James Schnurr on March 22, 2016 (Schnurr, 2016)

In his speech at the 12th Annual Life Sciences Accounting and Reporting Congress, Mr. Schnurr provided his perspectives on non-GAAP measures, which he said continue to receive “*attention*” from the SEC. He noted that “*the SEC staff has observed a significant and, in some respects, troubling increase over the past few years in the use of, and nature of adjustments within, non-GAAP measures by companies as well [as] prominence that the analysts and media have accorded such measures....*” He added: “*Staff in the Division of Corporation Finance continues to monitor non-GAAP disclosures as part of its selective review process and regularly issues comments on this issue....You can expect that the staff will continue to be vigilant in their review of the use of these measures for compliance with the rules....The proliferation of non-GAAP reporting measures among registrants, and reliance and reporting by analysts, should warrant increased focus by management and the audit committee. ...In addition, companies should ensure that the measure is prepared in a manner that includes appropriate controls and oversight procedures.*”

Appendix C: Accounting-based performance measures - Classification and Reconciliation

I present the two-step procedure followed to classify accounting-based performance measures into GAAP or non-GAAP with the following five illustrations.

Step 1: Does the description of the measure includes the words “GAAP” or “non-GAAP”?

Example 1: Citrix Systems, Inc., Fiscal year 2012

Performance Measure: Operating Margin %

Use: Target-setting in the CEO incentive plan (contracting) & in the 8-K earnings release (valuation).

Next, I include snapshots from the CD&A section of the company’s proxy statement filed on April 12, 2013, indicating that the measure was used to set CEO incentive pay:

Specifically, we model potential award payouts generated by various performance attainment levels against corporate goals for revenue, non-GAAP earnings per share and non-GAAP corporate operating margin. We also model the likely impact on stockholder

< 1 >

Determination of Awards

Early in the first quarter of 2013, our Executive Vice President, Operations, Chief Financial Officer and Treasurer reviewed and approved the calculations of financial target attainment levels, which were based on, and consistent with, our publicly reported financial results for 2012, and the 2012 award amounts payable to executive officers that were

< 2 >

	<u>Goal(1)</u>	<u>Actual</u>	<u>Attainment</u>
	<i>(amounts are approximate due to rounding)</i>		
Revenue	\$2.574 billion	\$2.586 billion	100.5%
<u>Non-GAAP Operating Margin %</u>	26.3%	25.3%	96.3%
Total Weighted Payout %			

< 3 >

Conclusion: ‘Operating Margin%’ is a non-GAAP measure following step 1. The measure is reconciled in the 8-K earnings release filed on January 30, 2013:

GAAP operating margin
 Add: stock-based compensation
 Add: amortization of product related intangible assets
 Add: amortization of other intangible assets
Non-GAAP operating margin

Example 2: Intuit, Inc., Fiscal year 2008

Performance measure: Operating Income

Use: Making discretionary adjustments to CEO incentive pay (contracting)

I next include snapshots from the CD&A section of the company's proxy statement filed on October 31, 2010, indicating that the measure was used to set CEO incentive pay:

Whether a bonus is paid under the SEIP or IPI, the Compensation Committee believes that it is important to exercise judgment and discretion, within the boundaries of the plan guidelines, in determining bonus payments. For this reason, annual bonuses are not paid out according to a pre-determined mathematical formula, but rather with careful analysis and balancing of many factors, including the overall corporate performance, based on revenue and operating income growth, and individual performance, based on leadership and impact on operational and strategic plans for growth. The factors are not assigned specific weights.

< 1 >

During the first quarter of fiscal 2008, the Compensation Committee established a target of \$2.8 billion in Company revenue as the performance hurdle for the SEIP. At the close of fiscal 2008, the Compensation Committee certified that Intuit had exceeded the revenue target, and the committee exercised its discretion to determine the specific cash bonuses to be paid to SEIP participants, subject to a limitation of \$5,000,000 per executive.

Though no other performance was required for SEIP participants to receive a bonus under this plan in fiscal 2008, the Compensation Committee also considered the following key financial measures in determining the actual incentive bonuses awarded to individual executives.

<u>Annual Financial Measures for Fiscal 2008</u>	<u>Performance</u>
Total Revenue	\$3.071 billion
Annual Growth Rate	15%
<u>Operating Income (Non-GAAP)</u>	\$856 million
Annual Growth Rate	12%

< 2 >

Conclusion: 'Operating Income' is a non-GAAP measure following step 1. The measure is reconciled in the proxy statement itself:

**RECONCILIATION OF NON-GAAP FINANCIAL MEASURES
TO MOST DIRECTLY COMPARABLE GAAP FINANCIAL MEASURES**

	Twelve Mon July 2008 (In thou (Unaud)
GAAP operating income from continuing operations	\$650,767
Amortization of purchased intangible assets	56,011
Acquisition-related charges	35,518
Share-based compensation expense	113,237
<u>Non-GAAP operating income</u>	<u>\$855,533</u>

< 3 >

Example 3: ADC Telecommunications, Inc., Fiscal year 2008

Performance measure: Company-wide Net Sales

Use: Only for setting targets in CEO incentive plan (contracting)

I next include snapshots from the CD&A section of the company's proxy statement filed on January 16, 2009, indicating that the measure was used to set CEO incentive pay:

Fiscal 2008 Incentive Plan Performance Goals and Results. For fiscal 2008, the performance goals established for the MIP were derived from our annual operating plan, which targeted revenue and profitability growth at rates higher than the global revenue growth rates expected for our overall industry at the time the plan was established. The following company-wide performance metrics were used for the 2008 MIP:

< 1 >

Fiscal 2008 Incentive Plan Business Performance Goals and Results

Metric	Fiscal 2008 Target (\$)	Fiscal 2008 Results (\$)	Incentive Payout Percentage(1)
<u>ADC-Level Net Sales(2)(3)</u>	1,483.9	1,493.7	108.2 %
ADC-Level Adjusted Operating Income(2)(3)	94.8	88.8	86.0 %

< 2 >

The measure is indicated to be a GAAP measure in the proxy statement itself :

Net Sales: Net sales commonly are used as a key performance measure both in our peer group and among United States public companies in general. Net sales accounted for 25% of each applicable financial performance goal in fiscal 2008. The amount of net sales is determined in accordance with Generally Accepted Accounting Principles ("GAAP") for goods shipped or services provided to third party customers, net of returns received and discounts.

< 3 >

Conclusion: 'Company-wide Net sales' is a GAAP measure following step 1.

Step 2: If the answer to Step 1 is a “No”, then check how the measure is calculated and if certain financial statement line items are indicated to be “adjusted” or “excluded” from it.

Example 4: Nabors Industries, Ltd., Fiscal year 2014

Performance measure: Adjusted EBITDA

Use: Target setting in the CEO incentive plan (contracting) & in the 8-K earnings release (valuation)

I next include a snapshot from the CD&A section of the company’s proxy statement filed on April 23, 2015, indicating that the measure was used to set CEO incentive pay:

For 2014, Mr. Petrello's annual performance bonus targets were based on the Company's target for adjusted EBITDA, or operating cash flow, of \$1.833 billion. This metric was selected by the Compensation Committee to encourage generation of cash flow and to further strengthen the Company's ability to grow, improve our competitive position and encourage long-term shareholder return. In particular, adjusted EBITDA is a significant consideration used by analysts in evaluating the Company and is therefore a key driver of the Company's share price.

The Compensation Committee established the following targets for Mr. Petrello's annual performance bonus for 2014:

- A minimum threshold of 70% of target adjusted EBITDA, with a payout of 70% of base salary at that level;
- A target award of 100% of target adjusted EBITDA, with a payout of 100% of base salary at that level; and
- A maximum goal of 120% of target adjusted EBITDA, with a payout of 200% of base salary at that level.

< 1 >

Conclusion: ‘Adjusted EBITDA’ is a non-GAAP measure following step 2 since certain items are indicated to be “adjusted” from it. The measure is reconciled in the 8-K earnings release filed on March 3, 2015.

RECONCILIATION OF NON-GAAP INCOME (LOSS) FROM CONTINUING OPERATIONS (Unaudited)	
(In thousands)	December 31, 2014
<u>Adjusted EBITDA</u>	\$ 445,692
Less: Depreciation and amortization	293,572
Adjusted income (loss) derived from operating activities	152,120
Interest expense	(43,697)
Investment income (loss)	1,596
Gains (losses) on sales and disposals of long-lived assets and other income (expense), net	(9,606)
Impairments and other charges	(1,010,423)
Income (loss) from continuing operations before income taxes	\$ (910,010)

< 2 >

Example 5: 3M, Inc., Fiscal year 2011

Performance measure: Economic profit

Use: Only for setting targets in the CEO incentive plan (contracting)

I next include snapshots from the CD&A section of the company’s proxy statement filed on March 21, 2012, indicating that the measure was used to set CEO incentive pay.

3M's broad-based annual incentive plan delivers short-term incentive compensation based on three performance metrics:

- Local Currency Sales vs. plan for the current year;
- Economic Profit (of 3M or a business unit, as applicable) vs. plan for the current year; and
- 3M Economic Profit vs. the prior year.

< 1 >

<u>Economic Profit</u>			Total Company Economic Profit vs. Prior Year	Weighted Average Payout % Based on Payout Curve
Plan	Actual	Actual vs. Plan		
\$2,405	\$2,304	96%	96%	101%

< 2 >

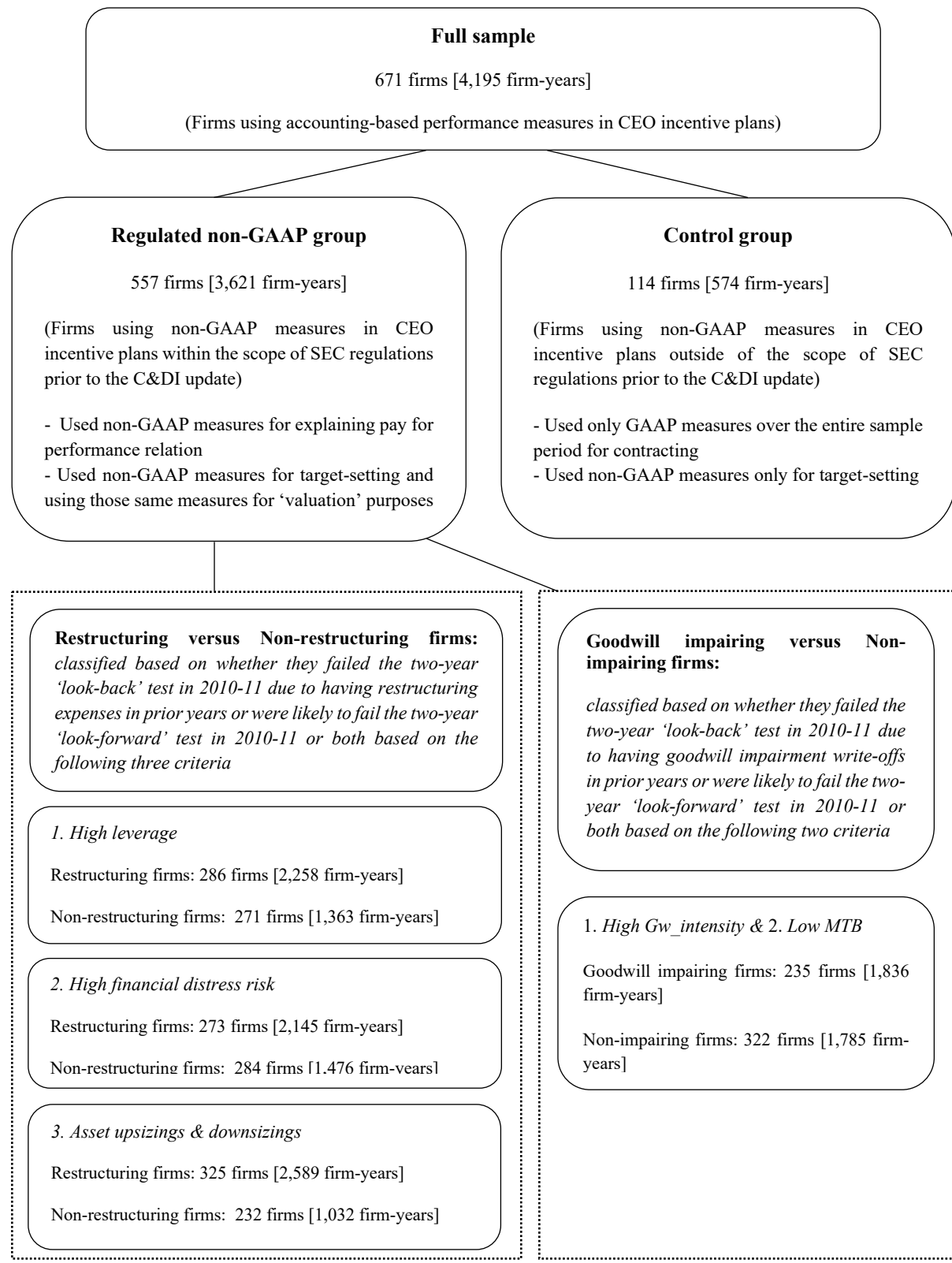
Conclusion:

‘Economic profit’ is a non-GAAP measure following step 2 since certain items are indicated to be “adjusted” from it. However, since the measure is only used for target setting in the CEO incentive plan, it is not reconciled in the proxy statement or any other SEC filing.

"Economic Profit" means the after-tax income of the Company or a business unit (operating income, plus interest income, minus income taxes), adjusted to exclude special items and the impact of acquisitions or divestitures in the year each acquisition or divestiture is completed (unless such acquisition or divestiture is included in the operating plan for the business), less a charge (10 percent in 2011) for the capital used to generate such after-tax operating income. Company Economic Profit is calculated using total Company capital, while the Economic Profit of a business unit is calculated using only accounts receivable and inventories of such business unit as capital.

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Appendix D: Classification of firms



This diagram provides an overview of the classification of firms into the regulated non-GAAP and the control groups and in addition, the sub-classification of regulated non-GAAP firms into restructuring (goodwill impairing) and non-restructuring (non-impairing) firm groups. The starting point for the classification is the total number of firms used in the analysis in Table 5 column (1). The actual number of firms that are a part of the multi-variate analyses in Tables 5 and 6 would be different due to missing variable values.

Appendix E: Variable definitions

Name	Description	Source
Key dependent variables		
<i>Num</i>	Equals the total number of non-GAAP measures used in CEOs' short- and long-term incentive compensation plans	- Hand collection (Proxy statements) - Equilar
<i>Num_ST</i> (<i>Num_LT</i>)	Equals the total number of non-GAAP measures used in CEOs' short-term (long-term) incentive compensation plans	- Hand collection (Proxy statements) - Equilar
Key independent variables		
<i>Regulated</i>	Indicator variable that equals one if a firm belongs to the regulated non-GAAP sample, and zero if it belongs to the control sample. The regulated non-GAAP (control) group comprises firms that use non-GAAP measures in CEO incentive plans within (outside of) the scope of SEC regulations prior to the 2010 C&DI update and are, thus, (un-) affected by the regulations. Firms that use non-GAAP measures in CEO incentive plans that fall <i>under</i> the scope of SEC regulations are defined as those that (i) used non-GAAP measures to explain the pay for performance relation, or (ii) used the same non-GAAP measures for target-setting that they also used for valuation purposes in earnings announcements and annual reports. Firms that use non-GAAP measures in CEO incentive plans <i>outside</i> of the scope of SEC regulations are defined as those that either used only GAAP measures in CEO incentive plans over the entire sample period, or they used non-GAAP measures only for target-setting.	- Hand collection (Proxy statements, 8-K filings, & 10-K filings) - Equilar
<i>Post</i>	Indicator variable that equals one for fiscal years from 2010 onwards until December 8, 2015 (i.e., before the influence of the 2016 SEC C&DI update begins from December 9 onwards) and zero otherwise (i.e., the pre-fiscal 2010 years).	N.A.
<i>Restruc_firm</i>	Indicator variable that equals one if a firm failed either the two-year 'look-back' test or was likely to fail the two-year 'look-forward' test or both in 2010-11, and zero otherwise.	N.A.

Firms that would have failed the ‘look-back’ test in 2010 (2011) are identified based on whether they had *restructuring expenses* in either of the past two years, 2008 (2009) or 2009 (2010).

Firms that were likely to fail the ‘look-forward’ test in 2010 (2011) are identified in terms of a higher propensity to restructure based on three distinct criteria: *high leverage*, *high financial distress risk*, *asset upsizings* and *downsizings*. I apply these criteria listed next to fiscal years 2011 (2012) and 2012 (2013) to determine if a restructuring firm was likely to fail the two-year ‘look-forward’ test in 2010 (2011).

1. Leverage

- Compustat

Indicator variable that equals one if the value of *Leverage* is above the median in year *t*, and zero otherwise.

Leverage is defined as the ratio of debt to common equity in year *t* and the median split is by two-digit SIC code and fiscal year.

2. Financial distress risk

- Compustat
- Federal reserve bank of St. Louis website²⁵

Indicator variable that equals one if the value of *O-score* is above the median in year *t*, and zero otherwise.

Financial distress risk is determined based on the Ohlson’s (1980) *O-score* model and the median split by two-digit SIC code and fiscal year.

$$\begin{aligned} O = & -1.32 - 0.407 \times SIZE + 6.03 \times TLTA \\ & - 1.43 \times WCTA + 0.0757 \times CLCA \\ & - 1.72 \times OENEG - 2.37 \times NITA \\ & - 1.83 \times FUTL + 0.285 \times INTWO \\ & - 0.521 \times CHIN \end{aligned}$$

Where, *SIZE* equals the natural logarithm of (total assets/GNP price-level index); *TLTA* equals total liabilities divided by total assets; *WCTA* equals working capital divided by total assets; *CLCA* equals current liabilities divided by current assets; *OENEG* equals one if total liabilities exceed total assets and zero otherwise; *NITA* equals net income divided by total assets; *FUTL* equals funds from operations divided by total assets; *INTWO* equals one if net income was negative for the last two years and zero otherwise; *CHIN* equals $(NI_t - NI_{t-1})/(|NI_t| + |NI_{t-1}|)$ where *NI* is net income for the most recent period.

²⁵ <https://fred.stlouisfed.org/tags/series?t=gnp%3Bimplicit+price+deflator>

	3. Asset upsizings & downsizings	- Compustat
	Indicator variable that equals one if a firm undergoes either an increase (or a reduction) of at least 10% in the book value of total assets or total employees in year t, but no increase (or decrease) in any of the previous three years, and zero otherwise (Cook et al., 2016; Denis and Shome, 2005; Hoskisson and Johnson, 1992) An increase (reduction) indicates ‘asset upsizing (downsizing).’	
<i>GwImp_firm</i>	Indicator variable that equals one if a firm failed either the two-year ‘look-back’ test or was likely to fail the two-year ‘look-forward’ test in 2010-11, and zero otherwise. Firms that would have failed the ‘look-back’ test in 2010 (2011) are identified based on whether they had <i>goodwill impairment charges</i> in either of the past two years, 2008 (2009) or 2009 (2010). Firms that were likely to fail the ‘look-forward’ test in 2010 (2011) are identified in terms of a higher propensity to impair goodwill based on two criteria. I apply these criteria (listed next) to each of the fiscal years 2011 (2012) and 2012 (2013) to determine if a restructuring firm was likely to fail the two-year ‘look-forward’ test in 2010 (2011).	N.A.
	1. Goodwill intensity	- Compustat
	Indicator variable that equals one if firms' goodwill (total intangibles) scaled by total assets is above the median in year t, and zero otherwise. The median split for <i>Gw_intensity</i> is by fiscal year.	
	2. Market to book ratio	- Compustat
	Indicator variable that equals one if the market to book ratio is below the median in year t-3 or t-4, and zero otherwise. The median split for <i>MTB</i> is by two-year SIC code and fiscal year. Note that this variable was lagged by three to	

Control variables: Firm characteristics

<i>Accruals</i>	Equals discretionary accruals in year t, measured using the modified Jones (1991) model proposed in Dechow et al. (1995). <i>Discretionary accruals</i> are calculated as the difference between total accruals and modified Jones normal accruals. <i>Total accruals</i> are calculated as the difference between net income before discontinued operations and extraordinary items and cash flows from operations. The modified Jones <i>normal accruals</i> are estimated as: $\begin{aligned} \text{Total Accruals}_{it} &= \beta_0 + \beta_1 \times (\Delta \text{Sales}_{it} - \Delta \text{REC}_{it}) \\ &+ \beta_2 \times \text{PPE}_{it} \end{aligned}$ Where, ΔSales equals the change in the firm's sales from year t-1 to year t, ΔREC equals the change in the firm's accounts receivables from year t-1 to year t, and <i>PPE</i> equals the firm's gross property, plant, and equipment. All variables are scaled by lagged total assets in year t. The modified Jones model is estimated cross-sectionally by year and industry for each 2-digit SIC industry year with at least 10 observations (Ayers, Jiang, and Yeung, 2006).	- Compustat
<i>CEO_tenure</i>	Equals CEO tenure in years (a proxy for CEO power)	- Compustat ExecuComp
<i>CFO</i>	Equals cash flow from operations in year t, in billions	- Compustat
<i>Earnings_vol</i>	Equals the standard deviation of prior three years of GAAP net income scaled by average total assets in year t	- Compustat
<i>Intan_intensity</i>	Equals total intangibles scaled by total assets in year t	- Compustat
<i>Leverage</i>	Equals the ratio of debt to common equity in year t	- Compustat
<i>Ln_assets</i>	Equals the natural log of total assets in year t (a proxy for firm size)	- Compustat
<i>Loss</i>	Indicator variable that equals one if GAAP net income is less than zero in year t (a proxy for firm performance)	- Compustat
<i>StockRet_vol</i>	Equals the standard deviation of daily stock returns over year t	- CRSP
<i>Trend</i>	Set to one in the initial sample year and increasing by one for every year thereafter (t = 1, 2, ..., T)	N.A.

Control variables: Compensation-related

<i>Comp_consult</i>	Equals one if the firm hired the services of a compensation consultant, and zero otherwise	- Hand collection (Proxy statements)
<i>NF_mes</i>	Equals one if CEO's incentives are partly based on non-financial performance measures, and zero otherwise	- Equilar

Control variables: Alternative proxies

CEO power:

<i>CEO_hire%</i>	Equals percentage of board members appointed during the CEO's tenure	- Institutional Shareholder Services (ISS) - Compustat ExecuComp
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<i>Insider_%</i>	Equals percentage of board members that are insiders	- ISS
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<i>Power_index</i>	Equals the number of points awarded to the CEO as follows: one point for being the chair of the board, two points for being the chair of the board and the president of the company, and zero points otherwise.	- ISS
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Firm size:

<i>Ln_mcap</i>	Equals the natural log of total market capitalization in year t	- Compustat
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<i>Ln_sales</i>	Equals the natural log of total sales in year t	- Compustat
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Firm performance:

<i>NegE_traj</i>	Indicator variable that equals one if the GAAP earnings in year t are less than those in year t-1	- Compustat
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<i>NegAb_ret</i>	Indicator variable that equals one if the firm's annual cumulative abnormal stock return in year t is negative.	- CRSP
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Abnormal return is defined as the firm's stock return minus CRSP value-weighted return.

<i>zROA</i>	Equals standardized return on assets as determined below:	- Compustat
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$$zROA_{it} = \frac{ROA_{it} - \overline{ROA_t}}{\sigma_t^{ROA}}$$

Standardization is based on year and two-digit SIC code returns. ROA is calculated by dividing EBIT by average total assets.

<i>zROA_{t-1}</i>	Equals lagged standardized return on assets	- Compustat
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zRstock Equals standardized stock returns: - CRSP

$$zRstock_{it} = \frac{Rstock_{it} - \overline{Rstock_t}}{\sigma_t^{Rstock}}$$

Standardization is based on year and two-digit SIC code returns.

zRstock_{t-1} Equals lagged standardized stock returns - CRSP

Control variables: Robustness checks

Diversify Equals the total number of business segments in year t with positive revenue - Compustat [WRDS_SEGMERGED]

R&D_Inv Equals the total research and development expenditure in year t, in billions - Compustat

Pay_complex Equals the natural logarithm of the sum of one plus the values of five indicator variables indicating whether the CEO pay package includes discretionary bonus, formula-based bonus, restricted shares vesting over time, performance shares, or stock options (Murphy and Sandino, 2020) - Compustat ExecuComp

Other variables

Incentive Equals the sum of equity- and cash-based incentive compensation, in millions (Balachandran, Kogut, and Harnal, 2011). - Compustat ExecuComp

Equity-based incentive compensation is the sum of the following fields: *option_awards_fv* and *stock_awards_fv* (i.e., it is determined as the total fair value of all stock and option awards as detailed in the ‘Plan-based awards’ table).

Cash-based incentive compensation is the sum of the fields, *bonus*, *ltip*, and *noneq_incent* (i.e., it is determined as the sum of the amounts earned from discretionary bonuses, long term incentive payouts, and performance-based non-equity incentive plans).²⁶

²⁶ Since the 2006 fiscal year end, the SEC has required separate reporting of the performance-based and the discretionary components of annual bonuses. Compustat ExecuComp, after December 2006, shows only discretionary bonuses in the ‘*bonus*’ field, while performance-based bonuses are reported as part of the ‘*non-equity incentive payments (noneq_incent)*’ field. Kim and Yang (2010), however, note that firms sometimes report numbers in the wrong columns, and ExecuComp doesn’t correct for these mistakes.

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Essay 2

How do managers make non-GAAP exclusion decisions?

1. Introduction

Regulators such as the United States Securities and Exchange Commission (SEC) issue guidance on non-GAAP disclosures that involves managing a trade-off between reducing the opportunism in these disclosures whilst increasing their informativeness. Bond, Czernekowski, Lee, and Loyeung (2017) suggest that the cost and benefits of this type of regulatory guidance needs to be better understood. To reflect their current position on non-GAAP disclosures, regulators may be less constrained in updating the level of detail of their statements in the guidance as opposed to updating any actual rules in the guidance.²⁷ Based on the type of guidance provided by the regulator and top management disclosure motives, managers need to make decisions in relation to what exclusions need to be made from a GAAP measure to construct a non-GAAP measure. I examine how managers make these decisions based on their perceptions of the type of regulatory guidance (detailed versus broad) and their disclosure motivations (informativeness versus opportunism).

The motivation for this research question comes from the 2016 update by the SEC to its staff interpretive guidance (also known as ‘Compliance and Disclosure Interpretations’ or C&DI), in which *some* examples of ‘potentially misleading’ non-GAAP measures that could violate Regulation G were included by the SEC (Graber and Flow, 2016; PwC, 2016; SEC, 2016a, 2016b).²⁸ My focus is on those examples that did not result in a change in rules as what is detailed in them was already implied and enforced by the SEC. However, I argue that the inclusion of these examples, which lack concrete facts and are detailed but not definitive, changed how managers perceive the regulatory guidance, and this in turn, affected their disclosure judgements and decisions.²⁹ Using the enhanced external validity

²⁷ It is a widely known fact that in the United States, regulators adopt a more ‘rules-based’ approach to accounting (Donelson, McInnis, and Mergenthaler, 2012).

²⁸ Appendix A provides a summary of the institutional background with details of the regulations affecting non-GAAP reporting adopted by the SEC and its 2016 interpretive guidance update.

²⁹ These examples are unlike those included in the implementation guidance of accounting standards.

provided by this 2016 regulatory shock, I find experimental evidence of participant managers perceiving the guidance to be significantly ‘more detailed’ (‘broader’) after (before) the C&DI update.

The reporting of non-GAAP measures is quite different from that of GAAP measures. First, the former is not audited, unlike the latter.³⁰ Thus, managers are less constrained in their decisions with respect to non-GAAP reporting. Further, since non-GAAP reporting is voluntary, managerial incentives to do it are more salient and uninhibited vis-à-vis their incentives with respect to the mandated GAAP reporting.

Prior accounting research on judgement and decision-making has mainly focussed on GAAP financial reporting issues by examining how different types of accounting standards (principles- versus rules-based) influence auditors’ (Backof, Bamber, and Carpenter, 2016; Hackenbrack and Nelson, 1996; Ng and Tan, 2003) and to some extent preparers’ cognitive processes, judgements and decisions (Agoglia, Doupnik, and Tsakumis, 2011; Jamal and Tan, 2010).³¹ Further, these prior studies have focussed almost exclusively on the ‘opportunism’ aspect of GAAP reporting (for example, which types of accounting standards, principles- or rules-based, mitigate aggressive GAAP reporting). However, since non-GAAP reporting is voluntary, managers could, ex-ante, have two underlying motivations when they choose to make these disclosures: *informativeness* and *opportunism*, with archival studies suggesting that the former motive is more dominant (Black, Christensen, Ciesielski, and Whipple, 2018).

My focus is on the decision that managers make of whether or not to exclude an ambiguous financial statement line item in constructing non-GAAP measures (hereafter referred to as ‘the non-GAAP exclusion decision’).³² ‘Informative’ managers are expected to exclude these items if it is appropriate to do so. In contrast, ‘Opportunistic’ managers are expected to exclude this type of an item

³⁰ In certain situations, however, the auditor may perform additional procedures over non-GAAP measures at the direction of the audit committee or the management.

³¹ For the influence of the type of accounting standards on auditors’ judgements, see also: Cohen, Krishnamoorthy, Peytcheva, and Wright (2013); Peytcheva, Wright, and Majoor (2014); Segovia, Arnold, and Sutton (2009); Trompeter (1994).

³² I define a financial statement line item as ‘ambiguous’ if the item creates a dilemma for managers as to whether it should be included in constructing the non-GAAP measure (i.e., whether it should be treated as recurring or non-recurring). Shumsky (2017) discusses how the distinction between a distinct cost and a recurring expense could be clouded for certain items such as expenses relating to a restructuring plan, which are announced in one year but bleed across several.

if it is inappropriate to do so. I define an exclusion made by managers with an informativeness (opportunism) motive as (in)appropriate if it makes the non-GAAP measure more (less) value relevant and increases (decreases) its predictive ability with respect to future operating performance (Fields, Rangan, and Thiagarajan, 1998; Kolev, Marquardt, and McVay, 2008).

I begin by examining the effect of the type of guidance on managers' non-GAAP exclusion decisions. I argue that a more detailed guidance can affect managers' exclusion judgements in two ways. First, it can make them more likely to choose to make the exclusion decision if it creates lower perceived decision uncertainty either due to a lower risk of regulator second-guessing (Nelson, Elliott, and Tarpley, 2002) or due to lower inherent uncertainty in the guidance because of explicit thresholds and requirements (Maines, 2007). Prior studies in psychology also suggest that 'uncertainty' can negatively affect individuals' cognitions and behaviours, and thus, it is better eliminated or, realistically, made cognitively manageable (Van den Bos and Lind, 2002; Weary, Jacobson, Edwards, and Tobin, 2001).

On the other hand, a more detailed guidance can make managers less likely to choose to make the exclusion decision if it creates managerial perceptions of a tighter regulatory regime (Heflin and Hsu, 2008; Webber, Nichols, Street, and Cereola, 2013; Zhang and Zheng, 2011). Managers may find their discretion in making non-GAAP exclusions reduced if the more detailed guidance constrains their option to go for a 'true and fair override' or points towards a certain course of action rather than prescribing it (Cunningham, 2007). To sum it up, without empirical examination, it is difficult to determine how a more detailed (broader) guidance affects the non-GAAP exclusion choices of managers.

I then examine the effect of managers' disclosure motivations on their non-GAAP exclusion decisions. Managers' motivations to make non-GAAP disclosures are based on the goal given to them by their firms' top management. I argue that a top management goal of 'informativeness' would make managers more likely to choose to make the exclusion as it triggers their epistemic motivation. Epistemic motivation is a cognitive motivation that is known to affect individuals' judgements, and if

it is at a higher (lower) level, it can increase their need for cognition (cognitive closure) (Carlston, 2013; Kruglanski, 1989, 2004). Thus, it leads to higher cognitive efforts being put in by managers to resolve moot non-GAAP disclosure issues and ensure that their exclusion decision meets the information needs of stakeholders, while complying with the regulator's guidance.

On the other hand, I argue that a top management goal of 'opportunism' would make it less likely that managers choose to make the exclusion due to career and reputational concerns. Managerial decision-making in this scenario involves a trade-off between satisfying the top management versus protecting themselves from regulatory scrutiny (Feng, Ge, Luo, and Shevlin, 2011; Jiang, Petroni, and Wang, 2010; Matejka, 2007). Moreover, though managers may expend higher cognitive efforts to resolve this trade-off, there is no positive influence on their cognitive processes from a higher epistemic motivation (Westbrook and Braver, 2015). Thus, I hypothesize that managers would choose to exclude an ambiguous item in constructing a non-GAAP measure when given a top management goal of informativeness as opposed to when given a top management goal of opportunism.

I also argue that managers' 'process accountability,' which is about holding them accountable for their efforts to achieve non-GAAP disclosure outcomes (Patil, Vieider, and Tetlock, 2014), plays a moderating role and that the effect of the mediators on managers' exclusion judgements would mainly occur only at low levels of managers' process accountability.³³ That is, if managers are more process accountable, I expect the strength of the relation between perceived decision uncertainty or epistemic motivation and managerial choice for making the exclusion decision to weaken. I make this prediction because more process accountable managers would be more concerned about the possible invalidity of their judgements as they expect to be judged by the regulator on the quality of their exclusion decisions. Thus, they would take the necessary steps to ensure they can justify their exclusion decision to the regulator if called upon to so (Libby, Salterio, and Web, 2004; Markman and Tetlock, 2000) regardless of their levels of perceived uncertainty or cognitive motivations.

³³ A higher process accountability leads to increased managerial attention to the disclosure problem and better calibration, consistent usage, encoding, and retrieval of available information (Tetlock and Kim, 1987).

Finally, I examine the interaction effect of the type of guidance with the top management goals on managers' exclusion decisions. I expect the higher epistemic motivation from an informativeness goal to crowd out the influence of managers' perceiving a more detailed guidance as creating a tighter regulatory regime and thus, not choosing to make the exclusion even if required to do so. I make this prediction because the increased cognitive efforts stemming from the higher epistemic motivation would have managers think deeply about the non-GAAP disclosure situation, for example, how successfully they can respond with detailed explanations and expanded disclosures if questioned by the regulator (Kruglanski, 2004; Kruglanski and Webster, 1996). Thus, I expect the lower perceived decision uncertainty and the higher epistemic motivation in this scenario to result in managers making more 'normative' non-GAAP exclusion decisions, which is what I hypothesize. I define non-GAAP exclusion decisions as 'normative' if managers (do not) exclude an ambiguous item when it is (in)appropriate to do so.

For managers with a goal of opportunism, the influence of a more detailed guidance on managers' exclusion decisions is not clear. On the one hand, it may result in them making more normative exclusion decisions if they perceive the guidance to result in a tighter regulatory regime that acts as a deterrent against aggressive non-GAAP reporting (Kolev et al., 2008). Contrarily, it may exacerbate aggressive non-GAAP reporting resulting in managers making less normative non-GAAP exclusion decisions if they perceive a lower uncertainty with respect to their exclusion decisions being second-guessed by the regulator (Agoglia et al., 2011; Nelson et al., 2002) or if they find it easier to justify their exclusion decisions due to the low inherent uncertainty in this type of guidance (Maines, 2007).

Based on experimental evidence from 132 participants, who have management experience and an accounting/finance background involving investment analysis experience, I find a main effect of the type of guidance on managers' exclusion decisions.³⁴ Specifically, I find that managers choose to exclude an ambiguous charge in constructing a non-GAAP measure when provided with a more detailed

³⁴ In the experiment, the following two variables are manipulated between participants at two levels: Type of non-GAAP guidance (detailed vs. broad) and Top management goal for reporting (informativeness vs. opportunism).

guidance as opposed to a broader guidance. This result is consistent with the argument that there is lower perceived decision uncertainty in the more detailed guidance condition. Further analysis suggests that perceived decision uncertainty partially mediates the effect of the type of guidance on managers' exclusion judgements.

I also find a main effect of the top management goal on managers' exclusion decisions as hypothesized previously. Specifically, I find that managers choose to exclude an ambiguous charge in constructing a non-GAAP measure when given a top management goal of informativeness as opposed to a top management goal of opportunism. This result is consistent with the argument that managers experience a higher epistemic motivation in the 'informativeness' goal condition. Additional analysis suggests that managerial epistemic motivation partially mediates the effect of the top management goal on managers' exclusion judgements.

Additional analysis indicates that, consistent with previous arguments, the conditional indirect effect of the type of guidance (top management goal) on managers' exclusion decisions via the mediator perceived decision uncertainty (epistemic motivation) occurs only at low levels of managers' process accountability. I also find strong evidence of the interaction effect hypothesized previously suggesting that managers with a goal of informativeness make more normative non-GAAP exclusion decisions when they are given a more detailed guidance as opposed to a broader guidance. I do not find any similar or contrary evidence for managers with a goal of opportunism.

To the best of my knowledge, this is the first study to examine how managers' cognitive processes, motivations, judgements, and decisions are influenced by examples that are an existing feature of the SEC C&DI. There is a paucity of research on managerial judgement and decision-making in the non-GAAP disclosures space – the only other study is by Guggenmos, Rennekamp, and Rugar

(2019).^{35, 36} It is not possible to examine the research question in this study using archival data since it is not possible to capture the psychological processes that go into managerial decisions.

My results should be of interest to regulators such as the SEC because they enable them to take a call on how detailed a disclosure guidance, they should consider providing managers. A cost-benefit analysis based on my evidence suggests that a more detailed guidance has benefits for ‘informative’ managers while the costs are inconsequential as ‘aggressive’ managers seem largely unaffected by the regulator’s choice of guidance. Thus, by making their interpretive guidance more detailed, regulators can make non-GAAP disclosures more informative without increasing any potential opportunism in them. With respect to regulatory guidance statements, the level of detail is an attribute that regulators can manipulate more easily as opposed to manipulating the underlying rules directly.

Bentley, Christensen, Gee, and Whipple (2018) find that analysts make their own exclusion choices and that analysts’ exclusion choices are of higher quality than managers’ exclusions. It is possible that managers’ exclusion choices are constrained to some extent by the type of guidance provided and are thus, of lower quality. The right level of detail in the guidance could be a possible fix. My evidence also raises an important point that the answer to ‘potential misinformation’ in non-GAAP disclosures may not be ‘less information’ – since that is disadvantageous to firms’ stakeholders. More ‘relevant’ information may continue to be provided to stakeholders through non-GAAP disclosures without increasing any potential misinformation in them if the regulator’s guidance has the right degree of detail.

2. Theory and Hypothesis Development

Non-GAAP measures are customized accounting measures that include or exclude financial statement items from the directly comparable GAAP financial measure. Examples of non-GAAP measures

³⁵ Prior experimental studies in the non-GAAP disclosures space focus only on analysts and investors as the accounting individuals of interest (Elliott, 2006; Frederickson and Miller, 2004).

³⁶ Guggenmos et al. (2019) predict and find that the presentation of non-GAAP earnings leads to less aggressive reporting of GAAP net income as it alleviates the pressure that managers feel to meet GAAP-based net income targets. They also find that greater perceived SEC-related regulatory concerns about non-GAAP earnings may reduce the quality of GAAP-based net income. However, they hold non-GAAP earnings constant and, thus, do not examine the influence of greater perceived SEC-related regulatory concerns on the quality of non-GAAP earnings.

include a measure of income that excludes one or more expense or revenue items such as EBITDA (earnings before interest, taxes, depreciation and amortization). Thus, the construction of non-GAAP measures involves inherent managerial discretion on what financial statement items to include or exclude (Venter, Emanuel, and Cahan, 2014).

2.1 Managerial decision-making with respect to non-GAAP disclosures

I explore how the type of non-GAAP guidance (detailed vs. broad) and managerial motivations to make non-GAAP disclosures (informativeness vs. opportunism) affect managers' choices with respect to non-GAAP reporting. The non-GAAP setting is unique and interesting because non-GAAP measures disclosed are not audited (unless there is a directive from the audit committee or the management to conduct additional procedures on these measures), and the disclosures are voluntary.^{37, 38} Thus, managers' incentives to make these disclosures are more conspicuous and unrestrained. If they choose to make non-GAAP disclosures, managers might decide to make them *informatively* or *opportunistically*, with extant archival research suggesting that the former motive is more dominant than the latter (Bentley, Christensen, Gee, and, Whipple, 2018; Beyer, Cohen, Lys, and Walther, 2010; Black et al., 2018; Curtis, McVay, and Whipple, 2013; Whipple, 2015). I operationalize the informativeness (opportunism) motivation to make non-GAAP exclusions as the motive for managers to exclude an ambiguous charge in constructing a non-GAAP measure when it is (in)appropriate to do so.³⁹

Managerial choices in relation to non-GAAP disclosures are two-fold. First, managers have to make a decision on what financial statement line items to exclude in constructing the non-GAAP measure. Second, managers need to take a call on the significance with which the non-GAAP measure

³⁷ Once a firm decides to make non-GAAP disclosures, only then it needs to comply with the relevant SEC rules, regulations, and guidance.

³⁸ With respect to GAAP disclosures, an audit committee's responsibilities are quite significant in terms of reviewing compliance with accounting standards and assessing audit quality, amongst other things. In the GAAP disclosures setting, Agoglia et al. (2011) suggest that audit committee strength affects preparers' decisions by inhibiting opportunism when the accounting standard is more rules-based but has no effect when the standard is more principles-based. However, it is important to note that, with respect to non-GAAP disclosures, an audit committee's role isn't quite as integral and may be limited to reviewing the selection and determination of non-GAAP measures with the management (Aughton, Burns, and Crawford, 2016; Bricker, 2018).

³⁹ My focus is on the exclusion of charges rather than gains because the exclusion of the former is more commonplace, and firms are less likely to remove transitory gain items from adjusted earnings (Curtis et al., 2013).

is presented vis-à-vis the GAAP measure. My focus is on managers' judgements and decisions with respect to the 'non-GAAP exclusions,' specifically - their decision on whether or not to exclude an ambiguous charge from a non-GAAP measure given the appropriateness of making the exclusion. The *normative* non-GAAP exclusion decision would involve managers (not) excluding an ambiguous charge in constructing a non-GAAP measure when it is (in)appropriate to do so (so as to be informative of firms' financials to stakeholders and avoid reporting them aggressively).

There is ambiguity that exists in the non-GAAP disclosures setting with respect to whether a financial statement item should be excluded or included in constructing a non-GAAP measure (if its 'recurring' nature is unclear).⁴⁰ This ambiguity exists because of the inherent uncertainty in which firms operate. The SEC Chief Accountant Wesley Bricker, in his keynote address before the 2016 AICPA conference, also said that "*it is important to keep in mind that businesses operate in uncertain environments*" in the context of non-GAAP disclosures (Bricker, 2016). A Wall Street Journal article by Shumsky (2017) also discussed how the distinction between a one-time expense and a recurring expense could be clouded for certain financial statement line items. One of the examples given by the author is expenses relating to restructuring plans, which are announced in one year but then bleed across several years.

Since examples are also a feature of the implementation guidance in accounting standards, comparing my evidence with prior studies in the accounting standards space is essential. In the context of accounting standards, Clor-Proell and Nelson (2007) find that accounting preparers engage in 'example-based' reasoning, which they refer to as the psychological process by which preparers mistakenly rely on the conclusion provided in the example in an accounting standard to account for an ambiguous transaction whilst disregarding the complete facts of the transaction. Their arguments are based on the premise that preparers' judgement process in evaluating an ambiguous accounting transaction is either *priming-based* or *similarity-based* (Capps et al., 2017), and that is why they find the treatment used in an example is most appropriate for their disclosure situation than is actually the

⁴⁰ Even in the context of accounting standards, prior studies indicate that ambiguity exists in accounting for transactions (Capps et al., 2017; Clor-Proell and Nelson, 2007).

case. In the first case, the example primes them to focus on the outcome indicated in the example depending on whether it is an affirmative [positive prime] example or a counter [negative prime] example; in the second case, preparers overstate the similarity between their case and the example (Tversky, 1977).⁴¹

However, the examples in the non-GAAP SEC guidance setting (based on the 2016 SEC C&DI update) to which I refer are not actual examples with hypothetical facts such as those in accounting standards. The former lack concrete facts and are structured to be detailed (though not definitive) one-liners unlike the latter. The inclusion of some of these examples did not result in any change in rules as what is detailed in them was already implied and enforced by the SEC. One such notable example provided by the SEC in its 2016 updated guidance on the appropriate construction of non-GAAP measures is as follows - *‘presenting a performance measure that excludes normal, recurring, cash operating expenses necessary to operate a registrant’s business could be misleading’* (SEC, 2016a). The SEC was already scrutinizing firms excluding ‘seemingly’ recurring expenses from adjusted earnings measures before inclusion of this example and thus, the inclusion of this example was simply an additional detail in the guidance. Moreover, note that the use of the words “*could*” indicate that the option of a true and fair override was retained even after the example was included in the guidance.

This example illustrates how managers’ ‘similarity-based’ psychological processes are not at play in the non-GAAP disclosures setting because the features of an ambiguous charge under managers’ ‘exclusion’ consideration are ill-defined. Thus, it is hard to determine what features are shared or unshared with the charge in the example that managers will over- or under-weight respectively (Tversky, 1977). The ‘priming’ bias, when managers solely rely on the conclusion in an example without regard for the example’s underlying facts, is also not at play in this setting. I draw this conclusion because the SEC guidance example does not have any underlying hypothetical facts, and thus, the example is by and of itself a conclusion. Moreover, even if this example suggests an evaluative tone (Higgins, Bargh, and Lombardi, 1985; Levin, Schneider, and Gaeth, 1998), it is unlikely that it

⁴¹ The affirmative (counter) example in their setting pertains to the case where the implementation guidance in an accounting standard provides an example of acceptable (unacceptable) reporting.

will be used to process a subsequent stimulus (here, exclusion decision) because there is expected to be some temporal delay between priming and the stimulus presentation as managers would have to consciously determine the exact nature of the ambiguous charge and whether it comes under the scope of the guidance example (Higgins and King, 1981; Wyer and Srull, 1981).

Finally, a large group of studies in accounting has also tried to resolve the debate on whether principles- or rules-based accounting standards can curb the opportunism in GAAP reporting. Evidence from these prior studies mainly concerns auditors, and to some extent, preparers as accounting individuals of interest. The evidence from these studies are only partially relevant to the non-GAAP setting for three reasons: (i) their focus is only on reducing opportunism but not on increasing informativeness in financial reporting (though these motives may be considered complementary in the GAAP setting, that is not the case in the non-GAAP setting), ii) as discussed previously, ‘detailed versus broad’ is a property of the statements in the guidance, and iii) U.S. accounting standards and guidance are widely known to be rules-based (Donelson et al., 2012) making the principles- versus rules-distinction less relevant. However, I do incorporate relevant evidence from these studies that specifically pertain to the influence of more versus less precise standards because a detailed guidance can be argued to be more precise than a broader guidance.

2.2 Type of guidance and managers’ non-GAAP exclusion judgements

When managers seek to make decisions, there are several impediments that may prevent them from doing so – one such impediment being ‘uncertainty’ (Duncan, 1972). Uncertainty affects peoples’ cognitions, perceptions, feelings, and behaviours (Van den Bos and Lind, 2002). Prior studies have found that people try to ameliorate the effects of uncertainty to either eliminate them or make them cognitively manageable (Festinger, 1954; Fiske and Taylor, 1991; Hogg and Mulin, 1999; Lopes, 1987; Sorrentino and Roney, 1986; Weary et al., 2001). The theoretical models on uncertainty management also assume that managing uncertainty is an important motive that influences peoples’ behaviours (Jost, Kay, and Thorisdottir, 2009; Lipshitz and Strauss, 1997).

If managers perceived the regulatory guidance as more detailed, it would reduce the uncertainty associated with the risk that their non-GAAP exclusion judgements are second-guessed by the regulator (Ghosh and Ray, 1997; Nelson et al., 2002). It is also easier for managers to justify their decisions when provided with a guidance that has low inherent uncertainty, and that has thresholds and requirements explicitly stated in it (Maines, 2007). Evidence from prior theoretical (Cafée and Craswell, 1984; Craswell and Cafée, 1986) and empirical studies (Agoglia et al., 2011) corroborates this view. Thus, I argue that if managers are provided with a more detailed regulatory guidance, it will lower their perceived uncertainty with respect to the validity of their non-GAAP exclusion decision as opposed to when they are provided with a broader guidance. This decreased uncertainty would make managers more likely to choose to exclude an ambiguous financial statement line item in constructing the non-GAAP measure if they are required to do so to fulfil their underlying informativeness or aggressive motives.⁴²

Managerial confidence in making non-GAAP exclusions is also expected to be higher as a result of the more detailed guidance that provides more information cues. This argument is based on evidence from prior studies in psychology, which find that more information (such as an increase in information cues) generally influences individuals' confidence in their judgements (Oskamp, 1965; Paese and Snizek, 1991; Peterson and Pitz, 1988).

However, prior research also suggests that a more detailed guidance by the regulator could be perceived as creating a tighter regulatory regime (Entwistle, Feltham, and Mbagwu, 2006a, 2006b; Heflin and Hsu, 2008; Kolev et al., 2008; Marques, 2006; Nichols, Gray, and Street, 2005; Webber et al., 2013; Zhang and Zheng, 2011).⁴³ Managers who perceive the guidance to be more detailed may believe that the regulator is trying to reduce their discretion in non-GAAP reporting since the regulator is attempting to tell them what to do, rather than how to decide what needs doing.

⁴² Note that I do not comment on the normativeness of the non-GAAP exclusion decision at this stage because it is associated with the 'top management goal' dimension, and H1 is specifically about the 'type of guidance' dimension only.

⁴³ Black, Christensen, Kiosse, and Steffen (2017) find that firms in the post-SOX period are less likely to exclude recurring items to meet strategic earnings targets because the requirements are stricter after SOX.

By including examples of a detailed nature in the non-GAAP interpretive guidance, the regulator may be perceived to be constraining the option for managers to go for a ‘true and fair override’ (i.e., the ability to depart from a treatment prescribed in the guidance if it results in a ‘true and fair’ presentation of the firm’s financials) in making their non-GAAP disclosure choices. The inclusion of detailed examples in the guidance also results in the guidance not prescribing but pointing managers in a certain direction (Cunningham, 2007). Thus, it might make managers less likely to choose to exclude an ambiguous financial statement line item in constructing the non-GAAP measure.

To sum it up, since prior research does not provide a clear direction on the influence of a more detailed type of guidance on managerial non-GAAP exclusion judgements, I hypothesize (in the null form) that:

H1 (null): *There is no significant difference in the likelihood of managerial choices to exclude an ambiguous charge in constructing a non-GAAP measure when provided with a more ‘detailed’ regulatory guidance as compared to a ‘broader’ guidance.*

Since non-GAAP reporting is a significant managerial undertaking, ‘accountability’ may also have a major role to play in this setting. Since the effectiveness of managers’ non-GAAP exclusion decisions is hard to measure in the short term, managers’ accountability would be based on their efforts to achieve desired non-GAAP reporting outcomes in this type of situation. This type of accountability that holds others accountable for their efforts to achieve outcomes since the effectiveness in delivering outcomes is hard to measure is referred to as ‘process accountability’ (Patil et al., 2014).

Prior psychology and organizational behaviour research finds that process accountability (PA) improves individuals’ attention to the problem at hand, their calibration, consistent use, encoding and retrieval of information - which increases their cognitive effort and decreases their overconfidence (Siegel-Jacobs and Yates, 1996; Simonson and Staw, 1992; Tetlock and Kim, 1987; Tetlock, Skitka, and Boettger, 1989).

Managers that strongly (weakly) expect to be judged by the regulator on the quality of their non-GAAP exclusion decision-making process may be more (less) concerned about the possible invalidity of their judgements. These concerns might make them more (less) process accountable in their decision-making (Siegel-Jacobs and Yates, 1996; Tetlock, 1983, 1985). If managers are more process accountable, I expect the strength of the relation between perceived decision uncertainty and managerial choices for making the exclusion decision to weaken. This effect is due to more process accountable managers taking the requisite steps to ensure they can justify their exclusion decision to the regulator if called upon to so, regardless of the level of uncertainty (Libby et al., 2004; Markman and Tetlock, 2000). To sum it up, the relation between perceived decision uncertainty and managerial choices to make the non-GAAP exclusion decision may hold mainly for managers with low process accountability.

2.3 Top management goals and managers' non-GAAP exclusion judgements

As discussed previously, the top management goals of informativeness and opportunism would influence managers' motives for non-GAAP reporting. An informativeness goal by top management would indulge managers into thinking more deeply over moot non-GAAP disclosure issues (e.g., the true recurring nature of the ambiguous charges that are the subject of their exclusion decision, whether the exclusion is defensible, etc.) in making their exclusion decisions, so that top management and investors' information needs are met. I argue that this would affect their cognitive processes by increasing their epistemic motivation.

Epistemic motivation is the concept of motivation for cognition promulgated in Kruglanski's (1989) research and is known to affect an individual's judgement and decision-making (Kruglanski, Dechesne, and Orehek, 2009; Kruglanski, Orehek, Dechesne, and Pierro, 2010). High (low) levels of epistemic motivation are known to result in a lower (higher) need for cognitive closure and thus, a higher (lower) need for cognition (Bodenhausen, Macrae, and Hugenberg, 2003; Carlston, 2013; Kruglanski, 1999, 2004; Kruglanski and Webster, 1996; Petty and Cacioppo, 1986). Kruglanski (1989)

also notes that epistemic motivation is affected by situational variables (here, a top management goal of informativeness).

Managers with an informativeness goal that have higher epistemic motivation will exert higher cognitive effort to ensure that their exclusion decision does not run afoul of the regulator's guidance whilst meeting the information needs of their stakeholders. Thus, I expect these managers to be more likely to choose to exclude an ambiguous charge from a non-GAAP measure when it is appropriate to do so.

On the other hand, when given an opportunism goal by top management, managers might be caught between a trade-off that involves them considering top management and regulatory repercussions of their judgements and decisions (Jiang et al., 2010). For example, they might feel pressured to align their disclosure decisions with the top management since their remuneration and future employment at their firm can be negatively influenced if they do not do so (Feng et al., 2011). Conversely, if they do what top management asks of them, there is a risk of attracting regulatory scrutiny which can not only affect their equity holdings at the firm, but also their reputation, and their future career prospects (Matejka, 2007).

Thus, even though they might exert higher cognitive effort to resolve this trade-off, epistemic motivation is not the source for their higher cognitive effort here. This point is also clarified in Westbrook and Braver (2015), where they argue that cognitive effort is not the same as motivation, though increased efforts may mediate the effects of increased motivation on performance. I expect an absence of a positive influence on 'aggressive' managers' cognitive processes from a higher epistemic motivation. Due to career and reputational concerns, I expect these managers to be less likely to choose to exclude an ambiguous charge from a non-GAAP measure when it is inappropriate to do so. If managers have the notion that the regulatory framework is strict, it might exacerbate their aforementioned concerns. Prior archival research on non-GAAP disclosures has also concluded that a tighter regulatory framework mitigates the 'opportunism' in non-GAAP disclosures to an extent (Heflin and Hsu, 2008; Kolev et al., 2008; Zhang and Zheng, 2011).

Thus, I hypothesize that:

H2: *Managers have a higher likelihood of choosing to exclude an ambiguous charge in constructing a non-GAAP measure when given a top management goal of ‘informativeness’ as compared to when given a top management goal of ‘opportunism’.*

However, if managers are more (less) process accountable, the strength of the relation between epistemic motivation and managerial choices for making the exclusion decision may weaken (strengthen). I draw this conclusion because, irrespective of the level of epistemic motivation, more process accountable managers would take the requisite steps to ensure they can justify their exclusion decision to the regulator if called upon to do so (Libby et al., 2004; Markman and Tetlock, 2000). This reasoning is especially true if they expect to be judged on the quality of their non-GAAP exclusion decision-making process, regardless of their motives, and are concerned about the possible invalidity of their judgements. To sum it up, the relation between epistemic motivation and managerial choices to make the non-GAAP exclusion decision may hold mainly for managers with low process accountability.

2.4 Type of guidance, top management goals, and managers’ non-GAAP exclusion judgements

Finally, I examine how managers’ non-GAAP exclusion judgements and decisions are affected by the interaction of their motivations to make these disclosures with the type of non-GAAP guidance provided. Based on the prior discussion, the provision of a more detailed guidance may increase or decrease the likelihood of managerial choices to exclude an ambiguous charge in constructing a non-GAAP measure, either due to reduced perceptions of decision uncertainty or increased perceptions of a tighter regulatory regime, respectively. Further, a top management ‘informativeness’ goal is expected to increase the likelihood of managers choosing to make the exclusion due to a higher epistemic motivation triggered by this goal.

Even if managers have perceptions of a tighter regulatory regime due to a more detailed guidance, the higher epistemic motivation from an informativeness goal would not have them simply follow the guidance without thinking deeply about the specific facts of the ambiguous charges and the

adequacy with which they can successfully respond with detailed explanations and expanded disclosures if questioned by the regulator. This influence on managers' cognitive processes results from the fact that, in this scenario, they have a higher need for cognition and a lower need for cognitive closure (Kruglanski, 1989). These managers would be leery of hasty judgemental commitments and be open-minded to gather all relevant information before coming to a final decision (Kruglanski, 2004; Kruglanski, Pierro, Mannetti, and De Grad, 2006; Kruglanski and Webster, 1996).

In summary, I expect the lower perceived decision uncertainty and the higher epistemic motivation in this scenario to result in managers making more normative non-GAAP exclusion decisions (i.e., excluding an ambiguous charge in constructing a non-GAAP measure when it is appropriate to do so). Thus, I hypothesize that:

H3a: *Managers with an 'informativeness' goal will make more normative non-GAAP exclusion decisions when provided with a 'more detailed' regulatory guidance as compared to a 'broader' guidance.*

From the prior discussion, we know that managers given an aggressive goal by top management are expected to have a lower likelihood of choosing to make the exclusion decision due to career and reputational concerns. However, the influence of a more detailed guidance on these managers' non-GAAP exclusion judgements is not quite clear as there are two opposing views in the literature. First, as argued in the previous section, there is no positive influence of a higher epistemic motivation on the cognitive processes of these managers. Thus, if managers perceive more detailed guidance to result in a tighter regulatory regime, it might deter them from engaging in aggressive behaviour to some extent. Thus, these managers would make more normative non-GAAP exclusion decisions (i.e., decide not to exclude an ambiguous charge when it is inappropriate to do so) in this scenario.

On the other hand, a more detailed guidance may exacerbate aggressive behaviour by causing managers with an opportunism motive to make less normative non-GAAP exclusion decisions (i.e., deciding to exclude an ambiguous charge when it is inappropriate to do so) because there is less uncertainty associated with the risk of being second-guessed by the regulator due to the detailed nature

of this guidance (Nelson et al., 2002). A relevant experimental paper by Agoglia et al. (2011) also finds evidence of more aggressive GAAP financial reporting under a more precise standard vis-à-vis a less precise standard. In the non-GAAP setting also, managers may find aggressive non-GAAP exclusion decisions less difficult to justify if they perceive low inherent uncertainty in the more detailed guidance due to thresholds and requirements being explicitly stated (Maines, 2007).

Since it is unclear as to whether aggressive managers would make more or less normative non-GAAP exclusion decisions when provided with a more detailed guidance versus a broader guidance, I hypothesize (in the null form) that:

H3b (null): *There is no significant difference in the normativeness of non-GAAP exclusion decisions made by managers with an ‘opportunism’ goal when provided with a more ‘detailed’ regulatory guidance as compared to a ‘broader’ guidance.*

Appendix B presents the ‘Libby Box’ framework for this study.

3. Method

I use a 2 x 2 between-subjects experimental design to test the hypotheses. In this experiment, the top management goal for reporting (informativeness vs. opportunism) and the type of non-GAAP guidance (detailed vs. broad) are the between-subject manipulations. I randomly assign participants to one of the four conditions.

3.1 Participants and task

I recruited 176 participants from the Prolific online subject pool. Participants were pre-screened based on the following variables: age (25 and above), education (at least an undergraduate degree), language (fluency in English), work experience (previously worked in a management position), and accounting/finance background (those who have invested in a company’s common stock/shares and those who have significant experience examining a company’s financial statements from an investing point of view). Following Libby, Bloomfield, and Nelson (2002), I do not use more sophisticated

participants than required since the pre-screened participants are competent in making an accounting judgement and decision in this scenario.

To maintain data quality, 44 unusable responses from participants were dropped from the analyses (leaving 132 participants in the final sample). These dropped responses pertain to malingerers or unengaged participants who showed a lack of understanding of the case (Prolific has also acknowledged that it is difficult to catch and block these respondents (Bradley, 2018). Leiby, Rennekamp, and Trotman (2019) also note that higher exclusion rates are inevitable when online platforms are used and suggest that screening out these participants in research studies with more complex case materials is a good practice.

Though there are other crowdsourcing platforms (such as MTurk or CrowdFlower (CF)) for recruiting participants online for behavioural research, prior studies find that participants on Prolific are much more diverse, more naïve, less dishonest, fail fewer attention-check questions, and provide higher data quality than CF but comparable to MTurk (Peer, Brandimarte, Samat, and Acquisti, 2017). Palan and Schitter (2018) also conclude an evaluation of Prolific by stating that “it is a large step towards a dedicated online participant pool for sound scientific research” (p. 27). Participants in the final sample are, on average, 41 years old, 64% male, and have seven years of work experience in the accounting/finance field.

I present participants with a role-play scenario as Chief Financial Officer of a global manufacturing company in which they must decide on how likely and confident they are in excluding an ambiguous expense item (restructuring expenses) in constructing a non-GAAP measure (adjusted net income). In making this decision, they must take into account both their perception of the regulator’s guidance and the top management’s goal.

To mitigate the possibility that participants would automatically revert to the non-GAAP guidance with which they are most familiar, I provide instructions to participants that they should make their non-GAAP exclusion choices in accordance with the guidance promulgated in the experiment,

and should ignore both the guidance used in their own country and any previous interpretive or implementation guidance they may have received on non-GAAP disclosures.

To facilitate the external validity of the experiment, I keep the regulator's rules and interpretive guidance qualitatively the same as those adopted and issued by the SEC, respectively (see Appendix A for details on the non-GAAP regulatory framework). I tell participants that the regulator's rules permit the exclusion of both recurring and non-recurring expenses from the adjusted net income measure so long as their recurring nature is not described incorrectly (SEC, 2016a). In the 'broader' type of non-GAAP guidance condition, I tell participants that, to help guide their exclusion decisions further, the regulator has provided the following guidance (SEC, 2016a):

“Certain exclusions, although not explicitly prohibited, may cause the presentation of an adjusted earnings measure to be misleading.”

In the more 'detailed' type of non-GAAP guidance condition, in addition to this statement from the 'broader' type of non-GAAP guidance condition, I tell participants that, to help guide their exclusion decisions further, the regulator has given the following example (SEC, 2016a):

“Presenting an adjusted earnings measure that excludes normal, recurring, cash operating expenses necessary to operate a firm's business could be potentially misleading.”

The 'more detailed (broader)' type of guidance condition mirrors the actual non-GAAP guidance after (before) the 2016 SEC C&DI update. The italicized statement in the 'broader' guidance condition is qualitatively the same as the actual guidance by the SEC.⁴⁴ The italicized statement in the 'more detailed' guidance condition is ad-verbatim the same as the actual example introduced by the SEC in the 2016 C&DI update.

⁴⁴ For clarity and comprehension, I expressed it as a statement in the experiment whereas, in the actual SEC C&DI, it is in a 'question-answer' form as follows: **Question:** *Can certain adjustments, although not explicitly prohibited, result in a non-GAAP measure that is misleading?* **Answer:** *Yes.*

In all the experimental conditions, to keep regulator's enforcement constant and for participants to judge the defensibility of their exclusion decision to the regulator, I tell them that the regulator has been scrutinizing firms excluding 'seemingly' recurring expenses from adjusted earnings measures. However, it has accepted, where applicable, a *defence* that the exclusions are more *informative* to investors. This requirement also ensures that I am only manipulating the level of detail of the guidance while holding its 'rules-based' nature constant.

Managers' non-GAAP disclosure motivation is determined based on their internalization of top management goals. When the top management goal condition is 'informativeness,' I tell participants that the CEO has argued that it is more informative for investors if the restructuring costs are excluded (i.e., added back) in calculating adjusted net income as it allows better comparability with prior period earnings and also helps them to better predict future earnings. When the top management goal condition is 'opportunism,' I tell participants that the CEO has argued that the company can beat street earnings expectations if the restructuring costs are excluded (i.e., added back) in calculating adjusted net income. I, thus, expect participants to gauge the appropriateness of excluding the ambiguous expense item in constructing the non-GAAP measure from this information – the exclusion is appropriate in the former condition but inappropriate in the latter.

I keep the recurring nature of the 'restructuring expenses' item ambiguous by suggesting that the restructuring was planned to be completed by year-end but now seems likely to continue over the next couple of years. To avoid participants' judgements and decisions from being affected by the materiality of the restructuring expense item to total net income, I provide only the quantum of the restructuring expense item (\$25 million) in the experiment case materials. The lack of information pertaining to the amount of total net income prevents participants from comparing it to the amount of restructuring expenses.

After they have finished going through the experimental case materials, I ask participants to make their non-GAAP disclosure choices. Specifically, I ask them how likely they are to exclude restructuring costs in constructing adjusted net income. I also ask them to indicate the degree of

confidence they have in their exclusion decision and to explain the rationale for their decision in their own words. Then, participants complete the process accountability and epistemic motivation measures, a question on perceived uncertainty in their decision setting, the manipulation check questions, a question on the defensibility of their exclusion decision to the regulator, and MacDonald's (1970) ambiguity tolerance scale. Finally, participants provide demographic information (age, gender, and work experience).⁴⁵

To incentivise participants to perform the task to the best of their ability, I pay them at the rate of £15/hr. Participants spend, on average, 12.75 mins on the task. Thus, it translates into an average pay of £3.19 per participant.⁴⁶

3.2 Key variables and measurement

Judgement

I ask participants how likely they are to exclude restructuring costs in constructing adjusted net income on a 7-point Likert scale (1. extremely unlikely, 7. extremely likely). I then ask them how confident they are in their judgement in making the exclusion decision on a 101-point Probability scale. Participants' likelihood of and confidence in making the non-GAAP exclusion decision can be considered first- and second-order judgements respectively (Arkes, 1991; Chung and Monroe, 2000). By multiplying both the aforementioned variables, I construct a continuous measure *Judgement* that ranges from 0 to 7, where a high (low) value indicates an extremely strong (weak) likelihood for managers to choose the exclusion of the ambiguous charge. The procedure used to construct this variable is similar to the approach followed in Capps et al. (2017).

⁴⁵ The instrument used in the experiment can be made available on request.

⁴⁶ This experimental task was pilot tested on 32 individuals with an accounting/finance background before it was formally run on the Prolific crowdsourcing platform. These individuals were a mix of students, faculty, and professionals with an accounting/finance background. Based on the feedback, I only made trivial changes to the instrument. For example, I removed the word 'viz.' since it is not frequently used. Moreover, the age field was restricted to input values greater than 18 so that participants could not give misleading answers.

Perceived decision uncertainty

To capture managers' perceived uncertainty about their non-GAAP decision setting, I ask participants, on a 6-point semantic differential scale with endpoints (Unambiguous, Ambiguous), about the extent to which they think the recurring nature of the restructuring expenses is ambiguous. The response to this question captures the uncertainty faced by participants in deciding whether to exclude the ambiguous restructuring expenses in line with the guidance.

Epistemic motivation

Epistemic motivation is measured using a 3-question scale developed and used by De Dreu et al. (1999) and De Dreu et al. (2006). I ask participants to rate the following items on a 7-point Likert scales (1. strongly disagree, 7. strongly agree): To apply the regulator's guidance, (1) I had to think deeply before making a decision; (2) I was required to consider several possible perspectives; and (3) I had to make judgments and decisions as thoroughly as possible.

Process accountability

Prior studies in psychology and accounting have mostly manipulated and not measured process accountability (e.g., Brtek and Motowidlo, 2002; De Langhe, van Osselaer, and Wierenga, 2011; Kennedy, 1993; Markman and Tetlock, 2000; Siegel-Jacobs and Yates, 1996; Tetlock and Boettger, 1989; Tetlock and Kim, 1987; Tetlock et al., 1989). Peytcheva et al. (2014) try to measure process accountability using a 5-question scale. However, they have indicated in their study that using the first question in their scale ("to what extent will an auditor have to defend to others his application of this accounting standard," p. 59) as a proxy for process accountability yields the same results as those with the entire 5-question scale. Thus, given the complexity of the non-GAAP setting and for simplicity, I take a cue from their study and capture the construct of process accountability by asking participants the following question on a 7-point Likert scale (1. strongly disagree, 7. strongly agree): I will have to defend to investors and/or the regulator my application of the guidance provided by the regulator (the higher the response on the scale, the higher the process accountability).

Some prior studies in psychology manipulate high or low epistemic motivation based on the presence or absence of process accountability respectively (De Dreu, Beersma, Stroebe, & Euwema, 2006; Scholten, van Knippenberg, Nijstad, and De Dreu, 2007; Van der Schalk, Beersma, Van Kleef, and De Dreu, 2010). Their argument is based on the premise that the presence of process accountability triggers epistemic motivation (see also, Peytcheva et al., 2014). However, I do not manipulate process accountability, nor do I consider it a situational variable that triggers epistemic motivation. I make this design choice because a high ‘base level’ process accountability is deemed to exist in the non-GAAP setting, where the exclusion decision is high stakes.⁴⁷

Ambiguity tolerance

Since participants might have a differing tolerance for ambiguity that might affect their non-GAAP exclusion judgments, perceived decision uncertainty, or epistemic motivation, I control for ambiguity tolerance using the 20-question MacDonald (1970) scale.⁴⁸ This scale, which was originally developed by Rydell and Rosen (1966) and subsequently revised by MacDonald (1970), requires participants to provide True or False responses to a set of 20 questions. Thus, the scale has scores ranging from zero (very intolerant of ambiguity) to 20 (very tolerant of ambiguity). There are numerous other scales that capture ambiguity tolerance, but the MacDonald (1970) scale seems to be the most widely used due to its reliability and validity and also since it has a reasonable length (Chong, 1998; Furnham, 1994; Furnham and Marks, 2013; Hartmann, 2005; Lamberton, Fedorowicz, and Roohani, 2005; Wright and Davidson, 2000).

Defensibility

To control for participants’ differing perceptions of regulatory enforcement that might affect their non-GAAP exclusion judgments, perceived decision uncertainty, or epistemic motivation, I ask them the following question on a 6-point semantic differential scale with endpoints (Defensible, Indefensible):

⁴⁷ This conclusion is based on the descriptive statistics for process accountability in Table 2, where the mean of process accountability (measured on a 7-point Likert scale from 1 to 7) is very high (Mean: 5.58).

⁴⁸ Epistemic motivation is known to be associated with individuals’ ambiguity tolerance (Levine, Thompson, and Messick, 2013).

My decision on the restructuring costs to the regulator is _____ (the higher the response on the scale, the lower the defensibility of managers' exclusion decisions).

Decision time

This variable indicates the time taken by participants to make the exclusion decision. I include it to control for the time element of participants' decision-making, which is especially not of interest in the analysis that includes epistemic motivation. I measure it based on the time that participants spend on the page that details the experiment case and asks them to indicate their responses to the likelihood and confidence questions.

3.2.1 Construct validity of the latent variable

To ensure that the constructs are in fact distinct from one another, I perform an exploratory factor analysis (EFA) that includes the entire set of questions used to measure the perceived type of guidance, perceived decision uncertainty, epistemic motivation, process accountability, and defensibility. To extract factors, I use the maximum likelihood method, which is largely applied in the psychology literature, since it has the advantage of providing a better fit of the data through a test of the hypothesis that m common factors are sufficient to describe the data vis-à-vis a potential alternative hypotheses of $m + k$ common factors (Lawlor, Ebrahim, May, and Davey Smith, 2004; Stevens, 1992, 2012). I use the varimax criterion with Kaiser normalization for orthogonal rotation of factors. There is only one factor with an eigenvalue greater than one that is retained. I consider variables that have a factor loading of 0.4 or greater within a particular factor to be a major component of the factor (Hair, Anderson, Tatham, and Black, 1995; Stevens, 1992).

I present the estimated values for factor loadings and cross-loadings in Panel A of Table 1. As presented in this panel, I find that three questions relating to epistemic motivation loaded on a factor without any significant cross loadings, though the weaker loading on the third question indicates it is not a major component of the latent variable. I measure the latent variable epistemic motivation from factor scores generated based on the three respective questions that load onto them from the EFA.

In addition to examining factor- and cross-loadings in Panel A of Table 1, I establish convergent validity of the factorized variables by performing a confirmatory factor analysis with standardized coefficients. I find that the loadings are all statistically significant at the 1% level for the latent variable ‘epistemic motivation’. Moreover, I also ascertain the scale reliability based on Cronbach’s alpha. I find that the reliability coefficient is 0.64 for ‘epistemic motivation,’ which is in the ‘acceptable’ zone (Hair, Black, Babin, Anderson, and Tatham, 2006; Kline, 2005). Hair et al. (2006) suggest that Cronbach’s alpha “values of 0.60 to 0.70 (are) deemed the lower limit of acceptability” (p. 90).

Following Fornell and Larcker (1981), I also do a robustness check for convergent validity. I compare the average variance extracted (AVE) by latent variable and find that it is 0.4 for the ‘epistemic motivation’ latent variable suggesting a potential issue with convergent validity. Fornell and Larcker (1981) state that if AVE is less than 0.5, but composite reliability is higher than 0.6, the convergent validity of the construct is still adequate. I find that composite reliability is 0.7 for ‘epistemic motivation,’ and thus, the convergent validity of this construct is not an issue.

Overall, I find evidence of the construct validity for the latent variable of epistemic motivation. I report descriptive statistics for all variables, their indicators, and the abbreviated questions from the instrument in Table 2.

4. Results

4.1 Manipulation checks

I test the effectiveness of the ‘*top management reporting goal*’ manipulation by asking participants the following question: what was the CEO’s goal behind reporting adjusted net income in the earnings release? Participants provide one of the following three responses: (i) To report earnings in a way that is informative to investors by increasing their comparability and predictability, (ii) To report earnings in a way that exceeds street earnings expectations, and (iii) I don’t know. 81.82 percent of participants correctly indicated their condition and responses are significantly associated with the experimental condition ($\chi^2 = 53.39$, $p < 0.01$), indicating a successful manipulation of top management’s reporting goal.

To capture managers' perceived type of guidance along the 'detailed - broad' continuum, I ask participants to respond to the following question 'The regulator provided _____ guidance' on a 6-point semantic differential scale with the following endpoints: Detailed, Broad. I test the effectiveness of the '*type of non-GAAP guidance*' manipulation by comparing the mean values of the 'perceived type of guidance' variable in both conditions.

An independent samples t-test reveals that the mean value of this variable was lower in the 'post-2016 C&DI update' guidance condition (4.00) vis-à-vis the 'pre-2016 C&DI update' guidance condition (4.28), with the difference being statistically significant at the 10% level (t -statistic = 1.32, $p < 0.10$ (one-tailed)). I also find that the Cohen's d effect size estimate is 0.23, suggesting that the value of the 'perceived type of guidance' variable is 0.23 standard deviations lower in the post-C&DI update condition versus the pre-C&DI update condition.⁴⁹ This result suggests that the participants, on average, perceived the guidance to be more detailed in the former condition and broader in the latter condition, indicating a successful manipulation of the type of guidance.

I also ask participants this question with endpoints of the scale being changed to the following: rules-based, principles-based. An analysis of their responses reveals no significant mean or effect size differences ($p = 0.91$, Cohen's d : -0.02) between the pre- and post-2016 C&DI update conditions - I do recognize here that I cannot prove the 'null.' This evidence also corroborates my arguments that the non-GAAP setting is unique and the psychological mechanisms from studies that examine the effect of rules- versus principles-based accounting standards on preparer's judgements and decisions are not at play here.

⁴⁹ Sullivan and Fein (2012, p. 1) suggest that effect size indices are useful for substantive significance "when the measurements have no intrinsic meaning, such as numbers on a Likert scale" (Cohen, 1990; Kline, 2004). A mean difference greater than 0.2 standard deviations suggests that there is a substantive non-trivial difference between how participants perceived the type of guidance in both guidance conditions.

4.2 Main and interaction effects

4.2.1 Univariate t-tests of means

From Table 3 Panel A, I find that the mean value of *Judgement* is significantly higher ($t = 2.20^{**}$, $p < 0.05$) in the post-2016 C&DI update guidance condition ($M = 3.07$, $SD = 1.57$) vis-à-vis the pre-2016 C&DI update guidance condition ($M = 2.54$, $SD = 1.17$). Thus, I reject the null in H1 and find strong evidence that managers choose to exclude an ambiguous charge in constructing a non-GAAP measure when provided with a more detailed guidance vis-à-vis a broader guidance. This result is consistent with the argument that a more detailed guidance results in a lower perceived uncertainty in the non-GAAP decision setting and inconsistent with the argument that it results in a tighter regulatory regime.

From Table 3 Panel B, I find that the mean value of *Judgement* is significantly higher ($t = 1.76^{**}$, $p < 0.05$) in the informativeness condition ($M = 3.00$, $SD = 1.51$) vis-à-vis the opportunism condition ($M = 2.57$, $SD = 1.22$). Thus, I find strong evidence that managers have a higher likelihood of choosing to exclude an ambiguous charge in constructing a non-GAAP measure when it is appropriate to do so in line with a top management ‘informativeness’ goal vis-à-vis when it is inappropriate to do so in line with the top management’s ‘opportunism’ goal – consistent with H2.

From Table 3 Panel C, I find that the mean value of *Judgement* is significantly higher ($t = 2.97^{***}$, $p < 0.01$) for managers with a goal of informativeness in the post-2016 C&DI update guidance condition ($M = 3.56$, $SD = 1.71$) vis-à-vis the pre-C&DI update guidance condition ($M = 2.53$, $SD = 1.75$). Thus, I find strong evidence that managers with a goal of informativeness choose to make more normative non-GAAP exclusion decisions (i.e., exclude an ambiguous charge if it is appropriate to do so) when they are provided a more detailed guidance vis-à-vis a broader guidance – consistent with H3a.

However, from Table 3 Panel C, I also find that there is no significant difference ($t = -0.11$, $p = 0.92$) in the mean values of *Judgement* for managers with a goal of opportunism in the post-2016 C&DI update guidance condition ($M = 2.58$, $SD = 1.28$) vis-à-vis the pre-C&DI update guidance condition ($M = 2.55$, $SD = 1.34$). Thus, I fail to reject the null hypothesis in H3b, which suggests that

there is no significant difference in the normativeness of non-GAAP exclusion judgements of managers with a goal of opportunism when they are provided a more detailed guidance vis-à-vis a broader guidance.

4.2.2 Analysis of variance results

In Table 4 Panel A, I present results of a two-way ANOVA.⁵⁰ The robust test statistics for the Levene's test of equality of variances are not statistically significant at the 5% level for each combination of groups of the two independent variables. These test results suggest that the group variances are not significantly different from each other and the key assumption of 'homogeneity of variance' for a two-way ANOVA is not violated (Huitema, 2011).⁵¹

The ANOVA results reveal a statistically significant main effect of the type of guidance ($F = 5.08^{**}$, $p < 0.05$) which is consistent with a rejection of the null in H1, a (weak) significant main effect of the top management's goal ($F = 3.66^{*}$, $p < 0.10$) which is weakly consistent with H2, and a significant interaction effect of the two independent variables ($F = 4.60^{**}$, $p < 0.05$) on *Judgement* which is consistent with H3a but fails to reject the null in H3b. Figure 1 plots this ordinal interaction between the two independent variables.

One of the reasons for finding a weak main effect of top management's goal is because an opportunism goal is inherently stronger to an informativeness goal. Some managers with a goal of opportunism could feel pressured by the top management into not making normative non-GAAP exclusion decisions whilst trading-off between the top management and the regulatory repercussions of their judgements and decisions (Jiang et al., 2010). This top management pressure would make them

⁵⁰ To increase statistical power and remove extraneous sources of variation, I also perform a two-way ANCOVA that includes the following control variables as covariates: *Decision time*, *Defensibility*, and *Tolerance for ambiguity*. The ANCOVA results are similar. However, the covariates have insignificant main effects, possibly due to their low correlation with the dependent variable, and thus, the ANOVA may be more powerful than the ANCOVA in this case (Huitema, 2011). I also note that controlling for demographic variables does not affect the results, and thus, I do not include them as covariates.

⁵¹ The 'homogeneity of variance' assumption suggests that the variances of residuals should be equal between each combination of groups of the two independent variables.

choose to exclude an ambiguous charge in constructing a non-GAAP measure even when it is inappropriate to do so.

4.2.3 Post-hoc comparisons

While a statistical interaction is consistent with the top management goal having an influence on managers' non-GAAP exclusion judgments, I perform simple effect tests to corroborate that participants alter their judgments in the direction indicated by the top management goal. Thus, in Table 4 Panel B, I do a test of simple main effects (one of the post-hoc comparisons) looking at the mean differences in *Judgement* between the 'top management's goal' conditions at each of the pre- and post-2016 C&DI update guidance conditions, as well as between the 'type of guidance' conditions at each of the informativeness and opportunism top management goal conditions.

I find that there is a statistically significant difference in participants' non-GAAP exclusion judgements ($F\text{-ratio} = 8.26^{**}$, $p < 0.05$) between the informativeness and the opportunism 'top management's goal' conditions when participants are provided the post-2016 C&DI update (more detailed) guidance. I do not find similar evidence when I provide participants the pre-2016 C&DI update (broader) guidance. I also find that there is a statistically significant difference in participants' non-GAAP exclusion judgements ($F\text{-ratio} = 10.04^{**}$, $p < 0.05$) between the pre- and post-2016 C&DI update guidance conditions when the top management goal is informativeness. I do not find similar evidence when participants are given a top management goal of opportunism. This evidence is similar to the evidence obtained in Table 3, Panel C.

Taken together, the statistical interaction and the follow-up simple effects results provide evidence consistent with H3a. However, I do not find any evidence consistent with rejecting the null hypothesis in H3b.

4.3 Path analysis

4.3.1 Mediation effects

To test mediation, I use the Baron and Kenny (1986) approach, which is adjusted by Iacobucci, Saldanha, and Deng (2007) for use with structural equation modelling (SEM). Baron and Kenney (1986) proposed the following steps: (1) the independent variable or the IV significantly affects the dependent variable or the DV in the absence of the mediator variable or the MV, (2) the IV significantly affects the MV, and (3) the MV has a significant unique effect on the DV, and the effect of the IV on the DV shrinks upon the addition of the MV to the model. Iacobucci (2008) argues that an SEM approach is superior to the “causal steps” approach of Barron and Kenny (1986) as it enables simultaneous estimation of all equations rather than assuming they are independent (Zhao, Lynch Jr, and Chen, 2010).

The results from Tables 3 and 4 have already provided evidence consistent with Step 1, and thus, they are not repeated. Controlling for *Decision time*, *Defensibility*, and *Tolerance for ambiguity*, the Table 5 Panel A ‘Step 2’ columns in both sections provide strong evidence that the IV (Section 1: *Type of guidance*, Section 2: *Top management’s goal*) significantly affected the MV (Section 1: *Perceived decision uncertainty*, Section 2: *Epistemic motivation*). Specifically, I find that a more detailed guidance significantly lowered ($\beta = -0.63$, $\rho < 0.01$) perceived decision uncertainty vis-à-vis a broader guidance. I also find that a top management informativeness goal significantly increased ($\beta = 0.40$, $\rho < 0.05$) managerial epistemic motivation vis-à-vis a top management opportunism goal.

Finally, again controlling for the aforementioned additional variables, the Table 5 Panel A ‘Step 3’ columns in both sections provide strong evidence that the MV (Section 1: *Perceived decision uncertainty*, Section 2: *Epistemic motivation*) significantly affected the DV (*Judgement*). Specifically, I find that a higher perceived decision uncertainty significantly lowered ($\beta = -0.25$, $\rho < 0.05$) the likelihood of managers choosing to make the exclusion decision. I also find that a higher epistemic motivation significantly increased ($\beta = 0.24$, $\rho < 0.05$) the likelihood of managers choosing to make the exclusion decision. I also find evidence that the effect of the IV (Section 1: *Type of guidance*, Section

2: *Top management's goal*) on the DV (*Judgement*) shrinks upon the addition of the MV (Section 1: *Perceived decision uncertainty*, Section 2: *Epistemic motivation*) to the model. Specifically, I find that the type of guidance has a weak effect ($\beta = 0.40, \rho < 0.10$) on *Judgement* upon the inclusion of the mediator perceived decision uncertainty. I also find that the top management goal no longer has an effect ($\beta = 0.33, \rho = 0.18$) on *Judgement* upon the inclusion of the mediator epistemic motivation. Figures 2A and 2B graphically present the results of the mediation analysis.

To further assess this mediation, I use the Preacher and Hayes (2004, 2008) bootstrapping test of indirect effects or average causal mediation effects (ACME), which is currently the most acceptable approach in mediation analysis that is more powerful than the formerly used Sobel (1982) z test (Zhao et al., 2010). The ACME is the effect of the IV on the DV through the MV. Table 5 Panel B provides a summary of the ACME. The 95% confidence intervals in both sections do not include zero, and thus, I conclude that the ACME is significantly different from zero – indicating ‘partial’ mediation in both cases. Specifically, I find that perceived decision uncertainty (epistemic motivation) mediates 28% (21%) of the total effect of the type of guidance (top management's goal) on *Judgement*.

4.3.2 Moderation effects

In Table 6 Panel A Section 1 (2), I present regression results for testing the moderating role of process accountability in the effect of perceived decision uncertainty (epistemic motivation) on *Judgement*. I find that the coefficient on the interaction terms is significantly positive ($\beta = 0.18, \rho < 0.01$) in Section 1 while it is significantly negative ($\beta = -0.17, \rho < 0.05$) in Section 2. Thus, I conclude that the effect of perceived decision uncertainty on *Judgement* is less negative (more negative) or weaker (stronger) when process accountability is higher (lower). I also conclude that the effect of epistemic motivation on *Judgement* is less positive (more positive) or weaker (stronger) when process accountability is lower (higher). These results are in line with my arguments in Section 2. Figure 3 depicts this moderating relation.

4.3.3 Moderated mediated effects

Preacher, Rucker, and Hayes (2007) suggest that the strength of mediation differing across the two levels of the moderator demonstrates moderated mediation. In the present models, moderated mediation is demonstrated when the magnitude of the indirect effect of the type of guidance (top management's goal) on *Judgement*, via perceived decision uncertainty (epistemic motivation), varies as a function of low and high levels of process accountability. The analyses in Sections 4.3.1 and 4.3.2 have already found mediation and moderation effects, respectively. I use the Preacher et al.'s (2007) approach to compute conditional indirect effects at increments of the moderator with standard errors obtained using bootstrapping. I operationalize high and low levels of the moderator as one standard deviation (SD) above and below the mean of process accountability.

The results from Table 6 Panel B Section 1 indicate that the strength of the conditional indirect effect of the type of guidance on *Judgement* was larger at lower levels of process accountability than high levels. It is $\beta = -1.01$ ($p < 0.01$) at 1 SD below the mean of process accountability, while it is $\beta = -0.61$ ($p < 0.05$) at 1 SD above the mean. The results from Table 6 Panel B Section 2 indicate that the strength of the conditional indirect effect of the top management's goal on *Judgement* was larger at lower levels of process accountability than high levels. It is $\beta = 2.04$ ($p < 0.05$) at 1 SD below the mean of process accountability, while it is statistically insignificant $\beta = 0.06$ ($p = 0.44$) at 1 SD above the mean. To sum it up, the aforementioned results suggest that the mediated effect of the type of guidance (top management's goal) on managers' non-GAAP exclusion judgements via perceived decision uncertainty (epistemic motivation) mainly occur only at lower levels of process accountability – which is consistent with my arguments in Section 2.2 (2.3).

4.3.4 Alternative explanation

Finally, I also rule out an alternative path, which suggests that a more detailed (broader) guidance that decreases perceived decision uncertainty would trigger a lower (higher) epistemic motivation amongst managers. This path is based on the argument in Van den Bos (2009), where the author argues that there could be epistemic motives related to uncertainty. This lower epistemic motivation in the more detailed

guidance condition could cause ‘premature closing of the mind’ (Kruglanski, 1989) if managers perceive it as a signal that the regulator is reducing their discretion in non-GAAP reporting by requiring them to simply follow the guidance. These managers would then be less likely to choose to exclude an ambiguous charge from a non-GAAP measure if it is appropriate to do so.

This managerial choice may result if they simply follow the guidance without giving adequate regard to the specific facts of the ambiguous exclusion items and the adequacy with which they can successfully respond with detailed explanations and expanded disclosures if the regulator questions them about making certain ambiguous exclusions (Bodenhause et al., 2003; De Dreu et al., 2006; Freund, Kruglanski, and Schpitzajzen, 1985; Kruglanski, 1989; Mayseless and Kruglanski, 1987). This conclusion follows from their reduced epistemic motivation, which would otherwise have them think deeply about the disclosure situation at hand and to understand all possible perspectives of the disclosure issue and process all the disclosure-related information thoroughly (De Dreu, Koole, and Oldersma, 1999; Hammersley, 2011).

However, upon estimating the structural equation models, I find that neither the type of guidance nor the perceived decision uncertainty has a significant effect on epistemic motivation. Thus, I rule out this alternative explanation. This evidence also corroborates my H2 results that top management goal is a trigger for epistemic motivation in this setting.

4.4 Textual analysis

Since I ask participants to express the rationale for their decisions in their own words, I unpack their responses to provide additional evidence on certain matters. I find that participants used the words ‘career’ or ‘reputation’ more frequently when they were given a top management goal of opportunism (weighted %: 0.97%) as compared to when they were given a goal of informativeness (weighted %: 0.48%). This result is in line with my arguments that participants with an opportunism motive would direct their cognitive efforts at making a trade-off that involves them considering the personal costs and benefits of making the exclusion decision. I next provide examples of some relevant responses from participants that are suggestive of them making this trade-off:

- “..... *Ramifications reflect poorly on me and my future career regardless of whether it is with this company or not.*”
- “*I’m between a rock and a hard place in this scenario. While I don't want to jeopardize my career, I also want to make a decision that is alignment with the CEO's goals.*”

I also found that participants engaged in higher cognitive efforts when they were given a top management goal of informativeness based on the following relevant responses:

- “..... *Will (need to) collect more information about the nature of the costs and discuss it with the CEO*”
- “..... *I think I would have to know more about the nature of the costs to be fully confident in my decision*”

Thus, these statements are suggestive of a higher managerial epistemic motivation in the informativeness condition vis-à-vis the opportunism condition.

Finally, I compare responses of participants, who were given a top management goal of informativeness, by the type of guidance condition. I next illustrate some of the relevant responses from participants for comparison:⁵²

Those with an informativeness goal in the ‘more detailed’ guidance condition:

- “*The CEO strongly preferred this way and the regulatory guidance permits it. The potential risk did not seem that great.*”
- “*It’s allowable We won’t restructure every year.*”
- “*One could argue that it is not a normal and recurring cost*”
- “*No trade-off was made as (the) regulatory guidance and the CEO’s goals are in line.*”

⁵² I correct the responses for obvious typos and grammatical errors.

Those with an informativeness goal in the ‘broader’ guidance condition:

- “..... *the regulator’s guidance was not definitive on the subject and gave room for interpretation.*”
- “*The adjustments are in something of a grey area*”
- “*The regulator’s guidance will prevail if there is ambiguity*”
- “..... *Risk of objections seems rather substantial.*

These responses also suggest a lower inherent uncertainty resulting in a lower perceived chance of regulator second-guessing in the more detailed guidance condition vis-à-vis the broader guidance condition that made participants more likely to make normative non-GAAP exclusion decisions. This evidence corroborates my results with respect to H3a.

5. Conclusion

I examine how managers make non-GAAP exclusion judgements and decisions based on differing types of regulatory guidance and their differing motivations. It is important to empirically examine this research question because the regulator’s choice of the type of disclosure guidance provided affects their two-pronged end goals of increasing the informativeness of disclosures while reducing any potential misinformation in them. I find that when provided with a more detailed regulatory guidance, as a result of the lower perceived decision uncertainty, participants in the role of managers are more likely to choose to exclude an ambiguous charge in constructing the non-GAAP measure vis-à-vis when given a broader guidance. I also find some evidence that participants in the role of managers are more likely to choose to exclude an ambiguous charge in constructing the non-GAAP measure as a result of experiencing a higher epistemic motivation triggered by being given an informativeness goal by top management vis-à-vis a goal of opportunism.

One of my key results is that the aforementioned effects mainly hold for managers with a lower level of process accountability. Thus, when managers are more process accountable, I expect them to be more likely to choose the exclusion of an ambiguous charge if required to do so regardless of the

type of guidance provided or the top management goal as they would take the necessary steps to justify their decision appropriately.

I also find evidence of a significant interaction effect of the type of guidance and managers' motivations for non-GAAP reporting on the informativeness of these disclosures. Specifically, I find that managers with a goal of informativeness made more normative non-GAAP exclusion decisions when they were provided a more detailed guidance as compared to a broader guidance. I do not find a similar interaction effect for managers with a goal of opportunism. Overall, I conclude that a more detailed regulatory guidance has a stronger and more significant effect on informative managers as compared to aggressive managers.

My results have some limitations. First, I use participants with management experience and an accounting/finance background in the experiment, and one can argue that real-world CFOs would make non-GAAP exclusion judgements differently. However, it is important to note that my focus is on two specific factors that affect managerial judgements, type of guidance and top management goal. The use of highly sophisticated participants in this experimental setting might bias results by introducing unrelated confounding effects (Libby et al., 2002). Second, one can argue that not providing participants with a net income amount reduces the external validity of the experiment. Though I have sacrificed some external validity by not giving participants the net income amount, I believe it has increased the internal validity of the experiment. The discussion on materiality in this experiment would have introduced an unnecessary confounding effect. In participants' responses to the open-ended question that asked them the rationale for their decision, they do not discuss the materiality of this amount. Thus, I can rule out any influence of materiality on participants' judgements and decisions.

Regulators such as the SEC stand to significantly benefit from my results since it enables them to shift positions on non-GAAP disclosures to some extent by changing the level of detail rather than the stated rules in their guidance, which is much more onerous. Prior to the 2016 C&DI update, the SEC has chiefly established its positions on non-GAAP disclosures by adopting regulations and causing 'hard' updates to its C&DIs - the passage of Reg G and Regulation S-K Item 10(e) rules in 2003

governing non-GAAP disclosures (SEC, 2003), and then the relaxation in these rules and regulations through the 2010 C&DI update (Kyung and Weintrop, 2016).

Moreover, by exercising their discretion on the level of detail to include in the guidance statements, regulators can make these disclosures more informative while preventing any corresponding increase in potential misinformation in them. This conclusion is based on my results, which suggest that the level of detail in the guidance does not affect managers with aggressive motives.

My results are also informative to managers who are involved in the preparation of non-GAAP disclosures as there is a possibility that they are unaware of how the type of regulatory guidance influences their cognitive motivations, judgements, and decisions. Finally, the insights from this study are also useful to investors and analysts as they are the end-users of non-GAAP information, and their judgements and decisions are likely to suffer if these disclosures are less informative or more aggressive.

Future research can examine other aspects of managerial non-GAAP decision-making such as how managers decide what prominence to give to a non-GAAP measure vis-à-vis the GAAP measure, why do managers decide to include certain types of non-GAAP measures and not others, and what motivates managers to adjust for certain recurring items and not others.

Table 1: Factor analysis

Panel A. Exploratory factor analysis (EFA) results

N = 132	Factor 1
% of variance explained	38%
Eigenvalue	1.27
The regulator provided _____ (Detailed/Broad) guidance.	0.1
The recurring nature of the restructuring expenses was _____ (Unambiguous/Ambiguous).	-0.0
I had to think deeply before making a decision.	0.4
I was required to consider several possible perspectives.	0.9
I had to make judgments and decisions as thoroughly as possible.	0.2
I will have to defend to investors and/or the regulator my application of the guidance provided by the regulator.	0.1
My decision on the restructuring costs to the regulator is _____ (Defensible/Indefensible)	0.3

Panel B. Construct validity (latent variable)

N = 132	Scoring coefficients	Confirmatory factor loadings	Sig.
Epistemic motivation			
I had to think deeply before making a decision.	0.46	0.74	***
I was required to consider several possible perspectives.	0.45	0.64	***
I had to make judgments and decisions as thoroughly as possible.	0.39	0.47	***
Cronbach's Alpha: 0.64			

Panel A of this table reports results of exploratory factor analysis that involves the extraction of factors using the maximum likelihood method. I then rotate the factors using the varimax rotation method with Kaiser normalization. All factors with an eigenvalue greater than one are retained. Variables that have a factor loading of 0.4 or greater within a particular factor are highlighted in bold as they are considered to be its major components. Panel B of this table presents scoring coefficients indicating how the latent variable is obtained as a weighted sum of its components. It also presents Cronbach's alpha coefficient from an estimation of the factor model and confirmatory factor loadings from the robustness checks. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All variable measurements are detailed in Section 3.2.

Table 2: Descriptive statistics

N = 132	Mean	Median	S.D.	Min	Max
<u>Key dependent variable</u>					
Likelihood of making exclusion decision	4.26	5.00	1.67	1.00	7.00
Confidence in making exclusion decision	0.67	0.70	0.18	0.00	1.00
Judgement	2.78	2.51	1.39	0.00	7.00
<u>Other test variables</u>					
<i>Perceived type of guidance</i>					
The regulator provided _____ (Detailed/Broad) guidance.	4.15	4.00	1.23	1.00	6.00
<i>Perceived decision uncertainty</i>	4.05	4.00	1.41	1.00	6.00
<i>Epistemic motivation</i>					
I had to think deeply before making a decision.	5.58	6.00	1.14	2.00	7.00
I was required to consider several possible perspectives.	5.71	6.00	1.14	2.00	7.00
I had to make judgments and decisions as thoroughly as possible.	6.05	6.00	0.82	2.00	7.00
Latent variable	0.00	0.26	1.00	-3.28	1.54
<i>Process accountability</i>					
I will have to defend to investors and/or the regulator my application of the guidance provided by the regulator.	5.58	6.00	1.19	2.00	7.00
<u>Demographic & Control variables</u>					
Age (in years)	41	37	11	25	66
Gender (Female: 0, Male: 1)	0.64	1	0.48	0	1
Work experience (in years)	7	4	8	0	38
Decision time (in mins)	2.20	1.87	2.58	0.09	29.22
Defensibility	5.08	5.00	0.97	1.00	6.00
Ambiguity tolerance	9.08	9.00	3.25	2.00	18.00

This table reports descriptive statistics for all variables, including the latent one and its indicators. All variable measurements are detailed in Section 3.2.

Table 3: Main and interaction effects

Panel A. Main effect of the ‘type of guidance’				
<i>Condition</i>	<i>Detailed guidance</i>	<i>Broad guidance</i>	<i>t-statistic</i>	<i>p-value</i>
	N = 61	N = 71		
Judgement	3.07 (1.57)	2.54 (1.17)	2.20** Pr (T > t)	$\rho < 0.05$
Panel B. Main effect of the ‘top management’s goal’				
<i>Condition</i>	<i>Informativeness goal</i>	<i>Opportunism goal</i>	<i>t-statistic</i>	<i>p-value</i>
	N = 68	N = 64		
Judgement	3.00 (1.51)	2.57 (1.22)	1.76** Pr (T > t)	$\rho < 0.05$
Panel C. Interaction effect of the ‘type of guidance’ and the ‘top management’s goal’				
	<i>Detailed guidance</i>	<i>Broad guidance</i>	<i>t-statistic</i>	<i>p-value</i>
1) ‘Informativeness goal’ Condition				
	N = 30	N = 38		
Judgement	3.56 (1.71)	2.53 (1.75)	2.97*** Pr (T > t)	$\rho < 0.01$
2) ‘Opportunism goal’ Condition				
	N = 31	N = 33		
Judgement	2.58 (1.28)	2.55 (1.34)	-0.11 Pr (T > t)	$\rho = 0.92$

This table reports results from univariate t-tests of means to examine the main effects (Panels A and B) and the interaction effects (Panel C) of the ‘type of guidance’ and the ‘top management goal’ conditions. The key outcome variable is *Judgement*, which is a continuous variable that is a product of participants’ first- and second-order judgements – likelihood and confidence, respectively. I present means and standard deviations (in parentheses) for the key outcome variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Pr (T < t) and Pr (T > t) indicate one-tailed independent sample t-tests based on directional predictions, while Pr (|T| > |t|) indicates two-tailed independent sample t-tests to determine if the means are significantly different. All other variable measurements are detailed in Section 3.2.

Table 4: ANOVA

Panel A. Two-way Analysis of Variance

Dependent variable: <i>Judgement</i>				
N = 132	SS	df	F-statistic	p-value
Type of guidance	9.07	1	5.08**	$\rho < 0.05$
Top management's goal	6.54	1	3.66*	$\rho < 0.10$
Type of guidance $\times$ Top management's goal	8.20	1	4.60**	$\rho < 0.05$

Panel B. Post-hoc comparisons (Simple main effects)

		<i>F critical values at the 5% level of sig.</i>			
N = 132	F-ratio	Dunn's procedure	Marascuilo & Levin	per family error rate	simultaneous test procedure
Top management's goal condition:					
Detailed guidance	8.26**	4.42	5.14	5.14	5.41
Broad guidance	0.00				
Type of guidance condition:					
Informativeness goal	10.04**	4.42	5.14	5.14	5.41
Opportunism goal	0.01				

Panel A of this table reports results of a two-way ANOVA that compares the mean differences between groups split on the two independent variables, type of guidance and top management's goal, to determine their individual main effects and joint interaction effect. The key dependent variable is *Judgement*, which is a continuous variable that is a product of participants' first- and second-order judgements – likelihood and confidence, respectively. 'SS' indicates sequential sum of squares for the model with 'df' indicating degrees of freedom, and the last two columns indicate the F-statistic and its significance. Panel B reports the simple main effects of one of the independent variables at each level of the other independent variable. F critical values (adjusted) at the 5% level of significance are determined based on four criteria – Dunn's procedure, Marascuilo & Levin, the per family error rate, and simultaneous test procedure. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All other variable measurements are detailed in Section 3.2.

Table 5: Mediation analysis

Panel A. Testing Mediation effects

Section 1: Mediating effect of perceived decision uncertainty (PDU)			Section 2: Mediating effect of epistemic motivation (EM)		
	Step 2	Step 3		Step 2	Step 3
Dependent variables:	<i>PDU</i>	<i>Judgement</i>	Dependent variables:	<i>EM</i>	<i>Judgement</i>
Constant	3.46*** (0.77)	3.19*** (0.81)	Constant	-1.64*** (0.42)	2.97*** (0.64)
Decision time	0.02 (0.09)	-0.06 (0.07)	Decision time	0.03 (0.05)	-0.05 (0.08)
Defensibility	0.04 (0.13)	0.02 (0.15)	Defensibility	0.32*** (0.09)	-0.12 (0.13)
Tolerance for ambiguity	0.07* (0.04)	0.05 (0.04)	Tolerance for ambiguity	-0.03 (0.03)	0.04 (0.03)
Type of guidance	-0.63*** (0.26)	0.40* (0.23)	Top management's goal	0.40** (0.17)	0.33 (0.25)
PDU		-0.25** (0.11)	EM		0.24** (0.10)
Observations	132	132	Observations	132	132
Wald χ^2 statistic	9.96**	11.47**	Wald χ^2 statistic	31.11***	12.63**
R ²	0.08	0.11	R ²	0.18	0.06
Adjusted R ²	0.05	0.08	Adjusted R ²	0.15	0.02

Panel B. Summary of mediation effects

<i>Effect</i>	Section 1: <i>Mediator: PDU</i>			Section 2: <i>Mediator: EM</i>		
	Mean	95% LCL	95% UCL	Mean	95% LCL	95% UCL
Total effect	0.554			0.427		
Direct effect	0.397			0.332		
Average causal mediation effect (ACME)	0.157	0.013	0.366	0.095	0.001	0.237
% of total effect mediated	28%			21%		

Panel A Section 1 (2) presents results from structural equation modelling (SEM) performed for testing the mediation effects of perceived decision uncertainty (epistemic motivation), which is the mediator variable or the MV. The key independent variable or the IV in Section 1 (2) is the *Type of guidance (Top management's goal)*. The key dependent variable or the DV in both sections is *Judgement*, which is a continuous variable that is a product of participants' first- and second-order judgements – likelihood and confidence, respectively. Results in Tables 3 and 4 have already provided evidence on the IV significantly affecting the DV in the absence of the M (Step 1). Hence, I do not present these results again.

The 'Step 2' column tests whether the IV significantly affects the MV. The 'Step 3' column tests whether the MV has a significant unique effect on the DV and if the effect of the IV on the DV shrinks upon the addition of the MV to the model. Following Iacobucci et al. (2007), one model is fit via SEM, in which the direct and indirect paths are fit simultaneously to estimate each effect while partialling out or statistically controlling for the other. I present bootstrapped standard errors in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All other variable measurements are detailed in Section 3.2.

Panel B reports a summary of the following effects based on the Preacher and Hayes (2004, 2008) bootstrap test: the *total effect* of the IV on the DV (without the MV), the *direct effect* of the IV on the DV after taking into account a mediation (indirect) effect of the MV, the *average causal mediation effect (ACME)* that equals the total effect minus the direct effect, and the *% of total effect mediated* that equals ACME divided by the total effect. The test generates an empirical sampling distribution of the ACME and estimates it as the mean of estimates generated for each of 5,000 bootstrap samples drawn with replacement. The test relies on 95% confidence intervals (CIs) from this empirical distribution of ACME estimates. The lower limit (LCL) of this CI is at the 2.5% point on this cumulative distribution, and the upper limit (UCL) is at the 97.5% point.

Table 6: Panel A. Moderating effect of process accountability

Section 1:		Section 2:	
Dependent variable:	<i>Judgement</i>	Dependent variable:	<i>Judgement</i>
Constant	8.68*** (1.53)	Constant	5.61*** (0.91)
Perceived decision uncertainty	-1.19*** (0.29)	Epistemic motivation	1.36*** (0.44)
Process accountability	-0.97*** (0.24)	Process accountability	-0.50*** (0.13)
Decision time	-0.07*** (0.02)	Decision time	-0.11*** (0.02)
Defensibility	0.05 (0.13)	Defensibility	-0.03 (0.13)
Tolerance for ambiguity	0.02 (0.04)	Tolerance for ambiguity	0.05 (0.13)
Perceived decision uncertainty × Process accountability	0.18*** (0.05)	Epistemic motivation × Process accountability	-0.17** (0.08)
Observations	132	Observations	132
F statistic	7.27***	F statistic	5.87***
R ²	0.23	R ²	0.20
Adjusted R ²	0.19	Adjusted R ²	0.17

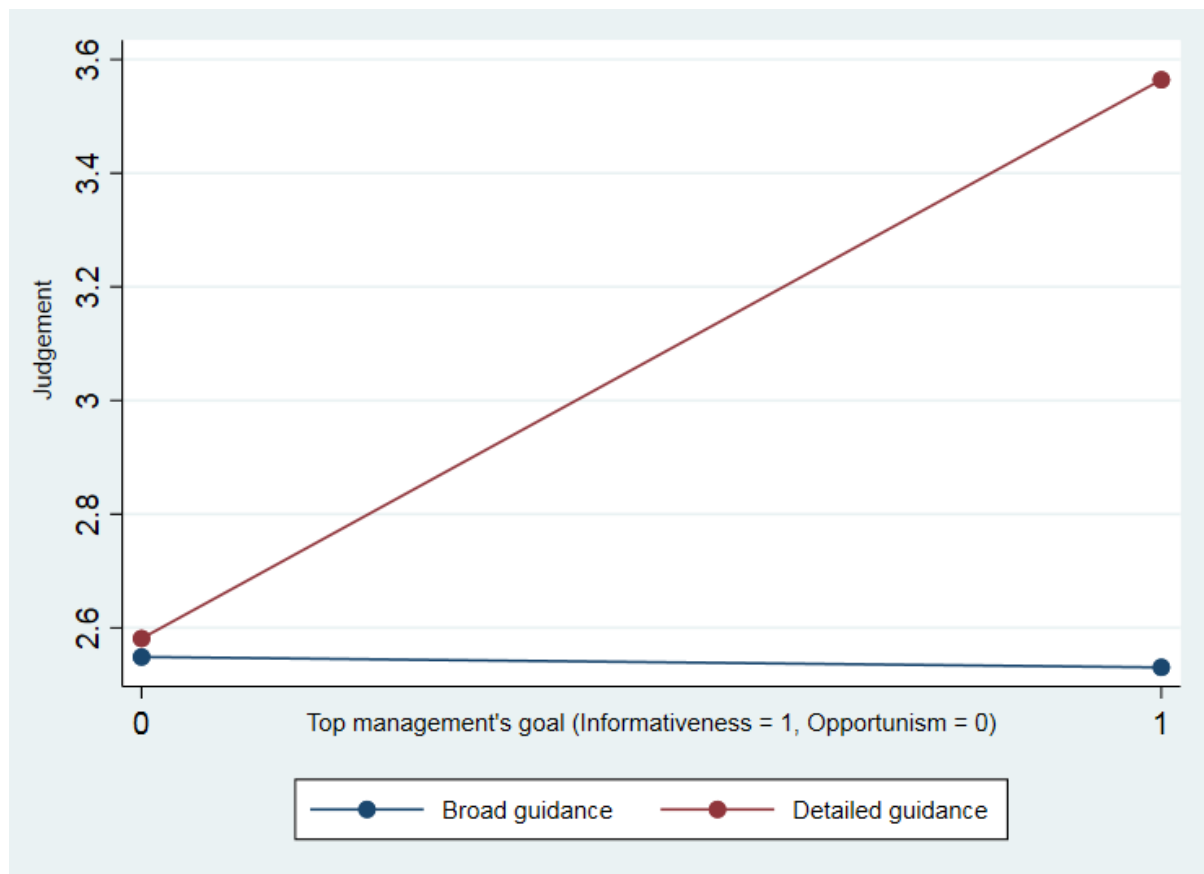
Panel A Section 1 (2) of this table presents regression results for testing moderation of the effect of *Perceived decision uncertainty* (*Epistemic motivation*) on *Judgement* by *Process accountability*, which is the moderator. *Judgement* is a continuous variable that is a product of participants' first- and second-order judgements – likelihood and confidence, respectively. I present robust standard errors in the parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. All other variable measurements are detailed in Section 3.2.

Table 6: Panel B. Moderated mediation model

Outcome variable: Judgement	Conditional indirect effect	Std error	Z statistic	ρ value
Section 1: Path between <i>Perceived decision uncertainty</i> (Mediator variable) & <i>Judgement</i> (Dependent variable) moderated by <i>Process accountability</i> (Moderator variable)				
-1 SD (1.19)	-1.01	0.30	-3.43	$\rho < 0.01$
Mean (5.58)	-0.81	0.27	-3.00	$\rho < 0.01$
+1 SD (1.19)	-0.61	0.27	-2.25	$\rho < 0.05$
Section 2: Path between <i>Epistemic motivation</i> (Mediator variable) & <i>Judgement</i> (Dependent variable) moderated by <i>Process accountability</i> (Moderator variable)				
-1 SD (1.19)	0.22	0.11	2.04	$\rho < 0.05$
Mean (5.58)	0.14	0.08	1.81	$\rho < 0.10$
+1 SD (1.19)	0.06	0.08	0.78	$\rho = 0.44$

Panel B of this table presents the estimates, standard errors, Z statistics, and ρ values of the moderated mediated effects (also known as the conditional indirect effects) of the independent variable or the IV on the dependent variable or the DV across high and low levels of the moderator. The IV in Section 1 (2) is the *Type of guidance (Top management's goal)*. The mediator variable or the MV in Section 1 (2) is *Perceived decision uncertainty (Epistemic motivation)*. The dependent variable or the DV is *Judgement*, and the moderator is *Process accountability* in both conditions. I operationalize high and low levels of the moderator as one standard deviation above and below the mean of *Process accountability*.

Figure 1: Ordinal Interaction



This figure shows the joint effect of the type of guidance and the top management's goal on participants' non-GAAP exclusion judgements captured by the *Judgement* variable, which is a continuous variable that is a product of participants' first- and second-order judgements – likelihood and confidence respectively. I first ask participants how likely they are to exclude restructuring costs in constructing adjusted net income on a 7-point Likert scale (1. Extremely unlikely, 7. Extremely likely) and then ask them how confident they are in their judgment in making the exclusion decision on a 101-point Probability scale.

Figure 2A: Structural equation model 1 (Mediation effect of Perceived decision uncertainty)

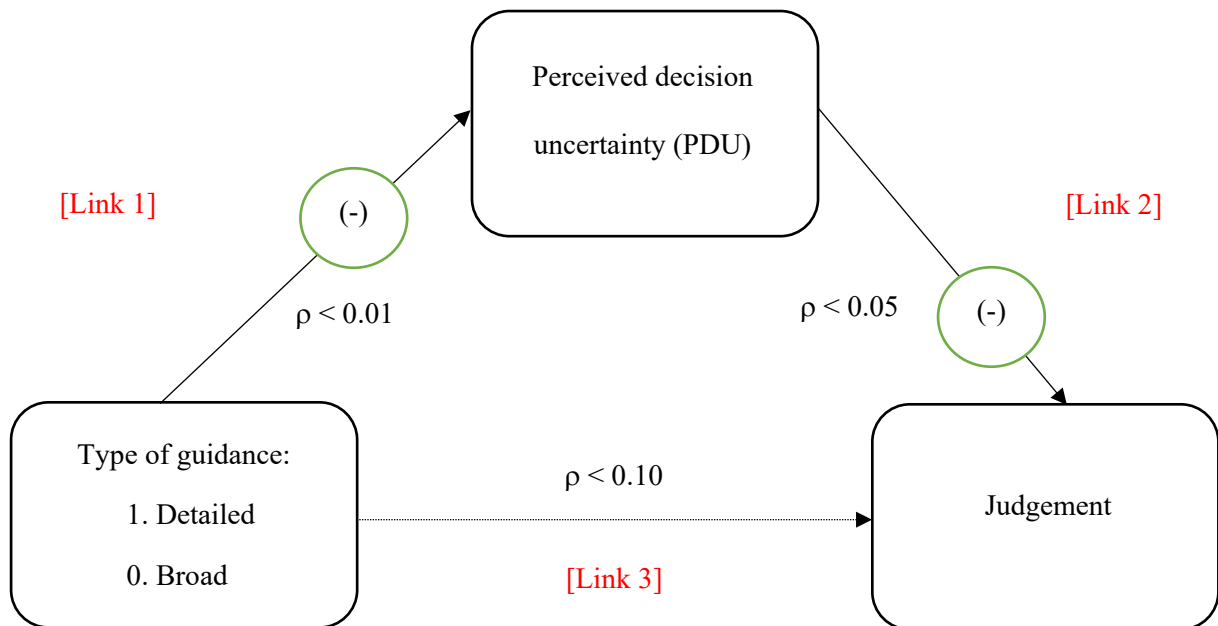


Figure 2B: Structural equation model 2 (Mediation effect of Epistemic motivation)

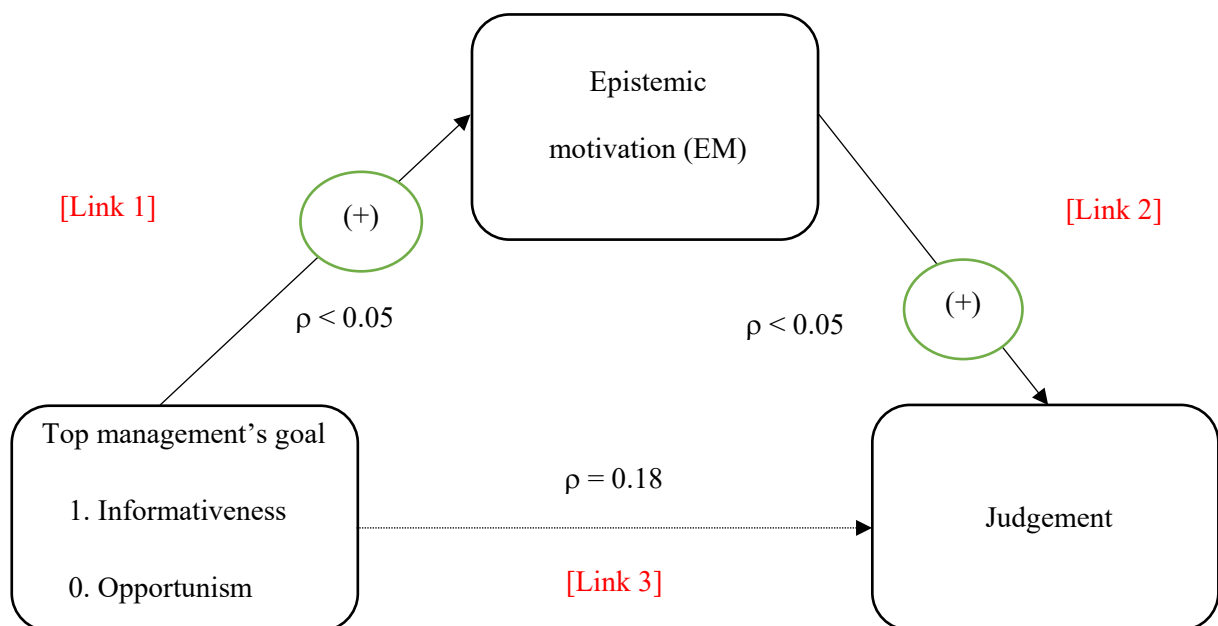
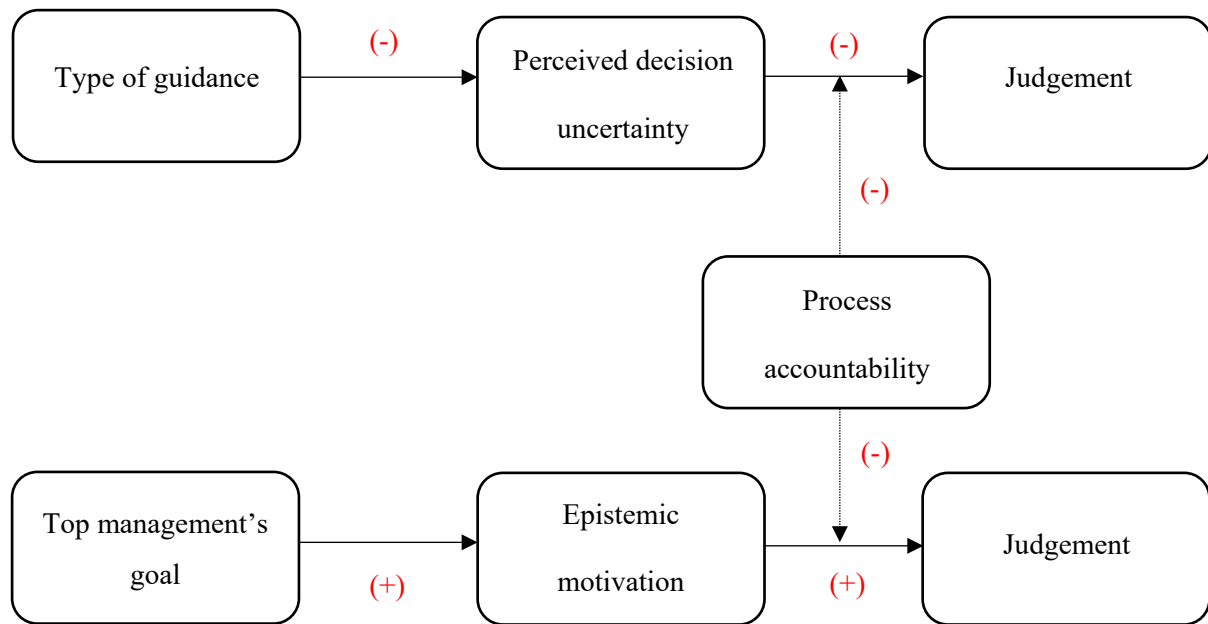


Figure 2C: Moderating effect of Process accountability



Figures 2A and 2B display the structural equation models along with summarized results from their estimation. The key independent variable or the IV in Figure 2A (2B) is *Type of guidance* (*Top management's goal*). The key dependent variable or the DV in both sections is *Judgement*, which is a continuous variable that is a product of participants' first- and second-order judgements – likelihood and confidence respectively. The mediator variable or the MV is perceived decision uncertainty (epistemic motivation) in Figure 2A (2B). The two-tailed p values for the path coefficients are also presented. Link 1 (2) indicates whether the IV (the MV) has a significant effect on the MV (the DV). Link 3 indicates direct effects (i.e., those that are not mediated) relating the IV to the DV. Figure 2C displays the moderating effect of process accountability. All variable measurements are detailed in Section 3.2.

Appendix A: Institutional background

The non-GAAP disclosures regulatory framework in the U.S. comprises of Regulation G and Item 10(e) and the SEC interpretations of these regulations (SEC, 2003). Regulation G and Item 10(e) requirements are strict and comprehensive rules that govern the use of non-GAAP measures in press releases and SEC filings. The SEC staff interpretive guidance, a.k.a. SEC Compliance and Disclosure Interpretations (C&DIs), which provides an interpretation of these regulations, is known to function just as effectively as an actual regulation because it can potentially bind entities such as SEC registrants (Kyung and Weintrop, 2016).

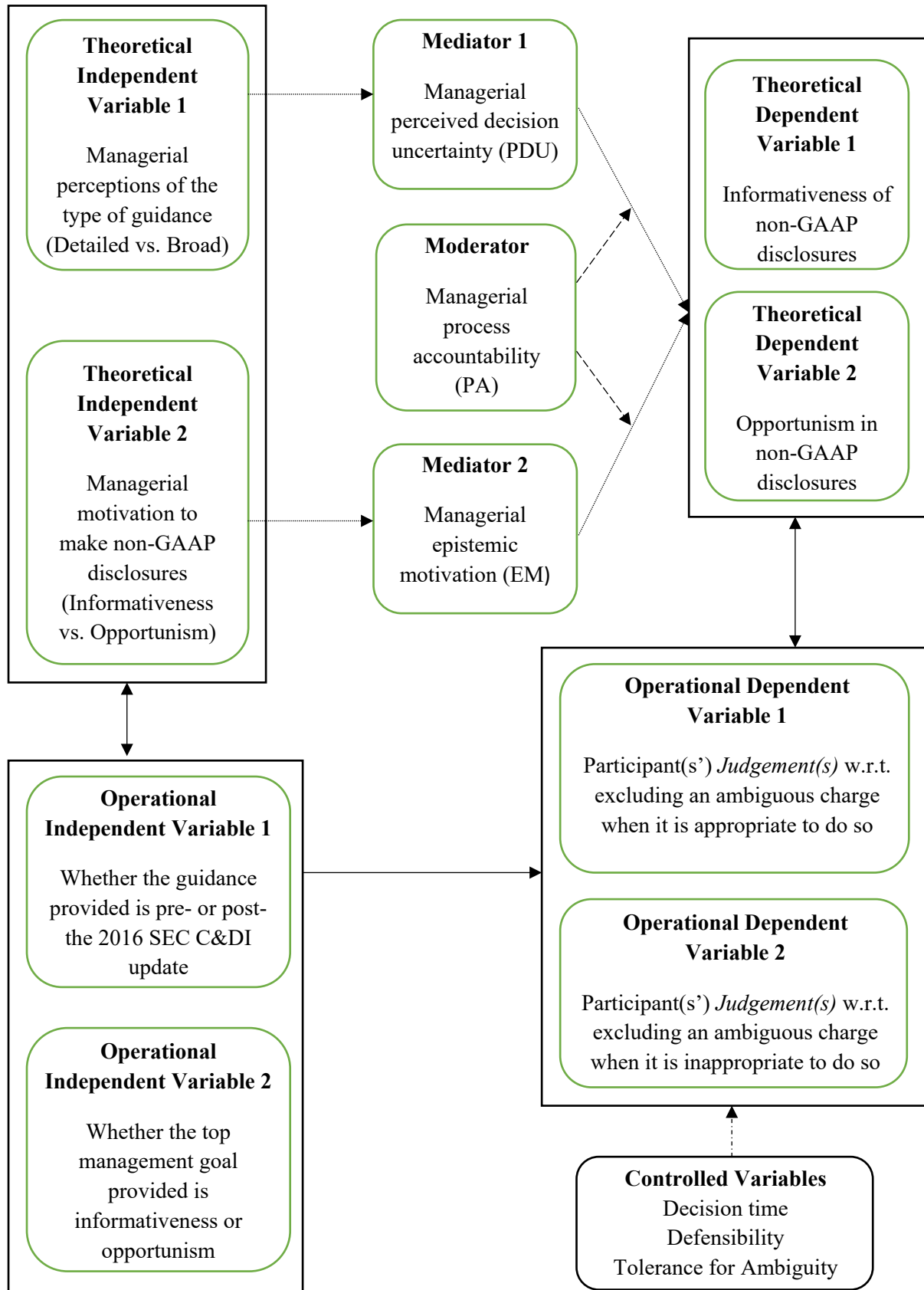
On May 17, 2016, the SEC tightened its policy on non-GAAP measures by updating its staff interpretive guidance to provide clarifying examples in areas of frequent staff comment (Graber and Flow, 2016; PwC, 2016; SEC, 2016a, 2016b).⁵³ Specifically, the updated guidance provided some examples of potentially misleading non-GAAP measures that could violate Reg G. One example provided by the SEC on the appropriate construction of non-GAAP measures is as follows – *‘presenting a performance measure that excludes normal, recurring, cash operating expenses necessary to operate a registrant’s business could be misleading’* (SEC, 2016a).

Prior to the 2016 C&DI update, the SEC guidance involved no examples but only a broad interpretation of the regulations on how managers should construct non-GAAP measures without making them misleading. For example, on the appropriate construction of non-GAAP measures, one of the guidelines that the SEC C&DIs included is as follows – *‘Certain adjustments, although not explicitly prohibited, can result in a non-GAAP measure that is misleading’* (SEC, 2016a). However, the SEC had expressed concerns about non-GAAP measures that exclude recurring items from the very

⁵³ There is some anecdotal evidence of how the 2016 C&DI update affected non-GAAP disclosures in general. Since the start of July 2016, Shumsky (2017) notes that 81% of S&P500 firms gave prominence to GAAP figures in reporting results versus 52% that did so previously. Electronic Arts, Inc., a videogame maker, announced it would drop non-GAAP measures from its earnings releases after the C&DI update, with the Chief Financial Officer (CFO) of the company stating that *“We’re trying to do exactly what we have been asked to do by the SEC, and we feel like we’re doing that in a very proactive way.”* The company’s rivals, Activision Blizzard Inc. and Take-Two Interactive Software Inc., also followed suit. Visa Inc., a payments technology company, included more non-GAAP measures in earnings releases to show investors how the business would have fared without a recent acquisition in response to the C&DI update, with the Chief Accounting Officer (CAO) stating that, *“The goal was for investors to make up their own minds about our performance. It’s not like we are afraid the SEC was going to come back and slap us on the wrist and tell us we are not doing a good job”*.

beginning (Black and Christensen, 2018), and firm managers were aware of the SEC's position on the same even though nothing was explicitly mentioned in the C&DI. The fact that the SEC filed its first enforcement action against SafeNet, Inc. way back in November 2009, for the misclassification of a significant amount of recurring ordinary expenses as non-recurring expenses and excluding them in the construction of the non-GAAP earnings measure, also makes this conclusion evident.

Appendix B: Libby Boxes



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