

The effect of continuous auditing and role duality on the incidence and likelihood of reporting management opportunism



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ABSTRACT

This study examines whether continuous auditing and functionally separating the internal audit function's (IAF) dual role as provider of both assurance and consulting affect (1) internal auditors' perceptions of the likelihood management opportunistically manipulates earnings and (2) the likelihood auditors report evidence of these reporting choices. Participants are 188 practicing internal auditors. Related to the first research question, I predict and find an ordinal interaction that suggests the perceived likelihood of earnings manipulation is least likely when the IAF both employs continuous auditing and functionally separates its roles. Related to the second research question, I find that separating the dual role increases the likelihood of reporting. In addition, how auditors perceive the likelihood of earnings manipulation positively affects the likelihood of reporting. Subsequent analyses examining both research questions in the context of accruals-based versus real earnings management suggest a more nuanced story. Related to the perceived likelihood of earnings manipulation, I find a similar ordinal interaction in the accruals setting but only find a main effect of continuous auditing in the real earnings management setting. Related to the likelihood of reporting, I find no significant effects in the accruals setting, but find that either continuous auditing or functional separation of the IAF's dual role increases the likelihood of reporting identified incidences of real earnings manipulation. This study has implications for auditors, managers, and accounting researchers.

1. Introduction

Prior auditing research suggests that internal audit assurance activities help to improve financial reporting quality by mitigating opportunistic earnings manipulation (e.g., Abbott et al., 2016; Ege 2015; Chi et al., 2011; Prawitt et al., 2009). DeFond and Zhang (2014) suggest that one way management can increase its demand for high external audit quality is to allocate sufficient company resources to employ a competent internal audit function (IAF). In this study, I focus on this demand-side audit quality factor because the IAF can add value to the organization by not only helping to increase management's competence but also helping to improve financial reporting quality (e.g., Christ et al., 2015). However, it is unclear whether this improvement occurs because an effective IAF helps to ensure the operating effectiveness of internal controls or because high IAF quality facilitates the assurance provided by external auditors on the financial statements (DeFond and Zhang, 2014; Donovan et al., 2014).

Critics argue that inability of internal auditors to be truly independent and objective reduces the IAF's ability to mitigate opportunism and thereby improve financial reporting quality (e.g., Carcello et al., 2017). Threats to internal auditors' objectivity such as providing

both assurance and consulting services in the same area of the company could limit the IAFs value add (Stewart and Subramaniam, 2010). Accordingly, this study examines whether continuous auditing and functional separation of the IAF's dual role as provider of both assurance and consulting to its employer jointly improve assurance quality and affect (1) internal auditors' perceptions of the likelihood that management will opportunistically manipulate earnings and (2) the likelihood that auditors report identified instances of such opportunism.

Audit standards suggest that audit evidence is higher quality and more persuasive when it is both sufficient and appropriate (PCAOB, 2010; IIA, 2017). While sufficiency is a measure of the *quantity* of evidence (e.g., sample size), appropriateness is a measure of the *quality* of evidence. Data analytic tools such as continuous auditing allow auditors to examine full populations of transactions in real or near-real time (e.g., Brown-Liburd et al., 2015) which proportionately increases sufficiency. Relative to traditional periodic sample-based auditing, properly designed data analytic tools also increase the appropriateness of evidence because 1) they improve the accuracy, timeliness, relevance, and breadth of that information (Davidson et al., 2013) and 2) auditors can independently extract the data from the accounting system. Technology enabling continuous auditing can be purchased

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externally; however, most firms develop it in-house and often with the assistance of the IAF serving in a consulting role (Gonzalez et al., 2012). While IAF involvement in the development of continuous auditing could improve its effectiveness, prior research suggest that future use of that technology by the IAF in some settings could present threats to auditors' objectivity (e.g., Plumlee, 1985; Church and Schneider, 1992). While both managers and standards setters suggest that this dual role is a value add to the company (IIA, 2017), it is important to understand whether focus on increasing the quality of audit evidence and auditor objectivity has complementary or substitutive effects on IAF quality.

Based on the IIA's professional practices framework (2017) and prior research, I develop two predictions related to the interaction between assurance frequency and IAF role duality. First, I expect that internal auditors will assess the likelihood that management engages in opportunistic earnings manipulation as lower when the IAF uses continuous relative to periodic auditing and when the IAF functionally separates its assurance and consulting activities. Second, I expect the likelihood internal auditors will report known incidences of earnings manipulation to be higher when the IAF uses continuous auditing and functionally separates its roles.

To test these predictions, I conduct a 2×2 between-subjects experiment that manipulated assurance frequency (continuous versus periodic) and role duality (separate versus combined assurance and consulting functions).¹ Participants are 188 practicing internal auditors identified through professional affiliation with chief audit executives, local chapters of the Institute of Internal Auditors (IIA), and the Association of College and University Auditors. Participants have on average 12.27 years of internal audit experience and represent staff, management, and chief audit executives. Participants read a case about an impending financial reporting decision at mid-year for the divisional vice president of a manufacturing company. The primary dependent measures are participants' assessment of 1) the likelihood that the division vice president would manipulate earnings to activate an annual bonus and 2) the likelihood the auditor would report identified incidences of earnings manipulation by the divisional vice president. I use participant demographics suggested by Anderson et al. (2012) that are associated with IAF quality and a measure of participants' level of organizational identification as control variables. I include the latter because prior research is mixed as to whether internal auditors who identify more with their organization are more or less objective and whether such identification results in acquiescence to management's preferences (e.g., Stefaniak et al., 2012; Stewart and Subramaniam, 2010).

Results of the experiment support predictions related to the likelihood of occurrence of earnings manipulation. I find an ordinal interaction that suggests internal auditors indeed perceive earnings manipulation as least likely when the IAF uses continuous auditing and functionally segregates its roles. Results of the experiment provide support for a main effect of role duality suggesting that when the IAF functionally segregates its assurance and consulting activities, internal auditors are more likely to report identified incidences of earnings manipulation. In addition, when auditors perceive the likelihood management engages in earnings manipulation as higher, they are more likely to report such behavior. In supplemental analyses, I find that the overall results hold but are more nuanced and context specific. While prior research suggests management considers and shows preferences for accounting (e.g., accruals-based earnings management) versus real activities (e.g., real earnings management) as a means to manipulate earnings (e.g., Graham et al., 2005), it is unclear how those choices could manifest in this experimental setting and how internal auditors

may respond to the consequences of either choice. Results in the accruals setting are similar to the overall results for the perceived likelihood management engages in earnings manipulation. However, in the real earnings management setting, only the main effect of continuous auditing holds. These results suggest that a differential effect of role duality in each of the earnings management settings drives the overall results. Related to the perceived likelihood of reporting, results signal differences in the likelihood of reporting by type of earnings manipulation such that internal auditors are more likely to report real relative to accruals-based earnings management. Unlike the overall results, continuous auditing increases (does not affect) the likelihood of reporting real (accruals-based) earnings management. Perceptions of the likelihood that management will manipulate earnings increases the likelihood of reporting both types of earnings management; however, functional separation of the IAF's dual role only increases the likelihood of reporting real earnings management. Lastly, when controlling for organizational identification, I find that higher identification in the accruals-based earnings management setting appears to drive the overall lower likelihood of reporting. Collectively, these results suggest that continuous auditing can improve the quality of IAF assurance and that in certain settings, a focus on objectivity may be more important.

These results are important for at least two reasons. First, this study examines the effect of continuous auditing on IAs' judgments and decisions and factors that could improve those decisions. While the prior literature demonstrates audit efficiencies gained by infusing technology such as continuous auditing into assurance activities (Chiu et al., 2014; Donovan et al., 2014), limited prior research examines the behavioral implications of continuous auditing (Brown-Liburd et al., 2015). Use of continuous auditing increases the monitoring frequency of management's choices, which reduces opportunism and increases ethicality (e.g., Merchant and Rockness, 1994) and auditor competence in a particular area or industry. Findings of this study suggest that use of continuous auditing has important deterrence effects that could improve both internal controls and internal audit quality. Second, in its dual role as provider of both assurance and consulting, involvement of the IAF in the development of continuous auditing technology subsequently used as both a control by management and an assurance tool by the IAF could present objectivity concerns (IIA, 2017; Plumlee, 1985; Church and Schneider, 1992). The effectiveness of segregating these roles, however, may depend on the underlying subject matter in the assurance task.

The next section further defines and reviews the prior feasibility- and behavioral-focused literature on continuous auditing. I then describe the experiment, discuss results, and offer concluding remarks and some implications.

2. Literature and hypotheses

2.1. Continuous auditing as a signal of audit quality

Early research on continuous auditing focused on its practicality and feasibility of implementation (see Brown et al., 2007). While these studies suggest that practitioners regard continuous auditing as both viable and beneficial to audit practice (e.g., Chan and Vasarhelyi, 2011; Vasarhelyi and Harper, 1991), implementation lags this desire (e.g., Gonzalez et al., 2012). Relevant to the current study, technologies such as continuous auditing can serve as a decision support system that helps auditors make decisions that are more objective (e.g., Messier, 1995). Further, continuous auditing could help auditors to identify patterns in data by aggregating across processes and times; and by examining different combinations of transaction- and or account-level relationships (Teeter et al., 2010). In sum, this literature suggests that continuous auditing relative to the more traditional periodic auditing could improve internal audit quality.

¹ I also manipulated whether participants responded to the dependent variables in an accruals-based versus a real earnings management setting, between subjects. As this was an exploratory manipulation, I present results collapsed across these conditions and examine the nuanced differences in Section 4.3.

2.1.1. The effect of assurance frequency on perceptions of manager behavior

Much of what we have come to understand about the behavioral implications of continuous auditing on the quality of the IAF follows an “outside-in” or stakeholder perspective (Brown-Liburd et al., 2015). While this perspective helps to assess the value that the IAF adds to organizations and its stakeholders, fewer studies focus on internal auditors’ (IA) self-assessments from an “inside-out” perspective (Lenz and Hahn, 2015). One focus of auditing literature taking the “outside-in” approach is use of continuous auditing by the IAF and its effect on the external auditors’ reliance decision (e.g., Davidson et al., 2013). These studies generally measure IAF quality as the external auditor’s willingness to rely on work performed by the IAF during the annual audit of internal controls and or the audit of the financial statements (e.g., Malaescu and Sutton, 2015). Davidson et al. (2013) examine whether use of continuous auditing moderates the relationship between sourcing of the IAF (in-house versus out-sourced) and the external auditor’s decision to rely on the work of the IAF. Results suggest that when the IAF uses periodic (continuous) auditing, external auditors rely more (do not differ in reliance) on an outsourced relative to in-house IAFs. This finding suggests not only that reliance on outsourced relative to in-house IAFs could reduce external audit fees (e.g., Bame-Aldred et al., 2013) but also that using an in-house IAF that also uses continuous auditing could provide similar external audit effects. Malaescu and Sutton (2015) examine the interaction between use of continuous auditing and absence (or presence) of prior year material weaknesses in internal control. Similar to Davidson et al. (2013), they find a main effect of continuous auditing suggesting that external auditors rely more on the IAF when they use continuous auditing relative to periodic auditing. Further, they find that presence of a prior year material weakness moderates this relationship such that audit hours are significantly lower when the IAF uses continuous auditing (relative to periodic auditing) and the company has no prior year material weakness. The current study contributes to knowledge by taking an “inside-out” approach to understanding how IAs perceive the effect of continuous auditing on both auditor and manager behavior.

Use of continuous auditing could result in less opportunism (PwC, 2006; AICPA, 2012) due to shorter audit cycle times (Jans et al., 2014) and management’s need to more frequently explain significant audit findings to senior management and/or the audit committee.² In a continuous auditing environment, financial information and associated controls are audited on a real or near real-time basis, which also helps to increase the timeliness, verifiability, and decision usefulness of the underlying data (Coderre et al., 2005). Archival auditing research finds that higher IAF quality is associated with less management opportunism in financial reporting (e.g., Abbott et al., 2016; Ege, 2015; Chi et al., 2011; Prawitt et al., 2009) and fewer material internal control weaknesses (e.g., Lin and Tepalagul, 2012). However, little prior research examines how continuous auditing affects IAs’ perceptions about the implications of steps they take to provide higher quality assurance (Brown-Liburd et al., 2015; Chiu et al., 2014). If IAs hold opinions similar to stakeholders about the effect of assurance frequency on quality, I expect that IAs will perceive that management will be less opportunistic when the IAF uses continuous auditing relative to periodic auditing.

Two contemporaneous experimental studies also examine the use of

² This study defines continuous auditing as use of technology to perform real-time assurance activities like identifying anomalies, analyzing transaction patterns, and dual purpose tests that also evaluate the operating effectiveness of internal controls (e.g., separation of duties). Emphasizing a difference between continuous monitoring (a management function) and continuous auditing is also important. Further, Anderson et al. (2012) suggest part of the IAF’s mission is “Control Leadership/Continuous Monitoring—Developing systems to provide information to management regarding control on a continuous basis” (182).

continuous auditing in a fraud setting. First, Gonzalez and Hoffman (2017) examines potential unintended consequences of continuous auditing. Also consistent with the availability heuristic, the study finds that while more timely notifications of control and other exceptions to both auditors and management help to improve compliance, these notifications also reveal weaknesses in the deterrence ability of the continuous auditing tool. Specifically, when the fraud deterrence capability of the continuous auditing tool is weak, management’s propensity to commit fraud in these areas increases. Second, Gonzalez and Hoffman (2018) extend Gonzalez and Hoffman (2017) by examining how the mode of identification and communication (either computerized or human) of control exceptions affects managers’ perceptions and fraud behavior. The results of the experiment show that feedback delivered face-to-face is more of a fraud deterrent relative to computer-mediated feedback. Importantly, however, the results show the least amount of fraudulent behavior when management receives face-to-face notifications about a discrepancy that was identified by a computerized monitoring system. In this study, I hold fraud deterrence capability and mode of communicating results constant. Further, the inside-out approach of this study focuses on IA perceptions rather than the interaction between auditors and management. This leads to the following hypothesis:

H1a. Internal Auditors will assess the likelihood that a manager engages in earnings manipulation as less likely when the IAF uses continuous auditing relative to periodic auditing.

2.1.2. The effect of assurance frequency on internal auditor behavior

If use of continuous auditing by the IAF improves the quality of audit evidence it collects, then I expect such use to increase the auditors’ willingness to report known incidences of management opportunism when the audit evidence is also more persuasive. Both internal and external audit standards and guidance suggest that higher quality audit evidence is more persuasive when it is sufficient and appropriate in relation to the audit assertions under evaluation (PCAOB, 2010; IIA, 2017). These standards define sufficiency as a measure of *quantity* of audit evidence and suggest that sufficiency increases proportionately with the sample size (e.g., AS 1105; IPPF Section 2310). Appropriateness is a measure of the *quality* of audit evidence based on the relevance and reliability of that audit evidence to the auditor’s conclusions. Because continuous auditing permits examination of the full population of transactions in real or near-real time, it necessarily increases the sufficiency of audit evidence. Relative to the more traditional periodic auditing, properly designed continuous auditing tools increase the appropriateness (or quality) of evidence collected by auditors because it improves the accuracy, timeliness, relevance, and breadth of information used in judgements and decision making (Davidson et al., 2013). Further, because the IA can extract the information from the accounting system on his or her own, this more direct evidence is also more reliable. This suggests the following hypothesis:

H1b. Internal Auditors will be more likely to report identified incidences of earnings manipulation when the IAF uses continuous auditing relative to periodic auditing.

2.2. Implications of role duality

In the current study, I further build on prior research by investigating the dual role of IAs as providers of both assurance and consulting services to their company. Consistent with prior research, I expect that functionally aligning the IAF such that IAs conduct either assurance or consulting activities results in greater objectivity and thus lowers the likelihood of opportunistic financial reporting by management because auditors will be more likely to report these incidences of opportunism (e.g., Plumlee, 1985). The IA setting presents a unique situation in that both managers and IA standards setters suggest that

this dual role adds value to the company in the areas of corporate governance, risk management, and internal control (IIA, 2017). However, serving in this dual role could present threats to auditor objectivity.³

A number of studies examine the implications of IAs acting in an assurance vs. a consulting role such as assisting in the design of internal control systems and subsequently auditing or even using those systems. While proper segregation of these roles is desirable to avoid situations where IAs review their own previous non-audit work, many IAFs are small and highly specialized, making such segregation difficult (Anderson et al., 2012). These studies often cite escalation of commitment (e.g., Staw, 1976) to develop predictions about IA behavior. The theory suggests that escalation occurs when individuals face increasingly negative outcomes related to a prior decision or action (e.g., their prior consulting work) but maintain behaviors that are irrational (e.g., fail to report indications that managers manipulated earnings) as discussed below. The individual's behavior is consistent, however, with the previous decision or action (Staw, 1976). Because the current study's design manipulates whether the IAF combines or segregates the IA's dual role, it is important to understand how such duality might affect objectivity (DeAngelo, 1981).

Plumlee (1985) is one of the first studies directly to examine how the IA's dual role can affect objectivity in judgement using a two-stage experiment. In the first stage, practicing IAs design an internal control system for either a revenue or a purchasing cycle for a hypothetical firm. In the second stage, the same participant either reviews the control system he previously created (reviewed her own work), reviewed a similar system (e.g., revenue) created by someone else (reviewed others' work), or reviewed a different system than the one she created in stage 1 (e.g., purchasing) created by someone else. The results suggest that IAs who reviewed control systems they previously designed perceived internal controls to be stronger, and perceived malfunctions in the system to be less severe compared to IAs with no previous role in the control system design.

Church and Schneider (1992) also examine the IA's dual role but extend Plumlee (1985) by examining whether this role could actually affect subsequent assurance work by the IA. While Plumlee (1985) shows dysfunctional effects of reviewing one's own work, Church and Schneider (1992) suggest that prior involvement in the design of an internal control system does not have a significant impact on subsequent work in that area. Brody and Kaplan (1996), extend Church and Schneider (1992) by examining whether IAs exhibit escalation behavior when they are involved in the initial and or the final stage of a budgeting task. The results support Plumlee (1985) rather than Church and Schneider (1992) and suggest that IAs' objectivity was impaired when they made both initial and final budget decisions. Despite new information suggesting revision of the initial budget decision was necessary, IAs providing both budget decisions upheld the initial decision.

Studies on IA independence and objectivity that are more recent also provide mixed evidence suggesting bias in IAs' judgments and decisions when their dual role is not segregated. For example, Selim et al. (2009) surveyed IAs in two countries and find positive perceptions of IAF involvement in consulting engagements because such involvement helps to improve staffing, morale and general standing of the IAF within the organization. In addition, consulting helps to improve performance on assurance engagements and the ability to add value to the organization (Selim et al., 2009). Results, however, are mixed regarding whether the dual role increases versus decreases objectivity (Selim et al., 2009).

³ Independence and objectivity are related constructs. However, independence is an *organizational* attribute that eludes IAs because they work for the same company they audit. Alternatively, objectivity is an *individual* attribute required of and achievable through factors such as the reporting line and organizational structure of the IAF (IIA, 2017).

Further, factors such as the size, industry, certifications, and management preferences affect the amount of operational versus financial assurance the IAF performs as well as the division of its assurance, consulting, and other activities among its professionals (Anderson et al., 2012). Some mitigating professional characteristics such as certification could improve the quality of IAs' judgements and decisions when these roles conflict (Lenz and Hahn, 2015; Stewart and Subramaniam, 2010; and Gramling et al., 2004).⁴ One of the advantages the IAF has over the external auditor is a more robust institutional knowledge of the company. Consequently, IAs may be better equipped to generate independent expectations about management's operational decisions and more likely to identify these instances. However, lack of objectivity results when the auditor fails to report an identified material error (DeAngelo, 1981).

Internal Auditors are required to identify, assess and manage potential threats to their objectivity (Mutchler, 2003). The most salient threat to the current study is a potential for self-review. For example, in its consulting role many IAFs help their employer develop continuous auditing tools designed specifically to help management monitor financial reporting-related activity and importantly compliance with internal controls. These tools could also be accessed independently and used by the internal auditor in her assurance role. This situation could increase the potential self-review threat because IAs may be less likely or less willing to first examine the operating effectiveness of the continuous auditing tool prior to relying on the output of the tool (e.g., as in Plumlee, 1985). The mixed results from prior studies bias against a standards-based expectation that IAs will perceive that management will assess them as more objective and IAs will be more likely to report known incidences of earnings manipulation when their roles are functionally segregated. This suggests the following hypotheses:

H2a. Internal Auditors will assess the likelihood that a manager engages in earnings manipulation as less likely when the IAF has separate versus combined assurance and consulting roles.

H2b. Internal Auditors will be less likely to report incidences of earnings manipulation when the IAF has separate versus combined assurance and consulting roles.

2.3. The joint effects of assurance frequency and role duality

H1 related to assurance frequency and H2 related to internal auditors' role duality could each occur as a main effect and have meaningful practical implications for internal audit quality. However, it is important to examine the interactive effect of these constructs for at least two reasons. First, both taken together describe practices currently used by IAFs (Coderre et al., 2005) and how most IAFs are structured (e.g., Anderson et al., 2012) to specifically address, where feasible, the potential threats to audit quality when the IAs' roles are or cannot be segregated.⁵ Second, exploring the interactive effects contributes to knowledge by providing empirical data that suggests whether and to what extent a higher quality assurance methodology mitigates or exacerbates a perceived lack of objectivity when the IA's dual roles are combined (See Fig. 1).

2.3.1. The effect on the likelihood of management opportunism

In H1a, I predict that IAs will perceive earnings manipulation to be least likely when the IAF uses continuous rather than periodic auditing. I expect this main effect even when the IAF combines its dual roles. However, H2a predicts that IAF quality may also be improved when the IAF clearly segregates its roles. Taken together, H1a and H2a predict an ordinal interaction that suggests higher assurance quality when the IAF

⁴ I discuss these factors further in Section 3.1.1.

⁵ Section 3.1 further describes the experimental settings and the relation of each to current internal audit practice.

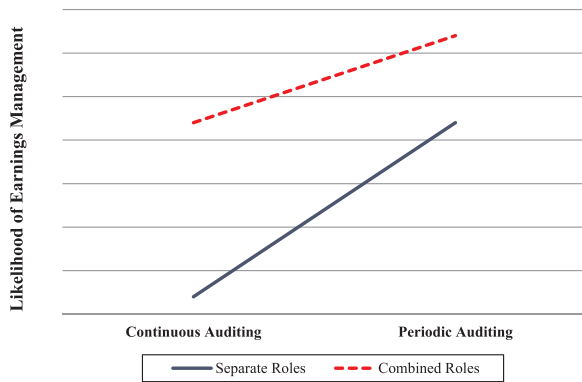


Fig. 1. Audit Frequency x Duality of Roles (*Predicted*) DV1 = Assessment of the likelihood the VP of the division would engage in earnings management on a Likert-type scale from 1 (very unlikely) to 10 (very likely). Cell means as defined in Table 2 Panel A.

uses continuous auditing and functionally separates its assurance and consulting roles. I formally state this expectation as follows:

H3a. Internal Auditors will assess the likelihood that a manager engages in earnings manipulation as least likely when the IAF uses continuous auditing and functionally separates its roles.

2.3.2. The effect on the likelihood of auditor reporting

H1b and H2b also predict an ordinal interaction. In particular, H1b posits that IAs are more likely to report incidences of earnings manipulation they identify when the IAF uses continuous auditing relative to periodic auditing. Further, H2b predicts that IAs will be more likely to report incidences of earnings manipulation they identify when the IAFs functionally segregates its dual roles. I expect each main effect to hold across both levels of the construct. But taken together, I expect that IAs will be more likely to report incidences of earnings manipulation that they identify when the IAF uses continuous auditing and functionally segregates its roles. I formally state this expectation as follows:

H3b. Internal Auditors will be more likely to report incidences of earnings manipulation when the IAF uses continuous auditing and functionally separates its roles.

3. Research method

In this study, I elicit practicing IAs' assessments of the likelihood that managers manipulate earnings to achieve a specific earnings target, which, if met, would result in those managers receiving an annual bonus. Participants also indicate whether they would report identified incidences of these opportunistic choices. Participants' decisions related to the likelihood of earnings manipulation and the likelihood they would report are collected independently and the sequencing is counterbalanced to mitigate order effects.⁶

Although managers may be better able to predict their responses to the hypothetical case, their predictive capability is limited by their own prior experience both with earnings manipulation and with the IAF. Managers also may not respond truthfully in estimating their behavior related to a practice that internal and external stakeholders may deem unethical. Further, rather than measuring management intent, this study focuses on measuring auditors' attitude changes regarding management (as suggested in Nolder and Kadous, 2014) and their willingness to report such incidences. IAs have experience with

⁶ I include *Order* (coded as 1 if the likelihood of reporting is presented first and 0 otherwise) as an explanatory variable and as a covariate in tests of hypotheses and find that it is insignificant.

management at multiple levels and in various divisions of the company. The *International Standards for the Professional Practice of Internal Auditing* require IAs to both identify and understand management's incentives (IIA, 2017). Internal auditors also do not have management's direct incentives to bias their responses and are not bound by restrictions of professional standards (Libby and Kinney, 2000; Nelson et al., 2002).

3.1. Experimental setting

Participants assumed the role of an IAF manager of a hypothetical global manufacturing company in charge of a review of one of the three manufacturing divisions. The timing of the audit corresponds with the audit frequency condition. The case presents background information about the company, the structure of the IAF, and the IAF's assurance methodology. I hold several characteristics constant across all conditions. The IAF consists of 40 professionals, including a Chief Audit Executive (CAE) who reports administratively to the CEO and has a direct functional reporting line to the audit committee, 9 managers, and 26 staff and senior auditors.^{7, 8}

The Company employs a Big 4 auditor who periodically relies on the IAF's work. Next, the case describes the financial position of the division after the first half of the fiscal year and annualized projected divisional profit. If the Vice President (VP) does not manipulate earnings, the division will miss its budgeted divisional income from operations and the VP will be ineligible for an annual bonus. The case emphasizes that annual bonuses are awarded based on divisional performance irrespective of company performance.⁹ Finally, the case illustrates one of two options the manager could use to help the division to exceed budgeted income by a narrow margin. If the manager adjusts the underlying accounting information in any way, it will appear in tests performed during the next internal audit as a variance from the budgeted and prior year amounts. While the variance appears in the tests' results, the IA has a choice of whether to report the exception in the final internal audit report or not. Including it in the report definitely reduces the division's profit and likely causes the VP to lose or have to repay the bonus depending on the timing of the audit and the size of the necessary adjustment. This phase concludes with the two randomly presented dependent measures. Participants respond to the earnings manipulation dependent variable using a ten-point scale anchored by 1 ("Very Unlikely to Adjust Accounting Numbers") and 10 ("Very Likely to Adjust Accounting Numbers"). This question specifically measures participants' perceptions of what the Divisional VP would do in each experimental setting. Responses to the likelihood of reporting dependent variable are binary and include 0 ("No, I would not report") and 1 ("Yes, I would report"). Lastly, participants answer several demographic and classifying questions.¹⁰

⁷ The IAF in all experimental conditions reports administratively to management with a functional but direct line to the audit committee. Prior research suggests this approach impairs independence comparatively less than when the IAF reports administratively and functionally to management (e.g., Hoos et al., 2018).

⁸ I base the size and other characteristics of the IAF on Anderson et al. (2012) who find that the mean size of the IAF for respondents in their survey was 13 employees (with a standard deviation of 18.46). Thus, the size of the IAF in the current study is about 1.5 standard deviations above the mean. Anderson et al. (2012) also note that IAF size is positively associated with 1) a mission focused on IT auditing and 2) the use of sophisticated audit technology such as continuous monitoring. Consequently, use of a larger IAF in this study attempts to account for the need to split auditors across assurance and consulting (the independence manipulation) and the need for adequate resources to deploy the advanced audit technology (relevant to the audit frequency manipulation).

⁹ I make this distinction to mitigate fixation on firm-wide earnings considerations (e.g., as in Jackson, 2008).

¹⁰ I design the instrument based on prior research (e.g., Hirst, 1994), reviews

3.1.1. Experimental manipulations¹¹

I manipulate audit frequency (*IAFreq*) at two levels between subjects, [continuous] vs. (periodic), and operationalize it as follows:

When the internal audit function performs assurance engagements, it does so on a **[continuous basis using automated software] (rotating basis)** such that divisions are audited **[continuously] (once every three years)**. Any significant variances and control exceptions are reported **[continuously] (whenever the audit is complete)** to all divisional and senior management. The last audit of this division was **[yesterday] (last year)**, and there were no significant findings.

I pattern the audit frequencies after prior research (Malaescu and Sutton, 2015; Davidson et al., 2013) and the traditional and continuous auditing practices currently used by IAFs (Coderre et al., 2005). The continuous auditing condition emphasizes the computerized and transactions-based audit with alerts when real-time transactions violate pre-established controls. This condition also highlights the fact that management will receive more timely reports from the IAF. In the periodic auditing condition, the hypothetical IAF reviews the same information. However, there is a more significant delay in reporting any exceptions identified. I also indicate that the previous audit of the division was the previous day (year) in the continuous (periodic) conditions, and there were no significant findings to control for other factors that could affect IAs' decisions.

I manipulate the role duality (*IADual*) at two levels between subjects, [separate] vs. (combined) assurance and consulting functions, and operationalize it as follows:

Your internal audit department has **[separate] (combined)** assurance functions (e.g., audits) and consulting functions (e.g., special projects like developing new software).

I describe the dual role as a separation between consulting and assurance functions for two reasons. First, Anderson et al. (2012) also suggests that in some organizations, the IAF may serve in both assurance and consulting capacities, while other organizations may prohibit such activities. Doing so in this study could help to increase mundane realism. Second, while all IAF management teams represent the IAF, separating the two potential roles of the IA is an attempt to examine settings where auditors may differ in objectivity (Lin and Tepalagul, 2012 review this literature).

3.1.2. Experimental control variables¹²

I include participants' self-reported organizational identification (*OrgID*) and whether they hold a certification (*Certified*) as covariates in the tests of hypothesis to control for factors that could provide alternative explanations of the results. I next discuss construction of both measures.

3.1.2.1. Organizational identification (*OrgID*). Prior research suggests IAs who identify more with their employer tend to be less lenient in their evaluations of their employer. For example, in a task reviewed internal controls, Stefaniak et al. (2012) find that compared to external auditors, IAs reporting higher levels of a *situational* measure of organizational identification (*OrgID*) were less lenient in their control evaluations. Because IAs operate in an environment where their focus

(footnote continued)

by six CAEs and two managers employed by publicly-traded companies. I conducted pilot tests with accounting faculty and Ph.D. students as well as 40 Masters of Accountancy students enrolled in an internal audit course at a medium-sized southeastern university.

¹¹ I also manipulate the type of adjustment to accounting numbers and discuss findings by type in Section 4.3.

¹² I find that results are qualitatively similar and inferences remain unchanged excluding these covariates.

can be less on their employment relationship with their firms compared to external auditors, IAs may be more likely to disagree with management preferences (Stefaniak et al., 2012). This likelihood could increase when IAs have greater identification with their employer. In such situations, social identity theory proposes that individuals will focus more on pro-social behavior that preserves the organization's long-term interests (e.g., Mael and Ashforth, 1992; Ashforth and Mael, 1989).

Burt and Libby (2017) manipulates rather than measures *OrgID*, focusing on the *salience* and *strength* of identity. Specifically, IA participants in the strong (weak) *OrgID* condition assume they are assessing internal control weaknesses identified in their own organization (a recently acquired organization). Unlike Stefaniak et al. (2012); Burt and Libby (2017) find no difference in the severity of IAs assessments when *OrgID* is strong versus weak. However, the study also manipulates the salience of professional norms (e.g., IIA standards). When these norms are salient, the results of are similar to Stefaniak et al. (2012) and suggest that IA with strong *OrgID* provide the most severe (e.g., less lenient) assessments of control weaknesses. Accordingly, I control for the effect of *OrgID* on IAs' perceptions of behavior in this study.

Mael and Ashforth (1992) developed a 6-question *OrgID* scale and Bamber and Iyer (2007) developed a modified version of the scale that consisted of five questions. Confirmatory factor analysis results in Bamber and Iyer (2007) suggested that only three of the five questions loaded highly on a single factor labeled *OrgID*. Stefaniak et al. (2012) adapted the Bamber and Iyer (2007) scale to tests differences in internal and external auditors' *OrgID* and similarly found that three of the five questions loaded highly on one factor.

In the current study, I measured participants' level of *OrgID* following findings in Stefaniak et al. (2012) and modify the statements to reflect sentiments of the hypothetical company in the experiment. The statements used in this study include: "If I worked for Houston Furniture Industries, I would... (1) "...take *criticism* of Houston Furniture Industries personally"; (2) "...be *interested* in what others think about Houston Furniture Industries."; and (3) "...take *compliments* about Houston Furniture Industries personally." Participants respond to each question on a six-point Likert-type scale with 1 being "Strongly Disagree" and 6 being "Strongly Agree." The aggregate responses constitute the *OrgID* score which has a potential range from 3 (very low *OrgID*) to 18 (very high *OrgID*). Results of a pilot using the original and modified versions of the scale questions from Stefaniak et al. (2012) noted no difference in *OrgID* scores.

To test construct validity of the modified *OrgID* measure, I performed two analyses. First, confirmatory factor analysis resulted in one factor with an Eigen value above 1 and each of the three questions loaded positively at 0.878, .652, and .884, respectively. Second, Cohen's alpha for the 3-question scale was 0.74 which exceeds the conventional benchmark of 0.70 (Hair et al., 2006). These analyses provide some assurance that the measurement approach was reliable. Following MacCallum et al. (2002) I used a continuous measure of *OrgID* in applicable analyses but found similar results splitting participants into high and low *OrgID* using the median scale score (11.00).

3.1.2.2. Professional certification. The IAF is in a unique position within the organization and its role duality could impair auditors' objectivity in some situations. Prior research suggests that IAs with professional certifications or who are involved in professional associations, for example, demonstrate more objective assurance-related judgments (e.g., Burt and Libby, 2017; Gramling and Myers, 1997; Harrell et al., 1989). As a result, I include whether participants self-reported holding at least one certification (*Certified*) as a control variable in all analyses.

3.1.3. Participants

Practicing IAs received an electronic link to the study and were randomly assigned to one of eight experimental conditions created by manipulating internal audit frequency at two levels (continuous versus

periodic), role duality at two levels (separate versus combined assurance and consulting roles) and the type of earnings manipulation at two levels (accruals-based versus real earnings management).¹³ Two hundred fifteen (215) IAs accessed the instrument online in Qualtrics. The study included screening criteria that required participants have current (within the past 5 years) IA assurance experience, especially with the technology enabling continuous auditing. I exclude 15 participants failing to meet this criterion. In addition, I removed one participant who failed the *IADual* manipulation check; four who failed the *IAFreq* manipulation check; and 7 who failed both manipulation checks. I exclude these participants because their completion times were also significantly lower than the mean of 15 min across participants who passed both manipulation checks. Results are less noisy but qualitatively similar including participants failing the manipulation checks.

3.1.4. Descriptive statistics

Table 1 shows the descriptive statistics of the two variables used as covariates (*Org_ID* and *Certification*) in all analyses as well as selected demographic characteristics of the participating internal auditors. Participants self-reported a mean *Org_ID* score of 11.75 with a standard deviation of 2.63. Additionally, 101 (54.98 percent) participants reported holding at least one certification (standard deviation 0.50). Regarding the demographic characteristics of the participants, the table shows that the average participant is between 31–40 years old, and has 12.28 years of internal audit assurance experience, and 14.99 years of overall business experience. The percentage of female participants 44.89 percent and 40.50 percent have at least a master's degree (un-tabulated). Further, participants include 56.10 percent staff and senior auditors; 27.46 percent managers, senior managers, directors, and non-chief audit executive vice presidents; and 16.44 percent chief audit executives. Lastly, participants represent a range of industries with significant participation from internal auditors representing the manufacturing (24.65 percent), transportation (22.15 percent), technology (19.38 percent), financial services (14.30 percent), and government (7.88 percent) sectors. Un-tabulated results show that internal auditors across the eight treatments groups do not differ statistically in terms either of the demographic characteristics.

4. Results

4.1. The perceived likelihood that management will manipulate earnings

To test hypotheses 1a, 2a, and 3a, I estimate the ANCOVA model that appears in Table 2 Panel B. In untabulated correlation analyses, I find a negative relationship between both *Org_ID* and *Certified* and the perceived likelihood that management will manipulate earnings (all *p-values* less than 0.05). Only *Org_ID* is a significant predictor in the ANCOVA ($F_{12, 172} = 4.17, p = .039$).

Recall that H1a examines whether IAs assess the likelihood that a manager manipulates earnings as less likely when the IAF uses continuous auditing relative to periodic auditing (*IAFreq*). Panel A of Table 2 (and Fig. 2) shows a mean likelihood of earnings management of 5.85 (7.35) in the continuous (periodic) auditing conditions. Panel B shows the mean likelihood of earnings manipulation is lower in the continuous auditing setting ($F_{1, 172} = 54.82, p < .001$), which supports H1a. H2a examines whether IAs assess the likelihood that a manager manipulates earnings as less likely when the IAF has functionally separate relative to combined assurance and consulting roles (*IADual*). Panel A of Table 2 shows a mean likelihood of earnings management of 6.25 (6.96) in the separate (combined) roles auditing conditions. Panel B shows the mean likelihood of earnings

¹³ The primary results in Sections 4.1 and 4.2 focus on a simplified 2x2 between-subjects design that does not segregate between earnings manipulation types. I discuss the exploratory findings related to type in Section 4.3.

Table 1
Descriptive Statistics.

Variable ^a	N	Mean ^b	Std. Dev. ^b
Organizational Identification (<i>Org_ID</i>)	188	11.75	2.63
Gender [<i>Female</i> = 1]	188	0.46	0.50
Age (<i>range in years</i>)	180	31 – 40	2.05
Years of Assurance Experience	188	12.28	9.24
Years of Total Business Experience	188	14.99	10.78
External Audit Experience [<i>Yes</i> = 1]	186	0.24	0.43
Current Position	186		
Staff Auditors	64	0.35	–
Senior Auditors	40	0.22	–
Managers & Senior Managers	31	0.17	–
Directors & Vice Presidents (non-CAE)	20	0.11	–
Chief Audit Executives (CAE)	31	0.16	–
Current Certification(s)^c	186		
Certified Internal Auditor (CIA)	11	0.06	–
Certified Public Accountant (CPA)	19	0.10	–
Certified Information Systems Auditor (CISA)	8	0.04	–
Other Business Certification (e.g., PMP)	16	0.09	–
At least one certification (<i>Certification</i>)	101	0.55	0.50
Multiple Certifications	47	0.25	0.43
None	87	0.46	–
Industry^d	186		
Manufacturing	47	0.25	–
Transportation	41	0.22	–
Technology	35	0.19	–
Financial Services	26	0.14	–
Government	15	0.08	–
Other (e.g., Construction, Retail)	22	0.12	–

^a There are no statistical differences between the accruals-based earnings management setting and the real earnings management setting, where $p > .90$ for all variable comparisons.

^b Means less than one (1) represent percentages within a category. Standard deviations not provided for within-group percentages.

^c More participants hold each individual certification but were not double-counted as they appear in the multiple certification category. The most frequent combination of certifications is CPA/CIA. Overall total is 100%.

^d Industries with less than 10 participants were combined in the “Other” category.

manipulation is lower in the separate roles setting ($F_{1, 172} = 25.90, p < .001$), which supports H2a. Importantly, H3a predicts an ordinal interaction suggesting that when the IA uses continuous (versus periodic) auditing and functionally separates (combines) its assurance and consulting roles the perceived likelihood of earnings manipulation will be lower (higher). Panel B of Table 2 shows the interaction is marginally significant ($F_{1, 172} = 3.76, p = .054$).

In untabulated analyses, I conduct three specific planned contrasts to further test H3a. First, I examine whether the perceived likelihood of earnings manipulation is significantly lower in the *Continuous Auditing-Separate Assurance and Consulting Roles* condition relative to the other three conditions (-3, 1, 1, 1). I find that this contrast is indeed significant ($t = -6.22, p < .001$). Second, I test the veracity of the first contrast by examining whether the mean likelihood of earnings manipulation is lower in the *Continuous Auditing-Combined Assurance and Consulting Roles* condition relative to the other three conditions (1, -3, 1, 1) is similarly lower. I find that this contrast is not significant ($t = -0.89, p = .377$). Lastly, I examine whether the perceived likelihood of earnings manipulation is significantly lower in the *Continuous Auditing-Separate Assurance and Consulting Roles* condition relative to the *Continuous Auditing-Combined Assurance and Consulting Roles* condition (1, -1, 0, 0). I find that this contrast is also significant ($t = -4.54, p < .001$). Collectively, these analyses provide support for H3a.

4.2. The likelihood of auditors reporting earnings manipulation

H1b predicts a main effect of *IAFreq*, H2b predicts a main effect of

Table 2
Likelihood of Earnings Management (Overall and by Type).

Panel A: Cell Means (Std. Err) [Sample Size] based on DV1				
	Continuous Auditing <i>Overall</i>		Periodic Auditing <i>Overall</i>	
Separate Roles	5.32 (0.24) [48]		7.17 (0.24) [46]	
Combined Roles	6.38 (0.24) [47]		7.53 (0.24) [47]	

Individual cell means for DV1, which assesses the auditor's perception of the likelihood that the VP of the division would engage in earnings management on a Likert-type scale from 1 (very unlikely) to 10 (very likely).

Panel B: ANOVA Results (Audit Frequency x Duality of Roles – Overall) on DV1				
	Df	SS	F	p-value*
IAFreq (H1a)	1	120.82	54.92	< .001
IADual (H2a)	1	25.90	11.77	< .001
IAFreq X IADual (H3a)	1	8.28	3.76	.054
Org_ID	12	50.09	4.17	.039
Certified	1	0.00	0.00	.993
Between-subjects error	172	316.81		

IAFreq = Manipulated between-subjects as continuous (daily) vs. periodic (every three years) internal audits.
 IADual = Manipulated between-subjects as separate vs. combined assurance and consulting roles.
 Org_ID = A covariate that represents each participant's total score across three questions that measure how much the participant identifies with the hypothetical company. Participants assess their level of agreement with each question on a six-point Likert-type scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). The total possible score is 18, where higher scores suggest higher identification. Analyses are similar using a dichotomous measure created by splitting scores at the median Org_ID score (12.00). Actual scores ranged from 5 to 17.
 Certified = A covariate and indicator variable equal to 1 if the participant has at least one certification (e.g., CIA).
 *one-tailed p-values

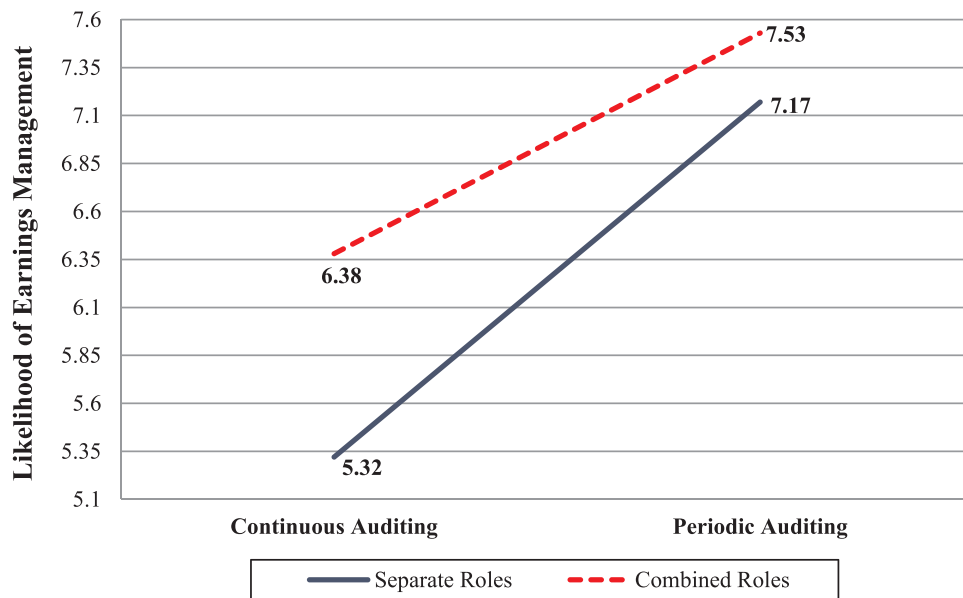


Fig. 2. Audit Frequency x Duality of Roles (*Actual*).

IADual, and H3b predicts an ordinal IAFreq x IADual interaction. To test these hypotheses, I estimate a logistic regression where the dependent variable is each participant's indication of whether he or she would report known incidences of earnings manipulation (Table 3 Panel B). As in the prior analysis, I include Org_ID and Certified as control variables. I also control for participants' perceptions of the likelihood that management would manipulate earnings (DV1). I find a positive (negative) relationship each between Certified and DV1 (Org_ID) and the perceived likelihood that the IA would report known incidences of earnings manipulation (DV2) (all p-values less than 0.05) in untabulated correlation analyses. I find that Org_ID (z = -1.69, p = 0.059), Certified (z = 2.89,

p < .01), and DV1 (z = 3.30, p < 0.001) are significant predictors in the logistic regression. These results suggest that when IAs identify more with their organization, they are less likely to report known incidences of earnings manipulation. IAs with at least one certification are more likely to report known incidences of earnings manipulation. Further, I find that a higher perception that management will manipulate earnings manipulation is associated with a higher likelihood of reporting.

Related to H1b, Panel B of Table 3 shows that when the IAF uses continuous auditing, IAs are no more or less likely to report known incidences of earnings manipulation (z = 1.42, p > 0.100). This result

Table 3
Likelihood of Reporting Earnings Management (Overall).

Panel A: Cell Means (Std. Err) [Sample Size] based on DV2		
	Continuous Auditing Overall	Periodic Auditing Overall
Separate Roles	0.73 (0.068) [48]	0.67 (0.070) [46]
Combined Roles	0.66 (0.070) [47]	0.48 (0.069) [47]

Panel B: Logistic Regression Results (Audit Frequency x Duality of Roles – Overall)	
VARIABLES	Coefficients
IAFreq (H1b)	0.74 (1.42)
IADual (H2b)	0.94* (1.90)
IAFreq x IADual (H3b)	-0.17 (-0.24)
DV1	0.40*** (3.30)
Org_ID	-0.18* (-1.68)
Certified	1.04*** (2.89)
Observations	186
Pseudo R-squared	0.21

DV1 = Auditor's indication of the likelihood the VP would engage in earnings manipulation on a Likert-type scale from 1 (very unlikely) to 10 (very likely).
 DV2 = Auditor's indication of whether he or she would report identified incidences of earnings manipulation and measured as 0 (No, I would not report) or 1 (Yes, I would report).
 Org_ID = A covariate that represents each participant's total score across three questions that measure how much the participant identifies with the hypothetical company;
 Certified = A covariate and indicator variable equal to 1 if the participant has at least one certification (e.g., CIA); all other variables are as previously defined.
 * z-statistics in parentheses and significance noted at the *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$ levels.
 † Constant suppressed for ease of exposition but is significant in all models.

does not support H1b. I do find support for H2b. Specifically, when the IAF functionally separates its dual roles, IAs are more likely to report known incidences of earnings manipulation ($z = 1.90$, $p = 0.053$). Lastly, Panel B shows an insignificant interaction ($z = -0.24$, $p > 0.100$), which does not support H3b. Collectively, these results suggest that functional separation of the IAF's roles (*IADual*) is the primary driver of reporting intentions.

4.3. Additional analyses

To contextualize the findings discussed in Section 4.2, I examine whether IAs perceptions vary by type of earnings manipulation. Much of the prior auditing research on the relationship between characteristics of the IAF and financial reporting quality follows the external audit focus on accruals-based earnings manipulation (e.g., Abbott et al., 2016; Ege, 2015; Prawitt et al., 2009). However, Anderson et al. (2012) find that of the chief audit executives they surveyed, 93% reported that providing assurance on operational activities is the primary mission of the IAF. Germane to the current study, Davidson et al. (2013) examines how the IAF's use of continuous auditing affects the external auditor's reliance decision. In subsequent analyses, the study finds that continuous auditing may be an effective corporate governance tool and act as a check on management opportunism. I follow prior research examining accruals-based earnings management and examine implications for real earnings management. The latter more closely measures managerial decisions that are more operational and reflects real activities with direct cash flow implications (e.g., Commerford et al., 2016; Roychowdhury, 2006).

As indicated below, the experimental design varied earnings manipulation type (*Type*) at two levels between subjects, accruals-based (AEM) vs. real earnings manipulation (REM):

To increase the division's budgeted annualized income, the manager could [**reduce bad debt expense**] (**cut advertising expenditures**) for the second half of FY15.

In the AEM setting, the case indicates that reducing the allowance percentage from 50 percent to 25 percent for uncollectible accounts for accounts over 90 days due will significantly decrease the bad debt expense (focusing on an accounting estimate). However, collection patterns for prior years are inconclusive as support for a reduction in the allowance percentage. In the REM setting, the case indicates that cutting advertising costs expenditures will result in a reduction in costs that have direct cash flow implications. With these lower costs, and sales trending as indicated by the senior cost accountant, divisional income from operations could be closer to the target and the division could save cash (Roychowdhury, 2006). Either option presents the manager with a viable option to activate the annual bonus (Cohen et al., 2008; Cohen and Zarowin, 2010).¹⁴ Section 4.2 includes aggregated results, but this section examines any differences by type.

I make no *ex ante* predictions but re-examine H1a, H2a, and H3a by *Type* to determine if the overall pattern of results holds. I provide cell

¹⁴ The proxies for earnings manipulation used in this study focus on whether the mechanism has cash flow implications (reducing advertising expenditures) or does not have cash flow implications (reducing bad debt expense). Prior research suggests REM is more difficult for outsiders like external auditors to identify (Schipper, 1989) because it reflects operational decisions and its cash flow implications cannot be reversed. As firm insiders, this study explored whether internal auditors' decisions differ from expectations documented in the external audit literature. Lastly, timing these decisions at mid-year could be a limitation as the AEM measure could be associated with some real changes in operations in later quarters. I expect that random assignment to conditions only biases against finding results.

Table 4
Likelihood of Earnings Management (by Type).

Panel A: Cell Means (Std. Err) [Sample Size] based on DV1

	Continuous Auditing			Periodic Auditing		
	AEM	REM	Overall	AEM	REM	Overall
Separate Roles	5.12 (0.33) [25]	5.52 (0.35) [23]	5.32 (0.24) [48]	7.13 (0.34) [24]	7.23 (0.35) [22]	7.17 (0.24) [46]
Combined Roles	6.60 (0.33) [25]	6.14 (0.35) [23]	6.38 (0.24) [48]	7.52 (0.33) [24]	7.55 (0.35) [22]	7.53 (0.24) [46]

Cell means presented overall and by Type (Accruals-Based Earnings Management vs. Real Earnings Management.)
DV1 = Assessment of the likelihood the VP of the division would engage in either AEM or REM (randomly assigned) on a Likert-type scale from 1 (very unlikely) to 10 (very likely).

Panel B: ANOVA Results (Audit Frequency x Duality of Roles – AEM) on DV1

	Df	SS	F	p-value
IAFreq (H1a)	1	56.36	56.36	< .001
IADual (H2a)	1	25.14	25.14	.001
IAFreq X IADual (H3a)	1	13.79	13.79	.016
Org_ID	11	19.26	1.75	.670
Certified	1	0.54	0.54	.630
Between-subjects error	84	159.64		

IAFreq = Manipulated between-subjects as continuous (daily) vs. periodic (every three years) internal audits.

IADual = Manipulated between-subjects as separate vs. combined assurance and consulting roles.

Org_ID = A covariate that represents each participant's total score across three questions that measure how much the participant identifies with the hypothetical company.

Participants assess their level of agreement with each question on a six-point Likert-type scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). The total possible score is 18, where higher scores suggest higher identification. Analyses are similar using a dichotomous measure created by splitting scores at the median Org_ID score (12.00). Actual scores ranged from 5 to 17.

Certified = A covariate and indicator variable equal to 1 if the participant has at least one certification (e.g., CIA).

*one-tailed p-values

Panel C: ANOVA Results (Audit Frequency x Duality of Roles – REM) on DV1

	Df	SS	F	p-value
IAFreq (H1a)	1	56.61	24.18	< .001
IADual (H2a)	1	1.07	0.46	.500
IAFreq X IADual (H3a)	1	0.04	0.02	.893
Org_ID	11	39.72	1.54	.149
Certified	1	0.16	0.07	.793
Between-subjects error	74	138.12		

means in Panel A of Table 4 and as in the primary analyses, I include Org_ID and Certified as covariates. Panel B of Table 4 reports significant main effects of IAFreq ($F_{1, 84} = 56.36, p < .001$) and IADual ($F_{1, 84} = 25.14, p = .001$) and, importantly, a significant interaction ($F_{1, 84} = 13.79, p = .016$). Consistent with the overall results, IAs perceived AEM as more likely when the IAF functionally separated its dual role and used continuous auditing relative to when the IAF combined the roles or when the IAF used periodic auditing.

For REM, I find a main effect of IAFreq ($F_{1, 74} = 24.18, p < .001$) but neither a main effect of IADual ($F_{1, 74} = 0.46, p = 0.500$) nor a significant IAFreq x IADual interaction ($F_{1, 74} = 0.02, p = .893$). These results suggest that even when the IAF is relatively less objective due to combined assurance and consulting roles, use of continuous auditing could lead to less REM.

I also make no *ex ante* predictions for but re-examine H1b, H2b, and H3b. Table 5 Panel A reports the mean likelihood of reporting across experimental conditions while Panel B reports the results of the logistic regression analyses. In the latter, I include participants' response to the first dependent measure (DV1), Org_ID, and Certified as controls in the logistic regression. For both AEM ($z = 1.67, p < 0.10$) and REM ($z = 2.70, p < 0.01$), I find that participants' response to DV1 is a significant predictor of their reporting likelihood. However, I find that higher Org_ID ($z = -2.43, p < 0.05$) decreases and holding at least one certification (Certified) ($z = 2.51, p < 0.05$) increases the likelihood of reporting AEM. While directionally consistent with the AEM results,

neither is a significant predictor in the REM setting.

Results of hypothesis testing related to AEM in Panel B of Table 5 show an insignificant main effect for IAFreq, IADual and the IAFreq x IADual interaction (all p 's > 0.10) even after controlling for Certification perceived Org_ID. These results provide no additional support for H1b, H2b, or H3b, respectively. What appears to drive the overall results reported in Section 4.2 is the REM setting. Specifically, Panel B of Table 5 shows a positive and significant main effect for IAFreq (H1b) ($z = 2.06, p < 0.05$) and IADual (H2b) ($z = 1.96, p < 0.05$). However, consistent with the AEM results, I find an insignificant IAFreq x IADual interaction ($z = 0.36, p > 0.10$). These results suggest that either deploying continuous auditing or segregating the IAF's dual role could result in a higher likelihood that IAs report REM and provide additional support for H1b and H2b.

5. Conclusion

Findings of this study contribute to prior research and examine whether the frequency of internal audits and IAs' role duality affect perceptions of the likelihood that management will opportunistically manipulate earnings and the likelihood that IAs report identified incidences of this behavior. Regarding the occurrence of earnings manipulation, results of this study suggest that internal auditors perceive earnings manipulation as least likely when the IAF uses continuous auditing and functionally segregates its roles. In supplemental analyses,

Table 5
Likelihood of Reporting Earnings Management (by Type).

Panel A: Cell Means (Std. Err) [Sample Size] based on DV2						
	Continuous Auditing			Periodic Auditing		
	AEM	REM	Overall	AEM	REM	Overall
Separate Roles	0.52 (0.088) [25]	0.96 (0.092) [23]	0.73 (0.068) [48]	0.50 (0.090) [24]	0.86 (0.094) [22]	0.67 (0.070) [46]
Combined Roles	0.44 (0.088) [25]	0.91 (0.094) [23]	0.66 (0.070) [48]	0.40 (0.088) [24]	0.59 (0.094) [22]	.048 (0.069) [46]
Cell means presented overall and by Type (Accruals-Based Earnings Management vs. Real Earnings Management.)						
DV2 = Auditor's indication of whether he or she would report identified incidences of earnings manipulation and measured as 0 (No, I would not report) or 1 (Yes, I would report).						
Panel B: Logistic Regression Results (Audit Frequency x Duality of Roles – By Type)						
VARIABLES	AEM Only		REM Only			
IAFreq (H1b)	0.68 (1.01)		1.74** (2.06)			
IADual (H2b)	0.94 (1.43)		1.22** (1.97)			
IAFreq x IADual (H3b)	−0.88 (−0.90)		0.42 (0.36)			
DV1	0.27* (1.67)		0.53*** (2.70)			
Org_ID	−0.24** (−2.43)		−0.06 (−0.53)			
Certified	1.20** (2.51)		0.89 (1.48)			
Observations	97		89			
Pseudo R-squared	0.22		0.20			
DV1 = Auditor's indication of the likelihood the VP would engage in earnings manipulation on a Likert-type scale from 1 (very unlikely) to 10 (very likely).						
DV2 = Auditor's indication of whether he or she would report identified incidences of earnings manipulation and measured as 0 (No, I would not report) or 1 (Yes, I would report).						
Org_ID = A covariate that represents each participant's total score across three questions that measure how much the participant identifies with the hypothetical company;						
Certified = A covariate and indicator variable equal to 1 if the participant has at least one certification (e.g., CIA); all other variables are as previously defined.						
*z-statistics in parentheses and significance noted at the *** p < 0.01, ** p < 0.05, and * p < 0.1 levels.						
*Constant suppressed for ease of exposition but is significant in all models.						
**Sample sizes vary from those reported in Panel A due to missing responses on Certified variable						

I find that continuous auditing potentially mitigates the effect of a less objective IAF in consideration of REM but the overall pattern of results hold in an AEM setting. Related to reporting of identified incidences of earnings manipulation, I find IAs are more likely to report when the IAF functionally segregates its dual role and when the auditor has a higher perception of the likelihood of occurrence. In supplemental analyses, I find that IAs who perceive the likelihood of occurrence as higher are also more likely to report earnings manipulation. This result is consistent with the overall results. However, I find that either continuous auditing or functionally segregating the IAF's dual role increases (does not affect) the likelihood of reporting incidences of REM (AEM). Lastly, I find that what drives the overall likelihood of reporting among IAs who identify more with the company is a lower likelihood of reporting AEM.

This study complements archival research that examines the effect of IAF assurance on the perceived likelihood of management's earnings manipulation behavior. While I focus on IAF assurance, this study also has implications for external auditors and standards setters. The nature of and restrictions on the external auditor's relationship with the company (e.g., per the Sarbanes-Oxley Act of 2002) restrict access to data that could enable continuous auditing, but innovations within the profession do allow various data analytics, such as 100 percent testing of transactions and other analyses, that provide benefits similar to continuous auditing. The study examines contexts in which reliance on or leveraging the work of the IAF could result in subsequent external audit efficiencies (e.g., Malaescu and Sutton, 2015; Davidson et al., 2013) and assists in the necessary evolution of auditing standards (AICPA, 2012) to address the aforementioned limitations on the

external auditor. Further, as a dual provider of assurance and consulting, IA involvement the development of technology subsequently used by both auditors and managers could present objectivity concerns when the IAF uses the tools in assurance activities (e.g., Plumlee, 1985).

Though exploratory, findings in this study related to earnings manipulation type complement research that examines how each affects manager (e.g., Chi et al., 2011; Cohen and Zarowin, 2010) and auditor (e.g., Commerford et al., 2016) behavior in financial reporting. As company insiders, internal auditors have a relative information advantage over external auditors affording them greater familiarity with the company's operations and control environment. The results suggest that company familiarity could help internal auditors mitigate real earnings management because they are able to generate independent assumptions about the likelihood and appropriateness of these mostly operational decisions and may be more confident in challenging such decisions. Future research should examine whether this behavior occurs as a result of internal auditors' deference to external auditors on accruals-based earnings management because external auditors do not have to accept that unlike accruals, real earnings management is irreversible, especially by the time of the external audit (Commerford et al., 2016). Collectively, the results suggest the underlying subject matter and design of the IAF could impact the internal audit quality.

This study has limitations that are typical of laboratory experiments. The design choices, for example, create a very specific context that does not include every important feature of internal audit practice. These features could affect the way in which IAs assess the likelihood of management opportunism. Nonetheless, the setting captures the essential characteristics of both a hypothetical and traditional IA setting

that permits examination of the effect of IAF assurance on the likelihood of earnings manipulation. In addition, this design allows me specifically to examine and add to prior research that examines the effect of the IAF's dual role on assurance quality. I acknowledge that this is a complex manipulation that likely impacts IAs' objectivity. Additional institutional features, however, may be unlikely to change the results of this study.

At least two avenues for future research emerge from these findings. First, my study examines a one-period setting and is unable to examine whether, actual or perceived manager compliance with controls increases over time when the IAF uses continuous auditing (Coderre et al., 2005). In a multi-period setting, future research could examine whether the functional and dysfunctional effects of continuous auditing on manager behavior (e.g. as in Gonzalez and Hoffman, 2017, 2018) have a similar effect on auditor behavior in a fraud or other setting. In addition, while inherent skepticism should not be affected by the frequency of assurance, future research could examine whether and to what extent auditor skepticism varies over time in a continuous auditing setting. Second, to explore the effect of assurance on earnings manipulation, future research could examine how the quality of the IAF, in conjunction with external audit quality, affects how managers use, shift between, or substitute the two types of earnings manipulation (e.g., Zang, 2011). The extent to which high quality IAFs preclude managers from either behavior could be a significant consideration in assessing the overall strength and effectiveness of a company's corporate governance.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.mar.2018.10.001>.

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