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_____ _____

Yuepin Zhou Date

Counteracting the Directional Influence of Incentives on Auditor Judgment

By

Yuepin Zhou
Doctor of Philosophy

Business

_____

Kathryn Kadous
Advisor

_____

Jacqueline S. Hammersley
Committee Member

_____

Kristy Towry
Committee Member

_____

Melissa Williams
Committee Member

Accepted:

_____

Lisa A. Tedesco, Ph.D.
Dean of the James T. Laney School of Graduate Studies

_____

Date

Counteracting the Directional Influence of Incentives on Auditor Judgment

By

Yuepin Zhou
M.Acc., Florida State University, 2009
B.S., Fudan University, 2004

Advisor: Kathryn Kadous, Ph.D.

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Abstract

Counteracting the Directional Influence of Incentives on Auditor Judgment
By Yuepin Zhou

Auditing standards require auditors to be objective in their judgment. However, incentives in the audit environment motivate auditors to prefer a particular audit conclusion over others, undermining auditor objectivity. In this study, I examine the effects of two interventions on the directional influence of incentives on auditors' judgment. I predict and find that increasing the salience of auditors' intrinsic motivation for their job counteracts the directional influence of incentives on auditor judgment. I further show that the counteracting effects are achieved through auditors' information processing: auditors with salient intrinsic motivation search for relatively more information that contradicts their incentive-preferred audit conclusion and evaluate the information as relatively less supportive of their incentive-preferred audit conclusion than do auditors in the control conditions. On the other hand, I do not find evidence that holding auditors accountable according to auditing standards reduces the directional influence of incentives on auditors' information evaluation (consistent with my prediction) or information search (contrary to my prediction). The results of this study indicate that salient intrinsic motivation that focuses auditors on intrinsic aspects of audit tasks is a promising means of mitigating the negative impact of directional incentives on audit quality, a challenging issue that has consistently concerned regulators, practitioners, and academics.

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INTRODUCTION

Auditors operate in an environment with various economic, social, and personal incentives (Nelson 2005). These incentives can motivate auditors to prefer a particular audit conclusion over others (Church, Jenkins, McCracken, Roush, and Stanley 2015). Some incentives, such as maintaining professional reputation and minimizing legal liabilities, prompt auditors to thwart clients' aggressive financial reporting and prefer conservative audit conclusions, while others, such as maintaining good client relationships, encourage auditors to go along with their clients' aggressive reporting and prefer aggressive audit conclusions (Blay 2005). Regulators have noted that the incentives inherent in the audit industry impair auditors' objectivity and audit quality (PCAOB 2012). Empirical evidence corroborates that auditors' judgment is biased toward reporting decisions that are more consistent with their incentives, threatening audit quality (e.g., Hackenbrack and Nelson 1996).[1] As a result, the issue of how to effectively counteract the directional influence of incentives on audit judgment has been of great interest to policy makers, practitioners, and academics (Moore, Tetlock, Tanlu, and Bazerman 2006; Nelson 2006; CAQ 2014; PCAOB 2016).

Auditors, motivated by their incentives, consciously or unconsciously form directional goals that align with their incentives (e.g., reaching an aggressive or conservative conclusion) and engage in a biased reasoning process in order to reach their directional goals (Kadous, Kennedy, and Peecher 2003). The biased cognitive process, known as motivated reasoning, induces individuals to strategically collect and evaluate

[1] While a conservative audit conclusion is usually linked to high audit quality, an overly conservative audit conclusion motivated by auditors' own incentives, such as avoiding litigation, could also potentially impair audit quality and financial reporting quality (DeFond and Zhang 2014).

information in a way that enables them to justify and reach their preferred conclusions (Kunda 1990). This suggests that encouraging auditors to move away from processing information in an incentive-consistent manner is a key step to counteracting the directional influence of incentives on auditor judgment.

In this study, I examine the effects of two interventions on the directional influence of incentives on auditors' judgments and two aspects of information processing: information search and information evaluation. The first intervention (intrinsic motivation), increasing the salience of auditors' intrinsic motivation for their job, has not been tested in the literature on addressing the issue of directional bias caused by one's incentives. Thus, it represents a novel approach to the problem. The second intervention (accountability), holding auditors accountable for their judgment process according to auditing standards, is often used or proposed as a means of improving judgment quality in practice (PCAOB 2014, 2015). Therefore, it provides a good baseline for addressing this issue.

Intrinsic motivation refers to the drive to perform an activity for the satisfaction inherent in the activity (Ryan and Deci 2000). The extent to which an individual focuses on her intrinsic motivation when performing a task can be influenced by contextual factors, such as task instructions, leadership styles, priming, etc. (Gagné and Deci 2005; Cerasoli, Nicklin, and Ford 2014; Kadous and Zhou 2017). Salient intrinsic motivation prompts individuals to focus less on extrinsic rewards and outcome of a task, and more on the process of performing a task—for example, satisfying their curiosity by collecting and viewing information to solve a problem or learning skills during the process of a task (Nolen 1996). Based on this reasoning, I expect that increasing the salience of auditors'

intrinsic motivation will make auditors less concerned about whether they can reach an audit conclusion that is most consistent with their extrinsic incentives, thereby counteracting the directional influence of incentives on auditors' judgment, information search, and information evaluation.

Accountability refers to the demand to justify one's decisions or decision process to others (Tetlock 1983). The pressure to justify one's decision process to others with unknown preferences is expected to make an individual exert more effort and reduce bias in certain types of tasks (e.g., Tetlock 1985; Kennedy 1993). Therefore, accountability is often offered as a solution to improving audit quality (e.g., PCAOB 2014, 2015). Auditors are held accountable for their work by their firms, clients, regulators, and investors (Gibbins and Newton 1994; Peecher, Solomon, and Trotman 2013).

While accountability may seem to be a promising means of mitigating the directional influence of incentives, I do not expect it to be effective in solving this particular problem. I propose that accountability's debiasing potential depends on the ambiguity of the criteria used to evaluate judgment quality. When standards are vague with regard to how one's judgment should be evaluated, individuals who are held accountable would have more flexibility in justifying that their preferred conclusion comply with the evaluation standards, thus reducing the effectiveness of accountability (Pyszczynski and Greenberg 1987; Kadous et al. 2003). Based on the observation that the auditing standard is relatively clear for information search and relatively vague for information evaluation, I expect that holding auditors accountable according to relevant auditing standards will reduce the directional influence of incentives on auditors' information search but not on their information evaluation.

To test my hypotheses, I conduct an experiment in which 149 experienced senior-level auditors evaluate the reasonableness of a client's revenue growth assumption used in a goodwill impairment test. The case provides auditors with a list of 14 evidence items. Auditors can choose to review as many or as few items as they like. Importantly, each evidence item has a descriptive title that enables auditors to infer whether that item supports, does not support, or is irrelevant to management's revenue assumption. This design feature allows me to measure directional bias in auditors' information search. For each chosen item, auditors evaluate the implications of the item for the revenue assumption, allowing me to measure any directional bias in auditors' information evaluation.

I use a 2 × 3 between-participants design in my experiment. I manipulate *auditor incentive* at two levels by varying whether the firm is concerned with auditors undertaking costly investigations of the client's explanations (Aggressive Incentive) or uncritically accepting the client's explanations (Conservative Incentive). The former incentive condition is expected to motivate auditors to agree with the client's assumption, whereas the latter is expected to motivate auditors to criticize the client's assumption. I manipulate *intervention* at three levels: increasing the salience of auditors' intrinsic motivation for their job (Intrinsic Motivation), holding auditors accountable for their judgment process according to the auditing standards (Accountability), and neither (Control).

Consistent with the theory, I find that salient intrinsic motivation counteracts the directional influence of incentives on audit judgment. Auditors' judgment in the intrinsic motivation conditions is less influenced by their incentives than is auditors' judgment in

the control conditions. Further analyses show that salient intrinsic motivation mitigates the directional bias in audit judgment through its impact on auditors' information processing. More specifically, auditors whose intrinsic motivation is salient search for relatively more information that contradicts their incentive-preferred audit conclusion and evaluate the information as less supportive of their incentive-preferred audit conclusion than do auditors in the control conditions.

On the other hand, holding auditors accountable according to auditing standards does not mitigate the directional impact of incentives on auditors' information processing behaviors. Auditors who are held accountable tend to evaluate the information more aggressively (conservatively) when they are in the aggressive (conservative) incentive condition, consistent with the theory. However, contrary to my expectation, accountability does not mitigate the directional impact of incentives on auditors' information search.

This study is important for several reasons. First, directional influence of incentives has been repeatedly shown to undermine audit quality (Nelson 2005). Policy makers and researchers have had only limited success in developing effective means of counteracting such directional effects on auditors' judgment (Moore et al. 2006; Church et al. 2015). The challenge in developing effective remedies is likely caused by the fact that individuals, motivated by their incentives, often unconsciously engage in a biased cognitive process to justify their decisions (Kunda 1999). Thus, explicitly asking auditors to be objective or accurate in their judgment is unlikely to be effective as auditors tend to be unaware of their biased reasoning process and judgment. My results indicate that interventions that make auditors' intrinsic motivation for their job salient,

such as by reminding auditors of their intrinsic motivation through firm trainings (similar to the intervention in this study), through intrinsically motivating leadership (Kadous, Proell, Rich, and Zhou 2017) or autonomous work environment (Gagné and Deci 2005; Williamson 2008), are promising means of reducing the directional impact of auditor incentives on their judgment. This study provides a new perspective—having auditors focus less on the extrinsic aspects (e.g., incentives and rewards from the outcome of a task) and more on the intrinsic aspects (e.g., learning and enjoyment from the process of a task) of the audit tasks—on addressing the issue of directional incentives.

Second, this paper examines ways to counteract the directional influence of incentives at the information processing level. Information processing (e.g., information search and information evaluation) is a central part of the audit process and a key to high audit quality (Bonner 2008; Griffith, Hammersley, and Kadous 2015a). Regulators frequently cite auditors' inadequate consideration of contradictory audit evidence in their information search and evaluation as one of the root causes of identified audit deficiencies (PCAOB 2016, 2017). The current study extends prior research on improving auditors' information processing (e.g., Griffith, Hammersley, Kadous, and Young 2015b; Kadous and Zhou 2017) by incorporating a key institutional element of the audit industry (i.e., directional influence of auditors' incentives) into the study. The paper shows that salient intrinsic motivation encourages auditors to attend to contradictory evidence and evaluate evidence critically even when their incentives do not motivate them to do so.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Auditing standards require that auditors be "without bias with respect to the client" (AS 1005). However various incentives inherent in the audit practice threaten auditors' objectivity and independence (Nelson 2005). For example, on the one hand, auditors are motivated to prevent aggressive financial reporting by their incentives to maintain a good reputation, minimize litigation liability, and avoid regulatory sanctions. On the other hand, auditors can be incentivized to allow clients' preferred aggressive reporting by their desire to maintain good client relationships in order to retain clients, earn high audit fees, and grow the business.

Auditors, motivated by their incentives, form directional goals to arrive at a particular audit conclusion, resulting in biased judgment (Kadous et al. 2003). For example, Hackenbrack and Nelson (1996) find that auditors allow more aggressive client reporting when audit engagement risk is low (i.e., more incentives for the auditors to report aggressively) than when engagement risk is high (i.e., less incentives for the auditors to report aggressively). Directional goals can also arise from incentives to please a supervisor. For example, Peecher (1996) shows that auditors are less skeptical about the client's explanations when their firm emphasizes audit efficiency than when their firm emphasizes professional skepticism.

The negative impact of directional goals caused by auditors' incentives on audit quality has greatly concerned practitioners, regulators, and academics (Moore et al. 2006; Nelson 2006; PCAOB 2012; CAQ 2014). Researchers have examined the efficacy of several approaches to reducing the negative impact of auditors' incentives on audit judgment. For example, SAS No. 90 attempts to address this issue by requiring auditors

to discuss with the audit committee the quality of the client's accounting methods (AU Section 380), i.e., increasing the auditor's accountability to the audit committee. Other proposed solutions include requiring disclosure of conflicts of interest, increasing regulation over the auditor-client relationship, and restructuring the auditor-client relationship by having a third party choose a company's auditor (Moore et al. 2006; Hurley, Mayhew, and Obermire 2015). However, prior studies suggest that these proposed solutions are either ineffective or costly to implement. For example, asking auditors to assess the quality of the client's accounting method for discussion with the audit committee (i.e., SAS No. 90) amplifies the effects of directional goals on auditors' acceptance of client-preferred methods (Kadous et al. 2003). Disclosing conflicts of interest increases the bias in one's judgment relative to not disclosing (Cain, Loewenstein, and Moore 2005; Jamal, Marshall, and Tan 2016). Thus, it remains an empirical question as to how to counteract the undesirable effects of auditor incentives on audit judgment.

Directional Influence of Incentives on Information Processing

Motivated reasoning theory indicates that directional goals motivated by one's incentives affect an individual's reasoning process through utilization of a biased set of cognitive strategies for processing information (Kunda 1990). When an individual is motivated to arrive at a particular conclusion, she will attempt to justify the desired conclusion in order to be perceived as "objective" to herself and others. To find support for her desired conclusion, the individual will search for and evaluate evidence in a biased way so that the conclusion can be seemingly reached by interpreting the acquired evidence (Pyszczynski and Greenberg 1987; Kunda 1999).

Information search and information evaluation are two important components of an individual's decision-making process (Einhorn and Hogarth 1981). Prior accounting studies have provided evidence that accounting professionals tend to strategically search for and evaluate information in order to support their directional goals. For example, auditors tend to focus their search more on information that confirms management's assumption when they learn that their firm is concerned about audit efficiency than when their firm is concerned about sufficient professional skepticism (Turner 2001). This directional bias has also been demonstrated in tax professionals' information search behaviors (Cloyd and Spilker 1999; Kadous, Magro, and Spilker 2008). In addition, prior findings indicate that auditors tend to evaluate information as more supportive of audit conclusions that align with their incentives than of conclusions that are not consistent with their incentives (e.g., Wilks 2002; Blay 2005).

The empirical findings about how incentives cause auditors to perform incentive-consistent information search and information evaluation corroborate regulators' concerns that auditors tend to overly focus on finding confirming evidence "without adequately considering contrary evidence" (PCAOB 2012) and auditors "did not take into account relevant evidence that appeared to contradict certain assertions" when evaluating evidence (PCAOB 2016, 2017). In the sections that follow, I provide theoretical predictions about whether and how two interventions, increasing the salience of auditors' intrinsic motivation for their job (Intrinsic Motivation) and holding auditors accountable for their judgment process according to the auditing standards (Accountability), will counteract the directional impact of incentives on auditors' judgment as well as their information search and information evaluation.

Intrinsic Motivation

Intrinsic motivation refers to one's desire to engage in an activity for its own satisfaction, rather than for external rewards (Ryan and Deci 2000). People are intrinsically motivated when they care primarily about enjoying tasks, satisfying curiosity, overcoming challenges, and building competence (Lepper and Henderlong 2000). Intrinsically motivated individuals are concerned less about the specific outcomes of the task and focus more on the process of performing the task itself—ensuring that the task is done appropriately. That is, they are driven by their internal needs to understand the material and the context and to learn and develop themselves through the process of completing a task (Nolen 1996).

The extent to which one is driven by her intrinsic motivation when performing a task is influenced by both contextual factors and personality traits (Cerasoli et al. 2014). Contextual factors that increase the salience of intrinsic motivation orient individuals toward the intrinsic aspects (enjoyment, curiosity, learning, etc.) of an activity (Amabile 1985). Temporarily induced intrinsic motivation by contextual factors (e.g., task instructions, observing others performing an activity intrinsically, priming, etc.) has been shown to influence people's behaviors and judgment on subsequent tasks. For example, it improves students' performance in an anagram task (Gillet, Vallerand, Lafrenière, and Bureau 2013) and conceptual learning of an article (Vansteenkiste, Simons, Lens, Soenens, and Matos 2005).

Concurrent research has shown that salient intrinsic motivation improves one's information processing by encouraging individuals to process information more broadly and deeply (Kadous and Zhou 2017). However, the specific information processing

problems auditors face under the influence of directional incentives are different. Directional extrinsic incentives cause auditors (often without their awareness) to focus more on evidence that supports their incentive-preferred audit conclusion during information search and evaluate evidence more consistently with their incentive. Therefore, to counteract the directional influence of incentives will require different cognitive processing behaviors than broader and deeper information processing alone.

Based on a synthesis of the literature on the effects of intrinsic motivation, I develop expectations about how salient intrinsic motivation can mitigate the impact of directional incentives on one's judgment. Evidence from the psychology literature supports the idea that salient intrinsic motivation can "immunize" individuals against the impact of extrinsic incentives (Hennessey, Amabile, and Martinage 1989; Hennessey and Zbikowski 1993; Gerrard, Poteat, and Ironsmith 1996). In these studies, children were paid to perform a creativity task. Before they started the task, half of the participants watched videos that emphasized intrinsic motives for doing school work, while the other half watched videos irrelevant to intrinsic motivation. Children reminded about the importance of intrinsic motivation in the video were less likely to be impacted by the negative crowding-out effects of extrinsic rewards on creativity than were those who did not watch the videos. Theory suggests that salient intrinsic motivation can reduce the impact of extrinsic incentives because it focuses individuals' attention on the process of a task (e.g., the enjoyment and learning/mastery derived from performing a task), rather than on the outcomes of a task (i.e., the extrinsic incentives that can be earned for completing a task). Therefore, making intrinsic motivation salient can, for example, reduce children's negative feelings associated with perceived poor test performance

(Burton, Lydon, D'Alessandro, and Koestner 2006) and counteract the negative effect of extrinsic rewards on children's interest in an activity (Fazio 1981).

Based on the above reasoning, I expect that auditors whose intrinsic motivation is salient will be less concerned about whether they can support an audit conclusion that is consistent with their incentives, resulting in audit judgment that is less influenced by auditor incentives. In addition, I expect the counteracting effects of salient intrinsic motivation on audit judgment to be achieved through how auditors search for and evaluate information: auditors with salient intrinsic motivation are less likely to focus on incentive-consistent evidence in their information search and less likely to evaluate evidence consistently with their incentive-preferred conclusion. The following hypotheses formally state these predictions:

Hypothesis 1: Salient intrinsic motivation will counteract the directional influence of incentives on auditors' judgment.

Hypothesis 2: Salient intrinsic motivation will counteract the directional influence of incentives on auditors' information search.

Hypothesis 3: Salient intrinsic motivation will counteract the directional influence of incentives on auditors' information evaluation.

Accountability

Accountability refers to the demand to justify one's decisions or decision process to other people (Tetlock 1983). Accountability is prevalent in practice as auditors are held responsible by their supervisors, clients, regulators, and investors (Gibbins and Newton 1994; Peecher et al. 2013). Accountability generally induces an individual to exert more effort, which in turn can improve certain types of judgment (Kennedy 1993). Therefore,

accountability is often proposed as a remedy for improving audit quality (PCAOB 2014, 2015).[2]

While accountability is effective at reducing some judgment biases, it does not temper all judgment biases (Lerner and Tetlock 1999). In an accounting context, Kennedy (1993) finds that accountability reduces recency effects in MBA students' bankruptcy assessments. Accountability also increases the quantity of justifications that auditors generate to explain an increased profit margin in analytical procedures (Koonce, Anderson, and Marchant 1995), the time that tax professionals spend on information search (Cloyd 1997), and auditors' extent of testing to explain an unexpected increase in gross margin (Asare, Trompeter, and Wright 2000). On the other hand, accountability does not reduce dilution effects (where irrelevant information dilutes the impact of relevant information on judgments) (Glover 1997; Hoffman and Patton 1997) or "curse of knowledge" effects (in which decision makers cannot ignore irrelevant information already processed) (Kennedy 1995).

I propose that the effectiveness of accountability's debiasing potential depends on the amount of ambiguity in evaluating the quality of the judgment (i.e., normative ambiguity) (Pyszczynski and Greenberg 1987; Kadous et al. 2003). As the normative standards for evaluating a judgment become more ambiguous, an individual has more flexibility in justifying her decision even when it is biased, thereby reducing the effectiveness of accountability. Consider a decision maker who is asked to compare her

[2] Decision makers can be held accountable for either their decision process (i.e., process accountability) or their decision outcome (i.e., outcome accountability) (Lerner and Tetlock 1999). I focus on process accountability, rather than outcome accountability in this study because holding auditors accountable for their judgment process is more likely to mitigate the impact of directional goals on auditors' cognitive processing, which will ultimately result in better audit judgment. This reasoning is consistent with prior findings that process accountability has comparative advantages over outcome accountability in increasing auditors' professional skepticism (Kim and Trotman 2015).

favorite artist with another artist. If the question is "which is the better artist?", the normative standard is vague and subjective and the decision maker has significant flexibility to strategically use confirming evidence and dismiss contradictory evidence to justify selecting her preferred artist as the better artist. On the other hand, if the question is "which artist is more prolific?", the normative standard is less flexible—productivity can be relatively objectively determined by counting how much art each artist has produced. This situation makes justification much harder when the evidence does not clearly support one's preferred artist. This is consistent with the prior findings that reduced flexibility (or increased constraint) in justifying one's decision is linked to less self-interested motivated reasoning (Koch and Salterio 2017).

In the audit setting, I argue that information search and information evaluation differ in the amount of ambiguity surrounding how they are evaluated. For information search, auditing standards require auditors to consider all relevant audit evidence "regardless of whether it appears to corroborate or to contradict the assertions in the financial statements" (AS 2810). Because auditing standards made it explicit that auditors need to consider both corroborating and contradictory evidence, auditors' ability to justify a search focused mainly on corroborating evidence is limited. Therefore, I predict that holding auditors accountable for their judgment process according to the auditing standards will reduce auditors' tendency to favor information that is consistent with their incentives during information search.

For information evaluation, auditing standards require "objectively evaluating audit evidence" (AS 1015). I argue that there is still considerable ambiguity regarding how "objective evaluation" is evidenced, and that this ambiguity provides auditors with

flexibility in justifying a wide range of evidence interpretations. Therefore, I do not expect that holding auditors accountable according to the auditing standards will mitigate the directional impact of incentives on their information evaluation. This leads to the following hypotheses: [3]

Hypothesis 4: Holding auditors accountable will counteract the directional influence of incentives on auditors' information search.

Hypothesis 5: Holding auditors accountable will not counteract the directional influence of incentives on auditors' information evaluation.

RESEARCH METHOD

I tested my hypotheses in an experiment in which auditors evaluate the reasonableness of management's revenue growth assumption used in a goodwill impairment test. The overall design is 2 × 3, with both manipulations between participants. I manipulated *auditor incentive* at two levels (i.e., aggressive incentive, conservative incentive) and the use of an *intervention* at three levels (i.e., intrinsic motivation, accountability, and control). Participants were 144 experienced senior auditors and 5 recently promoted managers from eight national and international firms. Senior auditors are appropriate participants because they are often responsible for evaluating assumptions underlying complex accounting estimates in practice (Griffith et

[3] I do not have an *ex ante* prediction about the effects of accountability on audit judgment since I only expect accountability to mitigate the directional impact of incentives on information search but not on information evaluation. The effects of accountability on audit judgment will depend on the relative influence of information search and information evaluation on audit judgment.

al. 2015a).[4] Participants have an average of 4.01 years of auditing experience, and 83 percent of them are CPAs.

Task

Auditors were asked to evaluate and form a conclusion about the reasonableness of management's revenue growth assumption used in a goodwill impairment test. The case contains a list of evidence items that allow auditors to search for and evaluate before they make their conclusions. The case was purposefully ambiguous about whether management's assumption is reasonable. The ambiguity is realistic, and it provides auditors with opportunities to engage in motivated reasoning.

I administered the study online through Qualtrics. Figure 1 provides an overview of the experimental procedures. Auditors who were not in the control condition received one of the interventions (intrinsic motivation or accountability) at the beginning of the task. They then learned about their firm's concern that is used to manipulate auditor incentives and were asked to briefly describe the firm's concern in their own words to reinforce the incentive manipulation. Next, auditors read background information about the company and the goodwill impairment test, and made a preliminary assessment of the reasonableness of the revenue assumption.

[Insert Figure 1 here]

[4] 189 participants completed the study. The case was designed specifically for the senior level auditors. Thus, I eliminated data from 23 participants who did not have the desired level of experience (22 experienced managers with over 6 years of experience and one audit partner) and 17 participants who did not complete the study in one sitting as required by the instruction (all 17 participants spent at least 90 minutes on the study with an average completion time of 227 minutes whereas the rest of participants spent an average of 35 minutes on the study). I retained the recently promoted managers who have less than or equal to five years of auditing experience in the study because although their title recently changed, I expect their experiences to be similar to those of experienced seniors. Inferences are qualitatively unchanged if I use data from all 189 participants who completed the study.

After making the preliminary assessment, auditors were provided with the option to review additional information from a list of 14 evidence items. Each evidence item has a descriptive title that enabled auditors to infer, without reading the contents of the item, whether the item supports (positive evidence), does not support (negative evidence), or is not directly related to (neutral evidence) management's revenue growth assumption.[5] For example, titles of positive evidence included "Strong sales in early FY 2016" and "Positive market reactions to the new product"; titles of negative evidence included "Intensified market competition" and "Potential delayed launch of Product C"; titles of neutral evidence included "No significant capital expenditures in the near future" and "Stable operating expense". There were six positive items, six negative items, and two neutral items on the list. Appendix A lists the fourteen items and their classifications.[6]

Auditors could select as many or as few items as they wished to review, with information search occurring in rounds. Every round, they could select up to four items, and they evaluated the implications of each selected item for the client's revenue growth assumption. At the end of each round, auditors reassessed the reasonableness of the client's revenue assumption based on all the information they had reviewed so far. Auditors were told that they could stop the information review process at any time, as long as they felt that they had reviewed enough information to make their final conclusion. After auditors made their final assessment, they answered questions related

[5] The average rating of positive evidence items by participants is significantly more positive than the average rating of negative items ($p < 0.01$). In addition, each positive (negative) item is rated significantly higher (lower) than the midpoint of an 11-point Likert scale ranging from 1 (very negative) to 11 (very positive) (all p-values < 0.01). This indicates that the categorization of the evidence items is consistent with participants' evaluation.

[6] I also vary between participants the order of the evidence items by creating two versions of the evidence list with different ordering. Including evidence order and all possible interactions with the independent variables in the ANOVA models does not change any of the inferences. Therefore, for analysis purpose, I collapse participants across the two evidence ordering conditions.

to the case and demographic questions in the post-experimental questionnaire. Feedback on auditors' judgment is provided to all participants at the end of the instrument. The feedback showed how the auditor's final reasonableness assessment compared to the average reasonableness assessment made by auditors who completed the task earlier.

Independent Variables

Auditor Incentive

I adapted *auditor incentive* manipulation from Peecher (1996) by varying the audit firm's concern about how auditors perform certain audit procedures. Auditors were told that, at a recent firm training session, the firm expressed concerns about how certain audit procedures are being performed. More specifically, in the aggressive incentive condition, the case stated that the firm was worried that:

> auditors might **undertake costly investigations** of explanations other than those provided by the client, even when there is no evidence that the client's explanation might be wrong. In other words, auditors sometimes might not **fully utilize the clients' insights to improve the efficiency** of our audits.

whereas in the conservative incentive condition, the case stated that the firm was worried that:

> auditors might **uncritically accept the client's explanations**, even when there is evidence that the client's explanation might not be correct. In other words, auditors sometimes might not **approach client-provided explanations with enough professional skepticism**.

I expect auditors in the aggressive incentive condition to be motivated to be less skeptical of the client's explanations and view the client's assumption as more reasonable, whereas I expect auditors in the conservative incentive condition to be motivated to be more skeptical about the client's assumption and view the client's assumption as less reasonable.

Intervention

I manipulated the intervention at three levels: intrinsic motivation, accountability, and control. The intrinsic motivation intervention was taken from Kadous and Zhou (2017). The intervention is expected to increase the salience of auditors' intrinsic motivation for their job by asking them to review and rank a list of intrinsically-oriented reasons that they like their job, in order of the importance to them. Although the particular ranks auditors assign to the reasons are not important, the act of reading, thinking about, and applying those intrinsic reasons to themselves makes auditors' intrinsic motivation for their job more salient, and the salient intrinsic motivation is expected to carry over to subsequent tasks. Auditors in the control conditions and the accountability conditions were asked to perform a filler task that involved ranking a list of reasons why they eat at a restaurant. This filler task is not expected to change either the salience of auditors' intrinsic motivation for their job or the level of auditors' accountability. I used this filler task to keep the timing and task procedures similar across the experimental conditions. See Appendix B for the lists of reasons provided in each condition.

Next, auditors who were assigned to the accountability condition were told that their judgment process would be evaluated according to the relevant auditing standards. More specifically, auditors who were in the accountability condition read that:

> You will be asked to write a brief audit memo at the end of the case to **explain and justify *how* you arrived at your audit conclusion**. We will evaluate whether **your judgment process is consistent with relevant auditing**

> **standards.** You will receive feedback about your performance after you complete the case.[7]

To keep procedures consistent across conditions, I asked auditors in all conditions to write an audit memo justifying their decision at the end of the case, but only auditors in the accountability conditions were informed about this before they started the main audit task. Auditors in the accountability conditions had to indicate that they understood they would need to write a memo to justify their decision process according to relevant auditing standard before they could proceed to the next screen. Immediately before auditors began the evidence search, relevant auditing standards were described to participants in all conditions: "Auditing standards (AS 2810) require auditors to take into account relevant audit evidence, regardless of whether it appears to corroborate or to contradict management's assertions. Auditing standards (AS 1015) also require auditors to evaluate evidence objectively."[8] At this point auditors in the accountability conditions (only) were further reminded that their judgment process would be evaluated "according to the relevant auditing standards."

Dependent Variables

I measured three types of dependent variables: audit judgment, information search, and information evaluation. Auditors made a final reasonableness assessment of the client's revenue growth assumption after they finished reviewing and evaluating all additional evidence items that they requested. The final assessment was collected on an

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[7] This manipulation of process accountability follows the prior auditing literature (e.g., Kim and Trotman 2015). Participants' audit memo and their performance on the task were subsequently reviewed by the author and an accounting professor from a *BusinessWeek* top-25 school. Performance feedback regarding how auditors' assessment of the revenue assumption compared to the average reasonableness assessment made by auditors who completed the task earlier was provided to all participants at the end of the case.

[8] The wording used for auditing standards requirements in the case is adapted from Auditing Standards AS 1015 and AS 2810.

11-point Likert scale, ranging from 1 (not at all likely to be reasonable) to 11 (extremely likely to be reasonable). I use this dependent variable to test audit judgment (*Judgment*).

Following prior research (Cloyd and Spilker 1999; Kadous et al. 2008), I use two measures to examine auditors' information search behaviors: proportion of positive versus negative evidence items viewed and proportion of time spent on positive versus negative evidence items, where positive (negative) items support (do not support) management's revenue growth assumption. I computed the first measure (*View*) as the number of positive items viewed divided by the total number of positive and negative items viewed. The second measure (*Time*) was calculated as the amount of time spent viewing positive items divided by the total time spent viewing positive and negative items. Both measures could range from 0 (exclusive negative evidence search) to 1 (exclusive positive evidence search).

Auditors evaluated the implications of each viewed item for management's revenue growth assumption on an 11-point Likert scale ranging from 1 (very NEGATIVE) to 11 (very POSITIVE).[9] To develop a measure of the aggressiveness of the evaluation, I first divided each participant's evaluation of an item by the average evaluation of the same evidence item by all participants. The resulting measure is a standardized evidence evaluation measure. A value greater than 1 indicates that the auditor evaluated that evidence item more positively (i.e., aggressively) than other auditors, whereas a value smaller than 1 indicates that the auditor evaluated the evidence more negatively (i.e., conservatively) than other auditors. I then use the mean of the standardized evidence

[9] The original Likert scale used in the instrument ranges from -5 to +5. For purpose of data analyses, I converted the scale to 1 to 11. The measure was adapted from Wilks (2002).

evaluation measures across all viewed items as the dependent variable for information evaluation (*Evaluation*).[10]

RESULTS

Manipulation Check

Accountability

Recall that auditors in the accountability condition are held accountable for their judgment process according to the relevant accounting standards (AS 2810 and AS 1015). Relative to auditors in the other conditions, auditors in the accountability conditions indicated that it was more important to 1) "review relevant evidence, regardless of whether it appears to corroborate or to contradict management's assertions" (i.e., AS 2810 requirements) (one-tailed $p = 0.02$); and 2) "think about the audit evidence objectively" (i.e., AS 1015 requirements) (one-tailed $p < 0.01$). This indicates a successful manipulation of accountability in the study.[11]

Auditor Incentive

After auditors read the audit firm's concern that was used to manipulate auditor incentives, they were asked to describe the firm's concern in their own words. While this

[10] For example, if one participant viewed two evidence items during the information search and evaluated the item A at 7.0 and item B at 4.5 on the 11-point Likert scale and the average evaluation of item A and item B by all participants is 7.3 and 5.5 respectively, then the value for *Evaluation* for this participant is calculated as: ((7.0/7.3) + (4.5/5.5))/2 = 0.89. In this case, the participant evaluated the evidence more conservatively than did the average participant. Standardization of the evidence evaluation measure is necessary because it makes information evaluation comparable across different participants when each participant viewed a different combination of positive and negative items.

[11] I did not employ a manipulation check question for the intrinsic motivation intervention because I do not expect participants to be aware of how the intervention affected the salience of their intrinsic motivation during the task (Bargh and Chartrand 2000). This implies a manipulation check would be ineffective and may even backfire (e.g., Nisbett and Wilson 1977; Sigall and Mills 1998). Consistent with this idea, prior research that manipulates the salience of intrinsic motivation often does not employ a manipulation check (e.g., Amabile 1985; Kadous and Zhou 2017).

step was mainly designed to reinforce the auditor incentive manipulation, an inspection of participants' responses identified nine auditors whose description of the firm's concern was not consistent with the concern presented in the case. Two auditors in the aggressive incentive conditions disagreed with the firm's concern and noted that the firm should not have such a concern; five auditors described a concern that is either contrary to or irrelevant to the firm's concern; and two auditors described the concern as the client's concern instead of the audit firm's concern. Successfully testing the mitigating effects of the interventions requires that auditors understand their firm's concern. Therefore, I exclude these nine auditors from my sample for the following analyses.[12]

Test of Hypotheses

In this section, I first examine the effects of salient intrinsic motivation on counteracting the directional influence of incentives on auditors' judgment and information processing. I then discuss the results of how holding auditors accountable impacts their information processing under the influence of directional incentives.

Effects of Salient Intrinsic Motivation on Audit Judgment

Table 1 provides descriptive statistics (Panel A), an ANOVA model (Panel B), contrast for testing Hypothesis 1 (Panel C), and simple effects tests (Panel D) for auditors' assessments of the reasonableness of the revenue assumption (*Judgment*).

[Insert Table 1 here]

[12] Of the nine participants who described the firm's concern wrong, four (44.4%) responded incorrectly to the comprehension check question related to the firm's concern, significantly higher than the remaining participants (8.6%) (two-tailed *p*-value <0.01). Retaining these nine participants would not change any inferences related to the hypotheses, except that the *p*-value of contrast test for H1 would change from 0.05 to 0.18.

The ANOVA model based on the intrinsic motivation conditions and the control conditions shows that the interaction between the intrinsic motivation intervention and the auditor incentive is marginally significant ($p = 0.07$, Panel B Table 1). The planned contrast in Panel C confirms that, as predicted, salient intrinsic motivation counteracts the directional influence of incentives on auditors' judgment ($p = 0.05$, Panel C Table 1).[13] Therefore, H1 is supported. Follow-up simple effects tests show that auditors in the control conditions assessed management's revenue assumption as more reasonable (i.e., a more aggressive audit judgment) in the aggressive incentive condition than in the conservative incentive condition ($p = 0.03$, Panel D Table 1), whereas auditors in the intrinsic motivation conditions did not assess the revenue assumption differently in the two incentive conditions ($p = 0.55$, Panel D Table 1).

Effects of Salient Intrinsic Motivation on Information Search and Evaluation

Participants on average viewed 6.9 evidence items and spent 5.5 minutes viewing the items.[14] Table 2 Panel A provides descriptive statistics for the two information search measures: *View* (i.e., the relative number of positive items viewed) and *Time* (i.e., the relative amount of time spent on viewing positive items) as well as the factor score (*Search*) of the two information search measures (*View* and *Time*). Table 2 Panel B reports an ANOVA model based on the intrinsic motivation conditions and the control conditions and using *Search* as the dependent variable.[15]

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[13] I test the interaction using custom contrast weights of -1 for Control/Conservative, +1 for Control/Aggressive, and 0 for the two intrinsic motivation conditions. The residual between-cells variance is not significant ($p = 0.79$, Panel C Table 1).

[14] The total number of evidence items viewed and the total time spent on evidence items do not vary across experimental conditions (all p-values > 0.10).

[15] A factor analysis of the two information search measures identifies one factor with eigenvalue greater than 1.00. The factor explains 93% of the variance. The ANOVA results are similar if using *View* or *Time* as the dependent variable. The p-values for the interaction term (Intrinsic Motivation × Auditor Incentive) in the ANOVA model are 0.09 and 0.04 if using *View* and *Time* as the dependent variable, respectively.

[Insert Table 2 here]

H2 predicts that salient intrinsic motivation counteracts the directional impact of auditor incentives on information search. While the interaction between the intrinsic motivation intervention and the auditor incentive is significant (p = 0.05, Panel B), further analyses suggest that the pattern of the interaction does not match exactly with my ex ante expectation. More specifically, while I expected auditors' information search behaviors in the control conditions to be affected by their incentives, I do not observe a significant difference in information search between the two incentives conditions (t_{47} = 0.03, p = 0.98). Instead, auditors in the intrinsic motivation conditions searched for relatively more negative information in the aggressive incentive condition than in the conservative incentive condition (t_{44} = 2.67, p = 0.01). The results indicate that salient intrinsic motivation prompts auditors to search for relatively more incentive-inconsistent information compared to auditors in the control conditions.

Table 3 provides descriptive statistics (Panel A) and an ANOVA model (Panel B) for the information evaluation measure (*Evaluation*) based on the intrinsic motivation conditions and the control conditions. *Evaluation* measures each individual auditor's evaluation of information items relative to all other auditors. A higher *Evaluation* value indicates that the auditor evaluates information items more aggressively relative to the average participant.

[Insert Table 3 here]

The ANOVA test based on the intrinsic motivation conditions and the control conditions shows that the interaction between the intrinsic motivation intervention and the auditor incentive is significant (p = 0.05) (Panel B, Table 3). Follow-up tests show

that the information evaluation behaviors of auditors in the control condition are not significantly influenced by their incentives (t_{47} = 0.55, p = 0.59). Rather, auditors with salient intrinsic motivation assessed the evidence items more conservatively in the aggressive incentive condition than in the conservative incentive condition (t_{44} = 1.99, p = 0.05). This shows that salient intrinsic motivation causes auditors to evaluate information less consistently with their incentives than did auditors in the control conditions.

The above results of information search and information evaluation share a similar pattern. That is, while the expected directional influence of incentives on auditors' information processing is not observed in the control conditions, salient intrinsic motivation counteracts the influence of incentives by prompting auditors to search for information and evaluate information in a way that is less consistent with their incentives than did auditors in the control conditions. However, the results of information processing are intriguing considering that in the control conditions, only auditors' judgment, but not their information search and evaluation, is influenced by their incentives. I perform additional analyses below to investigate why there is a seemingly "disconnect" between how auditors process information and how they make audit judgment in the control conditions.

Prior accounting research suggests that tax professionals' judgment is influenced by their incentives via two routes, one indirect route via how tax professionals search for information and one direct route from incentives to judgment (Cloyd and Spilker 1999; Kadous et al. 2008). I test whether both routes are at work in the current setting by fitting

a structural equation model (SEM) to the data (intrinsic motivation conditions and control conditions only) (Figure 2).[16]

[Insert Figure 2 here]

The structural equation model shows that while the path coefficients between auditor incentives and the two information processing measures (Link 1 and 2) are not significant in the control conditions, they are significantly negative in the intrinsic motivation conditions. The information search and information evaluation styles subsequently influence audit judgment (Link 3 and 4), where more positive evidence focused information search and more aggressive information evaluation lead to more aggressive *audit judgment*. In addition to this indirect path, there also exists a direct path from auditor incentive to auditor judgment in all conditions such that more aggressive auditor incentives result in a more aggressive audit judgment (Link 5).[17]

The SEM results suggest that although auditors' judgment in the control conditions is not influenced by the incentives via the two information processing paths, their judgment is nonetheless influenced by the incentives via the direct path. This explains why auditors in the control conditions show a directional bias in their judgment but not in their information search and evaluation. On the other hand, salient intrinsic motivation causes auditors to move further away from a "neutral" mode of information processing. Auditors whose intrinsic motivation is salient search for information and evaluate the information in a way that counteracts their incentives (i.e., the negative path coefficients

[16] Goodness-of-fit statistics show that the model fits the data well ($\chi^2_3 = 3.42$, $p = 0.33$; Comparative Fit Index = 0.991; and Root Mean Squared Error of Approximation = 0.054).

[17] Untabulated analyses show that the path coefficient of Link 5 does not significantly differ between intrinsic motivation conditions and control conditions ($\chi^2_1 = 0.37$, $p = 0.54$), therefore the path coefficient of Link 5 is held constant across all conditions.

of Link 1 and 2). This "overcorrection" by salient intrinsic motivation via the information processing paths offsets the direct impact of auditor incentives on audit judgment, resulting in a less directionally influenced audit judgment as compared to that of auditors whose intrinsic motivation is not salient.

The counteracting effects of intrinsic motivation via information processing are further evidenced by changes in auditors' judgment before and after their information search and evaluation. Recall that auditors are asked to provide a preliminary assessment of the reasonableness of the revenue assumption before they search and review any evidence items. If information processing influences audit judgment in the intrinsic motivation conditions but not in the control conditions, we should observe a change in auditors' reasonableness assessment such that intrinsically motivated auditors adjusted their reasonableness assessment lower in the aggressive incentive condition relative to the conservative incentive condition whereas the audit judgment change does not vary significantly between the two incentive conditions for auditors in the control conditions. Table 4 provides descriptive statistics (Panel A), an ANOVA model (Panel B), and contrast test (Panel C) for the changes in auditors' reasonableness assessments from the preliminary assessment to their final assessment.

[Insert Table 4 here]

The descriptive statistics show that while auditors in all conditions lowered their reasonableness assessment after reviewing additional evidence, auditors in the intrinsic motivation/aggressive incentive condition reduce their assessment most (Panel A Table 4). A contrast test in Panel C indicates that the interaction between intrinsic motivation

and auditor incentive is significant ($p = 0.02$).[18] Untabulated simple effects tests show that intrinsically motivated auditors reduced their reasonableness assessment more in the aggressive incentive condition than in the conservative incentive ($t_{45} = 1.65$, one-tailed $p = 0.05$) while the change in assessment does not differ in the two control conditions ($t_{47} = 0.19$, two-tailed $p = 0.85$).

Taken together, the above results support the hypotheses that salient intrinsic motivation counteracts the directional influence of incentives on auditors' information search (H2) and information evaluation (H3) by encouraging auditors to search for relatively more information that contradicts their incentives and evaluate information less consistently with their incentives.

Effects of Accountability on Information Search and Evaluation

Hypothesis 4 predicts that holding auditors accountable for considering both confirming and disconfirming information mitigates the directional impact of auditors' incentives on their information search behaviors. Table 2 Panel C examines the impact of auditor incentives in the accountability conditions and the control conditions. The interaction between the accountability intervention and the auditor incentive is not significant. Therefore, H4 is not supported. Descriptive statistics in Table 2 Panel A show that auditors in the accountability conditions tended to view relatively more positive information items and spent relatively more time on positive items in the

[18] I test the interaction using custom contrast weights of +1 for Control/Conservative, +1 for Control/Aggressive, +1 for Intrinsic Motivation/Conservative, and -3 for Intrinsic Motivation/Aggressive. The results are robust to alternative contrast weights, such as +0 for Control/Conservative, +0 for Control/Aggressive, +1 for Intrinsic Motivation/ Conservative, and -1 for Intrinsic Motivation/Aggressive ($F_{1,92} = 3.04$, $p = 0.08$, untabulated).

aggressive goal condition than in the conservative condition, although only the former comparison reaches marginal significance ($p = 0.06$ for *View*; $p = 0.21$ for *Time*).

Hypothesis 5 predicts that the accountability intervention will not mitigate the directional effects of incentives on information evaluation. A formal test of H5 based on the accountability conditions and the control conditions shows that the interaction between the accountability intervention and the auditor incentive is not significant ($p = 0.49$, Panel C Table 3). Therefore, as expected, I fail to reject the null hypothesis expressed in H5. Descriptive statistics in Table 3 Panel A suggests that auditors who were held accountable according to the auditing standards tended to evaluate the information more aggressively when they had an aggressive goal than when they had a conservative goal, although the difference is not statistically significant ($p = 0.20$).[19]

I do not have an ex ante prediction regarding the effects of the accountability intervention on mitigating the directional influence of incentives on audit judgment since I expect the accountability intervention to mitigate the impact of incentives on information search but not on information evaluation. Nevertheless, untabulated ANOVA tests show that the interaction between the accountability intervention and the auditor incentive is not significant using the control conditions as the comparison group ($p = 0.94$). Auditors in the accountability conditions evaluated management's revenue assumption as more reasonable in the aggressive incentive condition than in the conservative incentive condition ($p = 0.05$). This is not surprising given that the

[19] To rule out the possibility that the results of information evaluation is simply driven by auditors' information search behaviors, I run ANCOVA to test H3 and H5 that includes *information search* as a covariate in the model. Untabulated analyses show that the *intrinsic motivation* × *auditor incentive* interaction remains marginally significant ($p = 0.09$) and the *accountability* × *auditor incentive* interaction remains insignificant ($p = 0.67$).

accountability intervention does not reduce the directional impact of incentives on either information processing measure in the study.

DISCUSSION AND CONCLUSIONS

Directional incentives and pressure inherent in the audit industry are known to impair objectivity in auditor judgment (Nelson 2005; Church et al. 2015). However, there is limited empirical evidence of how to effectively mitigate such effects. This study shows that increasing the salience of auditors' intrinsic motivation for their job can counteract the directional influence of incentives on auditors' judgments. It also provides evidence that salient intrinsic motivation mitigates the impact of directional incentives on auditors' judgment through its effects on auditors' information search and information evaluation. Auditors with salient intrinsic motivation search for relatively more information that contradicts their incentive-preferred conclusion and evaluate the information as less supportive of their incentive-preferred conclusion than do auditors whose intrinsic motivation is not salient. Furthermore, I find no evidence that holding auditors accountable for their judgment process according to the auditing standards reduces the directional influence of incentives on auditors' information processing. Consequently, holding auditors accountable does not mitigate the impact of directional incentives on audit judgment.

This study informs the auditing literature by showing how directional incentives influence audit judgment via two routes: a direct path from incentives to audit judgment and an indirect path through information processing. While auditors in the control conditions do not show a directional bias in their information processing, their judgment

is nonetheless affected by incentives through the direct path, resulting in an overall biased audit judgment. Auditors whose intrinsic motivation is salient, on the other hand, are not only not influenced in the direction of their incentives in their information processing, but they exhibit a tendency to search for and evaluate information less consistently with their incentives. This "overcorrection" helps to offset the direct impact of incentives on audit judgment, leading to an overall less biased audit judgment. The results of this study imply that putting equal emphasis on positive and negative evidence in information processing may not be sufficient to overcome the direct impact of incentives on auditor judgment. Auditors need to be prompted to focus more on searching for contradictory information and evaluate information less consistently with their incentive in order to arrive at a final audit judgment that is "immune" from the impact of directional incentives.

This study contributes to the motivated reasoning literature by providing a new perspective on reducing the impact of directional incentives on one's judgment. Individuals engage in motivated reasoning because they are motivated to reach their preferred conclusion that aligns with their incentives and directional goals. One seemingly obvious solution to address the directional impact of incentives is to change auditors' incentives or their directional goals. However, changing auditors' incentive structure has proven to be challenging because various conflicting incentives are pervasive in the audit industry (e.g., affinity for client developed from interactions with the client) and can be difficult (if not impossible) to remove (Moore et al. 2006). Prior research also indicates that asking auditors to adopt an accuracy goal is not sufficient to cause auditors to consider more contradictory evidence (Austin, Hammersley, and Ricci

2017). The current study shows that salient intrinsic motivation that focus individuals more on the intrinsic aspects and process of a task rather than on the extrinsic aspects and outcome of a task is a promising solution to this challenging problem.

This study proposes that the effectiveness of accountability for improving judgment quality depends on the level of ambiguity surrounding the evaluation standards. However, I do not find support that increasing auditors' accountability will mitigate the directional influence of incentives on either information evaluation where the relevant auditing standards are relatively ambiguous nor on information search where the relevant auditing standards are relatively clear. One possible explanation for the results is that the accountability intervention in my study is not as strong as what auditors usually experience in practice. For example, in their natural environment, auditors may need to justify their decisions to their colleagues face-to-face. Future research can investigate whether a stronger form of the accountability intervention could mitigate the directional impact of incentives on auditors' behaviors when there is less ambiguity surrounding the evaluation standards.

Finally, directional bias in judgment caused by one's incentives is not unique to auditors. Other decision makers, such as managers (e.g., Boiney, Kennedy, and Nye 1997), tax professionals (e.g., Cloyd and Spilker 1999), analysts (e.g., Jollineau, Tanlu, and Winn 2014), and investors (e.g., Hales 2007; Thayer 2011), are also motivated by their incentives to engage in a biased reasoning process, which can lead to low judgment quality. I expect that the theory and findings in this study about how salient intrinsic motivation can inoculate auditors against the impact of their incentives to be helpful to

other professions and decision makers as well. Future research can investigate this issue directly.

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FIGURE 1
Overview of the Experiment

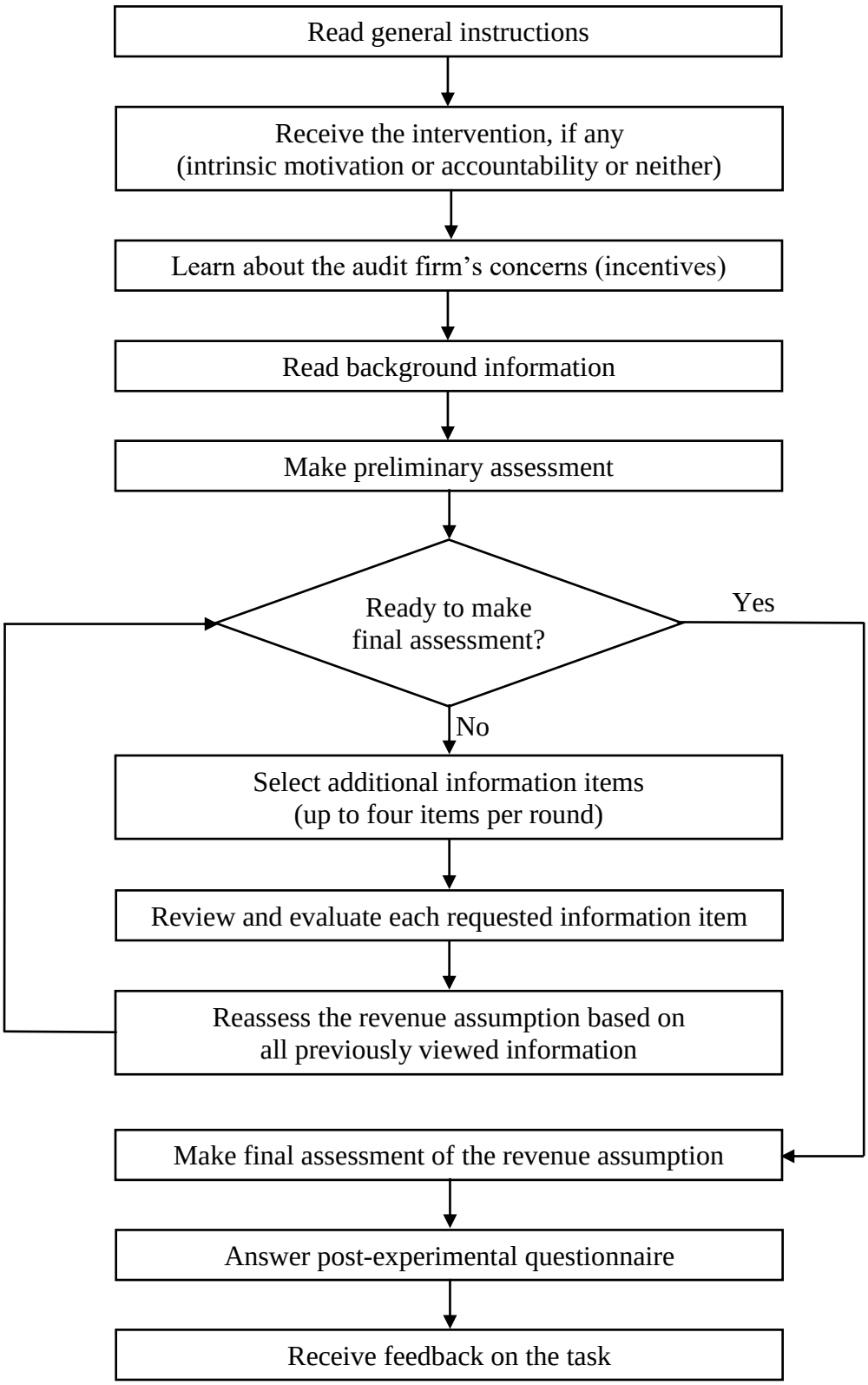
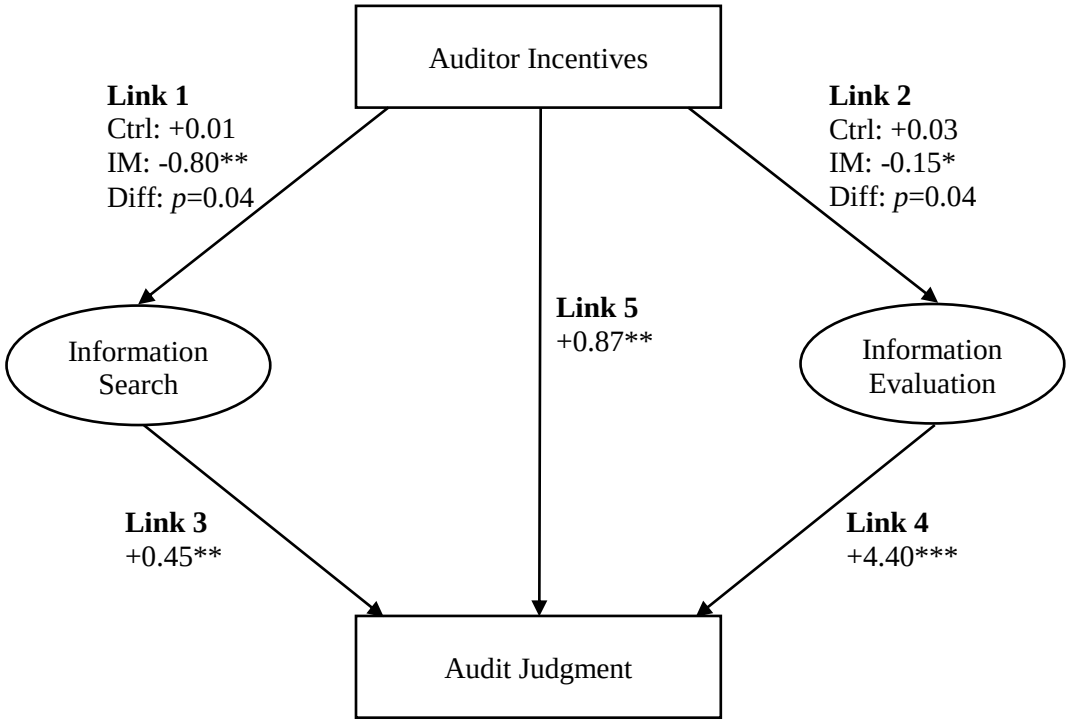


FIGURE 2
Counteracting Effects of Salient Intrinsic Motivation on Audit Judgment



Notes:
The figure summarizes the counteracting effects of *intrinsic motivation* on audit judgment based on the intrinsic motivation conditions ("IM") and the control conditions ("Ctrl"). The model fits the data well ($\chi^2_3 = 3.42$, $p = 0.33$; Comparative Fit Index = 0.991; and Root Mean Squared Error of Approximation = 0.054). All *p*-values are two-tailed.

Auditor Incentive is coded as 1 for auditors in the aggressive incentive conditions and 0 for auditors in the conservative incentive conditions. *Information search* is the factor score of two information search measures (i.e., *Search*). *Information evaluation* is measured by first dividing each auditor's evaluation of an information item by the average evaluation of the same item by all participants and then taking the mean of the standardized information evaluation of all the items viewed by an auditor to obtain an overall information evaluation measure for that auditor (i.e., *Evaluation*). *Audit judgment* corresponds to auditors' assessments of the reasonableness of the revenue assumption (i.e., *Judgment*).

***, **, and * indicate two-tailed significance level at less than 1%, 5% and 10% respectively.

TABLE 1
The Impact of Auditor Incentive and Interventions on Audit Judgment

Panel A. Mean (Std. Dev.) of reasonableness assessment

	Aggressive Incentive	Conservative Incentive
Intrinsic Motivation	4.52 (2.25) n = 21	4.92 (2.23) n = 26
Accountability	5.15 (2.25) n = 20	3.96 (1.73) n = 24
Control	5.32 (2.12) n = 22	4.19 (1.36) n = 27

Panel B. ANOVA for Audit Judgment (Intrinsic and Control conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Intrinsic Motivation (IM)	0.02	1	0.02	0.00	0.95
Auditor Incentive (AI)	3.19	1	3.19	0.80	0.37
IM × AI	13.93	1	13.93	3.48	0.07
Residual	367.93	92	4.00		

Panel C. Contrast test (Intrinsic and Control conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
IM × AI contrast (-1 +1 0 0)	15.56	1	15.56	3.89	0.05
Residual between-cells variance	1.91	2	0.96	0.24	0.79

Panel D. Supplemental simple effects test

Simple effect	*t*	*p* -value
Intrinsic/Aggressive vs. Intrinsic/Conservative	$t_{45} = 0.61$	0.55
Control/Aggressive vs. Control/Conservative	$t_{47} = 2.26$	0.03
Intrinsic/Aggressive vs. Control/Aggressive	$t_{41} = 1.19$	0.24
Intrinsic/Conservative vs. Control/Conservative	$t_{51} = 1.46$	0.15

Notes:
This table reports descriptive statistics (Panel A), an ANOVA model (Panel B), contrast for testing Hypothesis 1 (Panel C), and simple effects tests (Panel D) for auditors' assessments of the reasonableness of the revenue assumption. The contrast test in Panel C assigns contrast weight of -1 to the Control/Conservative condition, +1 to the Control/Aggressive condition, and 0 to the two intrinsic motivation conditions.

The dependent variable (*Judgment*) measures auditors' responses to "…how likely is it that the management's 7.8% revenue growth assumption is reasonable?" on a scale of 1 (not at all likely) to 11 (extremely likely).

Auditor Incentive was manipulated by varying whether the firm is concerned with auditors undertaking costly investigations of explanations (aggressive incentive condition) or uncritically accepting the client's explanations (conservative incentive condition).

Interventions was manipulated at three levels: intrinsic motivation (a rank order task that increases the salience of intrinsic motivation), accountability (asking auditors to justify their judgment process according to the auditing standards), and control (a rank order task that is not expected to change either the salience of intrinsic motivation or the level of accountability).

TABLE 2
The Impact of Auditor Incentives and Interventions on Information Search

Panel A. Mean (Std. Dev.) of information search measures

	Aggressive Incentive			Conservative Incentive		
	View	*Time*	*Search*	*View*	*Time*	*Search*
Intrinsic Motivation	0.30 (0.23) n = 21	0.26 (0.23) n = 21	-0.46 (1.08) n =21	0.44 (0.19) n = 25	0.46 (0.24) n = 25	0.34 (0.95) n = 25
Accountability	0.48 (0.23) n = 19	0.43 (0.23) n = 19	0.36 (1.09) n = 19	0.37 (0.16) n = 24	0.34 (0.20) n = 24	-0.12 (0.82) n = 24
Control	0.37 (0.14) n = 22	0.37 (0.22) n = 22	-0.06 (0.80) n = 22	0.37 (0.21) n = 27	0.36 (0.27) n = 27	-0.07 (1.10) n = 27

Panel B. ANOVA for Information Search (Intrinsic and Control Conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Intrinsic Motivation (IM)	0.00	1	0.00	0.00	0.98
Auditor Incentive (AI)	3.68	1	3.68	3.72	0.06
IM × AI	3.84	1	3.84	3.87	0.05
Residual	90.12	91	0.99		

Panel C. ANOVA for Information Search (Accountability and Control Conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Accountability (AC)	0.78	1	0.78	0.84	0.36
Auditor Incentive (AI)	1.33	1	1.33	1.43	0.24
AC × AI	1.24	1	1.24	1.33	0.25
Residual	81.61	88	0.93		

Notes:

This table reports descriptive statistics (Panel A) and ANOVA models for auditors' information search behaviors (Panel B and Panel C). Two participants did not view any evidence items; therefore this table only includes 138 participants who have viewed at least one evidence item.

Panel A reports descriptive statistics of three information search variables. The first dependent variable, *View*, is calculated as the number of positive items viewed divided by the total number of positive and negative items viewed. The second dependent variable, *Time*, is calculated as the amount of time spent viewing positive items divided by the total time spent viewing positive and negative items. The last dependent variable, *Search*, is the factor score of *View* and *Time*.

Panel B examines the interactive effects of the intrinsic motivation intervention and the auditor incentives in the intrinsic motivation conditions and control conditions only. Panel C examines the interactive effects of the accountability intervention and the auditor incentives in the accountability conditions and control conditions only. Both Panel B and Panel C use the factor score *Search* as the dependent variable.

The condition manipulation is described in the notes to Table 1.

TABLE 3
The Impact of Auditor Incentives and Interventions on Information Evaluation

Panel A. Mean (Std. Dev.) of information evaluation

	Aggressive Incentive	Conservative Incentive
Intrinsic Motivation	0.96 (0.24) n = 21	1.11 (0.28) n = 25
Accountability	1.03 (0.23) n = 19	0.95 (0.19) n = 24
Control	1.03 (0.17) n = 22	1.00 (0.18) n = 27

Panel B. ANOVA for Information Evaluation (Intrinsic and Control conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Intrinsic Motivation (IM)	0.01	1	0.01	0.16	0.69
Auditor Incentive (AI)	0.09	1	0.09	1.91	0.17
IM × AI	0.19	1	0.19	3.95	0.05
Residual	4.42	91	0.05		

Panel C. ANOVA for Information Evaluation (Intrinsic and Accountability conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Accountability (AC)	0.02	1	0.02	0.42	0.52
Auditor Incentive (AI)	0.07	1	0.07	1.89	0.17
AC × AI	0.02	1	0.02	0.48	0.49
Residual	3.25	88	0.04		

Notes:
This table reports descriptive statistics (Panel A) and ANOVA tests (Panel B and C) for auditors' information evaluation. Panel B examines the interactive effects of the intrinsic motivation intervention and the auditor incentives in the intrinsic motivation conditions and control conditions only. Panel C examines the interactive effects of the accountability intervention and the auditor incentives in the accountability conditions and control conditions only. Two participants did not view any evidence items; therefore this table only includes 138 participants who have viewed at least one evidence item.

The dependent variable (*Evaluation*) is the auditors' evaluation of information items relative to other auditors. Auditors evaluate the implications of each requested individual evidence item for the management's revenue growth assumption on an 11-point Likert scale, where the end points are labeled 1: "very NEGATIVE revenue growth implications" and 11: "very POSITIVE revenue growth implications." To calculate the dependent variable, I first divide each auditor's evaluation

of an evidence item by the average evaluation of the same item by all participants. The resulting measure for each item viewed by an auditor is then averaged to obtain an overall information evaluation measure for that auditor.

The condition manipulation is described in the notes to Table 1.

TABLE 4
The Impact of Auditor Incentive and Interventions on Audit Judgment Change

Panel A. Mean (Std. Dev.) of change in reasonableness assessment

	Aggressive Incentive	Conservative Incentive
Intrinsic Motivation	-2.00 (2.28) n = 21	-0.88 (2.32) n = 26
Accountability	-1.40 (1.90) n = 20	-1.13 (1.92) n = 24
Control	-0.59 (2.17) n = 22	-0.70 (1.96) n = 27

Panel B. ANOVA for Audit Judgment (Intrinsic and Control conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
Intrinsic Motivation (IM)	15.00	1	15.00	3.15	0.08
Auditor Incentive (AI)	5.96	1	5.96	1.25	0.27
IM × AI	8.95	1	8.95	1.88	0.17
Residual	437.60	92	4.76		

Panel C. Contrast test (Intrinsic and Control conditions)

Source	*SS*	*df*	*MS*	*F*	*p* -value
IM × AI contrast (+1 +1 +1 -3)	26.56	1	26.56	5.59	0.02
Residual between-cells variance	0.82	2	0.41	0.09	0.91

Notes:
This table reports descriptive statistics (Panel A), an ANOVA model (Panel B), and contrast test (Panel C) for the change in auditors' reasonableness assessments before and after they view additional evidence items. The contrast test in Panel C assigns contrast weight of +1 to the Control/Conservative condition, +1 to the Control/Aggressive condition, +1 to the Intrinsic/Conservative condition, and -3 to the Intrinsic/Aggressive condition.

The dependent variable (*Judgment Change*) measures the change in auditors' reasonableness assessments from their preliminary reasonableness assessment before viewing any additional evidence item to their final reasonableness assessment. Both the preliminary assessment and the final assessment are measured on a scale of 1 (not at all likely reasonable) to 11 (extremely likely reasonable).

The condition manipulation is described in the notes to Table 1.

APPENDIX A
Additional Evidence Items

Evidence item title	Type
Improved Economic Conditions and Consumer Confidence	Positive
Strong Sales in Early FY 2016	Positive
Positive Market Reactions to the New Product	Positive
Strong Marketing Plans for the New Product	Positive
Positive Synergies between Product B and Product C	Positive
Highly Experienced Leadership Team	Positive
Step 1 Test Highly Sensitive to the Revenue Growth Assumption	Negative
Intensified Market Competition	Negative
Bias in Historical Projections	Negative
More Optimistic Revenue Projection than Peer Firms	Negative
Stagnant Market for High-end Electronic Products	Negative
Potential Delayed Launch of Product C	Negative
No Significant Capital Expenditure in the Near Future	Neutral
Stable Operating Expense	Neutral

Notes:
This appendix lists the fourteen evidence items that are available for auditors to search for and evaluate before they make a final reasonableness assessment of the client's revenue growth assumption. The positive (negative) evidence items are items with a title that indicates supporting (contradicting) evidence for the management's revenue growth assumption. The neutral evidence items are items that are not related to the revenue growth assumption.

APPENDIX B
Intrinsic Motivation Intervention

Condition	Reasons
Intrinsic motivation	1. I enjoy learning about a client's business. 2. I feel good when I solve complex audit tasks. 3. My job provides me with opportunities for increasing my analytical skills. 4. Curiosity is the driving force behind much of what I do. 5. I want to find out how good I really can be at my work. 6. I enjoy the challenges that my job provides me on a daily basis. 7. No matter what the outcome of a project, I am satisfied if I feel I gained a new experience.
Control and Accountability	1. I like restaurants that provide a variety of food options. 2. I want to try restaurants that have good reviews or are highly recommended by my friends. 3. I prefer restaurants that are family-friendly. 4. I enjoy restaurants that have excellent service. 5. I like restaurants that offer healthy and nutritious food. 6. I like restaurants that provide reasonably-priced dishes. 7. I enjoy restaurants with good ambience.

Note:
This appendix lists the reasons that participants were asked to rank in different experimental conditions. Both lists are adopted from Kadous and Zhou (2017). The reasons listed in the intrinsic motivation condition are found to be strongly associated with people's intrinsic motivation for their jobs (Amabile, Hill, Hennessey, and Tighe 1994). Items in the accountability condition and the control condition are related to reasons for choosing a restaurant, which is not expected to change the salience of intrinsic motivation or the level of accountability.

APPENDIX C
Experiment Instrument

Note: Text in yellow indicates differences between experimental conditions.

Thank you for participating in this study. You will be asked to assess a client's goodwill impairment test. **Please try to complete the case as you would on the job.** This will maximize the value of your contribution to our understanding of how auditors do this important task. Please complete the case without interruption.

(Note: please do not use the back button on your browser throughout the study. Doing so will prevent your responses from being recorded.)

Note: this page appears in the *Intrinsic motivation* condition ONLY

Before beginning the case, please answer the following question about what motivates you at work.

Below is a list of reasons that may motivate you at work. Please rank these reasons with regard to how important each one is to you, with the **most** important item ranked as **#1** and the **least** important item ranked as **#7**. We realize that this is not an exhaustive list. We are particularly interested in these reasons, so please help us by making sure that you rank ***all*** the reasons and give each reason a ***different*** rank number.

Please think about each reason carefully. We know that this can be a difficult task, but please try the best you can.

	Rank order
a. I enjoy learning about a client's business.	( )
b. I feel good when I solve complex audit tasks.	( )
c. My job provides me with opportunities for increasing my analytical skills.	( )
d. Curiosity is the driving force behind much of what I do.	( )
e. I want to find out how good I really can be at my work.	( )
f. I enjoy the challenges that my job provides me on a daily basis.	( )
g. No matter what the outcome of a project, I am satisfied if I feel I gained a new experience.	( )

Note: this page appears in the *Accountability* condition and the *Control* condition ONLY

Before beginning the case, please answer the following question about what motivates you to dine out.

Below is a list of reasons that may motivate you to eat at a restaurant. Please rank these reasons with regard to how important each one is to you, with the **most** important item ranked as **#1** and the **least** important item ranked as **#7**. We realize that this is not an exhaustive list. We are particularly interested in these reasons, so please help us by making sure that you rank ***all*** the reasons and give each reason a ***different*** rank number.

Please think about each reason carefully. We know that this can be a difficult task, but please try the best you can.

Rank order

a. I like restaurants that provide a variety of food options. ( )

b. I want to try restaurants that have good reviews or are highly recommended by my friends. ( )

c. I prefer restaurants that are family-friendly. ( )

d. I enjoy restaurants that have excellent service. ( )

e. I like restaurants that offer healthy and nutritious food. ( )

f. I like restaurants that provide reasonably-priced dishes. ( )

g. I enjoy restaurants with good ambience. ( )

Note: this page appears in the *Intrinsic motivation* condition and the *control* condition ONLY

Instructions:

You have been assigned to audit the December 31, 2015 goodwill impairment test for J & H Electronics' U.S. reporting unit. The following pages contain management's Step 1 goodwill impairment analysis, as well as information related to the revenue growth assumption used in the goodwill impairment analysis.

Note: this page appears in the *Accountability* condition ONLY

Instructions:

You have been assigned to audit the December 31, 2015 goodwill impairment test for J & H Electronics' U.S. reporting unit. The following pages contain management's Step 1 goodwill impairment analysis, as well as information related to the revenue growth assumption used in the goodwill impairment analysis.

You will be asked to write a brief audit memo at the end of the case to **explain and justify *how* you arrived at your audit conclusion**. We will evaluate whether **your judgment process is consistent with relevant auditing standards.** You will receive feedback about your performance after you complete the case.

Do you understand that you will need to write a memo to justify how you arrived at your conclusion and that your judgment process will be evaluated according to relevant auditing standards? (Yes, No)

Note: this page appears in the *Aggressive goal* condition ONLY

Before beginning, you should be aware that at a recent training session, the firm expressed concern about how certain audit procedures are being performed. The firm is worried that auditors might **undertake costly investigations** of explanations other than those provided by the client, even when there is no evidence that the client's explanation might be wrong. In other words, auditors sometimes might not **fully utilize the clients' insights to improve the efficiency** of our audits.

Before you proceed to the next section, please briefly describe the firm's concerns in your own words based on the information above:

Note: this page appears in the *Conservative goal* condition ONLY

Before beginning, you should be aware that at a recent training session, the firm expressed concern about how certain audit procedures are being performed. The firm is worried that auditors might **uncritically accept the client's explanations**, even when there is evidence that the client's explanation might not be correct. In other words, auditors sometimes might not **approach client-provided explanations with enough professional skepticism**.

Before you proceed to the next section, please briefly describe the firm's concerns in your own words based on the information above:

Goodwill Case Background

J & H Electronics ("the Company") is a manufacturer that sells high-end electronic products to third-party retailers in approximately 100 countries. The Company has identified its reporting units by geographical regions in which it operates. The reporting units are the United States, South America, Canada, Asia, and Europe. J & H's key figures for the year (unaudited) are shown below:

- Total assets: $4.0 billion
- Revenue (U.S. reporting unit): $1.3 billion
- Net income (U.S. reporting unit): $121 million
- Goodwill (U.S. reporting unit): $280 million

Materiality for J & H Electronics' U.S. reporting unit was calculated at the group level, and the resulting component materiality for the U.S. reporting unit was determined to be $40 million. Goodwill for the U.S. reporting unit is a material account because it is both quantitatively and qualitatively significant due to its susceptibility to misstatement arising primarily from recent market declines. Goodwill was recorded in 2010 when the Company acquired a competitor with a strong brand name and a reputation for developing high quality products targeting luxury consumers. The Company has estimated the fair value of the U.S. reporting unit as part of the first step in its required annual goodwill impairment analysis.

Your task is to **evaluate management's revenue growth assumption** used in the goodwill impairment test and **form a preliminary conclusion about the overall reasonableness of the revenue assumption**.

Management estimates the fair value of the U.S. reporting unit as of December 31, 2015, based on the assumption that J & H's revenue will grow, on average, **7.8% each year for the next five years**.

J & H Electronics, Inc.
Goodwill Impairment Analysis Summary – Step 1 Test (U.S. Reporting Unit)
December 31, 2015
Prepared by client
(in thousands)

	Fair Value	Carrying Value	Step 1 passed?
U.S. Reporting Unit	$680,000	$640,000	YES

As the fair value of the U.S. reporting unit exceeds the carrying value, no step two analysis is required.

Revenue Growth Projections

Summary of Discussions with Management Regarding Revenue Projections:

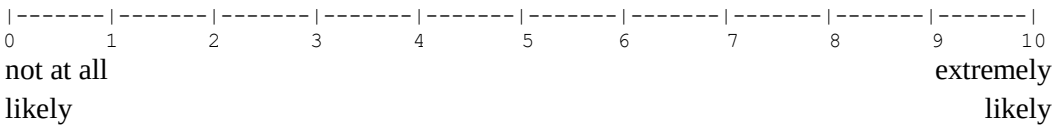
J & H's three products are primarily high-end electronic products. They are in the process of revising their marketing strategy by discontinuing their less profitable Product A and replacing it with the new Product C. They are just coming out of the development phase for Product C. They expect to fully go to market with Product C in fiscal year 2016. Product C features some cutting-edge technologies that are not available on other competing products yet. This product is expected to quickly surpass Product A's recent sales because of its innovative and proprietary technology. They already have market share and scale based on Product A, and they intend to use their existing distribution channels for Product C. They believe they will really begin seeing the benefits of Product C in fiscal year 2016.

Management estimates that its total revenue will grow **on average 7.8% per year from 2016 to 2020**. They base the fair value calculation of their U.S. reporting unit ($680 million) on this five-year revenue growth assumption. J & H breaks down its five-year revenue growth projection by its three products as below:

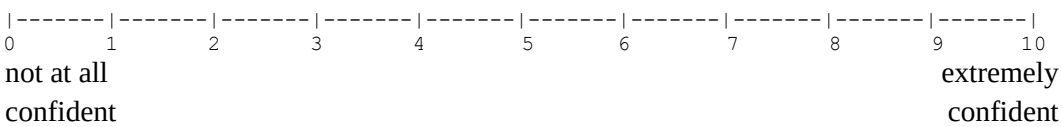
Historical Revenue and Current Projections by Product (in millions):

	Actual:				**Current Projection:**				
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Product A	175	184	192	198	85	26	16	-	-
% Change		*5.1%*	*4.3%*	*3.1%*	*-57.1%*	*-69.4%*	*-38.5%*		
Product B	925	971	1028	1,087	1,153	1,227	1,309	1,399	1,496
% Change		*5.0%*	*5.9%*	*5.7%*	*6.1%*	*6.4%*	*6.7%*	*6.9%*	*6.9%*
Product C	-	-	-	12	161	254	304	353	396
% Change					*1241.7%*	*57.8%*	*19.7%*	*16.1%*	*12.2%*
Total Revenue	1,100	1,155	1,220	1,297	1,399	1,507	1,629	1,752	1,892
% Change		*5.0%*	*5.6%*	*6.3%*	*7.9%*	*7.7%*	*8.1%*	*7.6%*	*8.0%*

Based on the information presented so far, what is your preliminary assessment of how likely it is that **management's 7.8% revenue growth assumption is reasonable?**



How confident are you about your likelihood assessment above?



Note: this page appears in the *Intrinsic motivation* condition and the *control* condition ONLY

Additional Information

Per your discussion with management, they project the revenue growth based on the following:

1) A large new revenue stream from Product C starting in 2016
2) A strong marketing plan for Product C coupled with positive early market reactions
3) Improved overall economic conditions
4) Positive synergies that will be created between Product B and Product C
5) Strong sales in early FY 2016

Fourteen additional information items are available below. You can review as many or as few of these items as you deem appropriate. **Each item has an informative title** to help you assess its value. Please select the information items that you consider **most relevant to evaluating the revenue assumption based on their title**, and then click on the ">>" button**.**

You are provided with an electronic notepad while reviewing information items. Click on the "Open Notepad" button in the upper-right corner of the screen to access the notepad. You can use the notepad to write down important thoughts or evidence that you might want to review later when making your audit conclusion.

You can stop the information review process anytime, as long as you feel you have reviewed enough information to make your conclusion. Once you are ready to make a decision, select the "I am ready to make an audit conclusion" option, and then click on the ">>" button. This will take you to the "Audit Conclusion" section. After you proceed to the "Audit Conclusion" section, you will no longer have access to the information items, but you will be able to use the notes you recorded in your notepad.

Auditing standards (AS 2810) require auditors to take into account relevant audit evidence, regardless of whether it appears to corroborate or to contradict management's assertions. Auditing standards (AS 1015) also require auditors to evaluate evidence objectively.

Note: this page appears in the *Accountability* condition ONLY

Additional Information

Per your discussion with management, they project the revenue growth based on the following:

1) A large new revenue stream from Product C starting in 2016
2) A strong marketing plan for Product C coupled with positive early market reactions
3) Improved overall economic conditions
4) Positive synergies that will be created between Product B and Product C
5) Strong sales in early FY 2016

Fourteen additional information items are available below. You can review as many or as few of these items as you deem appropriate. **Each item has an informative title** to help you assess its value. Please select the information items that you consider **most relevant to evaluating the revenue assumption based on their title**, and then click on the ">>" button**.**

You are provided with an electronic notepad while reviewing information items. Click on the "Open Notepad" button in the upper-right corner of the screen to access the notepad. You can use the notepad to write down important thoughts or evidence that you might want to review later when making your audit conclusion.

You can stop the information review process anytime, as long as you feel you have reviewed enough information to make your conclusion. Once you are ready to make a decision, select the "I am ready to make an audit conclusion" option, and then click on the ">>" button. This will take you to the "Audit Conclusion" section. After you proceed to the "Audit Conclusion" section, you will no longer have access to the information items, but you will be able to use the notes you recorded in your notepad.

Remember that we will evaluate your judgment process according to the relevant auditing standards. Auditing standards (AS 2810) require auditors to take into account relevant audit evidence, regardless of whether it appears to corroborate or to contradict management's assertions. Auditing standards (AS 1015) also require auditors to evaluate evidence objectively.

Please select **up to four items** that you think are **most relevant** to evaluating the revenue assumption from the "Additional Information Items" list below. You will have a chance to select more items later, if you wish. Your audit team will collect the requested information for you.

You can also view the two previously viewed background information items by selecting them from the "Background Information" list.

Information Items

Background Information

( ) Management's Step 1 Test
( ) Summary of Discussions with Management

Additional Information Items

( ) No Significant Capital Expenditure in the Near Future
( ) Improved Economic Conditions and Consumer Confidence
( ) Step 1 Test Highly Sensitive to the Revenue Growth Assumption
( ) Stable Operating Expense
( ) Strong Sales in Early FY 2016
( ) Intensified Market Competition
( ) Positive Market Reactions to the New Product
( ) Bias in Historical Projections
( ) Strong Marketing Plans for the New Product
( ) More Optimistic Revenue Projection than Peer Firms
( ) Stagnant Market for High-end Electronic Products
( ) Positive Synergies between Product B and Product C
( ) Highly Experienced Leadership Team
( ) Potential Delayed Launch of Product C

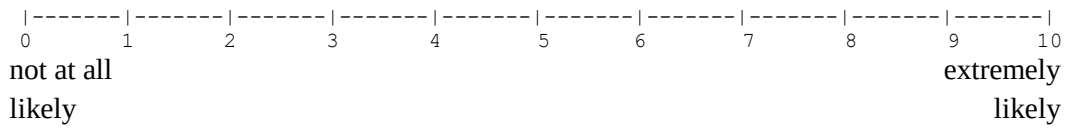
( ) **I am ready to make an audit conclusion.**

Note: this page will appear after participants requested information items

Your audit team is collecting the information items you requested. When the items are ready for your review, a ">>" button will appear in the bottom-right corner of the screen. Click on the button to review the items you requested.

[Note to reviewers: The following question is asked each round after participants have viewed all the requested information items.]

Based on **ALL** the information you have reviewed so far, how likely is it that management's 7.8% revenue growth assumption is reasonable?



If you would like to review more information, you can select up to four more additional items that you think are most relevant to evaluating the revenue assumption. You will have a chance to select more items later, if you wish. Your audit team will collect the requested information for you.

If you are ready to make your conclusion, please select the "I am ready to make an audit conclusion" option, which will lead you to the audit conclusion section.

Information Items

Background Information

( ) Management's Step 1 Test
( ) Summary of Discussions with Management

Additional Information Items

( ) No Significant Capital Expenditure in the Near Future
( ) Improved Economic Conditions and Consumer Confidence
( ) Step 1 Test Highly Sensitive to the Revenue Growth Assumption
( ) Stable Operating Expense
( ) Strong Sales in Early FY 2016
( ) Intensified Market Competition
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( ) Positive Synergies between Product B and Product C
( ) Highly Experienced Leadership Team
( ) Potential Delayed Launch of Product C

( ) **I am ready to make an audit conclusion.**

Note: this page will only appear if participants select this item in the information items menu.

Management's Step 1 Test

J & H Electronics, Inc.
Goodwill Impairment Analysis Summary – Step 1 Test (U.S. Reporting Unit)
December 31, 2015
Prepared by client
(in thousands)

	Fair Value	Carrying Value	Step 1 passed?
U.S. Reporting Unit	$680,000	$640,000	YES

As the fair value of the U.S. reporting unit exceeds the carrying value, no step two analysis is required.

Note: this page will only appear if participants select this item in the information items menu.

Summary of Discussions with Management

J & H's three products are primarily high-end electronic products. They are in the process of revising their marketing strategy by discontinuing their less profitable Product A and replacing it with the new Product C. They are just coming out of the development phase for Product C. They expect to fully go to market with Product C in fiscal year 2016. Product C features some cutting-edge technologies that are not available on other competing products yet. This product is expected to quickly surpass Product A's recent sales because of its innovative and proprietary technology. They already have market share and scale based on Product A, and they intend to use their existing distribution channels for Product C. They believe they will really begin seeing the benefits of Product C in fiscal year 2016.

Management estimates that its total revenue will grow **on average 7.8% per year from 2016 to 2020**. Per your discussion with management, they project the revenue growth based on the following:

1) A large new revenue stream from Product C starting in 2016
2) A strong marketing plan for Product C coupled with positive early market reactions
3) Improved overall economic conditions
4) Positive synergies that will be created between Product B and Product C
5) Strong sales in early FY 2016

They base the fair value calculation of their U.S. reporting unit ($680 million) on this five-year revenue growth assumption. J & H breaks down its five-year revenue growth projection by its three products as below:

Historical Revenue and Current Projections by Product (in millions):

	Actual:				**Current Projection:**				
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Product A	175	184	192	198	85	26	16	-	-
% Change		*5.1%*	*4.3%*	*3.1%*	*-57.1%*	*-69.4%*	*-38.5%*		
Product B	925	971	1028	1,087	1,153	1,227	1,309	1,399	1,496
% Change		*5.0%*	*5.9%*	*5.7%*	*6.1%*	*6.4%*	*6.7%*	*6.9%*	*6.9%*
Product C	-	-	-	12	161	254	304	353	396
% Change					*1241.7%*	*57.8%*	*19.7%*	*16.1%*	*12.2%*
Total Revenue	1,100	1,155	1,220	1,297	1,399	1,507	1,629	1,752	1,892
% Change		*5.0%*	*5.6%*	*6.3%*	*7.9%*	*7.7%*	*8.1%*	*7.6%*	*8.0%*

Note: this page will only appear if participants select this item in the information items menu.

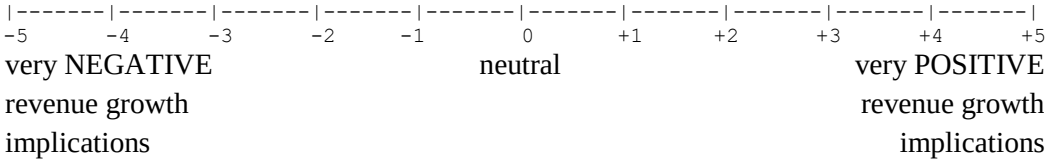
Step 1 Test Highly Sensitive to the Revenue Growth Assumption

Your audit team performed a sensitivity analysis to show the effect on the fair value of the U.S. reporting unit assuming a 1% decrease in each year's projected revenue. The results suggest that a 1% decrease in each year's projected revenue could lead to a step 1 test failure and potential impairment.

	Assuming a 1% decrease in each year's projected revenue
Fair value of U.S. reporting unit (in thousands)	$600,000

[Note to reviewers: The following question is asked subsequent to viewing each information item.]

How would you rate the implications of the evidence you are currently viewing for management's 7.8% revenue growth assumption?



Note: this page will only appear if participants select this item in the information items menu.

Bias in Historical Projections

Your audit team obtained J & H's historical revenue projections for the past three years and performed a retrospective review. A comparison between management's past revenue projections and the actual revenues suggests that management does not always accurately estimate its future revenue:

Historical Revenue and Current Projections by Product (in millions):

	Actual:				Current Projection:				
	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Product A	175	184	192	198	85	26	16	-	-
Product B	925	971	1,028	1,087	1,153	1,227	1,309	1,399	1,496
Product C	-	-	-	12	161	254	304	353	396
Total Revenue	1,100	1,155	1,220	1,297	1,399	1,507	1,629	1,752	1,892

Historical Total Revenue Projections (in millions):

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
FY 2014 Projection			1,326	1,395	1,505	1,618	1,740	
FY 2013 Projection		1,232	1,318	1,397	1,505	1,614		
FY 2012 Projection	1,165	1,231	1,321	1,395	1,502			

Note: this page will only appear if participants select this item in the information items menu.

Highly Experienced Leadership Team

The Company currently has approximately 1,000 employees worldwide, with approximately 600 employed in the United States. The Company is led by a highly experienced management team.

Key Personnel

CEO/Chairman - Edward Laudilee, 58, has over 30 years of experience in manufacturing operations. He has worked with J & H for 18 years and has been CEO for the past 7 years. Prior to his current position, Mr. Laudilee was chief of engineering for J & H. His background is in high-end electronic product development and he is known for being a pioneer in the area. Mr. Laudilee continues to provide input into new product development, although he is no longer directly involved.

CFO - Cheryl Smith, 52, has been with J & H for 15 years, the past 5 in the current position. She is highly respected and is a CPA with prior audit experience with a major international firm.

Director of Research and Development - James Funderburg, 49, heads a department of 40 employees actively creating and testing new products. He is considered to be an outstanding innovator and was responsible for creating the top-selling products in the high-end technology area.

Vice President of Marketing and Sales - Michael Wallenbach, 45, was appointed as the head of marketing 3 years ago. He has worked with J & H for 9 years, with extensive brand marketing and electronic products experience.

Note: this page will only appear if participants select this item in the information items menu.

Improved Economic Conditions and Consumer Confidence

The U.S. economy has gradually recovered since it hit bottom at the end of 2008. The U.S. economy expanded at an annual rate of 1% in the last quarter of 2015. Economists forecast U.S. GDP growth to pick up slightly in 2016, to 2.8% from 2.5% in 2015.

The U.S. has had consistent job growth since October 2010. Jobs have been added in professional and technical services, food services, retail, and health care, while manufacturing, transportation and warehousing, financial activities, and government have shown little change. The unemployment rate was 4.9% in February 2016. The Federal Reserve Governors forecast the unemployment rate to be 4.5-5.0% during 2016.

As the economy grows and new jobs are added, consumer confidence gradually rose from the low of 55.3 in November 2008 to 91.7 in February 2016.

Note: this page will only appear if participants select this item in the information items menu.

Intensified Market Competition

J & H operates in a highly competitive market driven by rapid technological innovation. Due in part to the range of performance and applications capabilities of its products, the Company competes in various markets against a number of companies. Many of these companies have substantial market share, diversified product lines, well-established supply and distribution systems, strong worldwide brand recognition and significant financial, marketing, research and development and other resources.

Recently, one of J & H's competitors announced that it is releasing a new product in October 2016 that is very similar to and will compete directly with Product C. Therefore, J & H is pushing for Product C to be fully released in early 2016, ahead of the competitor's product, to get first-mover advantage.

Note: this page will only appear if participants select this item in the information items menu.

More Optimistic Revenue Projection than Peer Firms

J & H Management provided its revenue projection benchmarking analysis using peer firms of similar size, product offerings, and geographic scope. Your audit team, including the specialist, has reviewed the list of peer firms and determined that they are appropriate for use in this benchmarking analysis. Management obtained the data from the peer firms' public filings.

Overall, J & H's five-year revenue growth projection (7.8%) is higher than the average of its industry peers (7.1%):

Firm	Projected Revenue Growth % (5-year average)
J & H, Inc.	*7.8%*
Black Bear Electronics, Inc.	6.9%
GOL Corporation	7.3%
CenVex	6.3%
Hellen Electronics Co.	8.8%
BML	6.4%
Peer average	7.1%

Note: this page will only appear if participants select this item in the information items menu.

No Significant Capital Expenditures in the Near Future

Management does not expect significant incremental capital expenditures going forward to produce Product C. Most of the capital investment related to Product C was already made several years ago.

Your audit team reviewed internal documents including capital budgets detailing J & H's significant planned capital projects. No significant projects related to production facilities are scheduled until 2020.

Your specialist team's research indicates that capital expenditures as a percentage of revenue in the electronics industry reached a low in 2008. Capital expenditure levels in the industry began to rebound in 2011, and by 2020 industry analysts expect capital expenditure levels to surpass the all-time high levels reported before the recession.

Note: this page will only appear if participants select this item in the information items menu.

Positive Market Reactions to the New Product

J & H had sent their Product C to various influential technology news media for product testing. Thus far, they have had favorable market reactions to Product C. A few highlights of quotes from the product reviews:

Joshua Smith, CET:

"J & H's Product C takes everything we liked about Product A and adds in some handy new features, making it one of the best high-end electronic products in its category."

Peter McCann, Techradar:

"Product C is an exceptional device in nearly every way except its average battery life: it's thin, fast, and features the super simple one-button operation."

Donna Sean, eGadget:

"Well-built, powerful, and lighter than you'd expect."

Lori Crist, InsideTech:

"With its newly added features and very streamlined aspects to its design and operation, J & H's Product C has a lot to recommend."

Note: this page will only appear if participants select this item in the information items menu.

Positive Synergies between Product B and Product C

Product B is currently J & H's main revenue source, accounting for 84% of the Company's total revenue in 2015. J & H expects additional growth as a result of strong positive synergies between Product B and Product C. Product B and Product C complement each other, which gives the Company a great competitive advantage. This enables the Company to leverage its multiple product lines to address more of their customer's needs. It also allows the Company to bundle the two products in marketing strategies and provide full-solution selling to its customers.

J & H has not yet been able to capitalize on those synergies since they have been waiting for the economy to recover to fully introduce Product C. They expect that once Product C is fully launched into the market in 2016, the Company will start to see the positive synergies between the two products.

Note: this page will only appear if participants select this item in the information items menu.

Potential Delayed Launch of Product C

J & H originally expected to fully release Product C in late FY 2015, but production delays caused them to postpone. Since Product C requires a few new technologies, J & H had to outsource its component production to a third-party supplier. The supplier had planned to start shipping the components by the end of November 2015, but mass production has been delayed in part by manufacturing difficulties. Although the supplier is working hard to get back on track with the production goals, it remains unclear when the supplier will start shipping the components. The delay could grow longer as production ramps up.

Note: this page will only appear if participants select this item in the information items menu.

Stable Operating Expenses

Your audit team obtained and reviewed J & H's historical and projected operating expenses by line item. J & H's operating expenses comprise three categories: cost of sales, direct expenses, and indirect expenses. Cost of sales is a stand-alone item. Direct expenses include employment, advertising and marketing, facilities-related, travel, professional services, and other direct services costs. Indirect expenses include restructuring costs and other expenses.

Your audit team calculated yearly fluctuations by line item for both historical and projected expenses for fiscal year 2015. There is no fluctuation that exceeds +/-5 percent from the preceding year.

Note: this page will only appear if participants select this item in the information items menu.

Stagnant Market for High-end Electronic Products

The high-end electronics retail industry is mature and has stagnated in the last few years, with sales growing at or below the rate of growth in the economy as a whole due to high competition and fewer unexplored market segments. The growth of the industry has also been greatly affected by the economic downturn during the last several years that has reduced consumers' disposable income. The high-end electronic retail industry has experienced fewer same-store visits per customer due to the downturn, leading to a further reduction in growth rates. Retailers are contemplating backward integration and launching products in their brand names in a continuing effort to open new avenues for revenue growth. Analysts forecast a cautious market outlook for 2016 and the first half of 2017.

Note: this page will only appear if participants select this item in the information items menu.

Strong Marketing Plans for the New Product

J & H has hired LEK Group, one of the nation's top marketing firms, to help develop a strategic sales plan for its launch of Product C as well as existing products. LEK Group has conducted marketing research over a 90-day period during 2015 and developed a marketing plan based on the research findings.

According to the new marketing plan, the Company will focus on expanding brand awareness and extending strategic marketing relationships. J & H plans to increase consumers' awareness of their upcoming product launch and existing product lines through increased advertising on television, in print, online, and on billboards and other out-of-home advertising.

Additionally, J & H will continue building close relationships with their retailers and distributors, educating their partners' sales forces about their products, especially the new Product C; working with them to merchandise their products in a compelling manner in-store; providing consumers with informative and convenient ecommerce experiences at retail partner websites.

Note: this page will only appear if participants select this item in the information items menu.

Strong Sales in Early FY 2016

J & H kicks off its fiscal year 2016 with promising sales figures. The total revenue increases by 8.2% year-over-year for the first three months of FY 2016. The strong sales are mainly driven by its Product B, which gains 10.0% from prior year:

(in millions)	Jan. - Mar. 2015	Jan. - Mar. 2016
Product A	34	31
% Change		*-8.8%*
Product B	259	285
% Change		*10.0%*
Product C	-	1
% Change		
Total Revenue	293	317
% Change		*8.2%*

Audit Conclusion

1. Based on **ALL** the information you have reviewed, what is your conclusion about how likely it is that management's 7.8% revenue growth assumption is reasonable?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9       10
```

not at all likely — extremely likely

2. How confident are you about your conclusion above?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9       10
```

not at all confident — extremely confident

3. What are the primary reasons for your conclusion? Please write a brief memorandum to explain and justify how you arrived at your audit conclusion.

_____
_____
_____
_____

4. What other information, if any, would you have liked to have in order to evaluate the reasonableness of the revenue assumption?

_____
_____
_____
_____

Please press "Submit" button to submit your responses.

2016 April Revenue Figures

Shortly after you had made your above audit conclusion, J & H released its revenue numbers for the month of April. J & H's monthly revenue in April 2016 had a year-over-year increase of 8.5% compared to the monthly revenue in April 2015.

How would you rate the implications of <u>this new piece of information</u> for management's 7.8% revenue growth assumption?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
-5      -4      -3      -2      -1       0      +1      +2      +3      +4      +5
```

very NEGATIVE revenue growth implications — neutral — very POSITIVE revenue growth implications

Based on this new piece of information and all the information you have previously reviewed, how likely is it that management's 7.8% revenue growth assumption is reasonable**?**

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9      10
```

not at all likely — extremely likely

Questionnaire

Please answer the following questions related to this audit case.

Given the information presented in the case, what is the audit firm mainly concerned about?

a. The firm is concerned that auditors sometimes might not fully utilize the clients' insights to improve the efficiency of our audits.
b. The firm is concerned that auditors sometimes might not approach client-provided explanations with enough professional skepticism.
c. It was not mentioned in the case material.

Given the information presented in the case, will you receive feedback about your performance after you complete the case?

a. Yes.
b. No.
c. It was not mentioned in the case material.

How much do you enjoy working on complex audit tasks that are similar to the goodwill impairment test in the above case?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9      10
```
not at all very much

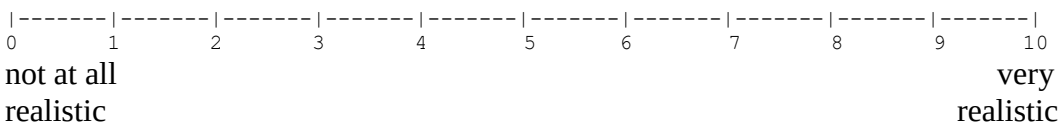
How important was it for you to build a justifiable case for **supporting** management's 7.8% revenue growth assumption?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9      10
```
not at all very important

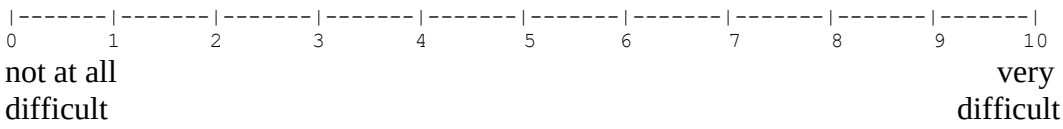
How engaged did you feel while completing this case?

```
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
0       1       2       3       4       5       6       7       8       9      10
```
not at all very engaged

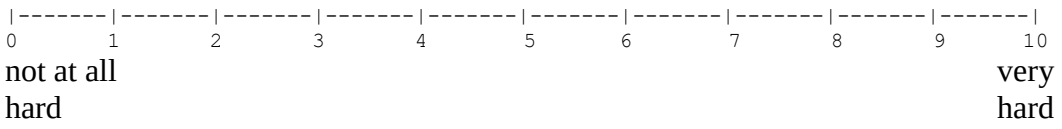
How realistic is this case?



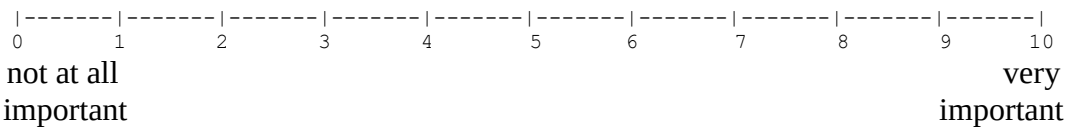
How difficult was the case?



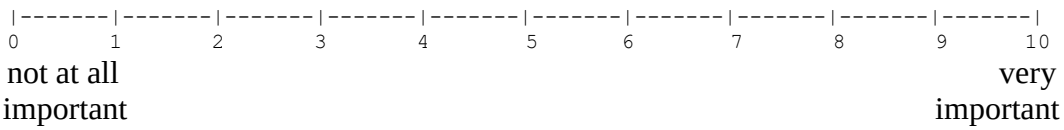
How hard did you work on this case?



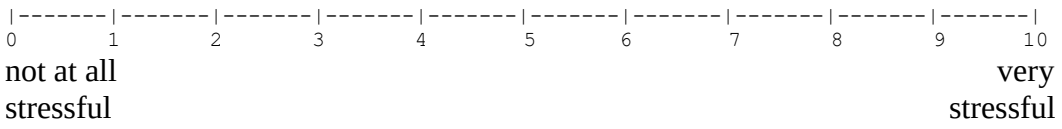
How important was it to you to review relevant evidence, regardless of whether it appears to corroborate or to contradict management's assertions?



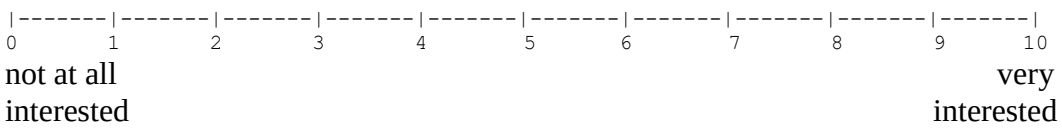
How important was it to you to think about the audit evidence objectively?



How much stress did you feel while working on this case?



Would you be interested in participating in similar audit studies in the future?



What is your current position in the firm? Please circle one. (Staff, Senior, Manager, Partner)

How much auditing experience do you have? _____years and _____months

On how many audits have you audited the goodwill impairment analysis? _____

Which certifications have you earned? (CPA, CMA, CFA, Others, None)

What is your gender? (optional) (Female, Male)

Approximately what percentage of your billable hours is spent on public (vs. private) clients? _____

For each of the statements below, indicate to what extent the statement is **characteristic of you** by circling the appropriate number on the scale beside the statement. If the statement is extremely uncharacteristic of you (not at all like you) circle "1"; if the statement is extremely characteristic of you (very much like you) circle "4."

There are no "right" answers in this exercise. Answering these questions will help us understand what you think about each statement related to your work.

		Extremely uncharacteristic	***Somewhat uncharacteristic***	***Somewhat characteristic***	***Extremely characteristic***
1	I am not that concerned about what other people think of my work.	1	2	3	4
2	I prefer having someone set clear goals for me in my work.	1	2	3	4
3	The more difficult the problem, the more I enjoy trying to solve it.	1	2	3	4
4	I am keenly aware of the income goals I have for myself.	1	2	3	4
5	I want my work to provide me with opportunities for increasing my knowledge and skills.	1	2	3	4
6	To me, success means doing better than other people.	1	2	3	4
7	I prefer to figure things out for myself.	1	2	3	4
8	No matter what the outcome of a project, I am satisfied if I feel I gained a new experience.	1	2	3	4
9	I enjoy relatively simple, straightforward tasks.	1	2	3	4
10	I am keenly aware of the promotion goals I have for myself.	1	2	3	4
11	Curiosity is the driving force behind much of what I do.	1	2	3	4
12	I am less concerned with what work I do than what I get for it.	1	2	3	4

		Extremely uncharacteristic	*Somewhat uncharacteristic*	*Somewhat characteristic*	*Extremely characteristic*
13	I enjoy tackling problems that are completely new to me.	1	2	3	4
14	I prefer work I know I can do well over work that stretches my abilities.	1	2	3	4
15	I am concerned about how other people are going to react to my ideas.	1	2	3	4
16	I seldom think about salary and promotions.	1	2	3	4
17	I am more comfortable when I can set my own goals.	1	2	3	4
18	I believe that there is no point in doing a good job if nobody else knows about it.	1	2	3	4
19	I am strongly motivated by the money I can earn.	1	2	3	4
20	It is important for me to be able to do what I most enjoy.	1	2	3	4
21	I prefer working on projects with clearly specified procedures.	1	2	3	4
22	As long as I can do what I enjoy, I'm not that concerned about exactly what I'm paid.	1	2	3	4
23	I enjoy doing work that is so absorbing that I forget about everything else.	1	2	3	4
24	I am strongly motivated by the recognition I can earn from other people.	1	2	3	4
25	I have to feel that I'm earning something for what I do.	1	2	3	4
26	I enjoy trying to solve complex problems.	1	2	3	4

		Extremely uncharacteristic	*Somewhat uncharacteristic*	*Somewhat characteristic*	*Extremely characteristic*
27	It is important for me to have an outlet for self-expression.	1	2	3	4
28	I want to find out how good I really can be at my work.	1	2	3	4
29	I want other people to find out how good I really can be at my work.	1	2	3	4
30	What matters most to me is enjoying what I do.	1	2	3	4

If you have any comments or feedback about this study, please write in the box below.

_____

_____

_____

Please press "Submit" button to submit your answers.

Feedback

You are done!

On an 11-point scale ranging from 0 (not at all likely) to 10 (extremely likely), you evaluated the likelihood of the management's 7.8% revenue growth assumption to be reasonable at XX.

Based on auditors who have completed this case in the past, their average rating is 8.05.

Thank you for completing the case. We really appreciate your time and expertise!

You can close the window now.