Audit Committees’ Propensity to Challenge Significant Accounting Estimates:

The Joint Effects of Audit Report Content and Investor Type

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This paper is based on my dissertation at the University of Illinois at Urbana-Champaign. I thank members of my dissertation committee: Brooke Elliott, Mark Peecher (Chair), Bradley Pomeroy (Director of Research), Ken Trotman, and Madhu Viswanathan for their guidance, support, and helpful comments. This paper also benefited from the workshops at Cornell University, Georgia State University, Lehigh University, University of Illinois at Urbana-Champaign, University of Iowa, and University of Massachusetts at Amherst. I also extend special thanks to Bob Libby and Mark Nelson for their helpful comments and Joe Carcello for his help in the recruitment process.
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Abstract

Drawing on two perspectives of accountability theory, this study experimentally examines the joint effect of audit report content and investor type (i.e., primary shareholders of the firm) on audit committee members’ propensity to challenge management’s significant accounting estimates. Findings indicate that audit committee members engage in the highest level of questioning when sophisticated investors are the primary shareholders of the firm and a standard, unqualified audit report is issued with no additional information about management’s significant accounting estimate. By contrast, their questioning level is significantly lower when unsophisticated investors are the primary shareholders of the firm and/or when the audit report includes an explanatory paragraph about management’s significant accounting estimate. Further analysis suggests this pattern of results is more pronounced for audit committee members who are designated as financial experts. These findings have implications in terms of both research and practice inasmuch as facets of a recent PCAOB Exposure Draft advocates for widespread and required usage of explanatory paragraphs in audit reports that, herein, decrease audit committee’s propensity to challenge management and/or auditors.

Keywords: Audit committee, audit committee effectiveness, audit report, investor type
I. Introduction

This paper reports an experimental examination of the joint influence of audit report content and investor type (i.e., the primary shareholders of the firm) on the audit committees’ propensity to challenge management’s significant accounting estimates. Specifically, it investigates whether and the extent to which explanatory paragraphs about significant accounting estimates in the audit report and the sophistication level of the firm’s primary shareholders interactively influence the degree to which audit committee members develop questions to ask management and/or the auditor about such estimates.

Being fiduciaries of shareholders, audit committee members have the duty to effectively monitor the financial reporting and auditing processes (BRC, 1999). The importance of this duty received increased attention following passage of the Sarbanes-Oxley Act (SOX, 2002) and, more recently, following the financial crisis (Deloitte, 2010; Ernst & Young 2008). One significant way that audit committee members can fulfill their oversight duty is to challenge the judgments and assumptions underlying management’s critical financial statement estimates. In fact, attendees of board meetings describe asking probing questions as the most important criterion for audit committee effectiveness (Beasley et al., 2009; Gendron and Bedard, 2006; Gendron et al., 2004). A recent report by the National Association of Corporate Directors (NACD) also identifies questioning assumptions that underlie critical accounting estimates as one of ten principles audit committee members should follow to provide effective oversight on the financial reporting process (NACD, 2010). Despite historic and recently heightened concern

1 SOX made audit committees directly responsible for appointing, compensating, retaining, and overseeing external auditors. Moreover, under SOX, the external auditors must report directly to the audit committee rather than client management. The reports issued by Deloitte and Ernst & Young both emphasize that the recent financial crisis calls for additional audit committee scrutiny in terms of risk oversight, review of earnings press releases, and oversight of internal controls and financial reporting.
about the extent to which audit committee members challenge management’s significant accounting estimates, few studies have investigated determinants of such challenges or conditions that amplify or attenuate the effects of specific determinants. This study provides theory and empirical evidence to address these issues.

Theory developed herein first addresses the likely dampening effect of more disclosure about management’s estimates in the audit report on audit committee members’ propensity to challenge the estimates. It then subsequently develops alternative predictions about how investor type may moderate the extent of this decrease. Along with management and external auditors, audit committee members are an integral part of the financial reporting supply chain who face complex accountabilities (Gibbins and Mason, 1988). Therefore, situational determinants of audit committee members’ perceived accountabilities will affect how a requirement to disclose new information about management’s estimates in the audit report influence their propensity to challenge the estimates.

While audit committee members generally are accountable to protect shareholders’ interests, they are likely to be held accountable to diverse other parties in times of negative events (e.g., financial statement restatements). Consistent with this idea, audit committee members of firms issuing income-decreasing restatements, compared to firms that issue no or income-increasing restatements, face greater turnover and higher likelihood of losing positions in other companies’ audit committees (Srinivasan, 2005). Ex ante, however, it is not clear whether audit committees’ perceived risk of being held accountable for potential adverse financial statement outcomes or the internal sense of responsibility to protect shareholders is the more influential mechanism underlying their behavior. Hence, I use two different perspectives of accountability -- self-serving vs. altruistic (Donaldson and Davis, 1991; Sinclair et al, 2010) -- to predict alternative
ways that audit report content and investor type jointly will influence audit committee members’ propensity to challenge management’s estimates.

Both the self-serving and altruistic perspectives of accountability theory predict that greater disclosure in audit reports about management’s estimates will decrease audit committee members’ propensity to challenge auditors and/or management. These perspectives, however, differ in their predictions for the effect of investor type as well as the joint effects of investor type and audit report content on audit committee members’ propensity to challenge management’s significant estimates. That is, competing hypotheses are warranted based on the two different perspectives. First, the self-serving perspective warrants predicting audit committee members will feel more accountable, and hence challenge management and/or auditors to a greater extent, when the firm’s primary shareholders are sophisticated, as opposed to unsophisticated, investors. It further predicts that greater disclosure about management’s estimates in the audit report will more substantially decrease their propensity to question management and/or auditors when the investor base is sophisticated instead of unsophisticated.

Conversely, the altruistic perspective predicts that audit committee members will feel more responsible to challenge management and/or auditors when the investor base is more vulnerable (i.e., unsophisticated). Given such greater salience in the need to protect unsophisticated investors, it further predicts that greater disclosure about management’s estimates in the audit report will more extensively decrease audit committee members’ propensity to challenge the estimates when the investor base is unsophisticated instead of sophisticated.

To test these predictions, I conduct an online experiment using a 2 x 2 design, with audit report content and investor type as between-subject factors. Participants are predominantly experienced audit committee members who assume that role for a hypothetical public
manufacturing firm. They receive an overview of the firm’s operations and information about a significant accounting estimate related to obsolete inventory. Management has favorably revised this estimate late in the audit process and moderately argues for their case. The audit committee participants’ main task is to develop questions regarding the significant accounting estimate.

Overall, the experimental findings are more consistent with the self-serving, instead of the altruistic, perspective. Consistent with both perspectives, however, audit committee members become significantly less likely to challenge management’s estimate when greater disclosure about the estimate appears in the audit report. Consistent (inconsistent) with the self-serving (altruistic) perspective, though, audit committee members ask more questions given a sophisticated, as opposed to an unsophisticated, investor base. Moreover, when there is greater disclosure about the estimates in the audit report, audit committee members’ propensity to challenge management’s estimates drops to a greater extent given a sophisticated, as opposed to an unsophisticated investor base.

Additional analysis provides further support for the self-serving perspective: Designated financial experts, who are relatively more likely to perceive self-serving accountability risk compared to audit committee members without this designation, are largely responsible for driving this pattern of findings. Especially for designated financial experts, minimization of potential accountability risks, rather than an internal sense of responsibility to protect unsophisticated shareholders, appears to be the stronger accountability mechanism underlying the decision processes of audit committee members.

This study makes several contributions. First, it enhances our understanding with respect to audit committee members’ decision processes, especially in terms of factors that are likely to affect their propensity to challenge management’s significant accounting estimates. Specifically,
this study identifies audit report content and investor type as co-determinants of the level of 
questioning audit committee members engage in when overseeing the financial reporting and 
auditing processes. Second, this study addresses the call for research on “unintended (behavioral) 
consequences” of attempts to regulate audit committee members (Turley and Zaman, 2004) by 
providing evidence on how greater disclosure about significant accounting estimates in the audit 
report, may lower audit committee oversight, acting more like a substitute than a complement or 
amplifier of increased audit committee’s diligence. Finally, the study adds to the expertise and 
corporate governance literatures by demonstrating that, while designated financial experts have a 
greater capacity to challenge management’s estimates, a potentially troubling boundary condition 
is an unsophisticated investor base.

The remainder of this paper is organized as follows. Section 2 provides background on the 
concern regarding audit committee’s propensity to challenge management’s accounting estimates 
and the debate on providing greater disclosure in the audit report. Section 3 summarizes relevant 
literature and section 4 develops the specific hypotheses. Section 5 provides an overview of the 
experimental method and section 6 discusses the results. Section 7 presents supplemental 
analyses and section 8 concludes.

II. Background

Do Audit Committee Members Challenge Management’s Accounting Estimates?

The need to protect investors, especially those who are unsophisticated, has been a 
longstanding issue. For decades the Securities Exchange Commission (SEC), for example, 
prohibited the inclusion of projections in filings under the 1933 and 1934 Securities Acts out of 
concern that the projections may “become traps for the unsophisticated who would be prone to 
attach more significance to such projections than they deserve” (SEC, 1969). In other words, the
need to protect unsophisticated investors outweighed the objective of supplying the investment community with meaningful information. Similarly, the Securities Industry Association (SIA) expressed concern regarding Regulation Fair Disclosure (Regulation FD) in that unsophisticated investors may misinterpret, and thus be unable to take advantage of the access to information mandated by Regulation FD (SIA, 2001). Concern related to investor protection has lead to various rules imposing fiduciary duties to various professions in the financial industry, such as accountants and audit committee members, to protect investors unable to sufficiently protect their own interests.²

Despite the fact audit committee members owe fiduciary duty to shareholders, commentators and regulators have expressed concern about the extent to which they actually adhere to such duties. A specific concern is failure to challenge or validate the assumptions that underlie significant accounting estimates (NACD, 2010). It is frequently emphasized that firm management compensates audit committee members. This economic bond may lead to conditions in which audit committee members, consciously or subconsciously try to please firm management, even at the cost of shareholder interests.³

Should the Audit Report Disclose More Information about Management’s Estimates?

The audit report is the primary means of communication by the auditors to third-party financial statement users. Although current reporting standards (SAS 58; AU Section 508) provide auditors the option to append an emphasis-of-matter paragraph to the standard

² Under Section 913 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act), the SEC is currently in the process of adopting a rule imposing a fiduciary duty on brokers-dealers and their representatives as well when they provide personalized investment advice (SEC, 2011).

³ Magilke et al., (2009) find that the objectivity of experimental participants in the role of audit committee members is affected to a greater extent when they receive stock-based vs. cash compensation.
unqualified audit report when auditors consider it necessary to draw the attention of financial statement users to issues that are important to their understanding of the financial statements, such option is rarely exercised (aside from going concern issues). Accordingly, the current pass/fail reporting model has been criticized for providing little to no information to financial statement users (PCAOB, 2011). Attempting to engineer an audit report that would provide more relevant information to financial statement users, the PCAOB Standing Advisory Group (SAG) launched a project called the “Auditor Reporting Model Project” (SAG meeting, July 2010).\(^4\) Consistent with the PCAOB’s initiative to revise the audit report, Peecher et al. (2011) also propose modifying the audit report to disclose more information about the audit process as one of several recommendations that, taken as a whole, would shift auditors’ accountability away from just penalties for bad outcomes and towards rewards for better judgment processes. Overall, both regulators and academic researchers are proposing changes be made to the audit report to promote greater disclosure of information related to the audit process. What information is most needed by financial statement users and thus should be included in the new audit report is a subject of intense debate.\(^5\)

Among various thoughts being discussed, one potential idea gaining interest is the concept of providing additional information regarding judgments underlying significant accounting

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\(^4\) A related concept release was issued on June 21, 2011 which was open for public comment until September 30, 2011. The PCAOB also held a public roundtable on September 15, 2011 to obtain additional insights on the alternatives for changing the audit report.

\(^5\) The form of the modified audit report is also under deliberation. The various possibilities being discussed include adding an additional emphasis paragraph to the standard audit report, expanding the audit report to include the content relating to the audit and management’s significant judgments (i.e. long-form report; variant of the French model), or requiring auditors to provide a supplemental report similar to the management discussion and analysis (MD&A) section of a company’s annual report regarding judgments made by the auditor while retaining the current pass/fail model.
estimates in the audit report. The findings of the surveys conducted by the PCAOB staff and Investor Advisory Group (IAG) indicate that many investors (79% of the survey respondents) believe they need more information about auditor’s assessments of management’s judgments and estimates (PCAOB Open Board Meeting, 2011). Therefore, including information regarding judgments underlying management’s significant accounting estimates in the audit report, would indeed be a step towards meeting the information requested by financial statement users.

However, it is yet unclear on how such increased emphasis on financial statement estimates in the audit report may affect the decision processes of the people involved in the financial reporting supply chain (i.e., managers, auditors, and audit committee members). This study provides theory-based empirical evidence regarding this issue by investigating the conditions under which such extended disclosure may decrease audit committee’s propensity to challenge management’s significant accounting estimates.

III. Summary of Prior Literature

The Effect of Additional Disclosure in the Audit Report

Extant studies on the effect of additional disclosures in the audit report suggest additional disclosure in the audit report can be beneficial. Fisher (1990) and Davis (2007) report evidence that public disclosures of materiality in the audit report increase market efficiency, ultimately benefiting financial statement users. The survey results of Manson and Zaman (2001) also document that various disclosures in the audit report, such as disclosure of materiality, auditor’s

6 Respondents also wanted more disclosure about auditors’ assessment of management’s accounting policies and practices (65%), discussion of sensitivity analysis performed by auditors in significant judgment areas (65%), and discussion of key issues included in the summary memorandum (54%). In their comment letters to the SEC Advisory Committee on Improvements to Financial Reporting (2008), institutional investors as well as various investor groups also expressed a preference for greater disclosure regarding significant assumptions, estimates, and qualitative discussion of risks and uncertainties.
assessment of the going concern status, findings related to fraud, and the extent of reliance on internal controls, can decrease the expectations gap. Such findings are relevant to this study as explanatory paragraphs could include materiality disclosures.

However, while these studies suggest additional disclosure in the audit report can be beneficial, they focus on how such disclosure will affect the users of the financial statement and the market outcome, without considering the effects that may occur with respect to the decision processes of other members of the financial reporting supply chain (e.g., audit committee members, auditors, etc.). This study extends this line of literature by experimentally examining how increased disclosure in the audit report regarding management’s significant accounting estimates influence audit committee members’ behaviors.

**Audit Committee Effectiveness**

Extant archival research regarding audit committees uses several indirect proxies for audit committee effectiveness, including financial reporting quality (Abbott et al., 2000; Beasley et al., 2000; Klein, 2002), the likelihood of employing external auditors who are industry specialists (Abbott and Parker, 2000), suspicious auditor switches (Archambeault and DeZoort, 2001), and the strength of relationship with internal auditors (Raghunandan et al., 2001; Scarbrough et al., 1998).

Much of the behavioral-experimental audit committee studies, on the other hand, measures audit committee effectiveness in terms of the extent to which audit committee members support auditors in the context of auditor-management disagreements and negotiations (Knapp, 1987; DeZoort and Salterio, 2001; DeZoort et al., 2003a; DeZoort et al., 2003b; DeZoort et al., 2008). Recent survey findings, however, indicate that audit committee members are rarely involved in resolving auditor-client negotiations (Gibbins et al., 2001; Cohen et al., 2002; Gibbins et al.,
2007). For example, in their interviews regarding CFO’s perspective on auditor-client negotiations, Gibbins et al. (2001) find that the CFOs did not involve the audit committee early in the negotiation process and frequently informed them only after the issue had been resolved.7

Building on such survey evidence suggesting that audit committee members usually are not involved in negotiated accounting decisions, Pomeroy (2010) examines audit committee effectiveness in terms of how audit committee members investigate secondary information (i.e., negotiated accounting decisions). Specifically, the study measures audit committee effectiveness in terms of the extent to which audit committee members ask probing questions related to a negotiated accounting decision. Findings indicate that audit committee members’ knowledge about the negotiation process increases their discomfort but does not increase how extensively they investigate the accounting decision. In addition, the study finds audit committee members more extensively investigate when management’s accounting is relatively aggressive.

Despite the increasing interest on audit committee members’ judgment and decision-making process, we still know little about the determinants of audit committee members’ propensity to more or less thoroughly exercise their fiduciary duty to actively question management and/or auditors to gain comfort about the integrity of the financial reporting and auditing processes. This study enhances our understanding regarding such determinants by examining how audit report content and investor type jointly affect audit committee members’ propensity to challenge management’s significant accounting estimates.

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7 Gibbins et al. (2007) observe that the audit committee or its chair was informed immediately of the issue in only 9% of the cases and the audit committee chair was involved in the resolution only about 33% of the cases. The audit committee was informed of the negotiated result 93% of the cases.
IV. Theory and Development of Hypotheses

Two Perspectives of Accountability

The theory of accountability used in the accounting and psychological literature concerns how individuals cope with different socio-economic pressures (Gibbins and Newton, 1994; Lerner and Tetlock, 1994, 1999; Tetlock, 1983, Tetlock et al., 1989). Specifically, the theory predicts that individuals develop different social and cognitive strategies for coping with accountability to obtain acceptance from, or avoid conflict with important interpersonal or institutional audiences. In other words, the concept of accountability is typically viewed to have a self-serving motivation.

However, self-interest is not the only motivation underlying accountability. Researchers in the field of sociology and management suggest altruistic reasons can also motivate accountability (Dicke, 2002; Heinrich, 2007, Sinclair et al, 2010). From this perspective, an internal sense of responsibility, rather than protection of self-interest, is the core motivation underlying accountability.

Audit committee members are generally accountable towards protecting shareholders’ interests, but they also have the incentive to minimize being accountable for negative financial outcomes. Ex ante, however, it is unclear whether the incentive to avoid such potential accountability (i.e., protection of self-interest) or the internal sense of accountability towards protecting shareholders (i.e., altruistic motivation) is the underlying mechanism of audit committee members’ behaviors. Hence, I examine the joint effects of audit report content and investor type on audit committee members’ propensity to challenge management’s estimates under the two different perspectives of accountability (self-serving vs. altruistic).
Effect of Additional Disclosure in the Audit Report

Prediction Based on the Self-Serving Perspective of Accountability

According to the accountability theory under the self-serving perspective, people exert greater cognitive effort in their decision processes when accountability pressure triggers the motivation to be accurate (Tetlock, 1992; Stapel et al., 1998) by engaging in a more extensive information gathering process (Gibbins and Newton, 1994). In the context of the financial reporting process, investors will have a preference for objective, accurate information. Accordingly, increased accountability pressure from investors will trigger a motivation to be accurate in the minds of audit committee members and increase their propensity to challenge management’s significant accounting estimates.

From the self-serving perspective, the likelihood of being culpable for negative financial statement outcomes will positively affect audit committee members’ perceived accountability. Greater disclosure in the audit report may be one factor that lowers audit committee members’ culpability and thus, decrease their level of perceived accountability toward investors. To elaborate, additional disclosure in the audit report may serve as a token of defense for audit committee members against being the target of public scrutiny in the event of negative outcomes, triggering a feeling of protection. This, in turn, will likely decrease their level of perceived accountability and ultimately reduce their propensity to challenge management’s estimates. Cain et al. (2005) use the concept of “moral licensing” to discuss a similar phenomenon in the context of disclosing conflicts of interest. They assert that greater disclosure can potentially reduce the information provider’s feeling of guilt about misleading users of the information, thereby triggering a moral license to bias the information further than they would without disclosure. Monin and Miller (2001) also discuss an analogous phenomenon using the term “self-licensing.”
They show that once people demonstrate that they are not morally corrupt in some way, they are more likely to display exactly this corruption on subsequent tasks. Similarly, audit committee members may perceive the additional disclosure in the audit report as a way of demonstrating their oversight duty and hence treat it as if it were a “license” to soften how much they challenge management’s estimates. So, from the self-serving perspective of accountability, audit committee members’ propensity to challenge management’s estimate will likely decrease with greater disclosure about management’s estimates in the audit report.

**Prediction Based on the Altruistic Perspective of Accountability**

Being designated as fiduciaries of shareholders, it is reasonable to assume audit committee members will have an internal sense of responsibility towards protecting shareholders who are unable to directly monitor the financial reporting process themselves. In this respect, challenging management’s significant accounting estimates can be regarded as a way audit committee members cope with accountability triggered for altruistic reasons.

The psychological theory of helping behavior identifies the severity of the need for aid as the primary determinant of one’s engagement in altruistic behavior (Bekkers and Wiepking, 2010).⁸ Findings in the social psychology literature on helping behavior confirm such theory by showing that the degree of need for help is positively related to the likelihood that help will be given (Levitt and Kornhaber, 1977; Staub and Baer, 1974; West and Brown, 1975). Wagner and Wheeler (1969) further suggest that subjective perceptions of needs, rather than objective needs, are what motivate people’s altruistic behavior. More recently, Zucker and Weiner (1993) and Weiner (1995) find that affective reactions to such cognitive perceptions, such as a feeling of

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⁸ Other determinants include economical and psychological costs and benefits, reputation, efficacy, etc. See Bekkers and Wiepking (2010) for a more comprehensive overview of psychological research on helping behavior.
sympathy towards the target in need, determine altruistic behavior. Overall, the theory of helping behavior postulate a motivational sequence of thinking-feeling-acting to underlie altruistic behavior and provides a basis for examining audit committee members’ propensity to challenge management’s estimates under the altruistic perspective of accountability. Specifically, the altruistic perspective warrants predicting audit committee members will treat the additional disclosure in the audit report as a substitute for their due diligence in protecting shareholders. This, in turn, will decrease their perception regarding investors’ need for help, ultimately stimulating a lower sense of responsibility to challenge management’s estimates.

In sum, both the self-serving and altruistic perspective of accountability warrants predicting greater disclosure about management’s estimates in the audit report will lower audit committee members’ propensity to challenge the estimates. However, this effect will likely be moderated by who forms the firm’s primary investor base.

**Effect of Investor Type**

*Prediction Based on the Self-Serving Perspective of Accountability*

The theory of accountability implies that audit committee members will likely develop different strategies in coping with the accountability depending on the type of investors that form the majority of the firm’s investor base. From the self-serving perspective, one way individuals cope with accountability demands, especially when it triggers a motivation to be accurate, is by engaging in self-discovery. Self-discovery refers to the act of gathering information to determine one’s own personal position (Gibbins and Newton, 1994). Asking challenging questions about issues that arise during the financial reporting and auditing process requires audit committee members to anticipate issues that may hinder the objectivity of the information disclosed in the financial statements and to obtain a neutral, objective view on such issues. In this respect,
challenging management’s significant estimates can be considered a way in which audit committee members engage in self-discovery as a way of coping with accountability demands and thus, minimize potential accountability risk.

Cognitive sophistication of the potential audience is one factor that affects the extent to which one engages in self-discovery. Specifically, theory predicts that greater sophistication of an audience increases accountability pressure, leading to greater cognitive effort in the information gathering process (Lerner and Tetlock, 1999; Tetlock, 1999). This suggests that audit committee members will challenge management’s estimates to a greater extent when the firm’s primary shareholders are institutional investors who are perceived to be more sophisticated than individual investors.

Moreover, prior literature suggests that the presence of a high level of sophisticated, institutional investors increase the probability of shareholder activism (Carleton, Nelson, and Weisbach, 1998; Del Guercio and Hawkins, 1999; Karpoff et al., 1996; Ryan and Schneider, 2002; Smith, 1996) which can result in negative consequences such as a change in board composition (Smith, 1996) or a decrease in firm value (Karpoff, 2001). An increase in the likelihood of shareholder activism will likely increase the audit committee members’ perceived accountability risk. This, in turn, will increase their propensity to challenge management’s estimates as a way of minimizing their probability of experiencing negative consequences that may occur in the event of shareholder activism. Hence, from the self-serving perspective, audit committee members will show a greater propensity to question management’s estimates when the firm’s investor base consists largely of sophisticated as opposed to unsophisticated investors.

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9 Shareholder activism refers to the use of power by an investor to bring about changes in the organizational structure of firms and include implementing confidential voting, creating shareholder advisory committees, altering board composition, etc.
**Prediction Based on the Altruistic Perspective of Accountability**

Recall that the theory of helping behavior identifies the severity of the need for aid as the primary determinant of altruistic behavior. Hence, from the altruistic perspective, investors who are more vulnerable (i.e., in greater need), compared to those who are less vulnerable will likely evoke a greater sense of responsibility from the audit committee. This, in turn, likely will lead to greater cognitive effort, and thus, greater questioning (i.e., more extensive help) to be exerted.

Investor vulnerability is likely to be a function of their sophistication level. Specifically, greater knowledge and investment experience (i.e., higher sophistication) is likely to stimulate greater detection of financial misstatements, should they exist. Sophisticated investors are also more likely to have diversified portfolios, reducing their overall level of investment risk. Hence, sophisticated investors are likely to be perceived as being less vulnerable compared to their relatively unsophisticated counterparts. Accordingly, from the altruistic perspective, audit committee members will show a greater propensity to challenge management’s estimates when the firm’s investor base consists largely of unsophisticated (i.e., more vulnerable), as opposed to sophisticated (i.e., less vulnerable), investors.

**Joint Effect s of Audit Report Content and Investor Type**

The reasoning thus far may seem to allow for predicting two main effects: one for the content of the audit report and another for investor type on the overall level of audit committee members’ questioning behavior. However, theory actually warrants predicting an ordinal interaction between these two factors.

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10 In the context of this study, investors are characterized as dedicated investors with long-term investment strategies. Hence, the term sophisticated (unsophisticated) investors refer to dedicated-sophisticated (dedicated-unsophisticated) investors. More extensive elaboration regarding this assumption is provided in the experimental design section.
From the self-serving perspective, a salient concern is the behavior of sophisticated investors as shareholder activism is positively associated with a higher level of sophisticated, institutional ownership. By contrast, the behaviors of unsophisticated investors are a less salient concern from this perspective. Accordingly, greater disclosure in the audit report, which will likely trigger a feeling of protection against shareholder activism, will decrease audit committee’s perceived accountability to a greater extent given sophisticated, as opposed to unsophisticated, investors. In other words, when there is greater disclosure in the audit report, audit committee members’ propensity to challenge management’s estimates will decrease to a greater extent when the firm’s investor base is sophisticated, instead of unsophisticated. This predicted interaction of audit report content and investor type based on the self-serving perspective is hypothesized in H1a. Panel A of Figure 1 also depicts the predicted pattern of the interaction.

**H1a:** Audit committee members’ propensity to challenge management’s significant estimates is greatest when there is less disclosure and the primary shareholders are *sophisticated*, lower when there is less disclosure and the primary shareholders are unsophisticated, and lowest when there is greater disclosure.

[Insert Figure 1 Here]

The altruistic perspective of accountability, on the other hand, predicts a variation of this pattern. Specifically, the vulnerability of unsophisticated, as opposed to sophisticated, investors is a more salient concern to audit committee members from this perspective. Accordingly, audit committee members will likely perceive greater disclosure in the audit report to be of greater help for more vulnerable, unsophisticated investors than for less vulnerable, sophisticated investors. Greater disclosure about management’s significant accounting estimate, thus, will likely reduce audit committee members’ propensity to challenge management’s estimates to a greater extent given unsophisticated, as opposed to sophisticated, investors. This predicted
interaction of investor type and audit report content based on the altruistic perspective is hypothesized in H1b. Panel B of Figure 1 also illustrates the predicted interaction.

**H1b:** Audit committee members’ propensity to challenge management’s significant estimates is greatest when there is less disclosure and the primary shareholders are *unsophisticated*, lower when there is less disclosure and the primary shareholders are sophisticated, and lowest when there is greater disclosure.

V. Experimental Method

Design and Participants

I employ a full factorial 2 x 2 between subject online experiment, with audit report content and investor type as manipulated independent variables. Audit report content is manipulated at two levels (lower vs. higher disclosure) with the requirement to include commentary on management’s significant accounting estimates in the audit report being either present (higher disclosure) or absent (lower disclosure).

Investor type is also manipulated at two levels (lower vs. higher sophistication) using information regarding the firm’s primary shareholders. Specifically, participants are either informed that 85% of the investor base consists of unsophisticated vs. sophisticated investors.

The extant financial accounting literature commonly categorizes investors into four different groups on the basis of their level of sophistication (sophisticated vs. unsophisticated) and investment strategy (i.e., transient vs. dedicated). Transient investors refer to those with a shorter-term horizon and momentum focus, while dedicated investors refer to those with a longer-term horizon and valuation focus (Bushee, 1998; 2001; Ke and Petroni, 2004; Ke and Ramalingegowda, 2005; Elliott et al., 2010). Considering such characteristics, transient-sophisticated investors, who likely take advantage of unsophisticated investors, may be perceived as being the least vulnerable, while dedicated-unsophisticated investors may be
perceived to be the most vulnerable to financial misstatements. However, the presence of a large number of transient-sophisticated investors may increase audit committee’s concern for potential exploitation of the minority of unsophisticated investors. In order to control for such secondary effect related to the investor group, only the level of investor sophistication is used to manipulate the different types of investors, while holding investment strategy constant across conditions.

The primary dependent variable, audit committee members’ propensity to challenge management’s significant estimates, is examined in terms of the level of questioning audit committee members engage in. Specifically, I use the number of questions audit committee members ask after receiving information related to a significant accounting estimate as the measure of their propensity to challenge the auditor and/or management. The figure in Appendix A illustrates the experimental design of the study using the predictive validity framework (Runkel and McGrath, 1972; Libby 1981).

Participants were individuals who either possess audit committee experience or are considered eligible for serving on an audit committee. The individuals were invited to participate in the study via e-mail through the alumni association of the college of business at a Big 10 university and also through professional networks. Case materials and procedures, which are described in detail in the following section, were designed to ensure that participants were randomly assigned to experimental conditions.

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11 Eligibility is determined based on their year of earning their bachelor’s degree in business and their current career standing. Specifically, their graduation year must be before 1996 (i.e., have at least 15 years of professional experience) and they must either be university professors or hold or have held corporate positions in the C-suite or near the C-suite. Among the respondents, only 8 indicated having no audit committee experience.

12 The survey software ensured complete anonymity (i.e., no IP addresses were collected). Hence, an analysis of the differences between the responses obtained from the two different recruitment methods could not be conducted.
Case Material and Procedures

Participants were recruited via e-mail asking them to voluntarily participate in an online survey about the decision-making processes of audit committees. The e-mails included a link to a website that directed the participants to one of the four experimental conditions.

Once the participants click on the website link, they are thanked for their willingness to participate in the study, and asked to electronically sign an information consent form. Once the participants sign the consent form, the experiment begins by asking them to assume they are a member of an audit committee of a hypothetical manufacturing company and are preparing for an upcoming board meeting.

The participants first read some background information about the hypothetical firm. The background information includes a brief overview of the nature of the firm’s operations, a recent strategy change implemented by the new CEO, and information regarding the firm’s investor base (unsophisticated vs. sophisticated). Participants in the greater disclosure condition are further alerted of a new regulation requiring additional commentary on significant accounting estimates in the audit report, while participants in the lower disclosure condition receive no such information. After reading the background information about the firm, participants read a document developed by the external auditor regarding a significant accounting issue related to obsolete inventory that emerged during the audit process. The document includes information about the nature of the accounting issue, the initial and revised (more favorable) amount estimated by the management to be most appropriate, and the auditor’s assessment of management’s final estimate. The document is followed by an income statement and balance sheet that reflects the initial and revised estimate. Finally, participants in the greater disclosure conditions receive an audit report that includes commentary about the accounting estimate as
explanatory paragraphs at the end of the report. Participants in the lower disclosure condition receive a standard audit report with no additional commentary. Such operationalization of greater disclosure in the audit report is based on the long-form reporting model, which is one of the possible forms of the modified audit report being considered by the PCAOB.

Although the actually implemented form of the audit report may differ from the one used in the study, there is no theoretical reason to predict a different operational form of the report would result in a significantly different conceptual effect from what is documented in this study. In addition, the long-form reporting model is similar to how emphasis-of-matter is disclosed in current reports. Hence, the use of a long-form reporting model allows the study findings to have implications with respect to possible effects that emphasis-of-matter disclosures under the current reporting model may have. Appendix B presents the additional commentary on the management’s estimate provided in the greater disclosure conditions.

After reviewing the background information, auditors’ communication, and the financial statements, the participants complete questionnaires related to the significant accounting issue. I specifically ask several questions related to their comfort level on the final estimate as well as the degree to which they would like to question about the issue. Participants are then further asked to develop, to the degree they feel appropriate, one or more questions they would like to ask the external auditors and/or management regarding the significant accounting issue. The experiment concludes by asking several debriefing and demographic questionnaires. The summary of the experimental procedure is shown in Figure 2.

[Insert Figure 2 Here]
VI. Results

Participants

A total of 81 participants completed the online experiment.\textsuperscript{13} On average, they have 7.4 years of audit committee experience (min=0; max=25), with no significant difference across the four different experimental conditions.\textsuperscript{14} Approximately half (52.1\%) of the participants who have audit committee experience, reported to be designated financial experts.

On average, the reported level of participants’ engagement in asking questions in prior audit committee meetings is somewhat high with a mean of 1.33 on a scale of -3 (extremely low) to +3 (extremely high), with no significant difference across conditions. Further, as Table 1 shows, the mean (median) values for participants’ relative knowledge on financial accounting, financial statement analysis, auditing, audit committee best practice, and industry used in the case materials are 80.8\% (82.7\%), 81.7\% (85.0\%), 79.2\% (82.7\%), 77.5\% (81.3\%), and 50.7\% (50.0\%), respectively, with no significant difference across conditions.

\[\text{Insert Table 1 Here}\]

Manipulation Checks

To assess the effectiveness of my investor type manipulation, I ask participants to indicate the extent they would characterize the hypothetical firm’s investor base to be sophisticated and their perception regarding the investors’ level of expertise. I then develop a new variable of perceived investor sophistication based on a factor analysis conducted on the reported

\textsuperscript{13} Meaningful response rates could not be obtained because the number of participants recruited via professional networks was unknown to the researcher.

\textsuperscript{14} There were 8 participants who reported to have no experience serving on audit committees but met qualifications to serve as audit committee members. The analysis result excluding this 8 participants are not significantly different from the results including all 81 participants. Hence, I include all 81 participants in my analysis.
sophistication and expertise of the investor base. Results indicate the perceived investor sophistication is significantly higher (1.56 vs. -1.77) in the higher sophistication conditions ($t = 15.4$, $p < 0.01$, one-tailed).\(^{15}\)

I also ask the participants to indicate the extent to which they would characterize the hypothetical firm’s investor base to be vulnerable to examine if the manipulation of investor type had an effect on participants’ perceived investor vulnerability. Results show that participants in the lower sophistication conditions perceived the investors to be significantly more vulnerable (1.41 vs. 0.86, $t = 2.07$, $p = 0.02$, one-tailed).\(^{16}\) Overall, the results suggest that the manipulation of investor type significantly affected the participants’ perception regarding the sophistication level and vulnerability of the hypothetical firm’s investor base.

I examine the manipulation effectiveness of audit report content by asking participants to indicate the extent to which they believe the audit report issued for the hypothetical firm would alert the financial statement users of the significant accounting issue. Results indicate that participants believed the audit report alerted the financial users to a greater extent (0.09 vs. -1.5) in the greater disclosure conditions ($t = 4.45$, $p < 0.01$, one-tailed).\(^{17}\)

I also find evidence that the orthogonality of these manipulated two independent factors perceptually persisted in the minds of the participants as there is no significant effect of investor type on the participants’ perception regarding the likelihood that the audit report would alert the

\(^{15}\) The numerical values on the response scale were labeled as follows: -3 “extremely unsophisticated,” -2 “unsophisticated,” -1 “somewhat unsophisticated,” 0 “neutral,” 1 “somewhat sophisticated,” 2 “sophisticated,” and 3 “extremely sophisticated.”

\(^{16}\) The numerical values on the response scale were labeled as follows: -3 “extremely not vulnerable,” -2 “not vulnerable,” -1 “somewhat not vulnerable,” 0 “neutral,” 1 “somewhat vulnerable,” 2 “vulnerable,” and 3 “extremely vulnerable.”

\(^{17}\) The numerical values on the response scale were labeled as follows: -3 “extremely low,” -2 “low,” -1 “somewhat low,” 0 “neutral,” 1 “somewhat high,” 2 “high,” and 3 “extremely high.”
investors of the estimate \((p = 0.60, \text{two-tailed})\) as well as no significant effect of the content of the audit report on perceived investor sophistication \((p = 0.47, \text{two-tailed})\). Further, there is no significant interaction between audit report content and investor type on the perceived likelihood that the audit report would alert investors of the significant estimate \((p = 0.51, \text{two-tailed})\) and perceived investor sophistication \((p = 0.35, \text{two-tailed})\).

**Test of Hypotheses**

Drawing on two different perspectives of accountability, H1a and H1b predict alternative ways that audit report content and investor type interactively will affect the audit committee members’ propensity to challenge management’s accounting estimates.

Panel A of Table 2 tabulates the average number of questions participants developed by experimental conditions and Panel B of Table 2 presents the analysis of variance (ANOVA).\(^{18}\) Panel C of Figure 1 also presents the observed pattern of results. The findings primarily support the prediction based on the self-serving perspective (H1a). Specifically, audit committee members show greater questioning when the primary shareholders are sophisticated \((\text{mean} = 6.08)\), as opposed to unsophisticated \((\text{mean} = 3.00)\). Moreover, when there is greater disclosure about management’s estimates in the audit report, audit committee members’ level of questioning decreases more given sophisticated, as opposed to unsophisticated, investors.

\(^{18}\) As individual audit committee members’ propensity to support auditors vs. support management, may influence the extent to which they engage in active questioning behavior, I examine if my findings hold while controlling for such propensity to support auditors. The propensity to support auditors is measured by asking participants to indicate the amount of change in audit fees they would support when the auditor is insisting on a 5% increase in audit fees, while management is arguing for a 5% decrease. On average, participants reported they would support a 1.13\% increase in audit fees, which is significantly greater than 0 \((p < 0.01, \text{one-tailed})\). ANCOVA results (not reported) using this response as the covariate shows no significant effect of auditors’ propensity to support auditors \((p = 0.13, \text{two-tailed})\) on the degree to which audit committee members challenge management’s estimate.
As I predict an ordinal interaction (i.e., a nonsymmetric pattern of cell means) of audit report content and investor type on audit committee members’ propensity to challenge management’s estimates, I use contrast codes to test H1a. Such analysis allows me to obtain greater statistical power in examining interactions compared to the conventional ANOVA tests (Buckless and Ravenscroft, 1990). Panel C of Table 2 presents the results of the planned contrast tests as well as follow-up simple effect tests. Consistent with my prediction, I apply contrast weights as follows: +3 in the lower disclosure/higher sophistication condition, +1 in the lower disclosure/lower sophistication condition, and -2 in the higher disclosure conditions.

Results presented in Panel C show that the +3, +1, -2, -2 planned contrast is statistically significant ($F = 20.54, p < 0.01$, one-tailed), consistent with the predicted interaction as per the self-serving perspective of accountability. In addition, the results of the follow-up simple effect tests show that when there is no additional information on management’s estimates in the audit report, there is a significant effect of investor type ($F = 27.35, p < 0.01$, one-tailed). The results also show that the level of disclosure provided in the audit report significantly influences audit committee members’ propensity to challenge management’s estimates given sophisticated investors ($F = 20.05, p < 0.01$, one-tailed), while having no significant influence given unsophisticated investors ($F = 0.06, p = 0.41$, one-tailed). For completeness, I also confirm that there is no statistically significant effect of investor type given greater disclosure in the audit report ($F = 0.47, p = 0.50$, two-tailed). Overall, the results show support for H1a rather than H1b. Specifically, audit report content and investor type jointly affect audit committee members’ propensity to challenge management’s estimates in a manner consistent with the prediction based on the self-serving perspective (see Panel A of Figure 1).

[Insert Table 2 Here]
VII. Supplemental Analyses

Further Evidence in Support of the Self-Serving Perspective of Accountability

The main findings of the study are consistent with the prediction based on the self-serving perspective rather than the altruistic perspective of accountability. This suggests that protection of self-interest, rather than altruism, underlies audit committee members’ perceived accountability in their decision-making processes. This further implies that the results are likely to be stronger for audit committee members who perceive greater accountability risk. The mere designation as an audit committee financial expert does not necessarily impose a higher degree of individual responsibility or obligation on a member of the audit committee (SOX Section 407). However, being designated to such position is likely to increase one’s perceived accountability risk (Paskell-Mede and Jackson 1999; Rupley et al., 2011; Vera-Manoz, 2005; Zacharias 2000). If this is true, the results are likely to be stronger for participants who are designated financial experts. I conduct a supplemental analysis to test such prediction.

Table 3 summarizes the analysis. Panel A tabulates the descriptive statistics and Figure 3 presents the observed pattern of the results by groups. Panel B presents the analysis of variance (ANOVA), while Panel C primarily tests my prediction.

19 Many of the comment letters to the SEC regarding the rule on financial experts proposed under Section 407 of SOX expressed concern that such rule would increase the perceived liability of audit committee members, decreasing their willingness to serve as financial experts or to serve as audit committee members at all. See http://www.sec.gov/rules/proposed/s74002.shtml for the full list of comment letters.

20 Among the participants with audit committee experience (n = 73), those who are designated as financial experts (n = 38), compared to those who are not so designated (n = 35), have significantly greater amount of audit committee experience (9.53 years vs. 5.10 years, t = 3.24, p < 0.01, one-tailed) and have served on significantly greater number of public company audit committees (2.03 vs. 0.83, t = 2.54, p < 0.01, one-tailed).

21 As participants were randomly assigned, I was not able to control for the number of designated financial experts assigned to the different experimental conditions. As a consequence, the four conditions have an unbalanced number of designated financial experts. Some statisticians recommend using Type II sums of squares in such situations as opposed to the conventional Type III sums of squares (e.g., Maxwell and Delaney, 1990). As it turns
Results suggest the findings documented in the previous section are mainly driven by participants who are designated as financial experts. Specifically, the +3, +1, -2, -2 planned contrast is statistically significant \( (F = 21.39, p < 0.01, \text{one-tailed}) \) for designated financial experts while it is not significant \( (F = 0.93, p = 0.17, \text{one-tailed}) \) for non-financial experts. In addition, the results of the follow-up simple effect tests for designated financial experts show that when there is no additional information in the audit report, there is a significant effect of investor type \( (F = 32.95, p < 0.01, \text{one-tailed}) \). The results also show that the level of disclosure provided in the audit report significantly influences the propensity to challenge management’s estimates given sophisticated investors \( (F = 26.98, p < 0.01, \text{one-tailed}) \), while having no significant effect given unsophisticated investors \( (F = 0.04, p = 0.42, \text{one-tailed}) \). I also confirm that there is no statistically significant effect of investor type given greater disclosure in the audit report for designated financial experts \( (F = 0.04, p = 0.85, \text{two-tailed}) \).

Such findings provide further evidence in support of the prediction based on the self-serving perspective, suggesting that protection of self-interest, rather than altruism, is the accountability mechanism underlying audit committee members’ decision processes. Moreover, the findings suggest that despite their greater capacity to ask challenging questions, designated financial experts will challenge auditors and/or management to a greater extent only when they perceive a strong cognitive need to do so (e.g., when the primary shareholders are sophisticated and no additional disclosure in the audit report is required).

[Insert Table 3 & Figure 3 Here]

\[\text{out, the interaction of investor type and disclosure is statistically significant whether I use the Type III (}p < 0.01\text{) or Type II (}p < 0.01\text{) sums of squares.}\]
Mediation Effect of Perceived Comfort on Financial Experts

The results thus far imply that audit committee members’ incentive to minimize potential accountability risk drives their decision making process. Perceived accountability risk is likely to be negatively associated with audit committee members’ comfort level regarding the accounting issue at hand. Greater accountability risk, thus, will lower audit committee members’ comfort level. This, in turn, will likely increase their need to obtain justification about the issue, raising their propensity to question about it. Hence, I conduct a mediation analysis using the participants’ comfort level regarding the accounting decision to gain further understanding on how audit committee members’ perceived accountability risk affects their behaviors.

I first develop a variable of audit committee’s overall comfort regarding the accounting issue based on a factor analysis on the participants’ perceived comfort regarding 1) management’s change in estimate, 2) auditor’s decision to allow management’s updated, smaller write-down of inventory, and 3) the difference in the net income that results from the different write-down amounts. Using this new variable, I conduct a mediation analysis according to the four-step procedure specified by Baron and Kenny (1986). The analysis is only conducted on the responses provided by designated financial experts given sophisticated investors as these are the conditions that drive my overall findings. Figure 4 summarizes the results of the analysis.

Consistent with my main findings, step 1 indicates higher disclosure in the audit report negatively affects participants’ propensity to challenge management’s estimates ($p < 0.01$, one-tailed). Step 2 indicates that higher disclosure positively affects participants’ perceived level of comfort regarding the accounting decision ($p = 0.04$, one-tailed). Step 3 shows that the perceived comfort level about the accounting decision negatively impacts the participants’ propensity to challenge management’s estimate ($p = 0.02$, one-tailed). Finally, step 4 indicates
that participants’ comfort with respect to the accounting decision fully mediates the influence of the disclosure level of the audit report on their propensity to challenge management’s accounting estimate ($p = 0.17$, two-tailed). Such results imply that greater disclosure in the audit report on management’s significant accounting estimate increases audit committee members’ overall comfort level regarding the issue (i.e., decreasing perceived accountability risk), ultimately leading to a decrease in their propensity to ask probing questions.

**Audit Committee Members’ Self-Insight into Decision Processes**

I conduct additional analysis to gain further insight on audit committee members’ self-insight regarding the effect of the content of the audit report and investor type on their decision processes. After completing the main case questionnaires, I ask participants to indicate the extent to which they believe 1) an increase in investor sophistication and 2) increased disclosure in the audit report, would affect the degree to which they would like the auditors and/or management to be questioned. The response scale ranged from -3 to +3, where -3 was labeled as ‘substantially decrease questioning’ and +3 as ‘substantially increase questioning.’

I find that, on average, participants believe they will increase their level of questioning both when the sophistication level of the investor base increases (mean = 0.12, $p = 0.02$, one-tailed) and when there is greater disclosure in the audit report (mean = 1.24, $p < 0.01$, one-tailed).\(^{22}\) Recall that the results from main case questionnaires show that audit committee members challenge management’s estimates to a greater extent when the primary shareholders are sophisticated investors and/or when the audit report does not have any additional disclosures about the significant accounting estimate.

\(^{22}\) Designated financial experts, compared to those who are not so designated, do not possess significantly better self-insight with respect to the effect of greater investor sophistication (mean = 0.12 vs. 0.13; $p = 0.45$, one-tailed) and greater disclosure in the audit report (mean = 1.14 vs. 1.33; $p = 0.24$, one-tailed) on their questioning level.
Together, these findings suggest that while participants have some level of self-insight with respect to how different investor type may affect their behaviors, they are not aware and probably misguided of how their behaviors may be influenced under different levels of disclosures in the audit report. Accordingly, while audit committee members, along with standard setters, may believe that greater disclosure in the audit report may increase audit committee members’ propensity to question management and/or auditors, actual implementation of such requirement may have unintended consequences by actually lowering their level of questioning. This also suggests that surveys that simply ask what audit committee members think they will do if changes were made to the audit environment may result in misleading (even if well-intended) responses.

VIII. Discussion and Conclusion

This study investigates the determinants of audit committee members’ propensity to challenge management’s significant accounting estimates. Specifically, I provide theory and empirical evidence on how audit report content and investor type jointly affect audit committee members’ degree of questioning while overseeing the financial reporting and auditing processes.

Overall, the findings suggest that audit committee members challenge management’s estimate to the greatest extent when the firm’s primary shareholders are sophisticated and there is no additional disclosure in the audit report related to the significant accounting estimate. There is also evidence of audit committee members significantly decreasing their level of questioning when the primary shareholders are unsophisticated and/or when there is greater disclosure in the audit report related to the significant accounting estimate. Such findings are consistent with the predictions based on the self-serving perspective of accountability, implying that perceived accountability triggered by the motivation to protect self-interest, rather than an internal sense of
responsibility to protect shareholders, is what causally drives the judgment and decision-making process of audit committee members. Supplemental analysis provides further evidence in support of the self-serving perspective by showing that the results tend to be more pronounced for audit committee members who are designated as financial experts.

There are various ways future research can extend the findings of this study. First, this study focuses on how the piecemeal implementation of greater disclosure in the audit report, the current approach being considered by standard setters, would affect audit committee members. In other words, the effect of changes in the audit report as part of a portfolio of other policies, such as those suggested by Peecher et al. (2011) that would switch auditors’ accountability from penalties for bad outcomes towards rewards for good judgment processes, is not considered. Future research can examine whether the findings documented in this study are moderated or flipped with the implementation of such portfolio of changes in the audit environment. Second, future research can extend this study by examining how greater disclosure in the audit report may have negative effects on other members of the financial reporting supply chain, such as auditors and firm management, and how their behavior, in turn, may affect audit committee members’ oversight process. For example, greater disclosure in the audit report may decrease management’s forthcomingness. Such change, in turn, will likely influence audit committee members’ propensity to challenge management’s estimates. The reaction of financial statement users may also be of interest as they are the ones who are insisting on such change. Third, future research can examine the effects of different composition of investor type. As one example, the presence of one big institutional investor where the primary shareholders are unsophisticated may alter the findings documented in this study. Fourth, future research could address the issue
of possible group dynamics among several audit committee members by using interacting groups to assess whether the implications of my findings extend in a group setting.

Overall, the theory and findings of the study extensively enhances our understanding regarding audit committee members’ decision-making processes. I also address the call for behavioral research on audit committees (Carcello et al., 2011) and provide ex ante evidence of possible ‘policy resistance’\textsuperscript{23} to greater disclosure in the audit report in terms of decreased audit committee effectiveness. Such findings warrant careful consideration of ways to minimize such unintended consequences before implementing a new auditor’s reporting model. Moreover, the findings are also applicable in the current audit environment, as I examine the effect of greater disclosure in the audit report using a form that is similar to emphasis-of-matter disclosures under the current reporting model. I also add to the expertise and corporate governance literatures by demonstrating that while designated financial experts have a greater capacity to challenge management’s estimates, a potentially troubling boundary condition is an unsophisticated investor base.

\textsuperscript{23} Policy resistance is defined as “the tendency for interventions to be defeated by the response of the system to the intervention itself” and is used in the systems dynamics literature to refer to the occurrence of unintended consequences of well-intended efforts to solve pressing problems (Sterman, 2002).
References


Ernst & Young. 2008. The focus of audit committees during the financial crisis. Insights Special for Audit Committees.


Figure 1

Effect of Audit Report Content and Investor Type

Panel A: Prediction Based on the Self-Serving Perspective of Accountability (H1a)

Panel B: Prediction Based on the Altruistic Perspective of Accountability (H1b)
Panel C: Observed Effects

![Graph showing observed effects with labels: No of Qs, Disclosure_Absent, Disclosure_Present, Sophistication_High, Sophistication_Low. The graph compares the number of questions based on disclosure and sophistication levels.]
Figure 2
Experimental Procedures

<table>
<thead>
<tr>
<th>Higher Disclosure Condition</th>
<th>Lower Disclosure Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read case materials consisting of a brief company background including the investor base manipulation (unsophisticated vs. sophisticated) and content of the audit report manipulation (presence vs. absence of a recent change in standards regarding new disclosure requirements in the audit report)</td>
<td></td>
</tr>
<tr>
<td>Read document prepared by the external auditors regarding a significant accounting estimate that emerged during the audit process.</td>
<td></td>
</tr>
<tr>
<td>Review income statement and balance sheet reflecting two different amounts proposed by management related to the significant accounting estimate.</td>
<td></td>
</tr>
<tr>
<td>View audit report with disclosures regarding commentary on the significant accounting estimate.</td>
<td>View standard audit report with no additional disclosures.</td>
</tr>
<tr>
<td>Complete questions regarding treatment of significant accounting estimate</td>
<td></td>
</tr>
<tr>
<td>Develop questions to ask external auditors and/or management.</td>
<td></td>
</tr>
<tr>
<td>Complete follow-up questionnaires including manipulation checks.</td>
<td></td>
</tr>
<tr>
<td>Complete demographic questionnaires.</td>
<td></td>
</tr>
</tbody>
</table>
Figure 3

Effect of Audit Report Content and Investor Type by Groups

Panel A: Designated Financial Experts

Panel B: Non-Financial Experts
Figure 4

The Mediating Role of Perceived Comfort on the Effect of Audit Report Content on Audit Committee Members’ Propensity to Challenge Management’s Estimates

This figure summarizes tests of the mediating role of perceived comfort in the causal relation between the disclosure level of the audit report and the audit committee members’ propensity to challenge management’s significant accounting estimate.

*p-values are one-tailed, given directional predictions.

** two-tailed equivalent
Table 1
Descriptive Statistics on Participants' Relative Knowledge on Specific Issues

<table>
<thead>
<tr>
<th>Issues</th>
<th>Financial Accounting</th>
<th>F/S Analysis</th>
<th>Auditing</th>
<th>AC Best Practice</th>
<th>Case Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>80.8%</td>
<td>81.7%</td>
<td>79.2%</td>
<td>77.5%</td>
<td>50.7%</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>16.5%</td>
<td>16.5%</td>
<td>19.3%</td>
<td>20.1%</td>
<td>25.9%</td>
</tr>
<tr>
<td>Minimum</td>
<td>8.9%</td>
<td>9.2%</td>
<td>8.9%</td>
<td>8.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>74.2%</td>
<td>75.5%</td>
<td>69.0%</td>
<td>62.2%</td>
<td>29.0%</td>
</tr>
<tr>
<td>Median</td>
<td>82.7%</td>
<td>85.0%</td>
<td>82.7%</td>
<td>81.3%</td>
<td>50.0%</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>91.1%</td>
<td>91.9%</td>
<td>95.3%</td>
<td>95.1%</td>
<td>71.9%</td>
</tr>
<tr>
<td>Maximum</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>n</td>
<td>81</td>
<td>81</td>
<td>81</td>
<td>81</td>
<td>81</td>
</tr>
</tbody>
</table>
Table 2
Main Analyses Based on Total Number of Questions
Descriptive Statistics and Two-Way ANOVA

**Panel A: Mean [Standard Deviation] for total number of questions**

<table>
<thead>
<tr>
<th>Disclosure in the Auditor's Report</th>
<th>Investor Sophistication</th>
<th>Lower</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td></td>
<td>2.84</td>
<td>9.71</td>
</tr>
<tr>
<td>N=19</td>
<td></td>
<td>[0.95]</td>
<td>[0.91]</td>
</tr>
<tr>
<td>Present</td>
<td></td>
<td>3.16</td>
<td>4.05</td>
</tr>
<tr>
<td>N=19</td>
<td></td>
<td>[0.95]</td>
<td>[0.89]</td>
</tr>
</tbody>
</table>

**Panel B: Basic ANOVA model**

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III SS</th>
<th>df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor</td>
<td>303.59</td>
<td>1</td>
<td>303.59</td>
<td>17.63</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Disclosure</td>
<td>144.48</td>
<td>1</td>
<td>144.48</td>
<td>8.39</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Investor * Disclosure</td>
<td>180.58</td>
<td>1</td>
<td>180.58</td>
<td>10.48</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Error</td>
<td>1,326.29</td>
<td>77</td>
<td>17.23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Panel C: Planned contrast coding and follow-up simple effect tests**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall tests: Audit committee members' level of questioning is greatest when there is less disclosure and the primary shareholders are sophisticated, lower when there is less disclosure and the primary shareholders are unsophisticated, and lowest when there is greater disclosure.</td>
<td>1</td>
<td>353.73</td>
<td>20.54</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

**Contrast Weights** (3, 1, -2, -2)

<table>
<thead>
<tr>
<th>Follow-up simple effect tests:</th>
<th>df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of investor type given lower disclosure</td>
<td>1</td>
<td>471.09</td>
<td>27.35</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Effect of disclosure given sophisticated investors</td>
<td>1</td>
<td>345.27</td>
<td>20.05</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Effect of investor type given greater disclosure</td>
<td>1</td>
<td>8.03</td>
<td>0.47</td>
<td>0.50</td>
</tr>
<tr>
<td>Effect of disclosure given unsophisticated investors</td>
<td>1</td>
<td>0.95</td>
<td>0.06</td>
<td>0.41</td>
</tr>
</tbody>
</table>

* Reported p-values are two-tailed for the simple effect of investor type given the presence of disclosure in the audit report, and one-tailed equivalent for all other tests given my directional predictions.
### Table 3
Supplemental Analyses:
Descriptive Statistics and Three-Way ANOVA of Total Number of Questions Asked

#### Panel A: Mean [Standard Deviation] for total number of questions by groups

<table>
<thead>
<tr>
<th>Disclosure in Auditor's Report</th>
<th>Investor Sophistication</th>
<th>Financial Experts</th>
<th>Non-Experts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>Absent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.70</td>
<td>12.15</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>[1.42]</td>
<td>[1.25]</td>
<td>[1.11]</td>
</tr>
<tr>
<td></td>
<td>N=10</td>
<td>N=13</td>
<td>N=9</td>
</tr>
<tr>
<td>Present</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.20</td>
<td>3.60</td>
<td>3.14</td>
</tr>
<tr>
<td></td>
<td>[2.01]</td>
<td>[1.42]</td>
<td>[0.89]</td>
</tr>
<tr>
<td></td>
<td>N=5</td>
<td>N=10</td>
<td>N=14</td>
</tr>
</tbody>
</table>

#### Panel B: Basic ANOVA model

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III SS</th>
<th>df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor</td>
<td>221.93</td>
<td>1</td>
<td>221.93</td>
<td>14.48</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Disclosure</td>
<td>98.48</td>
<td>1</td>
<td>98.48</td>
<td>6.42</td>
<td>0.01</td>
</tr>
<tr>
<td>Expert</td>
<td>32.91</td>
<td>1</td>
<td>32.91</td>
<td>2.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Investor * Disclosure</td>
<td>127.77</td>
<td>1</td>
<td>127.77</td>
<td>8.34</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Investor * Expert</td>
<td>39.17</td>
<td>1</td>
<td>39.17</td>
<td>2.56</td>
<td>0.11</td>
</tr>
<tr>
<td>Disclosure * Expert</td>
<td>54.28</td>
<td>1</td>
<td>54.28</td>
<td>3.54</td>
<td>0.06</td>
</tr>
<tr>
<td>Investor * Disclosure * Expert</td>
<td>66.17</td>
<td>1</td>
<td>66.17</td>
<td>4.32</td>
<td>0.04</td>
</tr>
<tr>
<td>Error</td>
<td>1,119.12</td>
<td>73</td>
<td>15.33</td>
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<td></td>
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</table>
Table 3 (continued)

Panel C: Planned contrast coding and follow-up simple effect tests

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Mean Square</th>
<th>F-Ratio</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Experts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall tests:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit committee members' level of questioning is greatest when there is less disclosure and the primary shareholders are sophisticated, lower when there is less disclosure and the primary shareholders are unsophisticated, and lowest when there is greater disclosure.</td>
<td>1</td>
<td>327.96</td>
<td>21.39</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Contrast Weights (3, 1, -2, -2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up simple effect tests:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of investor type given lower disclosure</td>
<td>1</td>
<td>505.16</td>
<td>32.95</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Effect of disclosure given sophisticated investors</td>
<td>1</td>
<td>413.56</td>
<td>26.98</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Effect of investor type given greater disclosure</td>
<td>1</td>
<td>0.53</td>
<td>0.04</td>
<td>0.85</td>
</tr>
<tr>
<td>Effect of disclosure given unsophisticated investors</td>
<td>1</td>
<td>0.83</td>
<td>0.04</td>
<td>0.42</td>
</tr>
<tr>
<td><strong>Non-Experts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall tests:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit committee members' level of questioning is greatest when there is less disclosure and the primary shareholders are sophisticated, lower when there is less disclosure and the primary shareholders are unsophisticated, and lowest when there is greater disclosure.</td>
<td>1</td>
<td>14.19</td>
<td>0.93</td>
<td>0.17</td>
</tr>
<tr>
<td>Contrast Weights (3, 1, -2, -2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reported p-values are two-tailed for the simple effect of investor type given the presence of disclosure in the audit report, and one-tailed equivalent for all other tests given my directional predictions.
Appendix A
Predictive Validity Framework

Content of audit report

Investor type

Presence vs. absence of explanatory paragraphs on management’s accounting estimate in the audit report

Investor base consisting largely of unsophisticated vs. sophisticated investors

Audit committee’s propensity to question management’s significant accounting estimates

Number of probing questions asked by audit committee members
Appendix B

Commentary Added in the Audit Report of the Greater Disclosure Conditions

Justification of Assessments

In accordance with the professional standards applicable in the Unites States, we bring to your attention the following matters:

SCA’s management adjusted its inventory by writing it down to its estimated net realizable value. This write down was necessary when a portion of its inventory became unsalable after implementation of a new marketing strategy as described in note 3.2 to the consolidated financial statements. The portion of on-hand inventory that management estimated to be unsalable had a carrying value of $970,000, and so management took a write down of inventory in this amount, materially decreasing SCA’s net income.

As part of our audit of significant accounting estimates, we assessed the assumptions made and the approach taken by management regarding this estimate for compliance, in all material respects, with U.S. GAAP. In addition, we communicated this issue to the audit committee in accordance with PCAOB Auditing Standards (AU 380). These procedures were performed in the context of our audit of the consolidated financial statements as a whole, and therefore contributed to the opinion expressed above.