Managing Expectations: How Assurance Level and Sustainability Reporting Approach Affect Investor and Auditor Confidence

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ABSTRACT

We use a controlled experiment with MBA students and experienced auditors to examine how a company's choice of assurance level (reasonable versus limited) affects nonprofessional investor confidence in sustainability information disclosed under two different reporting approaches (investor-oriented and multi-stakeholder), and how these choices contribute to investor-auditor expectation gaps. We find that, although investors are able to distinguish limited from reasonable assurance, their confidence adjustment appears insufficient when compared to auditing professionals, leading to a significant expectation gap, particularly for limited assurance. Interestingly, auditors and investors also hold different views about how assurance and reporting choices affect management's credibility on sustainability issues. Whereas auditors believe that managers who choose a multi-stakeholder approach have more credibility, investors focus more on the level of assurance that managers have chosen for their disclosures. Importantly – and consistent with the audit risk model – these differences in views of management credibility do not translate into post-assurance differences in confidence in reported information. Finally, we find that both auditors and investors perceive greater engagement risk with reasonable versus limited assurance. Our findings provide insights for companies pursuing sustainability assurance, audit firms, investors, policymakers, and future research.

Keywords: Sustainability reporting; sustainability assurance; expectation gap; reporting approach; confidence assessments

I. INTRODUCTION

The well-documented rise of voluntary sustainability disclosures in corporate reporting has also been accompanied by a growing market for external assurance of that information. While the increase in voluntary disclosure can be seen as a response to market demand for transparency and accountability, the rise in voluntary assurance of sustainability information can be seen as a response to concerns about disclosure quality, particularly as investors and then regulators have begun to focus more attention on sustainability information.[1] Currently, around 66 percent of the S&P 500 companies *voluntarily* chose to assure at least some of their sustainability disclosures in 2023 (G&A 2024). However, the vast majority of those companies opt only for limited assurance. Moreover, because investor confidence and investor-auditor expectation gaps have largely been studied in the context of mandatory audits of financial statements, less is known about how disclosure and assurance choices shape beliefs about management and the reliability of the assured information. Our study, therefore, explores how voluntary reporting and assurance choices shape investor and auditor beliefs and whether there are any gaps between what those two groups expect from assured information.

Investor confidence in assured information is important because it can influence not only the evolving market for assurance services, but also the credibility of reporting itself. Notably, U.S. companies and many companies globally have discretion over both reporting standards and assurance levels, though this flexibility is likely to change in certain jurisdictions as we discuss later. The assurance of sustainability disclosures presents the largest potential increase in the market for assurance services since at least the Sarbanes-Oxley Act of 2002 (SOX), when financial statement audits expanded to cover assurance of internal controls. Yet, if investors do not

[1] Throughout this paper, we refer to sustainability disclosures, which encompasses environmental, social, and governance (ESG) disclosures.

distinguish between the different types of assurance engagements, auditors risk not having a market for differentiated assurance services. Different reporting approaches adds another critical dimension embedded into companies' sustainability assurance choices, shaping the context in which limited and reasonable assurance are evaluated. Examining reporting approach alongside assurance level is important to understand whether findings on confidence judgments and expectation gaps are specific to one approach or are likely to generalize to other frameworks, particularly if auditors and investors have different views about what reporting approach and assurance level say about management's credibility.

Following prior studies of expectations gaps, we use experienced auditors' confidence judgments as a benchmark against which to compare investors' confidence judgments. Because auditors have expertise in providing assurance services, including on engagements with limited assurance, their confidence judgments reflect a deep understanding of the assurance process. In contrast, investors' confidence judgments may lack the technical understanding necessary to fully appreciate the lower level of verification involved with limited versus reasonable assurance. Comparing investor confidence to auditor confidence allows us to identify where there may be important gaps in expectations. Understanding where these gaps are more likely to arise is important because they have the potential to harm investors, increase auditor vulnerability to reputation and litigation risk, and undermine trust in the assurance process (Kinney and Nelson 1996).

To our knowledge, no research has yet examined expectation gaps for sustainability disclosures. Nor has prior research examined expectation gaps for any type of limited assurance engagement. Consistent with prior studies on expectation gaps (e.g., Campbell and Mutchler 1988; Kinney and Nelson 1996), an experiment enables direct measurement and comparison of investor

and auditor confidence in the same piece of information, holding other factors constant, to isolate key variables and draw causal inferences. Unique in comparison to prior research is that our design allows us to examine differences for auditors and investors in confidence across assurance levels, which mitigates concerns about baseline differences arising from unmeasured factors. The design also allows us to explore process measures such as perceptions of management credibility and engagement risk, providing insights for companies and auditors considering the level of assurance to obtain, and for regulators debating whether and how to mandate sustainability assurance.

We draw from Hoang and Trotman (2021) to predict that investors will differentiate limited from reasonable assurance on sustainability disclosures. However, extending this literature, we posit that investors will fail to fully account for the differences. Research shows investors have historically tended to place more confidence in audited information than auditors believe is warranted (e.g., Franzel 2016; McEnroe and Martens 2001; AICPA 1993). This tendency can be particularly pronounced with new or unfamiliar disclosures, as recent evidence suggests that expectation gaps decrease over time as investor understanding improves (e.g., Heltzer et al. 2022). Given the unfamiliarity of many investors with limited assurance procedures, we expect they will not fully appreciate the implications of the different engagements (i.e., the lower level of work effort involved with limited assurance), even when they attend to the auditor's report. Consequently, we predict larger gaps between investor and auditor confidence for sustainability disclosures with limited versus reasonable assurance.

Providing assurance involves assessing compliance with a reporting standard. Since the 1970s, the Financial Accounting Standards Board has identified investors as the primary user of general purpose financial reports. Sustainability reporting, however, is more complicated in that some standards identify investors as the primary user whereas other standards take a multi-

stakeholder approach. Both approaches are commonly used in the US. In 2023, 93 percent of Russell 1000 Index companies published sustainability reports. Eighty-one percent of these reports contained disclosures aligned with the Sustainability Accounting Standards Board (SASB), which is investor-oriented, and 55 percent contained disclosures aligned with the Global Reporting Initiative (GRI), which is multi-stakeholder oriented (G&A 2024).

Because a multi-stakeholder approach significantly expands the user group beyond investors, the choice to use this reporting approach could influence auditors' and investors' perceptions about management credibility and engagement risk. On the one hand, if auditors view management credibility and engagement risk differently conditional on the reporting approach that management has selected, they should factor that into the audit risk model such that auditors' post-assurance confidence in reported information should depend only on the level of assurance chosen, not on management's choice of reporting approach. Investors, on the other hand, may fail to appreciate the ability of auditors to adjust their audit procedures accordingly and/or could hold different beliefs than auditors altogether – both of which could contribute to expectation gaps. As such, we examine whether our predictions about investor confidence and expectation gaps are sensitive to the reporting approach chosen by management.

To do this, we conducted a 2×2×2 between-participants experiment. We manipulated assurance level (reasonable or limited) and reporting approach (investor-oriented or multi-stakeholder), and we used two participant types (auditors or investors). The auditor participants are from Big 4 and large national firms and are highly experienced (i.e., an average of 8.7 years of experience and 62.7 percent are managers, directors or partners). The auditors also have direct experience or some degree of comfort with sustainability assurance engagements. We use MBA students as nonprofessional investors. Following prior research on expectation gaps, we elicit

participants' confidence in an assured disclosure. Specifically, we elicit confidence in the "Water Management" disclosure, which is held constant across reporting approaches and is relevant under both reporting approaches.[2] Participants assess how assured (confident) they are that the reported information is fairly stated in all material respects, as well as their confidence in the accuracy and completeness of the sustainability disclosure. Finally, we ask process-level questions about management's credibility related to the sustainability disclosure (e.g., how committed management is to sustainability, concerns about greenwashing) and other perceptions.

The results of our experiment indicate that investors do differentiate limited from reasonable assurance, expressing significantly lower confidence in the reported information when that information received limited assurance. Despite this distinction, we also find that investors are more confident in information that has received limited assurance than are auditors, suggesting a significant expectation gap. Interestingly, the gap dissipates entirely with reasonable assurance. As such, our findings suggest investors may insufficiently understand how much less assurance is provided by limited versus reasonable assurance. Importantly, this expectation gap appears under both reporting approaches.

Our process measures reveal that auditors and investors react to the choices managers make about their sustainability disclosures, albeit differently. Auditors perceive higher credibility when management has adopted a multi-stakeholder approach. Importantly, these credibility differences do not impact auditors' confidence assessments, consistent with auditors understanding that the audit risk model adjusts for any *ex-ante* differences to achieve the desired level of assurance. This nuance to how auditors see their clients does not contribute to any expectation gap because

[2] We use a "Water Management" disclosure because it is a relevant topic under both reporting approaches (e.g., per both the SASB and GRI standards). Focusing on one disclosure held constant across reporting approaches follows prior research (Hasan et al. 2003; Vera-Muñoz et al. 2020) and allows us to draw strong and relatively clean inferences about how our variables of interest affect confidence in a sustainability disclosure.

investors focus instead on the choice managers make about the level of assurance associated information, rather than the reporting approach. In particular, investors perceive management to have higher credibility when managers have elected to get reasonable versus limited assurance. Auditors, perhaps recognizing that limited assurance is a very common choice, do not view management credibility differently conditional on assurance level. Neither investors nor auditors perceive greater difficulty assessing materiality with reasonable assurance or multi-stakeholder reporting, though both associate higher engagement risk with reasonable assurance. While this process evidence provides some additional color to our results, we are cautious not to overinterpret these findings, particularly as they are not the primary dependent variables in our experimental design.

Our study offers timely insights into the evolving landscape of sustainability assurance and is the first to identify expectation gaps for sustainability assurance and for disclosures with limited assurance. We answer calls from academics (Christensen et al. 2021; Gipper et al. 2024) by confirming, on the one hand, that investors differentiate limited from reasonable assurance, while also finding that investors draw less of a distinction between them than do auditors. Our findings are, therefore, consistent with concerns that investors' lack sufficient understanding of limited assurance and that they may draw too much confidence from information that has received only limited assurance (AICPA 2021; ACCA 2024; ICAEW 2024; Ceres 2024). This evidence is timely and important to practice given that the vast majority of assurance obtained on sustainability disclosures is currently limited assurance (G&A 2024). Our findings also have timely implications for companies and auditors facing increased demands for expanding what information gets assured, including, for example, non-GAAP financial measures, management discussion and analysis, and key performance indicators, in addition to sustainability information (CAQ 2020).

Finally, our finding that reasonable assurance fully alleviates the expectation gap would seem to lend support to calls from investors and audit firms for reasonable assurance on sustainability disclosures (KPMG 2021; PWC 2020).[3] However, our results do not speak to the cost-effectiveness of such engagements. Future research is needed to better understand the costs and the benefits of various types of assurance engagements. Future research could also study cost-effective ways to ensure that investors are aware of what information has been assured, know what level of assurance it has received, and are familiar with what to expect of that level of assurance.

An important caveat of our findings is that they are from a setting with both voluntary reporting and assurance and so may not generalize to settings where either choice is mandated. However, we expect voluntary choice to remain, for the foreseeable future, an important institutional feature of the sustainability reporting environment in the United States, where the vast majority of sustainability information – and the assurance of that information – is provided voluntarily. SEC regulations do require certain sustainability disclosures. However, only Scope 1 and 2 GHG emissions would eventually require assurance, and the prospects of the SEC's climate rule ever going into effect are relatively low. California, however, has passed a state bill that would similarly require climate-related disclosures and limited assurance of Scopes 1 and 2 GHG emissions in 2026 and reasonable assurance from 2030.

Outside of the United States, there are several reporting and assurance mandates currently in effect or on the horizon. The Corporate Sustainability Reporting Directive (CSRD) has mandated the creation of ESRS, which takes a multi-stakeholder approach and is currently subject to limited assurance, potentially rising to reasonable assurance after a 2028 review and pending

[3] For example, PWC's 2022 Global Investor Survey reports, "75% of investors surveyed say their confidence in ESG reporting would receive the biggest boost if it were assured at the same level as companies' financial statements (i.e., reasonable assurance)" (https://www.pwc.com/us/en/services/esg/esg-reporting/esg-assurance.html).

the outcome of currently proposed Omnibus legislation. In contrast, Brazil has mandated the use of ISSB disclosures with limited assurance to begin with and reasonable assurance starting from 2026. As regulators globally consider such mandates, our findings offer comfort regarding auditor and investor beliefs about the readiness of auditors to provide such assurance. However, this comfort also comes with some caution regarding investor understanding of limited assurance and the increased confidence that investors have in managers who have *chosen* reasonable assurance. As such, future research is needed to better understand whether the effects of mandating reporting approaches and/or assurance levels.

II. HYPOTHESES DEVELOPMENT

Assurance of Sustainability Information

Despite not being required to do so, companies are increasingly obtaining external assurance on some or all of their sustainability disclosures. A report by the Governance & Accountability Institute found that 48 percent of the Russell 1000 companies providing a sustainability report in 2023 chose to get assurance for at least part that report, up from 40 percent the prior year (G&A 2024). The choice to get assurance is even more common among the largest reporters. According to that same report, 66 percent of reporters in the S&P 500 voluntarily obtained assurance for their 2023 reports, up from 57 percent in 2022.

The increasing prevalence of sustainability assurance should not be too surprising because external assurance can provide companies with many benefits, such as signaling higher information quality (e.g., Higgs and Skantz 2006; Minnis 2011), especially when assurance is not mandatory (Lennox and Pittman 2011). In addition, investors tend to demand a higher level of assurance when they are less confident in information or when information asymmetry is higher, such as during IPOs (Menon and Williams 1991). Although much of the research on assurance is

in the context of financial reporting, research has similarly found positive effects of assurance on investors' judgments in the context of sustainability reporting, including higher information credibility perceptions (Pflugrath et al. 2011) and higher fundamental valuation estimates (Hoang and Trotman 2021), relative to information that has not been assured.

Although demand for sustainability assurance is on the rise, less than 10 percent of reporters in either half of the Russell 1000 opted for reasonable assurance, suggesting that the vast majority of companies getting assurance over sustainability disclosures are content with limited assurance (G&A 2024). This is an important distinction because, in comparison to reasonable assurance, which is required for public company financial statements, limited assurance engagements are considerably narrower in scope (IAASB 2013; IAASB 2023; IAASB 2024) and so provide a relatively low level of assurance.[4]

A major concern with limited assurance is that not only will information quality generally be lower when it comes with less assurance, but also that investors may develop *undue* confidence in disclosures with limited assurance. For example, Ceres argues that limited assurance "is of little value to investors, and worse, may convey *a false sense of comfort*" (Ceres 2024, italics added). To signal the difference in engagement scope, assurance reports use different language for limited assurance engagements. For example, rather than expressing an unqualified opinion about information being fairly stated, a limited assurance engagement report would state that nothing had come to the auditors' attention that would cause them to believe there is a material misstatement (Vera-Muñoz et al. 2020). In addition, limited assurance reports typically include the following disclaimer-like wording:

[4] See the IAASB's "Explanatory Memorandum for Proposed International Standard on Sustainability Assurance (ISSA) 5000 General Requirements for Sustainability Assurance Engagements" (IAASB 2023) for more detailed discussion of the difference in work effort by auditors between a limited and a reasonable assurance engagement.

> A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects, in order to express an opinion. Accordingly, we do not express such an opinion.

Prior financial accounting and sustainability research has found that investors do tend to differentiate between assurance levels, expressing higher confidence for reasonable versus limited assurance (Hasan et al. 2003; Hodge et al. 2009; Vera-Muñoz et al. 2020; Hoang and Trotman 2021). However, prior research has not compared investor confidence to auditor confidence when sustainability information has received either limited or reasonable assurance. Benchmarking investor confidence against auditor confidence is informative because auditors are trained to evaluate the level of work effort required for limited versus reasonable assurance and also to adjust their planned procedures to accommodate for engagement specific risks. Thus, auditor confidence can provide evidence on whether a given level of confidence expressed by investors is warranted. Studying such investor-auditor expectation gaps is critical because these gaps can lead to investor harm, expose auditors to reputation and litigation risk, and can undermine trust in assurance more generally (Franzel 2016; Kinney and Nelson 1996).

Indeed, expectation gaps arising from financial statement assurance have been acknowledged since the 1970s, allowing academics and regulators to help revise investors' financial statement-related expectations, and narrow the gaps.[5] Research on expectation gaps, in the context of financial statement audits with reasonable assurance, highlights differences in investor and auditor understanding of audit work and responsibilities (e.g., Frank, Lowe, and Smith 2001; Kinney and Nelson 1996; Lowe and Reckers 1994; Nair and Rittenberg 1987; Libby 1979).

[5] As former PCAOB board member Jeanette Franzel notes, "it is necessary and helpful to break down this 'gap' into various components when analyzing potential regulatory initiatives in order to find effective, appropriate, and targeted solutions" (Franzel 2016). The specific gaps we study in this paper are gaps between what investors expect from assurance and what auditors believe assurance provides. In other words, we consider auditor responses descriptive rather than normatively correct.

Recent evidence suggests expectation gaps for information with reasonable assurance are reducing over time (Heltzer, McEnroe, and Mindak 2022).[6] However, research has yet to address whether similar gaps exist for sustainability disclosures, especially those receiving limited assurance.

In light of the prior discussion, we expect that expectation gaps will persist for sustainability disclosures—i.e., on average, investor confidence will be higher than auditor confidence—and that they will be amplified for limited assurance because investors are less familiar with the lower level of work it implies:

> **H1:** Investor confidence will be higher for sustainability disclosures with reasonable versus limited assurance.
>
> **H2**: Investor confidence will be higher than auditor confidence on sustainability disclosures, and this gap will be amplified for sustainability disclosures with limited assurance.

Assurance and Reporting Approach

Assurance is inextricably linked to reporting standards, as auditors evaluate whether disclosed information aligns with the standards used by the company. In financial reporting, standards universally identify investors as the primary user group, creating a consistent framework for assurance that rarely requires consideration of the disclosure's reporting approach. In contrast, sustainability disclosures can be prepared using either an investor-oriented or a multi-stakeholder approach, introducing variability that may influence how assurance is applied and perceived. While the investor-oriented approach focuses on information relevant to investment and credit decisions, aligning with financial accounting frameworks, the multi-stakeholder approach expands

[6] Early research on investor-auditor expectation gaps finds differences between accountants' and private shareholders' understanding of the meaning of the ("true and fair view") wording used on the audit report at the time (Houghton 1987). However, subsequent work finds auditors and investors came to agreement about the meaning of the specific wording, but not yet about what work an auditor should do to issue an unqualified opinion with reasonable assurance (i.e., the auditors' responsibilities) (Gold, Gronewold, and Pott 2012; McEnroe and Martens 2001).

the user group to include employees, customers, and society at large. These differences could potentially influence perceptions of management's credibility by signaling management's priorities, and thereby shape how compliance with the standard is audited and potentially how confidence is judged.

Overview of Sustainability Reporting Approaches

Under a multi-stakeholder approach, companies consider how *any* of a company's key stakeholder groups, such as employees, customers, and society at-large, could be significantly impacted by the company's operations (GRI 2021; Christensen, Hail, and Leuz 2021). This approach typically results in reporting on a wide set of topics and is most commonly associated with GRI. In contrast, an investor-oriented approach focuses solely on the risks and opportunities material to investors, aligning with the perspective of financial accounting standard setters. This approach is exemplified by SASB, Integrated Reporting, and the Climate Disclosure Standards Board, all of which were consolidated into the IFRS Foundation in 2022 to support the establishment of the ISSB. The ISSB applies the same definition of materiality as its sister board, the International Accounting Standards Board and focuses on sustainability-related risks and opportunities that could reasonably be expected to affect a company's prospects (ISSB 2023).

Reporting under a multi-stakeholder approach requires companies to determine which sustainability issues, even if they are not material to investors, may be material to other key stakeholders. For example, the company's parental leave policy may not be material to investors if it operates in an industry with a strong and varied supply of labor, but it could still be viewed as having a material impact on employees. Multi-stakeholder reporting, therefore, typically encompasses a broader range of topics in order to reflect the diverse interests of multiple stakeholder groups compared to an investor-oriented approach.

Historically, the multi-stakeholder approach has been more prevalent in sustainability reporting, driven by the early establishment of GRI in the late 1990s. In contrast, the SASB Standards Board only codified its set of 77 industry standards in late 2018 (Hales 2023). The SASB Standards are now used by more than 3,000 companies around the world, and both approaches are commonly used. For example, a recent study of the sustainability reports published by Russell 1000 companies found that 55 percent of reports reference GRI standards and 81 percent of the sustainability reports refer to SASB standards (G&A 2024). While the use of GRI has increased somewhat from 2019 when 47 percent referenced GRI, the use of SASB has increased dramatically as only 12 percent referred to SASB in 2019 (G&A 2024).

The Effect of Assurance Conditional on Reporting Approach

Given the significant differences between the two reporting approaches, we consider how they might influence investor confidence and expectation gaps. On the one hand, an investor-oriented approach aligns with the financial materiality standard familiar to investors, potentially enhancing their confidence by tailoring disclosures to their specific information needs. On the other hand, a multi-stakeholder approach expands the focus to include a wider range of topics relevant to multiple stakeholder groups, which may signal stronger management commitment to sustainability issues and bolster perceptions of their credibility, which could increase confidence in the disclosure.[7] However, the multi-stakeholder approach's inclusion of a large number of diverse topics—many of which may not directly affect financial outcomes—could also raise greenwashing concerns, which could decrease confidence in the disclosure. Thus, prior research does not lead to a clear prediction regarding whether or how investor confidence will vary

[7] Management credibility has been shown to be an important determinant of investor confidence in numerous financial accounting studies (e.g., Prowse 1998; Mercer 2005; Demerjian, Lev, and McVay 2012; Hewitt, Hodge, and Pratt 2020).

depending on the company's reporting approach, or the interaction of reporting approach and assurance level.

For auditors, the reporting approach may influence perceptions of management's credibility or greenwashing. However, auditors are trained to apply the audit risk model, which allows them to adjust their planned procedures to address such differences and maintain a consistent level of assurance. Consequently, unless auditors lack confidence that the audit risk model can be effectively applied to either approach, we do not expect their confidence to vary based on reporting approach. Given the potential for reporting approach to affect investors differently than auditors, it remains unclear whether the expectation gap will be affected by reporting approach. Instead of making a directional prediction, we pose the following research question:

RQ: Do the effects for H1 and H2 vary based on the reporting approach used?

III. METHOD

Research Design and Participants

We conducted a 2×2×2 between-participants experiment, manipulating the assurance level provided by the auditor's report (*Limited, Reasonable)* and reporting approach (*Investor-oriented, Multi-stakeholder*). To assess whether investors have *undue* overconfidence in assured disclosures, we conducted our experiment with *Auditors* and *Investors* as participants with *Auditors* serving as a benchmark group. This approach aligns with established expectations gap literature (e.g., Kinney and Nelson 1996; Vera-Muñoz et al. 2020) and addresses the absence of a normative benchmark for investor confidence while allowing for exploration of the expectation gap. Auditors serve as an ideal benchmark group due to their specialized knowledge and training in assurance engagements, including their understanding of assurance levels and the ability to

adjust engagement plans based on management credibility and other contextual factors. We obtained 110 experienced auditor participants from Big 4 and other large national accounting firms. The auditors had an average of 8.7 years of experience in public accounting, with 13.7 percent holding partner or director roles, 37.3 percent senior manager roles, 11.8 percent manager roles, and 37.3 percent senior roles. Additionally, 58.2 percent had direct experience working on sustainability engagements and all expressed at least some degree of comfort with sustainability assurance.[8]

We also recruited 117 MBA-student participants from a large public university to serve as proxies for nonprofessional investors. This approach is consistent with prior research examining investor assessments of assurance levels (e.g., Kachelmeier, Rimkus, Schmidt, and Valentine 2020; Vera-Muñoz et al. 2020), particularly for tasks with low integrative complexity (Elliott, Hodge, Kennedy, and Pronk 2007). Fifty-nine percent of MBA participants reported that they have investing experience and 80.3 percent said they plan to invest in the future. We collected the data online via Qualtrics and Institutional Review Board (IRB) approval was obtained prior to data collection.

Overview of the Experimental Procedures

We told all participants that their task was to answer questions related to an assurance report on a hypothetical company's sustainability report. We asked auditor participants to assume their firm provides assurance on the company's sustainability report. We asked investor

[8] A total of 133 auditors completed our study, but we restrict our sample to auditors who are reasonably familiar with providing assurance, in general, by excluding auditors at the staff level or with less than one year of experience in public accounting (n = 11). We also excluded auditor participants who chose a 1 "Not at all comfortable" when asked "How comfortable are you with the standards for performing assurance on sustainability engagements?" using an 11-point scale (n = 12). Finally, we find no significant main or interactive effects of whether the auditors have direct experience working on sustainability engagements on auditor confidence (all p-values > 0.10).

participants to assume they were considering investing in the company. The experimental procedures are summarized in Exhibit 1 and described in more detail below.

Participants first obtained general background information about sustainability reports, which included examples of topics these reports may cover. They then received background information about a fictional publicly traded company in the electronics manufacturing industry. Adapted from Moroney and Trotman (2016), the scenario describes that the company has been under intense pressure to reduce its consumption of freshwater, which is addressed in a "Water Management" disclosure in its sustainability report. The background information highlights that the company is not required to issue a sustainability report, or obtain assurance on it, and thus its report and the assurance are voluntary disclosures.

Participants then received information about the company's approach to sustainability reporting, which contained the manipulation of reporting approach, followed by the "Water Management" disclosure. Participants also received the independent auditor's report, which contained the manipulation of assurance level (described in detail below) and reinforced the manipulation of reporting approach by referencing the approach followed by management in preparing the report. Participants answered attention check questions to ensure they attended to the materials, including both manipulations. Finally, we elicited our dependent measures by asking participants to assess their confidence in the "Water Management" disclosure.

Manipulation of Reporting Approach

We manipulated reporting approach by varying whether the report is prepared for investors or from a multi-stakeholder perspective. The *Investor-oriented* condition notes that the company has chosen to prepare its report in accordance with standards that take an investor approach and includes a table that lists the 6 disclosure topics included in the report, emphasizing relevance to

investors. The *Multi-stakeholder* condition notes that the company has chosen to prepare its report in accordance with standards that take a stakeholder approach and that it is intended to address the needs of a broader audience, including not just investors, but also employees, customers, suppliers, government, non-governmental organizations, and community members. This condition includes a table that lists the 28 disclosure topics included in the report, reflecting the broader scope of the reporting approach.[9] In both conditions, the table includes "Water Management" as one of the disclosure topics.

After describing the company's approach to sustainability reporting, we provided participants with an excerpt from the company's report on its "Water Management" disclosure. This disclosure was adapted from a real-world company's report and the materials from Moroney and Trotman (2016). The disclosure is included in the Appendix and describes the company's five-year water reduction target and performance. It also includes a graph which shows the company beat its water reduction target in the current fiscal year. We chose "Water Management" as the sustainability disclosure topic because it is reasonably likely to be viewed as a material issue for an electronics manufacturer according to the SASB and GRI standards.

Manipulation of Assurance Level

We manipulated the assurance level in the auditor's report by using language adapted from real-world auditor assurance reports on sustainability disclosures. In the *Limited Assurance* condition, the auditor's report highlights that the engagement is a review, that a review obtains limited assurance, and that a review is substantially less in scope than an examination and does *not* provide reasonable assurance or express an opinion. In the *Reasonable Assurance*

[9] The number and type of disclosure topics listed are based on the index disclosures from a real-world publicly-traded company in the electronics manufacturing industry. The company includes indices for both the SASB (i.e., investor-oriented approach) and GRI (i.e., multi-stakeholder approach) standards, which we used for our *Investor-oriented* and *Multi-stakeholder* conditions, respectively.

condition, the auditor's report highlights that the engagement is an examination and that an examination provides reasonable assurance and an opinion (see the Appendix).

Dependent Variables and Other Measures

Our primary dependent measure is participants' *Confidence* in the sustainability disclosure from the company's sustainability report given the assurance report they read. Following prior research on expectation gaps, (e.g., Vera-Muñoz et al. 2020; Kinney and Nelson 1996), we designed this measure to be consistent and meaningful for both auditor and investor participants. We asked participants three questions to elicit their confidence assessments. First, we asked, given the assurance report they just read, how assured (or confident) they were that the "Water Management" disclosure from the company's ESG report was *fairly stated* in all material respects using an 11-point scale with endpoints "Not At All Assured" and "Extremely Assured." Second, using two separate questions, we asked participants, given the assurance report they just read, how likely it was that the information included in the "Water Management" disclosure was *accurate* and *complete* (i.e., not missing information) in all material respects using 11-point scales with endpoints "Not At All Likely" and "Extremely Likely." While all three questions should capture confidence in the information, we measure *accuracy* and *completeness* in addition to *fairly stated* because they may capture different risks of material misstatement (i.e., information could be accurate but not complete and vice versa).

Next, we asked all participants three questions to capture their perceptions of management's credibility with respect to the disclosure: "How committed is Alpha Inc.'s management to managing all of its significant sustainability issues?", "How committed is Alpha Inc.'s management to sustainable freshwater consumption?", and "How likely do you think it is that Alpha, Inc.'s management is "greenwashing" (i.e., conveying a false impression or providing

misleading information about their sustainability issues)?" using 11-point Likert scales. We also asked, "How difficult do you think it was for the auditors to assess materiality when providing assurance on Alpha Inc's "Water Management" disclosure?" (*Audit Difficulty*) and "How much business risk (e.g., litigation risk, reputation risk) do you think this assurance engagement poses for the auditors?" (*Engagement Risk*) using 11-point Likert scales. Finally, we collected various demographic information.

Key Design Choices

We made two key design choices which we believe strengthen our study while acknowledging their potential impact on the generalizability of the results. First, we included attention check questions after the manipulations of the company's reporting approach and assurance level, and we required participants to answer them correctly. If participants answered the attention check questions incorrectly, we provided them with feedback before having them reattempt the questions. This choice helps ensure that participants attended to the company's reporting approach and the language in the auditor's report used to describe either limited or reasonable assurance, minimizing concerns that inattention could drive any observed expectation gaps. As such, this design choice allows us to have a strong test of whether investors attend to differences in the language used in the assurance report.

Second, we manipulated the reporting approach by varying not only the description of the company's approach, but also the number and type of disclosure topics included in the sustainability report, consistent with the theoretical differences in the approaches and with real-world practice. We believe this design enhances ecological validity by realistically capturing the breadth of topics typically associated with each reporting approach. An alternative design choice would have been to hold the number and type of disclosure topics constant under both reporting

approaches. However, that alternative would artificially create an unrealistic set of sustainability disclosures for at least one condition. For instance, limiting the disclosure topics in a multi-stakeholder report would contradict the approach's aim to address a wide array of stakeholder interests. Conversely, including topics unlikely to be financially material in an investor-oriented report would misrepresent its focus on investor relevance. By aligning the breadth of disclosure topics with the reporting approach, we maintain the authenticity and ecological validity of the manipulation. However, to ensure comparability across all conditions, we asked all participants to assess their confidence in one particular disclosure (i.e., "Water Management") that is included in both reporting approaches. As a result, our design allows us to draw strong and relatively clean inferences about how a company's reporting approach and assurance choices affect participants' confidence in a specific disclosure.

IV. RESULTS

To confirm our three measures of confidence capture the same underlying construct for all participants, we conducted a confirmatory factor analysis using all investor and auditor participants (Asay, Hales, Hinds and Rupar 2023). All three variables load on one factor that explains 79.11 percent of the variance, and the Cronbach's Alpha is 0.866. Overall, the results suggest the items have relatively high internal consistency (Nunnally 1978). Thus, we use the mean of the three measures as our dependent variable (*Confidence)* (Asay et al. 2023).

Auditor Confidence

Figure 1, Panel A, and Table 1 provide results for auditor *Confidence*. We find a significant main effect of *Assurance Level* on auditor *Confidence* ($p < 0.001$, one-tailed), with lower confidence from limited than reasonable assurance. Untabulated analyses confirm this pattern holds across both the multi-stakeholder ($t_{52} = 3.707$, $p < 0.001$, one-tailed) and investor-oriented

approach (t_{54} = 3.121, p = 0.002, one-tailed).[10] Neither the main effect of *Reporting Approach* (p = 0.601) nor its interaction with *Assurance Level* (p = 0.619) are significant. These findings are consistent with our earlier arguments that any differences in perceived credibility, engagement risk, or client complexity based on the assurance level or reporting approach will not affect auditors' *post-assurance* confidence because auditors adjust their audit plan for these differences to achieve the level of desired assurance. We explore this process-level evidence in additional analyses after our examining our hypotheses and research question.

Investor Confidence and Investor-Auditor Expectation Gap

Figure 1, Panel B illustrates the results for investor *Confidence*. Table 2 presents the means and standard deviations by condition (Panel A) and the analysis of variance (ANOVA) results (Panel B). Supporting H1, we find a significant effect of *Assurance Level* on investor *Confidence* (p = 0.003, one-tailed), such that investor confidence is lower with limited versus reasonable assurance. Untabulated analyses further reveal that investor confidence is significantly lower with limited versus reasonable assurance for the multi-stakeholder approach (t_{56} = 2.533, p = 0.006, one-tailed) and (marginally) significantly lower for the investor-oriented approach (t_{57} = 1.374, p = 0.086, one-tailed). Although these effects are similar to those observed for auditors, a direct comparison to auditor confidence is required to examine whether investors have undue confidence in the assurance of sustainability disclosures (i.e., whether there are any expectation gaps).

We conduct a 3-way ANOVA with *Assurance Level*, *Reporting Approach*, and *Participant Type* as independent variables, and *Confidence* as the dependent variable. Table 3 reports the results. Supporting H2, we find a significant *Assurance Level* × *Participant Type* effect (p = 0.042, one-tailed) on *Confidence*. Figure 1, Panel C illustrates the investor-auditor expectation gap by

[10] We report one-tailed p-values, as indicated, for directional effects that correspond to predictions or prior research.

assurance level and participant type. Although investor confidence is nominally higher than auditor confidence for each cell, the main effect of *Participant Type* is not significant (p = 0.154, one-tailed). Rather, Table 3, Panel C shows investor confidence is significantly higher than auditor confidence when limited assurance is obtained (p = 0.040), but not when reasonable assurance is obtained (p = 0.665). Thus, while investors differentiate limited from reasonable assurance (H1), their confidence in sustainability disclosures with limited assurance is higher than auditors' confidence, suggesting investors may have undue confidence in limited assurance. Notably, the investor-auditor expectation gap is avoided entirely with reasonable assurance. This evidence contrasts with longstanding research on expectation gaps with reasonable assurance, but is consistent with recent work suggesting some of these gaps are closing (Heltzer et al. 2022).

Regarding our RQ, neither the main effect of *Reporting Approach* (p = 0.225) nor the interaction of *Assurance Level* and *Reporting Approach* (p = 0.407) significantly affect investor *Confidence* (Table 2). Similar to auditors, investors' *post-assurance* confidence in a particular disclosure is not sensitive to the reporting approach that produced it, regardless of assurance level. This finding aligns with Lyman (2023), who uses a more holistic assessment of reporting approach rather than focusing on a specific disclosure and finds no impact of reporting approach when the company obtains some assurance. The three-way ANOVA with investors and auditors shows no main or interaction effects of *Reporting Approach* on *Confidence* (p-values > 0.20). Thus, the investor-auditor expectation gap is also unaffected by the company's reporting approach. In our analyses below, we examine how these post-assurance measures of confidence align with investor and auditor perceptions of managers who adopt different reporting approaches and assurance levels, which can help isolate the specific role of assurance in shaping post-assurance confidence.

Additional Analyses – Process Evidence

We examine auditors' and investors' perceptions of *Credibility*, *Audit Difficulty*, and *Engagement Risk* to provide additional insights into the process-level differences underlying our main results. We first conduct a confirmatory factor analysis with investor and auditor participants to ensure the three questions we use to construct the *Credibility* measure capture the same construct. Results reveal all three variables load on one factor that explains 66.44 percent of the variance. Additionally, the Cronbach's Alpha 0.730, and the results overall suggest acceptable internal consistency (Nunnally 1978). Thus, we use the mean of the three questions to create one measure of investor perceptions of management's credibility (*Credibility)*.

Auditors

Table 4 reports descriptive statistics for all process measures for *Auditors*. ANOVA results (untabulated) on *Credibility* reveal no main or interactive effects of *Assurance Level* (p-values > 0.10). However, we do see a main effect of *Reporting Approach* ($F_{1,106} = 5.560$, $p = 0.060$). More specifically, auditors perceive management's credibility to be significantly higher when the company takes a multi-stakeholder compared to an investor-oriented approach. Because this difference in perceived credibility does not translate into differences in auditors' *post-assurance* confidence, our results are consistent with auditors believing that differences in management credibility will be accounted for when designing planned audit procedures in order to achieve the level of desired assurance, which is consistent with the audit risk model.

ANOVA results (untabulated) show no effects of *Assurance Level, Reporting Approach,* and *Assurance Level* × *Reporting Approach* on *Audit Difficulty* (p-values > 0.20). These findings indicate auditors do not view assessing materiality to be more difficult for reasonable versus limited assurance or for a multi-stakeholder versus an investor-oriented approach. Finally, ANOVA results (untabulated) reveal a significant main effect of *Assurance Level* on *Engagement*

Risk ($F_{1,106}$ = 5.560, p = 0.010), and nonsignificant effects of *Reporting Approach* and *Assurance Level* × *Reporting Approach* on *Engagement Risk* (p-values > 0.20). These findings suggest that auditors view greater engagement risk with higher levels of assurance, independent of reporting approach.

Investors

Table 5 reports descriptive statistics for all process measures for *Investors*. Our theory suggests lower investor confidence with limited assurance is driven in part by lower investor perceptions of management's credibility. Consistent with this theory, (untabulated) ANOVA results on *Credibility* show a marginally significant main effect of *Assurance Level* ($F_{1,106}$ = 2.438, p = 0.060), such that investors perceive lower credibility when the company chooses limited versus reasonable assurance. Unlike auditors, investors do not perceive higher credibility when the company takes a multi-stakeholder approach—the effects of *Reporting Approach* and *Assurance Level* × *Reporting Approach* are not significant (p-values > 0.20). Like auditors, investors do not perceive differences in audit difficulty based on assurance level or reporting approach; (untabulated) ANOVA results for investors show no effects of *Assurance Level*, *Reporting Approach*, and *Assurance Level* × *Reporting Approach* on *Audit Difficulty* (p-values > 0.20). Finally, (untabulated) ANOVA results show a significant main effect of *Assurance Level* ($F_{1,113}$ = 4.172, p = 0.043), and nonsignificant effects of *Reporting Approach* and *Assurance Level* × *Reporting Approach* on *Engagement Risk* (p-values > 0.20). Like auditors, investors perceive greater engagement risk as being higher for reasonable versus limited assurance engagements, independent of reporting approach.

V. CONCLUSIONS

We use a controlled experiment to examine how a company's sustainability reporting choices impact investor confidence in the disclosures and investor-auditor expectation gaps. Consistent with our predictions, results reveal investors differentiate limited from reasonable assurance in their confidence judgments. However, investor confidence significantly exceeds auditor confidence for sustainability disclosures with limited assurance, resulting in an expectation gap. We see no such gap with reasonable assurance.

These findings are consistent with concerns that investors lack sufficient understanding of limited assurance and that they may draw too much confidence from information that has received only limited assurance (AICPA 2021; Ceres 2024). Such concerns have recently been voiced as part of public consultations on sustainability assurance. For example, in a letter to the UK Financial Reporting Council (FRC), the Association of Chartered Certified Accountants (ACCA) emphasized "the need for improved awareness of what sustainability assurance is, including how limited assurance differs to reasonable assurance" (ACCA 2024). Similarly, the Institute of Chartered Accountants in England and Wales (ICAEW) warned of "a risk of a growing knowledge and expectation gaps between user and assurance provider" and stressed that these gaps must be addressed through education so that investors and other stakeholders understand the nature and implications of assurance engagements (ICAEW 2024). Our findings lend empirical support to such concerns.

Our findings also provide practical implications for audit firms. The widespread use of limited assurance creates challenges for firms managing investor expectations and mitigating their own business risk. Understanding that limited assurance contributes to significant investor-auditor expectation gaps is particularly relevant for decisions related to client acceptance, fee structures,

and engagement planning. Reassuringly, our evidence suggests auditors are comfortable providing assurance on sustainability disclosures under both reporting approaches, as they do not perceive these reporting frameworks as inherently more difficult or risky. However, managing investor perceptions of limited assurance will be critical for audit firms seeking to maintain their reputation as credible and value-added assurance providers and best compete with other third-party sustainability assurance providers.

This study contributes to the accounting literature. Whereas prior research has examined effects of sustainability assurance (Hasan et al. 2003; Hodge et al. 2009; Vera-Muñoz et al. 2020), we are the first to examine expectation gaps and to demonstrate that investors fail to sufficiently differentiate between limited and reasonable assurance. Our study addresses direct calls for research on how varying assurance levels affect investor perceptions (Christensen et al. 2021; Gipper et al. 2024). Additionally, we provide novel evidence that these gaps arise whether companies take an investor-oriented or multi-stakeholder approach to sustainability reporting.

We provide fruitful avenues for future research, such as whether our results differ for other stakeholders or for professional investors, or to assurance engagements performed by non-auditor service providers. Future research can explore whether and how investor and auditor perceptions about reporting approach persist or evolve as sustainability disclosures are subject to more scrutiny and litigation. Additionally, while we manipulate reporting approach by varying how the company's reporting approach is described and implemented and hold the disclosure constant across our experimental conditions, future research can examine whether reporting approach has a larger impact on assurance when studied in a setting where the information content of the disclosure differs. Finally, future research can examine how assurance impacts perceptions in contexts where a specific level of assurance is mandated rather than voluntarily chosen. In sum,

our study represents a vital first step in understanding how key features of sustainability reporting and assurance influence investor and auditor perceptions and the expectation gaps between them. These findings contribute to the ongoing dialogue on how assurance and reporting frameworks can enhance the credibility of sustainability disclosures and align stakeholder expectations.

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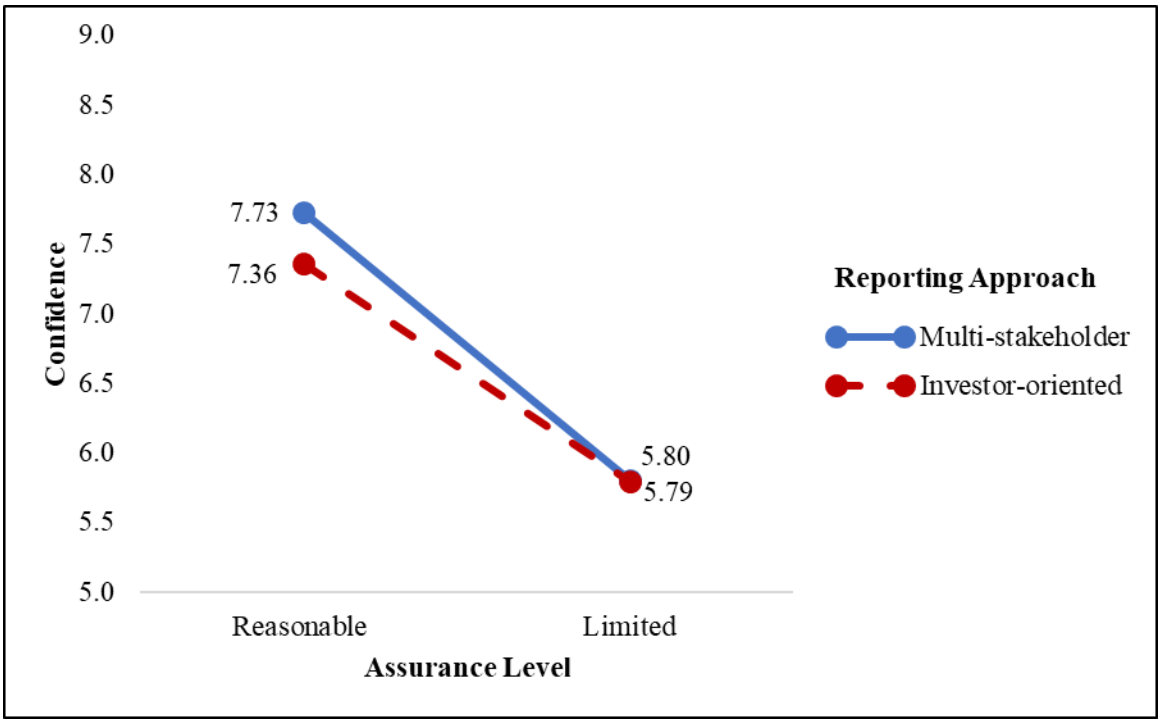
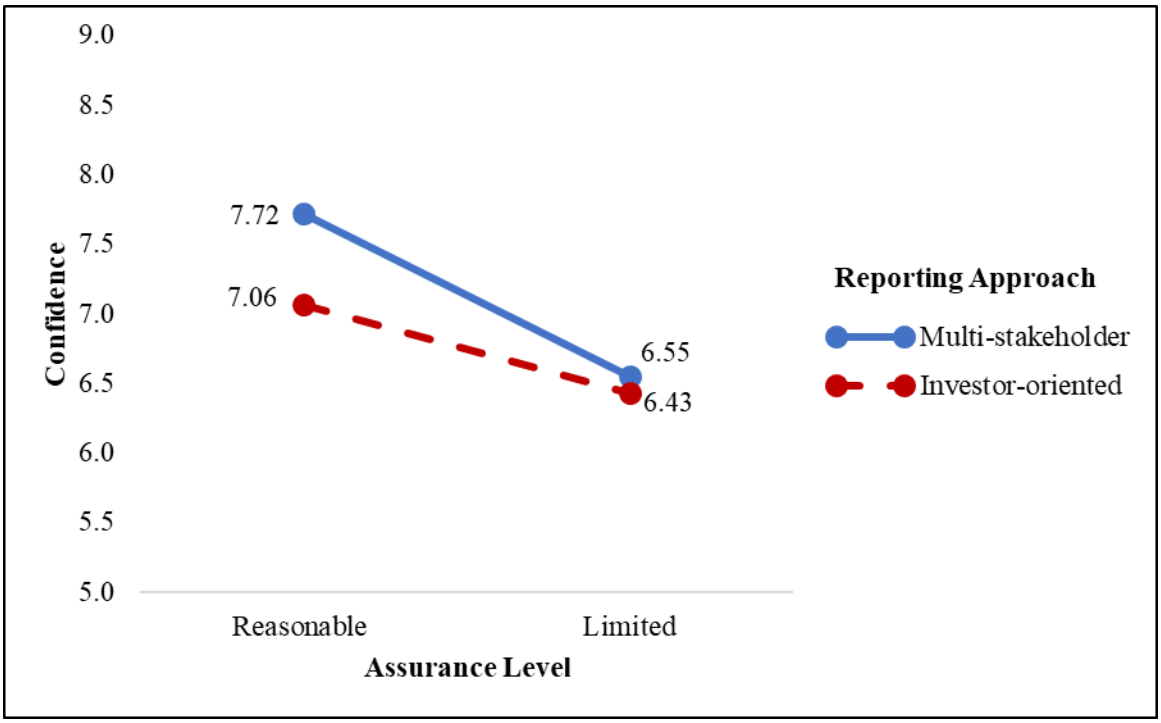
Figure 1
Results of Means for Auditor and Investor Confidence

Panel A: Experiment 1 – Auditor Confidence



Panel B: Investor Confidence



Panel C: Auditor and Investor Confidence (Collapsed across Reporting Approach)

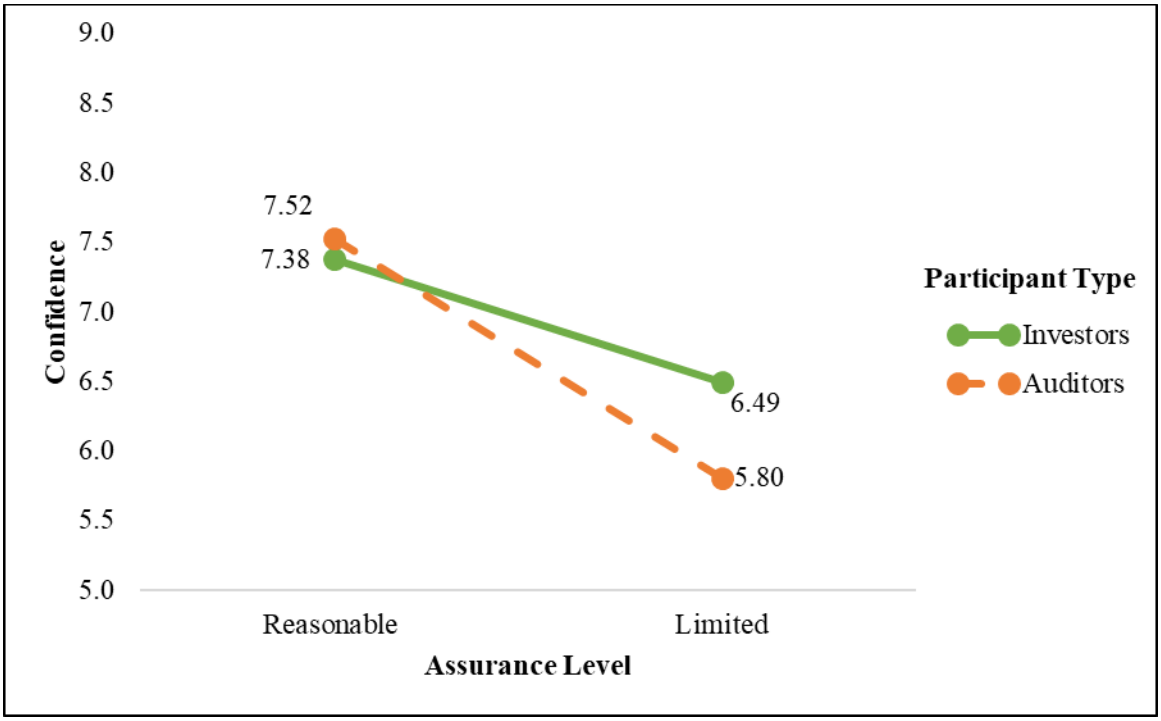


Figure 1 summarizes how the level of assurance and reporting approach on a company's sustainability disclosure jointly affect investors' and auditors' confidence assessments about the disclosure and thus, the investor-auditor expectation gap. The dependent variable *Confidence* is the mean of *Fairly Stated, Accuracy,* and *Complete. Fairly Stated* measures participants' responses to "Given the assurance report you read, how assured (or confident) do you feel that the "Water Management" disclosure from Alpha, Inc.'s ESG report is fairly stated in all material respects?" using a scale from 1 (not at all assured) to 11 (extremely assured). The dependent variable *Accurate* measures participants' responses to "Given the assurance report you read, how likely do you feel it is that the information included in the "Water Management" disclosure from Alpha, Inc.'s ESG report is accurate in all material respects?" using a scale from 1 (not at all likely) to 11 (extremely likely). The dependent variable *Complete* measures participants' responses to "Given the assurance report you read, how likely do you feel it is that the "Water Management" disclosure from Alpha, Inc.'s ESG report is complete (i.e., not missing information) in all material respects?" using a scale from 1 (not at all likely) to 11 (extremely likely).

The level of assurance is manipulated in the auditor's report. In the *Limited Assurance* conditions, we highlight that the auditor is performing a review, that a review obtains limited assurance, and explicitly, that a review is substantially less in scope than an examination and that it does *not* provide reasonable assurance or express an opinion. In the *Reasonable Assurance* conditions, we highlight that the auditor is performing an examination and that an examination obtains reasonable assurance and an opinion. Reporting approach is manipulated in the background information about the company's approach to sustainability reporting. In the *Multi-stakeholder* condition, the company chooses to prepare their sustainability report in accordance with standards that take a multi-stakeholder approach and so is primarily intended to be relevant to all its stakeholders, including employees, customers, suppliers, government, non-governmental organization, and community members. We provide a table that lists the 28 disclosure topics included in the report. In the *Investor-oriented* condition, the company chooses to prepare their sustainability report in accordance with standards that take an investor-oriented approach and so is primarily intended to be relevant to investors. We provide a table that lists the 6 disclosure topics included in the report.

Table 1
Results of Auditors' Confidence

Panel A: Descriptive Statistics (Means and [Standard Deviations])

	Reasonable + Investor-oriented (n = 27)	Reasonable + Multi-stakeholder (n = 22)	Limited + Investor-oriented (n = 29)	Limited + Multi-stakeholder (n = 32)
Fairly Stated	7.63	8.14	5.93	5.75
	[1.93]	[1.61]	[2.76]	[1.98]
Accurate	7.26	7.91	5.72	6.03
	[1.85]	[1.80]	[2.07]	[1.82]
Complete	7.19	7.14	5.72	5.63
	[2.04]	[2.19]	[2.28]	[1.91]
Confidence	7.36	7.73	5.79	5.80
	[1.80]	[1.74]	[2.22]	[1.67]

Panel B: ANOVA Model of *Confidence*

Source of Variation	Sum of Squares	df	Mean Squares	F	p-value
Assurance Level	82.179	1	82.179	23.377	**<0.001**
Reporting Approach	0.965	1	0.965	0.275	0.601
Assurance Level × Reporting Approach	0.876	1	0.876	0.249	0.619
Error	372.630	106	3.515		

See Figure 1 for descriptions of the independent and dependent variables.
Bold values indicate *p*-values are one-tailed for directional predictions.

Table 2
Results of Investor Confidence

Panel A: Descriptive Statistics (Means and [Standard Deviations])

	Reasonable + Investor-oriented (n = 30)	Reasonable + Multi-stakeholder (n = 29)	Limited + Investor-oriented (n = 29)	Limited + Multi-stakeholder (n = 29)
Fairly Stated	7.83	8.17	6.79	6.79
	[1.37]	[1.34]	[1.88]	[2.61]
Accurate	7.03	7.83	7.00	6.55
	[1.99]	[1.54]	[2.04]	[2.49]
Complete	6.30	7.17	5.48	6.31
	[2.62]	[1.89]	[2.26]	[2.44]
Confidence	7.06	7.72	6.43	6.55
	[1.70]	[1.36]	[1.72]	[2.18]

Panel B: ANOVA Model of *Confidence*

Source of Variation	Sum of Squares	df	Mean Squares	F	p-value
Assurance Level	23.758	1	23.758	7.654	**0.003**
Reporting Approach	4.621	1	4.621	1.489	0.225
Assurance Level × Reporting Approach	2.149	1	2.149	0.692	0.407
Error	350.739	113	3.104		

See Figure 1 for descriptions of the independent and dependent variables.
Bold values indicate *p*-values are one-tailed for directional predictions.

Table 3
Expectation Gap – Comparison of Investors' and Auditors' Confidence

Panel A: ANOVA Model of *Confidence* - Investors and Auditors

Source of Variation	Sum of Squares	df	Mean Squares	F	p-value
Assurance Level	98.291	1	98.291	29.758	**<0.001**
Reporting Approach	4.830	1	4.830	1.462	0.228
Participant Type	4.064	1	4.064	1.230	**0.134**
Assurance Level × Reporting Approach	2.857	1	2.857	0.865	0.353
Assurance Level × Participant Type	9.991	1	9.991	3.025	**0.042**
Reporting Approach × Participant Type	0.610	1	0.610	0.185	0.668
Assurance Level × Reporting Approach × Participant Type	0.116	1	0.116	0.035	0.852
Error	723.369	219	3.303		

Panel B: Descriptive Statistics, Means [Standard Deviations]

	Participant Type		
Assurance Level	Auditor	Investor	Difference
Reasonable	7.52 [1.77] n = 49	7.38 [1.57] n = 59	0.14
Limited	5.80 [1.93] n = 61	6.49 [1.94] n = 58	-0.69
Difference	1.72	0.89	

Participant Type indicates a measured variable and refers to whether the participant is an investor or an auditor. See Figure 1 for descriptions of the other independent variables.
Bold values indicate *p*-values are one-tailed for directional predictions.

Panel C: Follow-Up Simple Effects Tests for Assurance Level × Participant Type		
Source of Variation	**t**	**p-value**
Effect of Assurance Level for Auditors	4.988	**<0.001**
Effect of Assurance Level for Investors	2.681	**0.004**
Effect of Participant Type given Reasonable Assurance	0.434	0.665
Effect of Participant Type given Limited Assurance	2.072	**0.020**

Table 4
Results of Auditor Process-Level Measures

Descriptive Statistics (Means and [Standard Deviations])				
	Reasonable + Investor (n = 27)	Reasonable + Stakeholder (n = 22)	Limited + Investor (n = 29)	Limited + Stakeholder (n = 32)
Commitment to Sustainability	7.19 [1.92]	7.59 [1.37]	7.00 [1.63]	7.44 [1.64]
Commitment to Freshwater Consumption	6.11 [1.72]	6.23 [1.60]	5.62 [2.03]	6.28 [1.94]
Greenwashing (reverse coded)	5.22 [2.12]	6.73 [2.21]	6.24 [1.66]	6.34 [2.28]
Credibility	6.17 [1.57]	6.85 [1.17]	6.29 [1.37]	6.69 [1.64]
Audit Difficulty	7.33 [1.80]	7.59 [2.75]	6.79 [2.74]	6.94 [2.71]
Engagement Risk	6.74 [1.75]	6.41 [2.48]	5.86 [2.71]	5.03 [2.79]

The process-level variables are measured as follows using 11-point Likert scales:
Commitment to Sustainability measures participants' responses to "How committed is Alpha Inc.'s management to managing all of its significant sustainability issues?"
Commitment to Freshwater Consumption measures participants' responses to "How committed is Alpha Inc.'s management to sustainable freshwater consumption?"
Greenwashing is reverse coded and measures "How likely do you think it is that Alpha Inc.'s management is "greenwashing" (i.e., conveying a false impression or providing misleading information about their sustainability issues?"
Credibility is the mean of *Commitment to Sustainability, Commitment to Freshwater Consumption,* and *Greenwashing* (reverse coded).
Audit Difficulty measures "How difficult do you think it was for the auditors to assess materiality when providing assurance on Alpha Inc.'s "Water Management" disclosure?
Engagement Risk measures "How much business risk (e.g., litigation risk, reputation risk) do you think this assurance engagement poses for the auditors?

See Figure 1 for descriptions of the independent variables.

Table 5
Results of Investor Process-Level Measures

Descriptive Statistics (Means and [Standard Deviations])				
	Reasonable + Investor (n = 30)	Reasonable + Stakeholder (n = 29)	Limited + Investor (n = 29)	Limited + Stakeholder (n = 29)
Commitment to Sustainability	7.10 [1.97]	7.72 [1.58]	6.90 [2.29]	6.79 [2.37]
Commitment on Freshwater Consumption	6.57 [1.83]	7.03 [1.72]	6.31 [2.54]	5.93 [2.28]
Greenwashing (reverse coded)	5.60 [2.49]	6.17 [2.69]	5.66 [2.54]	5.41 [2.40]
Credibility	6.42 [1.54]	6.98 [1.57]	6.29 [2.16]	6.05 [2.04]
Audit Difficulty	7.80 [1.90]	6.86 [2.60]	7.31 [2.16]	7.28 [2.30]
Engagement Risk	7.20 [2.54]	6.52 [2.72]	5.76 [2.81]	5.90 [2.85]

The process-level variables are measured as follows using 11-point Likert scales:
See Figure 1 for descriptions of the independent variables. See Table 4 for descriptions of the process-level variables.

Exhibit 1
Experimental Procedures

Exhibit 1 summarizes the steps of the experiment.

Appendix
Experimental Materials

Panel A: Multi-stakeholder versus Investor-oriented Reporting Approach

MULTI-STAKEHOLDER APPROACH CONDITIONS
Alpha, Inc.'s Approach to ESG Reporting

When a firm chooses to disclose an ESG report, they can also choose what type of approach to take. **Alpha chooses to prepare their ESG report in accordance with standards that take a *stakeholder* approach.** While this information could be of interest to investors, it's primarily intended to be relevant to all Alpha stakeholders, including employees, customers, suppliers, government, non-governmental organizations, and community members. Therefore, when reporting on ESG issues, Alpha considers whether the information is financially material to the company, but also considers the company's impact on all stakeholders. Alpha also chooses to obtain **assurance** on their ESG report.

As discussed, there are many potential ESG issues that a firm could report on. In accordance with the applicable standards for a ***stakeholder* approach**, Alpha reports on the following **28 disclosure topics**:

Water management	**Organizational profile and strategy**	**Employment**	**Human rights assessment**
Energy	**Ethics and integrity**	**Occupational health and safety**	**Supplier social assessment**
Emissions	**Governance**	**Training and education**	**Political contributions**
Effluents and waste	**Stakeholder engagement**	**Diversity and equal opportunity**	**Customer privacy**
Environmental compliance	**Reporting practice**	**Non-discrimination**	**Socioeconomic compliance**
Supplier environmental assessment	**Economic performance**	**Child labor**	**Employee wellness**
Conflict minerals	**Anti-corruptions, anti-competitive behavior**	**Forced or compulsory labor**	**Working hours**

Appendix (Continued)
Experimental Materials

Panel A: Multi-stakeholder versus Investor-oriented Reporting Approach (continued)

INVESTOR-ORIENTED APPROACH CONDITIONS
Alpha, Inc.'s Approach to ESG Reporting

When a firm chooses to disclose an ESG report, they can also choose what type of approach to take. **Alpha chooses to prepare their ESG report in accordance with standards that take an *investor* approach.** While this information could be of interest to other Alpha stakeholders, including employees, customers, suppliers, government, non-governmental organizations, and community members, it's primarily intended to be relevant to investors. Alpha also chooses to obtain **assurance** on their ESG report.

As discussed, there are many potential ESG issues that a firm could report on. In accordance with the applicable standards for an ***investor* approach**, Alpha reports on the following **6 disclosure topics**:

Water management	**Labor employment practices**
Product lifecycle management	**Labor working conditions**
Waste management	**Materials sourcing**

Appendix (Continued)
Experimental Materials

Panel B: Limited versus Reasonable Assurance

INVESTOR-ORIENTED APPROACH / LIMITED ASSURANCE CONDITION

INDEPENDENT AUDITOR'S REPORT

We have reviewed management of Alpha, Inc.'s assertion that the sustainability disclosures in the index included within the accompanying Environmental, Social, and Governance (ESG) report for the 2021 fiscal year are presented in accordance with the applicable standards when following Alpha's chosen **investor approach**. The Company's management is responsible for its assertion. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Those standards require that we plan and perform the review to obtain **limited assurance** about whether any material modifications should be made to management's assertion in order to be fairly stated. **A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material aspects, in order to express an opinion. Accordingly, we do not express such an opinion. We believe that our review provides a reasonable basis for our conclusion.**

In performing our review, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The procedures we performed were based on our professional judgment. In performing our review, we performed analytical procedures and inquiries, and for a selection of sustainability disclosures, reviewed supporting documentation in regard to the accuracy of the data in the sustainability disclosures.

The preparation of the disclosures included within the ESG Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty. Obtaining sufficient, appropriate evidence to support our opinion does not reduce the inherent uncertainty in the metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

The ESG Report includes certain information relating to goals and progress against goals. Any information relating to goals and progress against goals were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information.

Based on our review, we are not aware of any material modifications that should be made to management of Alpha, Inc.'s assertion that the sustainability disclosures in the accompanying ESG report for the 2021 fiscal year are presented in accordance with the applicable standards when following an investor approach for sustainability reporting, in order for it to be fairly stated.

Appendix (Continued)
Experimental Materials

Panel B: Limited versus Reasonable Assurance (continued)

INVESTOR-ORIENTED APPROACH / REASONABLE ASSURANCE CONDITION

INDEPENDENT AUDITOR'S REPORT

We have examined management of Alpha, Inc.'s assertion that the sustainability disclosures in the index included within the accompanying Environmental, Social, and Governance (ESG) report for the 2021 fiscal year are presented in accordance with the applicable standards when following Alpha's chosen **investor approach**. The Company's management is responsible for its assertion. Our responsibility is to express an opinion on management's assertion based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Those standards require that we plan and perform the examination to obtain **reasonable assurance** about whether management's assertion is fairly stated, in all material respects. **An examination involves performing procedures to obtain evidence about management's assertion. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risks of material misstatement of management's assertion, whether due to fraud or error. We believe that our examination provides a reasonable basis for our opinion.**

In performing our examination, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The preparation of the disclosures included within the ESG Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty. Obtaining sufficient, appropriate evidence to support our opinion does not reduce the inherent uncertainty in the metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

The ESG Report includes certain information relating to goals and progress against goals. Any information relating to goals and progress against goals were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information.

In our opinion, management's assertion that the sustainability disclosures in the accompanying ESG report for the 2021 fiscal year are presented in accordance with the applicable standards when following an investor approach for sustainability reporting is fairly stated, in all material respects.

Panel B: Limited versus Reasonable Assurance (continued)

MULTI-STAKEHOLDER APPROACH / LIMITED ASSURANCE CONDITION

INDEPENDENT AUDITOR'S REPORT

We have reviewed management of Alpha, Inc.'s assertion that the sustainability disclosures in the index included within the accompanying Environmental, Social, and Governance (ESG) report for the 2021 fiscal year are presented in accordance with the applicable standards when following Alpha's chosen **stakeholder approach**. The Company's management is responsible for its assertion. Our responsibility is to express a conclusion on management's assertion based on our review.

Our review was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Those standards require that we plan and perform the review to obtain **limited assurance** about whether any material modifications should be made to management's assertion in order to be fairly stated. **A review is substantially less in scope than an examination, the objective of which is to obtain reasonable assurance about whether management's assertion is fairly stated, in all material aspects, in order to express an opinion. Accordingly, we do not express such an opinion. We believe that our review provides a reasonable basis for our conclusion.**

In performing our review, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The procedures we performed were based on our professional judgment. In performing our review, we performed analytical procedures and inquiries, and for a selection of sustainability disclosures, reviewed supporting documentation in regard to the accuracy of the data in the sustainability disclosures.

The preparation of the disclosures included within the ESG Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty. Obtaining sufficient, appropriate evidence to support our opinion does not reduce the inherent uncertainty in the metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

The ESG Report includes certain information relating to goals and progress against goals. Any information relating to goals and progress against goals were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information.

Based on our review, we are not aware of any material modifications that should be made to management of Alpha, Inc.'s assertion that the sustainability disclosures in the accompanying ESG report for the 2021 fiscal year are presented in accordance with the applicable standards when following a stakeholder approach for sustainability reporting, in order for it to be fairly stated.

Panel B: Limited versus Reasonable Assurance (continued)

MULTI-STAKEHOLDER APPROACH / REASONABLE ASSURANCE CONDITION

INDEPENDENT AUDITOR'S REPORT

We have examined management of Alpha, Inc.'s assertion that the sustainability disclosures in the index included within the accompanying Environmental, Social, and Governance (ESG) report for the 2021 fiscal year are presented in accordance with the applicable standards when following Alpha's chosen **stakeholder approach**. The Company's management is responsible for its assertion. Our responsibility is to express an opinion on management's assertion based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Those standards require that we plan and perform the examination to obtain **reasonable assurance** about whether management's assertion is fairly stated, in all material respects. **An examination involves performing procedures to obtain evidence about management's assertion. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risks of material misstatement of management's assertion, whether due to fraud or error. We believe that our examination provides a reasonable basis for our opinion.**

In performing our examination, we have complied with the independence and other ethical requirements of the Code of Professional Conduct issued by the AICPA. We applied the Statements on Quality Control Standards established by the AICPA and, accordingly, maintain a comprehensive system of quality control.

The preparation of the disclosures included within the ESG Report requires management to interpret the criteria, make determinations as to the relevancy of information to be included, and make estimates and assumptions that affect reported information. Measurement of certain disclosures includes estimates and assumptions that are subject to inherent measurement uncertainty. Obtaining sufficient, appropriate evidence to support our opinion does not reduce the inherent uncertainty in the metrics. The selection by management of different but acceptable measurement methods, input data, or assumptions may have resulted in materially different amounts or metrics being reported.

The ESG Report includes certain information relating to goals and progress against goals. Any information relating to goals and progress against goals were not subject to our review and, accordingly, we do not express a conclusion or any form of assurance on such information.

In our opinion, management's assertion that the sustainability disclosures in the accompanying ESG report for the 2021 fiscal year are presented in accordance with the applicable standards when following a stakeholder approach for sustainability reporting is fairly stated, in all material respects.

Appendix (continued)
Experimental Materials

Panel C: The Water Management Report

Water Management

Access to safe, clean water is a basic human right and essential to maintaining healthy ecosystems. Water is also integral to what we do and we cannot operate without it. In 2017, we adopted a Water Management Strategy to improve our management of water.

We recognize the importance of responsible water management, and we are committed to reducing our impact on freshwater systems, especially in the water-stressed regions in which our facilities operate. We use water in our manufacturing processes and other consumption activities. Our water management strategy has three main objectives: conserve water used in our operations, collaborate on water initiatives with local communities, and create technology solutions to help refine how we use and conserve water in our operations. By improving water management within our operations, we can more credibly find solutions for water challenges and opportunities, including water scarcity or high variability in water supply.

In 2017, we announced a plan to reduce freshwater withdrawal to 300,000K gallons (a roughly 10 percent reduction across our operations) by 2021. We have continued to make progress on our current public target for water reduction. In 2020, freshwater withdrawal decreased by 3.0 percent to 315,883K gallons compared to 325,653K gallons in 2019. Our 2021 result of 299,773K gallons represents a further 5.1 percent reduction from 2020, helping us meet our 5-year target of 300,000K gallons on schedule.

Our annual freshwater withdrawals from 2017 to 2021 are shown in the chart below. Measuring our freshwater withdrawal contains a degree of uncertainty and discretion due to the inclusion of significant estimates and assumptions.