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The Effect of Materiality Disclosures on Investors' Decision Making

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The Effect of Materiality Disclosures on Investors' Decision Making

ABSTRACT: Despite regulation requiring the disclosure of audit materiality, recent reviews of the academic literature indicate that little is known regarding how users respond to materiality disclosures or evaluate the level of materiality used by auditors, and what is deemed to be material to various groups of financial statement users (e.g., creditors, shareholders). In response, we examine the effect of audit materiality disclosures on professional investors' decision making. Additionally, because the need for, and the use of, audited financial statements differs across stakeholder groups, we also examine users' demand for materiality given certain investment-specific characteristics (debt vs. equity, public vs. private). Among a sample of 246 informed users of financial statements from the U.S. and U.K., we find investors struggle to understand materiality disclosures. Specifically, they fail to make consistent connections between disclosed audit materiality and the level of auditor effort. Further, these judgments are the same across hypothetical debt and equity investments for both public and private companies. In sum, our findings suggest that disclosures of audit materiality are not well understood by investors. This research will inform practitioners, regulators, and academics regarding the effect of materiality disclosure on investor decision making as well as stakeholders' views and expectations of overall materiality.

Keywords: audit report; investment decisions; investors; materiality disclosure

1. Introduction

The potential disclosure of auditors' materiality judgments has been discussed in the academic literature for some time (Holstrum & Messier, 1982; Leslie 1985; Messier, Martinov-Bennie, & Eilifsen, 2005). Recently, several standard setting bodies have considered requiring the disclosure of quantitative materiality thresholds within the auditor's report. The Public Company Accounting Oversight Board (PCAOB, 2017) and the International Auditing and Assurance Standards Board (IAASB, 2015a, 2015d) decided not to require materiality disclosures. However, the U.K.'s Financial Reporting Council (FRC, 2013c) and the Netherlands' Nederlandse Beroepsorganisatie van Accountants (NBA, 2014) have issued standards that now require auditors to disclose the materiality threshold used for the audit of the financial statements.¹ Furthermore, auditors are not precluded from voluntarily disclosing materiality.² While audit reports in most of the world continue to exclude information about materiality, investors generally support the inclusion of such information (PCAOB, 2011; Singh & Peters, 2015).³

The PCAOB defines materiality by referring to the Supreme Court of the United States⁴ which stated that a fact is material if there is "a substantial likelihood that the . . . fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information

¹ The European Union (2014) requires that the auditor "disclose the quantitative level of materiality applied to perform the statutory audit for the financial statements as a whole and where applicable the materiality level or levels for particular classes of transactions, account balances or disclosures, and disclose the qualitative factors which were considered when setting the level of materiality" (Article 11, para 2. (h)) in an additional report provided to the audit committee.

² For example, PwC has elected to do so for audits of financial statements in Finland (e.g., Tieto and Ferratum Oyj) and Sweden (e.g., Betsson AB).

³ The PCAOB's Investor Advisory Group (2011) reports that 56 percent of investors surveyed agree that auditors should be required to disclose materiality, while only 17 percent disagreed. The CFA Institute reports that 82 percent of investors surveyed support increased disclosure about materiality (Singh & Peters, 2015).

⁴ See *TSC Industries v. Northway, Inc.*, 426 U.S. 438, 449 (1976) and *Basic, Inc. v. Levinson*, 485 U.S. 224 (1988).

made available.” As the Supreme Court has noted, the determination of materiality requires “delicate assessments of the inferences a ‘reasonable shareholder’ would draw from a given set of facts and the significance of those inferences to him.” The IAASB’s guidance (2009, ISA 320 para 4.) states “the auditor’s determination of materiality is a matter of professional judgment, and is affected by the auditor’s perception of the financial information needs of users of the financial statements.” Thus, both the PCAOB and IAASB take a user perspective when providing guidance to auditors about materiality.

Recent academic reviews of audit reporting (Church, Davis, & McCracken, 2008; Mock Bédard, Coram, Davis, Espahbodi, & Warne, 2013) indicate that little is known regarding how users respond to materiality disclosures or evaluate the level of materiality used by auditors, and what is deemed to be material to various groups of financial statement users (e.g., creditors, shareholders). Because the extent of audit procedures, including the accounts and locations that are scoped into the audit, is based in large part on the level of audit materiality—thus affecting the level of rigor supporting the opinion provided to investors—it is important to understand how users respond to, and interpret, audit materiality. Based on the call for research and what we know from extant research, it is unclear how professional investors will react to materiality disclosures.

We investigate four research questions related to the disclosure of audit materiality on *professional* investors’ decisions. First, does the *disclosure* of materiality affect professional investors’ investment decisions. Second, are professional investors’ investment decisions affected by the *level* of materiality disclosed by the auditor? These questions examine the average disclosure effect on users’ decisions in general. However, regulators also require auditors to consider clients’ ownership structure and financing type when evaluating users’ needs (IAASB, 2009). Therefore, our third research question investigates whether the disclosure of materiality

differentially affects professional investors' decisions when considering the type of investment entity (publicly traded versus privately held investments). Finally, the fourth research question examines whether the disclosure of materiality differentially affects professional investors' decisions when considering the type of investment (equity versus debt)?

We address our research questions by manipulating the presence or absence of the materiality disclosure, two levels of quantitative materiality (4 and 10 percent of pre-tax income), and investment type (public equity, private equity, public debt). We use 246 U.S. and U.K. professional investors to evaluate a company in which auditors' materiality considerations are disclosed in the entity's audit report like those currently provided in the audit reports of U.K. filers. Our primary dependent variable is the extent of investors' change in an existing investment. We also report and analyze additional research questions around professional investors' assessment of auditor materiality and the users' self-reported materiality benchmarks and levels.

Relative to a control group with no disclosure of materiality, we find that the disclosure of materiality in the audit report has no effect on users' decision to increase or decrease current investment levels in a hypothetical company. This result is consistent with emerging archival research on investors' response to expanded U.K. audit reports (Gutierrez, Minutti-Meza, Tatum, & Vulcheva, 2017; Lennox, Schmidt, & Thompson, 2017). Examining only those who receive a materiality disclosure, we find some evidence that the level of disclosed materiality (4 vs 10 percent) affects investor decision making, but in the opposite direction that audit theory would predict. Specifically, investors are more likely to increase their investment when audit materiality is set at 10 percent of pre-tax income than when materiality is 4 percent of pre-tax income, even though a higher materiality threshold typically means lower levels of auditor effort. Thus, this result suggests that participants fail to understand the inherent relationship between audit

materiality and auditor effort. An alternative explanation is that 10 percent is closer to investor's expectations for materiality and thus signals an auditee presenting normal levels of risk. In a debriefing question, we ask participants what they believe audit materiality *should be* for the hypothetical case and across conditions the response, on average, was around 10 percent. Thus, a potential explanation around the decision to not increase their investment at the 4 percent level is that lower audit materiality signals the audit client is riskier than the typical audit client. However, academic research points out that for listed or public company audits, audit materiality of 5 percent is much more common than 10 percent, so there would appear to be a disconnect regarding investor's expectations for materiality and typical audit materiality (Eilifsen & Messier, 2015). As such, our results suggest that the disclosure of audit materiality may be misinterpreted by investors.

In other results, we find no significant effect of materiality on investment decisions between investors considering an investment in public equity compared to private equity or, separately, public debt compared to public equity. Thus, our results suggest that investors view materiality disclosures as not informative or marginally informative at best, but in a direction opposite to audit theory.

We also ask participants a series of debriefing questions that shed further light on our results. Analysis of these questions suggests that participants in the 10 percent materiality treatment make higher estimates of what audit materiality *should be* and are also more confident in their investment decision than participants in the 4 percent materiality treatment. These results further suggest that, at least in our sample, participants interpret higher materiality as superior to, or reflective of typical risk, than lower materiality levels. Collectively, our results provide additional support to investor interview evidence collected by Houghton, Jubb, & Kend (2011), who find that investors struggle to understand quantitative materiality judgments and caution that

disclosing materiality might be detrimental. Additionally, we note that investors may be more open to alternative materiality benchmarks than previously thought. While audit firms predominantly use pre-tax income as the materiality benchmark, and even though we also use this threshold in our study, participants' responses suggest a preference for other financial statement metrics such as EBIT and total assets.

Our study provides insights into how the disclosure of auditors' materiality impacts the judgments and decisions of financial statement users in various settings. These results suggest that users may not interpret the relationship between audit materiality and auditor effort the same way audit professional and audit theory would predict, providing support for the decision of U.S. regulators to not require its disclosure in an expanded audit report. If such disclosures are considered in the future, our results suggest the importance of clearly communicating the inherent relationship between quantitative materiality and auditor effort. Further, our results provide evidence on users' expectations of materiality. By better understanding users' expectations, practitioners can more efficiently plan and execute audits with those expectations in mind (Altiero, Kang, & Peecher, 2017). These findings should enhance regulators', firms', and academics' understanding of users' implementation of the concept of materiality and inform regulators as to the effect of appropriate disclosure of auditor materiality considerations in the audit report.

The remainder of the paper is organized as follows: In section 2, we provide background to our experiment and develop our hypotheses. Section 3 discusses the methods. The findings are discussed in Section 4, and we provide concluding comments in Section 5.

2. Background and hypothesis development

2.1. Regulatory background

Until recently, the disclosure of materiality in audit reports had little support from auditing regulators and practitioners. In 2013, the FRC⁵ implemented a new requirement for U.K. audit reports to disclose and explain how the auditor applied the concept of materiality in planning and performing the audit (FRC, 2013c). The explanation should be tailored to the specific circumstances and complexity of the audit. At a minimum, this requires auditors to disclose the materiality threshold for the financial statements as a whole; other materiality levels such as performance materiality are listed as examples of “relevant disclosure.”

In justifying the need for the increased disclosure, the FRC (2013a, 2013b) references the key role materiality plays in shaping the scope of an audit and the extent of the audit work performed, as well as the disclosure’s ability to provide investors with a “benchmark” on which they could start a dialogue with a company (and perhaps in due course with the auditor) about the audit. One of the driving forces behind the FRC’s decision to require materiality disclosures was the demand for such information by investors based on FRC investor surveys and focus groups (FRC, 2013a). A survey of members of the CFA Institute in 2010 similarly suggested that more than 75 percent of the respondents believed that auditor’s materiality thresholds should be disclosed (CFA Institute, 2010), and Manson & Zaman (2001) report that U.K. directors, analysts, and corporate bankers view the disclosure of materiality as enhancing the value of the audit report. Based on survey results, users of financial statements are seemingly in accord that the disclosure

⁵ The FRC sets the standards framework within which auditors, actuaries and accountants operate in the U.K. It also sponsors the U.K. Corporate Governance Code (for companies) and the Stewardship Code (for investors). The FRC monitors the implementation of these standards and promotes best practice by companies and professionals by issuing guidance and publishing thought leadership papers (FRC, 2015, <https://www.frc.org.uk/Our-Work/our-key-activities.aspx>).

of materiality would provide useful information.

For the first year of the required materiality disclosure, the FRC (2015) reviewed 153 audit reports of companies (with two exceptions) listed on the U.K.'s main market. 148 (97%) audit reports stated the benchmark used in determining overall materiality for the financial statements and 128 (84%) described the percentage applied. The most common benchmark (79%) was profit before tax (or a proxy measure for profit before tax) with percentages ranging from 3% to 10%. The disclosure of performance materiality was mainly restricted to one of the large audit firms. No audit reports referred to significant qualitative considerations relating to the auditor's evaluation of materiality. A further FRC review of 278 audit reports from the second year of the required materiality disclosure show no examples where the benchmark was not disclosed and profit measures remain the most popular benchmark (FRC, 2016).

Except for Dutch regulators (NBA, 2014), other standard setters and regulators have been hesitant to fully follow the FRC's lead in this endeavor. The European Commission (EC) initially proposed a requirement for audits to disclose materiality levels, but in the end, the European Parliament did not adopt the Commission's proposal (EC 2011; EU 2014). In January 2015, the IAASB issued new auditor reporting standards designed to enhance auditor's reports for investors and other users of financial statements (IAASB, 2015a, 2015b, 2015c, 2015d). Based on respondents' comments, the IAASB concluded that it was not yet necessary to establish a requirement for the auditor to disclose assessments of materiality in the auditor's report.⁶ The IAASB, however, has left open the possibility that it may reconsider its position on materiality disclosures. In the United States, the PCAOB adopted a new standard to enhance communication

⁶ Nevertheless, the auditor may judge it appropriate, or be required by law or regulation, to do so in an "Other Matter" paragraph (IAASB, 2015d).

about the audit in the auditor's report using critical audit matters, but with no disclosure of materiality (PCAOB, 2017). The Board decided not to include materiality disclosure in the auditor's report because disclosure may reduce the element of surprise in the audit and overstate the importance of quantitative rather than qualitative factors in the auditor's overall consideration of materiality. However, the Board will monitor the implementation of the final standard, as well as the developments of expanded auditor reporting in other jurisdictions, to determine if future enhancements to the auditor's report may be warranted in this area (PCAOB 2017, p. 56). Taken together, the U.K. FRC and Dutch NBA have made the first move in requiring auditors to disclose the specific threshold of overall materiality, while other standard setters are carefully monitoring these "experiments."

2.2. Prior research

In a recent review of research on audit reports, Mock et al. (2013, p. 342) call for researchers to examine changes to the audit report that could potentially "affect users' decisions, or improve the communicative value of the audit report." In discussing examples of these potential changes, the authors identified the disclosure of materiality as an area of interest. Research examining investor response to materiality disclosure is scant, and with mixed results. Early research by Fisher (1990) and Davis (2007) used experimental markets with student participants and find that the disclosure of materiality improves market efficiency and perceived financial statement accuracy. In contrast, Boolaky & Quick (2016) have German bankers perform an experimental task including the disclosure of audit materiality and find no evidence that disclosed materiality had a significant impact on lending decisions.

More recently, archival (e.g., Amiram, Chirop, Landsman, & Peasnell, 2017; Gutierrez et al., 2017) and experimental (Eilifsen, Hamilton, & Messier, 2017) researchers have examined the

effects of disclosure of materiality in a number of contexts.⁷ In their experimental study, Eilifsen et al. (2017) examine two disclosures expected to help investors evaluate the reliability of subjective fair value estimates: a quantitative sensitivity analysis and the auditor's quantitative materiality threshold. They find that when *both* a quantitative sensitivity analysis and a materiality threshold are disclosed, investors judge the reliability of a reported estimate to be significantly higher when it is relatively precise (i.e., low sensitivity) compared to imprecise (i.e., high sensitivity) but not in the absence of a materiality disclosure. In a recent archival study examining the impact of the new disclosure in the expanded audit reports in the U.K., Gutierrez et al. (2017) find that comparatively smaller materiality thresholds are associated with higher audit quality, but that financial statement users do not find the materiality disclosures incrementally useful. Bédard, Coram, Espahbodi, & Mock (2016, p. 261) warn, however, that care should be taken in assessing the “value” of the new audit report from market-level data, given that the motivation of standard setters is to improve the information set to a broad group of stakeholders. Thus, an examination of the decision effects on various stakeholders such as professional investors, creditors, and jurors will remain a relevant consideration. They also encourage research beyond the U.K. environment and our study is responsive to their call for additional research focused directly on users in both the U.S. and the U.K.

⁷ In related archival studies, Reid, Carcello, Li, & Neal (2015, 2016) examine whether the adoption of the expanded audit reporting model in the U.K. affects audit quality. Their results suggest that the new audit reporting requirements are associated with a significant improvement in audit quality and provide useful information to investors. Smith (2017) finds that analyst forecast dispersion decreases in the post extended audit report period in the U.K. Lennox et al. (2017) focus on the risk disclosures rather than materiality disclosures. They report that the new disclosure of risks of material misstatement in the expanded audit report in the U.K. is reliable but is not incrementally informative to investors. Choudhary, Merkley, & Schipper (2016) analyze a sample of errors deemed immaterial by management of firms applying U.S. GAAP and find that immaterial errors are relevant for investors because immaterial errors have predictive ability to forecast outcome indicators of poor reporting quality. Finally, Choudhary, Merkley, & Schipper (2017) analyze a sample of audits inspected by the PCAOB between 2005 and 2015. They provide evidence that relatively looser materiality threshold judgments within the boundaries specified by audit firm guidance imply that the auditor finds fewer errors, suggesting that materiality judgments affect audit outcomes through audit effort.

While the concept of materiality seems to be consistently understood and applied by auditors, it is not clear that well-informed users have a similar clear and consistent working definition of audit materiality. Based on interviews with users of financial statements, Houghton et al. (2011) suggest that materiality is misunderstood and that its disclosure would only lead to investor misconceptions as to the level of work provided. PwC similarly questioned whether disclosing such information could undermine investor confidence in the audit (PwC, 2013). In their feedback to the FRC proposed reporting standard requiring the disclosure of materiality, some commentators warned that disclosure might lead to additional confusion (FRC, 2013b). Finally, an analysis by Citi Research of materiality disclosure in 88 U.K. audit reports, including 35 of the largest companies in the U.K., concludes that investors may reach some incorrect conclusions about the comparability of auditor effort if they review materiality percentages cited in the auditor's reports across a range of companies (Citi Research, 2014a).

In what follows, we consider this prior research and develop our specific hypotheses that are related to the four main research questions cited earlier. Our focus is the effect of the disclosure on professional investors' decision making.

2.3. The overall effect of disclosing materiality

We are first interested in the answering the following two questions: Does the *disclosure* of materiality affect professional investors' investment decisions? Does the *level* of disclosed materiality affect professional investors' investment decisions? By disclosing materiality, the auditor provides the investor with the "precision" of the audit; that is, the amount that the auditor uses to plan and perform the audit procedures. According to auditing standards, the auditor should determine materiality based on their "perception of the financial information needs of users of the financial statements." Until recently, materiality was not disclosed, and archival and behavioral

research (Altiero et al., 2017; Choudhary et al., 2016, 2017) suggests that auditor's materiality judgments are not consistent with users' expectations. If the auditor discloses materiality in the audit report, users should be able to benchmark the disclosure to an amount that they consider important for investing purposes. Thus, disclosing materiality should provide incrementally useful information for investors' decisions compared to situations in which materiality is not disclosed.

Audit firm guidance allows for a range of percentages to be applied to the financial criterion (i.e., net income before taxes, assets, revenues, etc.) used to set materiality. For example, Eilifsen and Messier (2015, Table 3) report that for net income before taxes (NIBT, the most common criterion) the firms allow a range of 3 to 10 percent. The auditor's materiality level is inversely related to the precision of the audit. Audit theory suggests, all else equal, that if a lower level of materiality is disclosed, the investor should understand that such an audit is more precise, resulting in higher audit effort and higher audit quality than an audit conducted using a higher level of audit materiality.

Therefore, in our study, investors receiving the same company facts and circumstances as well as a disclosure of auditor materiality will have more information about the quality of the audit and thus should be more likely to change the level of investment than investors who do not receive information about audit materiality. Furthermore, investors of a company should recognize the relationship between precision, audit effort and audit quality and should be more willing to invest in the company when reported audit materiality is a lower percentage of NIBT than when audit materiality is a higher percentage of NIBT. This discussion leads to our first two hypotheses:

- H1:** Investors who receive a disclosure of audit materiality are more likely to change the level of existing investment in a company than investors who do not receive materiality disclosures.

H2: Investors who receive audit materiality disclosed at a lower (4 percent) percentage of NIBT are more likely to increase the level of existing investment than investors who receive audit materiality disclosed at a higher (10 percent) percentage of NIBT.

2.4. Public versus private investments

The third question we are interested in is: Does the disclosure of materiality differentially affect professional investors' decisions when considering the type of investment entity (publicly-traded versus privately-held investments)? Recent research suggests significant variation among investors' definitions of materiality (DeZoort, Holt, & Stanley, 2015). If information needs differ from one user group to the next, then investors' perceptions of materiality may change depending on investment- and investor-specific characteristics. In discussing materiality, ISA 320 para 2 suggests that audit materiality considerations must take the users into account (IAASB, 2009).⁸ Specifically, auditors are encouraged to consider the ownership structure of the audited entity. Consistent with this requirement, Eilifsen & Messier (2015) find that firms have different allowable ranges for public companies compared to private companies. Therefore, we investigate how the disclosure of materiality affects investors' decisions for a public equity vs. private equity investment.

Prior literature finds that audited financial statements are associated with lower cost of debt, are relied upon more heavily by users, and receive higher credit ratings than unaudited financial statements (Blackwell, Noland, & Winters, 1998; Minnis, 2011; Lennox & Pittman, 2011). However, the level of information asymmetry—and thus the demand for audit assurance—is not the same in all investment settings. Publicly-traded companies have more diffuse ownership

⁸ Altiero et al. (2017) investigate the extent to which auditors take user-specific situations into account when determining audit materiality. The authors find that auditors fail to take this perspective into account unless explicitly prompted to do so. Our study also adds to archival research that relies on public equity investments by investigating private investment settings.

structures, thus increasing the information asymmetry between management and users. Chen, Noronha, & Singal (2004) report that companies included in the S&P 500 report an average of approximately 20,000 unique shareholders. Such an ownership structure dramatically increases the information asymmetry between the small number of managers and the large number of owners (Ang, Cole, & Lin, 2000). Privately-held companies, on the other hand, have more centralized ownership and thus less information asymmetry. Lisowsky & Minnis (2013), for example, find that private companies with assets of \$10 million or more average only 14 owners. Thus, from an information asymmetry perspective, investors would have a lower demand for external audit assurance for private relative to public investments.

However, publicly-traded companies are subject to other factors that may reduce this information asymmetry. For example, publicly-traded companies are subject to stock exchange listing requirements for boards of director and audit committee expertise and independence that improve financial reporting quality (e.g., Klein, 2000). Further, auditors of publicly-traded companies are subject to extensive regulations and oversight, which have also had a beneficial effect on reporting quality (e.g., Coates & Srinivasan, 2014). Finally, auditors of publicly-traded companies are subject to higher litigation risk, which also improves reporting quality (e.g., Lennox, 1999; Khurana & Raman, 2004). Therefore, while publicly-traded companies have higher information asymmetry than privately-held companies, other factors in the public market may offset the associated increase in demand for auditor precision.

Due to these fundamental differences in information environments, users' expectations of auditors may be different depending on whether the company is publicly traded or privately held, but we make no prediction in which direction this difference will be. Therefore, we propose the

following null hypothesis for the effect of disclosing materiality on investors' investment decisions:

H3: Investors holding publicly-traded equity will be no more likely to increase or decrease their investment than investors holding an investment in privately-held equity when materiality is disclosed.

2.5. Equity versus debt

The last research question we examine is: Does the disclosure of materiality differentially affect professional investors' decisions when considering the type of investment (equity versus debt)? The type of financing being secured through the audited financial statements may influence the level of auditor precision expected by investors, and is another characteristic that auditors are encouraged to consider when determining materiality (IAASB, 2009).

Gray, Turner, Coram, & Mock (2011) and Asare & Wright (2012) suggest that nonprofessional investors, bankers, and auditors all have different interpretations of audit reports. Similarly, it is unclear whether equity investors and debt investors use the same financial statement information in making their investment decision. Holthausen & Watts (2001, p. 26) state "it is not apparent that the relevance of a given number would be the same for equity investors and lenders." While equity investors are concerned with net income as evidenced by positive market returns to earnings that just meet analysts' expectations (Bartov, Givoly, & Hayn, 2002), debt investors response to beating such earnings targets is more muted (Jiang, 2008). Instead, debt investors may be more concerned with the company's ability to cover the debt and less concerned with other, more complex portions of the financial statements. Bharath, Sunder, & Sunder (2008) and Kim Simunic, Stein, & Yi (2011) find that higher levels of tangible assets and higher current ratios are associated with significantly lower interest rates. These accounts, while often material, are traditionally based in historical cost and thus subject to lower levels of uncertainty and subjectivity

than other areas of the financial statements (Christensen, Glover, & Wood, 2012). Therefore, if debt investors focus more on information that is inherently easier to audit, they may be less concerned about overall auditor precision and thus be more willing to accept higher levels of auditor materiality than investors investing in equity.

Alternatively, Amiram et al. (2017) argue that the greater a company's reliance on debt financing, the more willing managers are to accept greater auditor scrutiny. In support of their prediction, Amiram et al. (2017) find that a company's reliance on debt financing is associated with lower auditor materiality thresholds using recent U.K. materiality disclosure data. Additionally, simply because debt investors rely on different financial statement accounts does not necessarily mean they will require lower levels of auditor precision. While cash and tangible asset accounts may be subject to less uncertainty than other accounts, the statement of cash flows has recently been a significant reason for financial statement restatements (Heller, 2014). Thus, we propose the following null hypothesis:

H4: Investors holding publicly-traded debt will be no more likely to increase or decrease their investment than investors holding an investment in publicly-traded equity when materiality is disclosed.

2.6. Additional research questions

Our main hypotheses relate to professional investors' investment decisions. To shed further light on investor decision making when presented with materiality disclosures, we also examine a series of additional research questions:

RQ1: What level of audit materiality do professional investors consider appropriate, and does it change depending on type of ownership or investment type?

RQ2: How often do professional investors adjust audit materiality benchmarks?

RQ3: What materiality benchmarks do professional investors prefer, and does it change depending on type of ownership or investment type?

3. Method

3.1. Design and independent variables

A $2 \times 3 + 1$ between-participant design was used to test the hypotheses. The first independent variable, *MATERIALITY_LEVEL*, is manipulated at two levels: 4% and 10%. Eilifsen and Messier (2015) find that firm guidance provides allowable ranges from 3 to 10 percent of income before taxes, with most firms using 5 percent of income before taxes for publicly-traded companies. However, surveys (Citi 2014a, 2014b) show that materiality is rarely set below 4 percent of income before taxes. Thus, our use of 4 to 10 percent is consistent with the range of thresholds commonly used in practice. The second independent variable was the type of investment (*INVEST_TYPE*), which is manipulated at three levels: public equity, private equity, and public debt. We include a control condition where the audit report is for a public equity company with no materiality disclosure. Because our professional investors come from two countries (U.S. and U.K.), we control for country in the analyses. Figure 1 shows the experimental design.

Insert Figure 1 here

3.2. Dependent variable

The dependent variable used to test the hypotheses is based on the participants' responses to the following question: "Assume that the mutual fund currently holds 3 percent of the [*investment type*] in the Company. Based on the information provided about Trans-Global Exports, please indicate whether the fund should increase, decrease, or maintain its current 3% investment" using the following scale:⁹

Significantly Decrease to 1%			Maintain at 3%			Significantly Increase to 5%		
1.0%	1.5%	2.0%	2.5%	3.0	3.5%	4.0%	4.5%	5.0%

⁹ Participants could respond in increments of 0.1% in the on-line survey instrument (e.g., 1.1%, 1.2%, etc.).

3.3. Case materials and procedures

The participants were presented with the financial information for a fictitious company, Trans-Global Exports – that “manufactures and ships first-rate, high quality tools to carpenters, contractors, production facilities, and fabricators across North and South America, and Europe. The Company’s products are largely sold directly to the end users.” The case was adapted from an instrument used in Clor-Proell, Proell, & Warfield (2014).

The participants were told that “For the purposes of this study, you are to assume the role of the fund manager for a large mutual fund that is actively managed (that is, the fund is not an index fund). The fund invests in common stock and bonds from public and private companies. Assume you are evaluating the fund’s current investment in Trans-Global Exports.” They were then presented three years of ratios, the auditor’s report, simplified income statement and balance sheet for two years, and a footnote excerpt about the fair value of their securities investments. By presenting the participant with information about accounts with estimation uncertainty that require more auditor scrutiny, we allow materiality disclosures to be potentially meaningful to the user. The participants were then asked to respond to the dependent variable question discussed above and a series of questions related to the investment decision, the case, and general information. The control group received the same information except that materiality was not disclosed in the audit report. The instrument (cf. Appendix) was administered by emPANEL using Qualtrics.¹⁰

¹⁰ This study was approved by the university’s Institutional Review Board.

3.4. Participants

Because professional investors are difficult to obtain in traditional settings, we contracted with emPANEL, a reputable online survey company, to obtain this class of investor.¹¹ In order to receive case information and proceed with the study, participants were required to answer questions regarding their status as a professional investor, years of experience as a professional investor, the number of financial statements analyzed for investment purposes over the prior 12 months, and a fact-based question regarding the relation between discount rate and DCF valuation models. Participants were only allowed to proceed if they self-identified as professional investors with more than 5 years of experience, who analyzed at least 3 sets of financial statements that year, and who correctly answered the question on discounted cash flow analysis.

In order to identify our desired pool of informed investors, we also applied additional screens relating to the manipulation checks that were completed after viewing the case materials. First, we asked “In the case study, you were asked to evaluate Trans-Global Exports for a potential investment in the Company’s (participants selected one from the following categories: Publicly traded equity, Publicly traded debt, Privately held equity, or Privately held debt)?” As advised by emPANEL, participants were not able to proceed to the subsequent debriefing questions if they failed this first manipulation check. Second, we asked, “In the case study, auditors set materiality at (participants selected one from the following categories: It was not specified in the case, 4% of pre-tax income (\$11.5M), or 10% of pre-tax income (\$29M))?” Because users’ response to a particular level of materiality is central to our study, we also screen out participants who missed this second manipulation check. Finally, we screened out participants who spent less than 2

¹¹ emPANEL has been used in experiments published in accounting journals (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2014).

minutes on the task. These screens help increase the likelihood that our results are based on a sample of investors who paid attention to the case at hand.

Our final sample consists of 246 professional investors from emPANEL online at a cost of approximately \$46 per usable response.¹² 120 participants were from the U.S. and 126 were from the U.K. Table 1 provides the demographic data on the participants. Overall, males composed 71 percent of the participants while females were 29 percent. The distribution of participants' current employment position is reasonably consistent across the two countries. The bulk of the participants are financial analysts (36%), asset managers (17%), CEO/CFO (16%), and investment bankers (13%). Eighty-eight percent of the participants had 6 to 25 years of experience as professional investors. The investment expertise of the participants included financial services (30%), manufacturing (19%), sales (15%) and services (tech & healthcare) (11%). Most the participants held advanced degrees and professional certifications (e.g., CPA/CA, CFA, CFP). Thus, our sample included an experienced group of investors.

<Insert Table 1 here>

4. Results

4.1. Hypotheses tests

Table 2 presents the results of our experiment. Panel A presents descriptive statistics for participants' investment decision across all treatments, and by country.¹³ Our first hypothesis predicts that investors presented with any type of materiality disclosure will be more likely to change their level of investment than investors lacking information on auditors' materiality level.

¹² Cost per usable response is approximated because we also paid for unusable responses.

¹³ In untabulated analysis, all measured variables were included as covariates. None were significant at conventional levels.

We test H1 in Table 2, Panel B, by examining how investment decision varies between participants in the control treatment and those in all other cells. As reported in Table 2, Panel B, we find no evidence that the disclosure of materiality affects investors' decision making ($F=0.08$, $p=0.775$). The *COUNTRY* variable was moderately significant ($F=3.12$, $p=.079$, two-tailed).¹⁴ Based on cell means (3.46 U.S., 3.30 U.K.), the U.S. participants tend to increase their investment more than U.K. participants, although this difference in means appears to be primarily driven by one cell of participants in the U.K. (private equity, 4% materiality disclosure, mean 2.89). Thus, we fail to support H1.

<Insert Table 2 here>

H2 predicts that the *level* of materiality will affect investor decision making. We test this hypothesis using a 2×3 ANCOVA (omitting the control group). As shown in Table 2, Panel C, we find a main effect for *MATERIALITY_LEVEL* ($p=0.03$, two-tailed; mean 3.50 for 10% materiality, 3.28 for 4% materiality). However, the significant effect is opposite to that predicted by audit theory. Specifically, participants presented with audit materiality of 10 percent increase their investment in the company to a greater extent than participants presented with audit materiality of 4 percent. In other words, investors increase their investment as materiality increases, even though auditor precision decreases.¹⁵ This result is consistent with concerns voiced by investor surveys (Houghton et al., 2011), practitioners (PwC, 2013), and consultants (Citi Research, 2014a) that investors may not understand how levels of audit materiality affect effort

¹⁴ We also find no significant difference in decision making if we only compare the control treatment to the two public equity treatments ($F=0.19$, $p=0.668$, untabulated).

¹⁵ This interpretation is consistent with investors viewing “more” materiality as being superior to “less” materiality. We note that our materiality disclosures in the audit report are consistent in content with those disclosed in the U.K. While this language suggests that lower audit materiality results in auditors being concerned about smaller dollar errors, we do not explicitly tell participants of the inherently inverse relation between audit materiality and auditor effort.

and audit quality and, as such, disclosures of audit materiality could be confusing to investors. An alternative explanation is that the lower materiality level signals a higher risk level than what investor would expect in the typical audit client. As noted below, investors' self-determined materiality for the case materials obtained in a debriefing question was around 10 percent across conditions. Therefore, if 10 percent is considered typical, it is possible that the apparent preference for a higher materiality is driven by investors' assessment of risk. We examine this result more fully in Section V. We also note that the *COUNTRY* variable is significant ($F=5.30$, $p=0.022$, two-tailed; mean 3.49 for U.S., 3.27 for U.K.),¹⁶ consistent with results presented in Panel B.

<Insert Table 3 here>

H3 examines how materiality disclosures differentially affect participants making investment decisions in publicly traded equity compared to privately held equity. As reported in Table 3, Panel A, when materiality is disclosed we find a marginally significant difference between the investment decisions of participants in the public and private equity treatments ($F=2.81$, $p=0.095$, two-tailed; mean 3.49 for public equity, 3.28 for private equity), with public equity participants being slightly more willing to increase their investment level. Thus, we find moderate support to reject H3. Table 3, Panel B, presents the results of testing H4, which relates to debt versus equity investors. As shown in Table 3, Panel B, the investment decisions of participants in the public debt and public equity treatments are not significant ($F=0.96$, $p=0.329$; mean 3.49 for public equity, 3.38 for public debt). Thus, we fail to reject H4. Taken together, our main hypotheses testing suggest that the disclosure of audit materiality does not generally affect investors' decisions on average, and in the cases where disclosure of materiality may affect decisions, the disclosed

¹⁶ U.S. and U.K. means from ANOVA in Table 2 Panel C are slightly different than those in Table 2 Panel B because Panel C excludes the control treatment.

information is either not well understood or is not used in a manner predicted by audit standards and theory.

4.2. Additional analyses

In addition to our main dependent variable, we also obtained information on participants' assessment of auditors' disclosed materiality level (too low vs. too high), their own materiality estimates, frequency of adjusting benchmarks when calculating materiality, preferred benchmarks for various types of investments, confidence in their investment decision, confidence that no misstatement exists greater than audit materiality, and familiarity with the concept of audit materiality. Participant response to these questions is reported in Table 4, Panels A-G. We believe this information is relevant in shedding light on our hypotheses as well as answering our three additional research questions.

<Insert Table 4 here>

Regarding our additional research questions, RQ1 investigates what professional investors view as appropriate levels of audit materiality, and if that level varies by characteristic of the investment. As presented in Table 4, Panel A, investors assess disclosed materiality as being neither too high nor too low. Further, we find no effect of materiality level, or of investment setting on participants' assessment of materiality in a 2×3 ANCOVA ($p > 0.05$ on variables of interest, untabulated).

Panel B presents participants' own estimates of materiality. In this case, experimental setting does affect decision making, as participants in the 10 percent treatment have significantly higher materiality estimates (mean of \$31.74 million) than the participants in the 4 percent treatment (mean of \$26.06 million, t-test significant at $p < 0.01$). Interestingly, across all non-control treatments, participants' own estimates of what audit materiality should be (\$28.58 million

on average, or 9.84 percent of pre-tax income), are higher than the traditional benchmark of 5 percent of pre-tax income (\$28.58 vs \$14.53, significant at $p < 0.01$). Further, participants in treatment conditions reported estimated materiality that is not significantly different from the average provided by the control group (\$28.58 vs \$25.24 million, $p = 0.22$). Taken together, Panels A and B suggest that participants appear to prefer and/or expect materiality levels at about 10 percent, which exceed the traditional benchmark of 5 percent of pre-tax income. It is not clear investors fully understand the effect on audit effort of lower materiality and it is possible that the disclosure of lower audit materiality than investors expect signals heightened auditee risk.

Our second RQ investigates how often users adjust materiality benchmarks before calculating audit materiality. Financial statement users commonly use non-GAAP measures when evaluating financial statements by adjusting reported balances through the exclusion of certain accounts, transactions, or events (e.g., EBITDA). RQ2 enables us to examine whether investors make similar adjustments to audit materiality thresholds before calculating audit materiality. As reported in Table 4 Panel C, investors frequently adjust benchmarks (grand mean of 6.84 > midpoint of 5, $p < 0.01$). However, this proclivity was not affected by experimental treatments ($p > 0.05$ for all treatments in a 2×3 ANCOVA, untabulated).

Finally, our third RQ investigates participants' preferred materiality benchmarks in the three investment settings included in our case. As shown in Table 4, Panel D, participants appear to consider a wide array of benchmarks acceptable for purposes of determining materiality. Surprisingly, the most common benchmark used by auditors—pre-tax income—is not commonly preferred by investors. However, it could be that investors' views on materiality are not consistent with guidance in auditing standards or that they lack a proper understanding regarding the effect

of materiality on audit quality, so it is not clear that this study would be a sufficient basis to suggest that auditors should move away from pre-tax income as the most commonly used benchmark.

Evidence regarding our main hypotheses tests suggest that investors were more willing to increase investment in the hypothetical company when reported audit materiality was 10 percent than when it was 4 percent. As noted earlier, investors' self-determined preferred level of materiality was around 10 percent across conditions. As such, a 4 percent reported auditor materiality could signal higher auditee risk and investors may be more comfortable investing when audit materiality is 10 percent. Data in Table 4, Panel E, provides some support for this interpretation. Specifically, participants in the 10 percent materiality treatment are more confident in their investments (7.51 vs 6.88, $p < 0.01$). Further, while participants in the 10 percent materiality treatment are not significantly more confident that the financial statements are free of misstatement (Panel F, 6.89 vs 6.61, $p = 0.24$), it is directionally consistent with participants attributing greater comfort to higher materiality thresholds.

5. Conclusion

In a review of the literature on audit reports, Mock et al. (2013) note that we currently know very little about how financial statement users understand, respond to, or incorporate audit materiality. Given recent regulation requiring the disclosure of audit materiality in the U.K. (FRC, 2013c) and the importance of audit materiality in determining auditor effort, we examine the effect of audit materiality disclosures on professional investors' decision making.

From a sample of 246 professional U.K. and U.S. investors, we find that participants who read audit reports that disclose audit materiality do not make significantly different investment decisions than investors who do not receive an audit materiality disclosure. Failing to incorporate the materiality information into the investment decision is consistent with recent archival studies

that have examined the market's response to new U.K. materiality disclosures (e.g., Gutierrez et al., 2017). When we only examine treatments that view a materiality disclosure, we find that participants are more likely to increase their investment in a hypothetical company when audit materiality is set at 10 percent of pre-tax income than when materiality is 4 percent of pre-tax income. In other words, investors in our setting appear more comfortable and confident increasing investment in a company when reported materiality was higher. There are two possible interpretations: (1) investors lack a basic understanding the inherently inverse relationship between audit materiality and audit precision and audit effort or (2) investors perceive the lower level of reported audit materiality to be a signal of increased auditee risk. Given the investors' own self-determined preferred audit materiality for the hypothetical company and investors' reported confidence in decisions, it appears our results are more consistent with the second interpretation. Further, we find no differential effect of materiality on investment decisions when comparing public versus private or, separately, debt versus equity investment decisions. These results provide evidence that disclosing audit materiality may not have the effect intended by audit regulators and could even confuse investors in a wide variety of investment settings, consistent with interview evidence in Houghton et al. (2011).

Because other audit regulators outside of the U.K. and the Netherlands are taking a “wait and see” approach to requiring the disclosure of audit materiality, our results are timely and can help inform standard setters on future policy choices. For example, our results suggest it may be helpful to explicitly disclose the inverse relationship between audit materiality and audit precision. Additionally, our results suggest that investors appear comfortable with a wide set of audit materiality benchmarks above and beyond pre-tax income, which is predominantly used by audit firms. Thus, our study extends Eilifsen & Messier (2015) by providing evidence on investors'

preference for materiality benchmarks. Our results should be of interest to practitioners who seek to better understand users' preference and understanding of audit materiality. Finally, our results are consistent with recent market evidence of a lack of user response to materiality disclosures (Gutierrez et al., 2017). By triangulating evidence between multiple research methods, users can be more confident in the true effect of materiality disclosure on investor decision making.

Our results are subject to limitations. Although we go to great lengths to ensure that our study participants truly are professional investors, some of our screening requirements were dependent on self-reporting, which is subject to error. Additionally, we acknowledge that participants in our setting have a limited set of information and that additional information is available when investors make actual investment decisions.

Appendix: Instrument

Consent and Screening Quiz

The purpose of this study is to examine how the disclosure of the auditor's materiality level affects the investment decisions of US and UK professional investors. You are being asked to participate in the study because you meet the following criteria: You make decisions about large monetary value investments. If you volunteer to participate in this study, you will be asked to do the following: You will be asked to make an investment decision about a hypothetical company. This study includes only minimal risks. The study will take 15-20 minutes of your time. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact Kristen at Empanel Online at kjames@empanelonline.com. Your participation in this study is voluntary. You may withdraw at any time. You are encouraged to ask questions about this study at the beginning or any time during the research study. Participant Consent: I have read the above information and agree to participate in this study. I am at least 18 years of age. If you agree to participate, please continue to the next page.

This case is to be completed by those with professional investing experience ONLY. Please answer the following question honestly. Do your day-to-day job requirements include making decisions about large monetary value investments or analyzing/trading stocks/bonds? Jobs that would meet this criteria include, but are not limited to, financial analysts, fund/asset managers, investment bankers, investment brokers/dealers, loan officers, CEOs, and CFOs.

- Yes
- No

***If a participant answered No, proceeding to the next page redirected them to a site indicating they were finished)**

Please answer the following questions based on your current knowledge of finance, accounting, and financial reporting.

How many total years of work experience do you have as an investment professional?

- 0-4 years
- 5-15 years
- >15 years

In the past 12 months, how many times have you analyzed a company's financial statement information for the purpose of making or recommending a potential investment in the company's debt or equity?

- 0-2 times
- 3-5 times
- >5 times

What effect does using a higher discount rate generally have on the valuation of a company valued using a discounted cash flow model?

- Lower valuation
- Higher valuation
- The discount rate has no effect on valuation

When you have answered the three questions above, please continue to the next page. You will be automatically redirected to a version of the survey customized for your financial background.

***If a participant missed any of the above three questions, proceeding to the next page redirected them to a site indicating they were finished. If they answered all three correctly, they were randomly assigned to a treatment.**

Experimental Instrument
(Experimental Conditions are Highlighted)

General Instructions

The following presents financial information about a fictitious company, Trans-Global Exports (the Company). For the purposes of this study, you are to assume the role of the fund manager for a large mutual fund that is actively managed (that is, the fund is not an index fund). The fund invests in common stock and bonds from public and private companies. Assume you are evaluating the fund's current investment in Trans-Global Exports. On the following pages, you will be presented with information from the Company's annual report and will use this information to decide whether the fund should increase, decrease, or maintain its current investment in the Company's **publicly traded equity, publicly traded debt, or privately held equity**.

In the case that follows you will be presented with or asked questions about *materiality*. Financial reporting frameworks generally explain that misstatements or omissions are considered to be *material* if they, individually or in the aggregate, could reasonably be expected to influence the economic decisions of users.

The information included in the case is not intended to be comprehensive or representative of what information would normally be available when you evaluate a company. However, please provide your best effort in reaching an investment decision about the Company's **publicly traded equity, publicly traded debt, or privately held equity** using only the information provided in the case.

In reporting the results of this study, all participants will remain anonymous. Since this study is concerned with **individual** judgments, it is important that you work independently of others

participating in this study.

Thank you again for participating in the study.

Company Description and Background Information

Trans-Global Exports is a specialty manufacturer of tools.

(Public Equity Treatment & Control)

The Company's stock is **publicly traded** on the New York Stock Exchange and the London Stock Exchange.

(Public Debt Treatment)

The Company's equity is privately held by a group of twenty investors, but the Company's **debt is publicly traded** on the New York Stock Exchange and the London Stock Exchange.

(Private Equity Treatment)

The Company's stock is **privately held** by a group of twenty investors.

(All Treatments)

The Company manufactures and ships first-rate, high quality tools to carpenters, contractors, production facilities, and fabricators across North and South America, and Europe. The Company's products are largely sold directly to the end users. Selected historical financial ratios are presented below:

Trans-Global Exports			
	2013	2014	2015
Return on Assets (Income ¹⁷ /Assets)	5.23%	6.05%	5.86%
Return on Sales (Income/Sales)	6.55%	6.89%	6.69%
Current Ratio (Current Assets / Current Liabilities)	1.2	1.9	1.5
Quick Ratio (Current Assets – Inventory / Current Liabilities)	0.6	1.1	0.9

Selected financial information and the audit report were obtained **from public filings (for public equity and public debt) or directly from the Company (for private equity)** and are reported below.

¹⁷Terminology and formatting was adapted to UK participants (i.e., “profit” instead of “income”, “revenue” instead of “sales”, dating conventions, names of financial statements, and order of accounts in financial statements). All substantive content was identical between US and UK participants.

Independent Auditor's Report¹⁸
(Only One/Two Paragraphs of the Report are provided)

Control Treatment only receives first paragraph

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Trans-Global Exports as of December 31, 2015 and 2014, and the results of its operations and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Audit Materiality

We apply the concept of materiality both in planning and performing our audit, and in evaluating the effect of misstatements on our audit and on the financial statements. For the purposes of determining whether the financial statements are free from material misstatement we define materiality as the magnitude of misstatement that makes it probable that the economic decisions of a reasonably knowledgeable person, relying on the financial statements, would be changed or influenced. When establishing our overall audit strategy, we determined a magnitude of misstatements that we judged would be material for the financial statements as a whole. We determined materiality for the consolidated financial statements to be **\$11.5 million or \$29 million**, which is approximately **4 percent or 10 percent** of pre-tax income. Our objective is to provide reasonable assurance that total detected and undetected audit differences do not exceed **\$11.5 million or \$29 million** for the financial statements as a whole.

Big 4 Auditor
February 15, 2016

¹⁸ The first paragraph of the UK audit report read as follows to comply with European terminology: "In our opinion the financial statements give a true and fair view of the state of the Group's affairs as at 31 December 2015 and of the Group's profit for the year then ended; and the Group financial statements have been properly prepared in accordance with International Financial Reporting Standards ('IFRSs') as adopted by the European Union." In the second paragraph, the UK audit report refers to the "Group" instead of "consolidated" financial statements.

Trans-Global Exports **(Same for all treatments)**

Trans-Global Exports
Simplified Income Statement

	Dec 31, 2015 (‘000’s)	Dec 31, 2014 (‘000’s)
Net sales	\$2,716,256	\$2,350,145
Cost of goods sold	1,831,250	1,552,351
Gross profit	885,006	797,794
Selling, general, & administrative expenses	402,500	311,020
Income from operations	482,506	486,774
Investment income (loss)	60,400	2,543
Interest expense	252,378	255,571
Income before income taxes	290,528	233,746
Income tax	108,571	71,821
Net income	<u>\$181,957</u>	<u>\$161,925</u>

Simplified Balance Sheet

	Dec 31, 2015 (‘000’s)	Dec 31, 2014 (‘000’s)
Current Assets (e.g., cash, inventory, A/R)	\$742,111	\$693,199
Property, Plant & Equipment, net	276,351	492,145
Goodwill and Intangible Assets, net	2,086,606	1,491,102
Total Assets	<u>\$3,105,068</u>	<u>\$2,676,446</u>
Current Liabilities	494,740	364,842
Long-Term Debt	711,060	594,171
Other Liabilities	493,706	422,879
Shareholders’ Equity	1,405,562	1,294,554
Total Liabilities and Shareholders’ Equity	<u>\$3,105,068</u>	<u>\$2,676,446</u>

Footnote Excerpt from Trans-Global Exports (Same for all treatments)

Footnote Excerpt from Trans-Global Exports

Investments Measured at Fair Value

The Company uses fair value accounting for its investments. Fair value is measured based on observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the Company's assumptions. These two types of inputs create a three-tiered fair value hierarchy. Level 1 fair values contain low estimation uncertainty, whereas Level 2 and Level 3 fair values contain *moderate or high estimation uncertainty*, depending on the nature of the model inputs and the value of the instrument. Estimation uncertainty is the susceptibility of an accounting estimate to an inherent lack of precision in its measurement. The following table presents, for each level of the fair value hierarchy, the Company's trading securities and available-for-sale securities at fair value as of December 31, 2015 (numbers in thousands):

Description	Fair Value at 12/31/2015	Fair Value Measurements Using		
		Level 1	Level 2	Level 3
Security Assets				
Trading Securities	\$ 147,624			\$ 147,624
Available for Sale	\$ 63,576	\$ 63,576		
Total Security Assets	\$ 211,200	\$ 63,576	\$ 0	\$ 147,624

The following table provides a reconciliation of the beginning and ending balances for security assets (numbers in thousands).

	Level 1	Level 3
Beginning balance at December 31, 2014	\$63,576	\$87,224
Unrealized gains	0	60,400
Ending balance at December 31, 2015	63,576	147,624
Total Effect on Earnings	0	60,400
Total Effect on Earnings per Share (EPS)	\$0.00	\$0.60

Section 1: Case Questions

Please answer the following questions regarding Trans-Global Exports. You may review the case materials while answering these questions.

1. Assume that the mutual fund currently holds **3 percent** of the **publicly traded equity, publicly traded debt, or privately held equity** in the Company. Based on the information provided about Trans-Global Exports, please indicate whether the fund should, increase, decrease or maintain its current 3% investment.

Significantly Decrease to 1%				Maintain at 3%			Significantly Increase to 5%		
1.0%	1.5%	2.0%	2.5%	3.0	3.5%	4.0%	4.5%	5.0%	

2. How confident are you in this investment decision in Trans-Global Exports?

Not Confident									Confident	
0	1	2	3	4	5	6	7	8	9	10

3. As fund manager, what is your assessment of the auditor’s disclosed materiality threshold for Trans-Global Exports of **\$11.5M or \$29M**, which is approximately **4% or 10%** of pre-tax income? (Note: this question is not asked of the control group)

Materiality threshold is much too low							Materiality threshold is much too high			
0	1	2	3	4	5	6	7	8	9	10

4. Based on your professional experience, what do you believe is an appropriate dollar amount for materiality for auditing Trans-Global Exports (in millions \$USD)?

0.0	5.8	11.6	17.4	23.2	29	34.8	40.6	46.4	52.2	58.0
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Questions 5a and 5b are only asked of the Control Group:

5a. Based on your professional experience, what do you believe is an appropriate dollar amount for materiality for auditing Trans-Global Exports if the company were privately held and the investment was in the form of equity securities? (in millions \$USD)

0.0	5.8	11.6	17.4	23.2	29	34.8	40.6	46.4	52.2	58.0
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5b. Based on your professional experience, what do you believe is an appropriate dollar amount for materiality for auditing Trans-Global Exports if the company were publicly traded and the investment was in the form of debt securities rather than equity securities? (in millions \$USD)

0.0	5.8	11.6	17.4	23.2	29	34.8	40.6	46.4	52.2	58.0
-----	-----	------	------	------	----	------	------	------	------	------

6. As the manager for the fund considering the investment in **publicly traded equity, publicly traded debt, or privately held equity**, how important is Trans-Global Exports' **profitability** to you in making your **investment** decision?

Not important									Very important	
0	1	2	3	4	5	6	7	8	9	10

7. As the manager for the fund considering the investment in **publicly traded equity, publicly traded debt, or privately held equity**, how important is Trans-Global Exports' **liquidity** to you in making your **investment** decision?

Not important									Very important	
0	1	2	3	4	5	6	7	8	9	10

8. Given the auditor's opinion, as the manager for the fund considering the investment in Trans-Global Exports' **publicly traded equity, publicly traded debt, or privately held equity**, how confident are you that there are no misstatements individually or in the aggregate greater than the auditor's disclosed materiality threshold of **\$11.5M or \$29M**? (note: "disclosed" is not included in control treatment, neither is the phrase "of \$11.5 or \$29M")

Not confident									Very confident	
0	1	2	3	4	5	6	7	8	9	10

This marks the end of Section 1 of 3; the following two sections are very short. Once you continue to the next page, you will not be able to return to these questions or review the case information.

Section 2: Case Questions (Same for all treatments)

The following questions ask you to reflect on the case you just completed regarding Trans-Global Exports. Please carefully reflect on the case materials before answering each question.

1. In the case study, you were asked to evaluate Trans-Global Exports for a potential investment in the Company's:

- Publicly traded equity
- Publicly traded debt
- Privately held equity
- Privately held debt

***Based on recommendation of the online survey company emPANEL, this question was used to screen out participants. If a participant missed this manipulation check, proceeding to the next page redirected them to a site indicating they were finished. If they answered the question correctly, they continued to Section 3.**

2. In the case study, auditors set materiality at:

- It was not specified in the case
- 4% of pre-tax income (\$11.5M)
- 10% of pre-tax income (\$29M)

This marks the end of Section 2 of 3; the following section is very short. Once you continue to the next page, you will not be able to return to these questions.

Section 3: General Questions (Same for all treatments)

The following questions are general and are NOT related to the Trans-Global Exports materials presented in the case. Please answer the remaining general questions for a company in the industry in which you specialize as a professional investor. Please answer ALL questions before finishing.

1. Please select the industry below that best matches most of your investment expertise in terms of evaluating potential investments:

- Mining and construction
- Manufacturing
- Transportation and communication
- Utilities
- Wholesale and retail sales
- Financial institutions and insurance
- Services (e.g., technology services, healthcare, etc.)
- Other: _____

2. How familiar are you with the concept of audit materiality as used by auditors?

Not at all familiar									Very familiar	
0	1	2	3	4	5	6	7	8	9	10

3. The following list provides a number of benchmarks (financial results and financial positions) proposed in auditing standards and academic literature to determine the level of materiality. For a potential investment in the industry selected in #1 above, please select **the one** materiality benchmark you would choose **for each** of the following investment types: publicly traded equity, publicly traded debt, and privately held equity. Please treat all benchmarks as being before any normalization or additional potential adjustments.

	Pre-tax Income	EBIT or EBITDA	Operating Income	Total Assets	Gross profit/gross margin	Total Equity	Total Revenue	Cash Flow from Operations
Publicly Traded Equity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Publicly Traded Debt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Privately Held Equity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

4. Given a full set of financial statements, how often would you **adjust** benchmark amounts computed based on the current period financial statements before arriving at an amount you consider material (for example, backing out depreciation and amortization expense, take a multi-year average of a benchmark, etc.)?

Never										Always
0	1	2	3	4	5	6	7	8	9	10

5. How often do you refer to the auditor’s opinion on the company’s financial statements to inform your investment decisions?

- Always
- Sometimes
- Never

6. Please select the role below that best matches your current position within your company:

- Investment banker
- Asset manager
- Financial analyst
- CEO or CFO
- Broker
- Internal or external auditor
- Other _____

7. How many total years of work experience as an investment professional do you have?

- 0-5 years
- 6-15 years
- 16-25 years
- 26-35 years
- >35 years

8. What is your gender?

- Male
- Female

9. What is the highest level of education you have completed and what certifications have you received?¹⁹

- Undergraduate -- Accounting/Finance/Mgmt
- Undergraduate -- Other
- Master's Degree -- Accounting/Finance/Mgmt
- Master's Degree -- Other
- M.B.A.
- Ph.D.
- Certified Public Accountant (CPA)
- Certified Internal Auditor (CIA)
- Certified Financial Analyst (CFA)
- Certified Financial Planner (CFP)
- Certified Fraud Examiner (CFE)
- Certified Management Accountant (CMA)

Thank you for your participation! Please answer ALL questions, then continue to the next page to complete the study and save your responses.

¹⁹ In the UK version, Certified Public Accountant (CPA) is replaced with Chartered Accountant (CA, ACA/FCA, ACCA/FCCA). Similarly, Certified Internal Auditor and Certified Financial Analyst are replaced with Chartered Internal Auditor and Chartered Financial Analyst, respectively. Certified Management Accountant (CMA) is replaced with Certificate in Business Accounting (CBA).

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Figure 1
Experimental Design

		Type of Investment			
		Public Company equity	Private Company equity	Public Company debt	Public Company equity
Materiality Level	4%	A	B	C	
	10%	D	E	F	
	No disclosure (control)				G

Table 1
Participant Demographic Information
(U.S.: n=120, U.K.: n=126)

<u>Gender:</u>	<u>U.S.%</u>	<u>U.K.%</u>	<u>Total%</u>
Female	23	34	29
Male	77	66	71
<u>Current Role:</u>	<u>U.S.%</u>	<u>U.K.%</u>	<u>Total%</u>
Investment banker	13	13	13
Asset manager	18	17	17
Financial analyst	38	34	36
CEO/CFO	19	14	16
Broker	8	6	7
Auditor	3	10	7
Other	1	7	4
<u>Years of Experience as Investment Professional:</u>	<u>U.S.%</u>	<u>U.K.%</u>	<u>Total%</u>
0 to 5	5	3	4
6 to 15	62	54	58
16 to 25	25	35	30
26 to 35	6	7	7
>35	3	0	1
<u>Industry Specialization as Investor:</u>	<u>U.S.%</u>	<u>U.K.%</u>	<u>Total%</u>
Mining	6	6	6
Manufacturing	19	19	19
Transportation/Communication	5	11	8
Utilities	4	13	9
Sales	21	9	15
Financial/Insurance	32	29	30
Services (tech, healthcare)	11	11	11
Other	3	2	2

How often do you refer to the audit opinion?

	<u>U.S.</u>	<u>U.K.</u>
Always	47%	52%
Sometimes	51%	45%
Never	2%	2%

<u>Education:</u> *	<u>U.S.%</u>	<u>U.K.%</u>	<u>Total %</u>
Undergrad-Acct/Fin/Mgmt	22	12	18
Undergrad-Other	3	9	6
Masters-Acct/Fin/Mgmt	25	21	23
Masters-Other	12	17	14
MBA	24	7	15
PhD	8	6	7
<u>Certifications:</u> *			
CPA/CA/ACA/FCA/ACCA/FCCA	10	15	13
CIA	4	9	7
CFA	18	16	17
CFP	10	7	9
CFE	2	2	2
CMA	3	4	3

* Participants were asked to mark the highest level of education obtained and what certifications, if any, they have held. Because some participants included multiple degrees and not just their highest degree obtained, percentages do not add up to 100 percent.

Table 2

Overall Test of Effect of Materiality Level and Type of Investment on Investment Decisions

Panel A: Mean (Standard Deviation) of Participants' Investment Decision

	<u>MATERIALITY_LEVEL—4%</u>			<u>MATERIALITY_LEVEL—10%</u>			<u>Control</u>	<u>Overall</u>
	<u>Private Equity</u>	<u>Public Debt</u>	<u>Public Equity</u>	<u>Private Equity</u>	<u>Public Debt</u>	<u>Public Equity</u>		
U.S.	n=22 3.30 (0.52)	n=18 3.33 (0.50)	n=19 3.60 (0.65)	n=18 3.62 (0.73)	n=17 3.60 (0.62)	n=12 3.53 (0.66)	n=13 3.27 (0.91)	n=119 3.46 (0.65)
U.K.	n=24 2.89 (1.05)	n=19 3.26 (0.46)	n=20 3.37 (0.67)	n=19 3.41 (0.92)	n=17 3.34 (0.74)	n=14 3.49 (0.64)	n=12 3.59 (0.68)	n=125 3.30 (0.79)
All	n=46 3.09 (0.86)	n=37 3.29 (0.48)	n=39 3.48 (0.66)	n=37 3.51 (0.83)	n=34 3.47 (0.68)	n=26 3.51 (0.64)	n=25 3.42 (0.81)	

Panel B: Effect of Any Materiality Disclosure on Investment Decision vs. Control Group (**H1**)

<u>Source</u>	<u>df</u>	<u>SS</u>	<u>F</u>	<u>p-value</u>
<i>CONTROL</i>	1	0.44	0.08	0.775
<i>COUNTRY</i>	1	1.66	3.12	0.079
Error	241	127.85		

Panel C: ANCOVA— Investment Decision (**H2**)

<u>Source</u>	<u>df</u>	<u>SS</u>	<u>F</u>	<u>p-value</u>
<i>MATERIALITY_LEVEL</i>	1	2.31	4.65	0.032
<i>INVEST_TYPE</i>	2	1.40	1.41	0.247
<i>MATERIALITY_LEVEL * INVEST_TYPE</i>	2	1.39	1.40	0.248
<i>COUNTRY</i>	1	2.63	5.30	0.022
Error	212	105.29		

Investment decision is a scale bounded by decrease investment to 1 percent and increase investment to 5 percent.

CONTROL equal to 1 if participant was in the Control Treatment, and equal to 0 for all other treatments. *MATERIALITY_LEVEL* equal to 1 if 4%, 2 if 10%. *INVEST_TYPE* equal to 1 if private equity, 2 if public debt, and 3 if public equity. *COUNTRY* is equal to 1 for U.S. participants, 0 for U.K. participants.

ANCOVA comparison in Panel C does not include the control group as they are not presented with materiality levels and thus are omitted from the regression.

Table 3
Planned Contrast Tests

Panel A: Publicly Traded vs Privately Held Equity (H3)

<u>Contrast</u>	<u>df</u>	<u>F</u>	<u>p-value</u>
<i>INVEST_TYPE</i> (1, -1)	1	2.81	0.095

Panel B: Public Debt vs Public Equity Investment (H4)

<u>Contrast</u>	<u>df</u>	<u>F</u>	<u>p-value</u>
<i>INVEST_TYPE</i> (1, -1)	1	0.96	0.329

Two planned contrasts based on the 2 x 3 ANOVA estimated in Panel C of Table 2. To test H3 (Panel A), we code the private equity treatment as 1, public debt as 0, and public equity treatment as -1. Thus, public debt is omitted from the test, resulting in a comparison of public and private equity. To test H4 (Panel B), we code public debt as 1, private equity as 0, and public equity as -1. Thus, private equity is omitted from the test, resulting in a comparison of public debt and public equity. All statistical inferences are verified using standard t-tests (untabulated).

Table 4
Other Debriefing Questions

Panel A: Mean (Standard Deviation) of Participants' Assessment of Audit Materiality

	<u>MATERIALITY_LEVEL—4%</u>			<u>MATERIALITY_LEVEL—10%</u>		
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity
U.S.	n=22 5.50 (1.54)	n=18 5.89 (1.53)	n=19 6.05 (1.93)	n=18 6.61 (2.00)	n=17 6.12 (1.80)	n=12 6.25 (1.96)
U.K.	n=24 5.88 (2.03)	n=18 6.83 (1.42)	n=21 6.43 (1.25)	n=18 6.83 (1.04)	n=17 6.29 (1.49)	n=14 6.93 (1.77)

'Assessment of Auditor's Materiality' is bounded by materiality threshold is much too low (0) and materiality threshold is much too high (10). No control group because those individuals were not presented with auditor's materiality disclosure.

Panel B: Mean (Standard Deviation) of Participants' Own Audit Materiality Estimates

	<u>MATERIALITY_LEVEL —4%</u>			<u>MATERIALITY_LEVEL —10%</u>			Control
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity	
U.S.	n=22 21.23 (10.52)	n=18 21.04 (8.72)	n=19 29.39 (16.20)	n=18 35.92 (13.31)	n=17 32.53 (8.14)	n=13 28.43 (13.19)	n=13 21.95 (13.77)
U.K.	n=24 27.43 (14.70)	n=19 30.19 (13.64)	n=21 27.08 (12.74)	n=19 29.64 (11.11)	n=17 29.29 (10.37)	n=14 34.31 (6.26)	n=12 28.82 (14.71)

'Participants' Own Materiality Estimate' is bounded in millions \$USD by \$0 and \$58.

Panel C: Mean (Standard Deviation) of Participants' Frequency of Adjusting Materiality Benchmark

	<u>MATERIALITY_LEVEL —4%</u>			<u>MATERIALITY_LEVEL —10%</u>			Control
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity	
U.S.	n=22 6.64 (1.47)	n=18 6.39 (1.97)	n=19 6.74 (1.73)	n=18 7.72 (1.87)	n=16 6.81 (1.22)	n=13 7.00 (2.04)	n=13 5.85 (2.27)
U.K.	n=24 6.79 (1.61)	n=19 7.05 (1.35)	n=21 6.62 (1.53)	n=19 7.37 (1.54)	n=17 7.06 (1.64)	n=14 6.86 (1.46)	n=12 6.58 (2.11)

'Frequency of Adjusting Materiality Benchmark' is bounded by never (0) and always (10). This question captures how often users adjust materiality benchmarks for non-recurring items.

Panel D: Participants' Preference for Materiality Benchmarks Across Investment Types

U.S.	pre-tax income	EBIT/ EBITDA	Operating income	Total assets	Margin	Equity	Revenue	Cash Flow
Public Equity	5%	17%	8%	17%	16%	24%	8%	5%
Public Debt	15%	10%	15%	15%	18%	13%	8%	7%
Private Equity	3%	11%	10%	21%	18%	18%	13%	6%

U.K.	pre-tax income	EBIT/ EBITDA	Operating income	Total assets	Margin	Equity	Revenue	Cash Flow
Public Equity	10%	10%	12%	14%	16%	17%	17%	4%
Public Debt	9%	13%	7%	30%	14%	11%	11%	5%
Private Equity	5%	6%	16%	21%	11%	27%	7%	6%

Panel E: Mean (Standard Deviation) of Participants' Confidence in Investment Decision

	<i>MATERIALITY_LEVEL</i> —4%			<i>MATERIALITY_LEVEL</i> —10%			<u>Control</u>
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity	
U.S.	n=22 6.64 (1.79)	n=18 6.67 (1.46)	n=19 7.26 (1.66)	n=18 7.67 (1.41)	n=17 7.65 (1.46)	n=12 8.00 (0.95)	n=12 7.42 (1.83)
U.K.	n=24 7.08 (1.79)	n=19 7.00 (1.53)	n=21 6.62 (1.94)	n=18 6.94 (1.35)	n=17 7.59 (1.42)	n=14 7.36 (0.84)	n=12 8.00 (1.41)

'Confidence in Decision' is bounded by not confident (0) and very confident (10).

Panel F: Mean (Standard Deviation) of Participants' Confidence that No Misstatement Exists

	<i>MATERIALITY_LEVEL</i> —4%			<i>MATERIALITY_LEVEL</i> —10%			<u>Control</u>
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity	
U.S.	n=22 6.45 (1.74)	n=18 5.83 (1.95)	n=19 7.16 (2.14)	n=18 6.50 (2.43)	n=17 7.24 (1.71)	n=13 7.00 (1.53)	n=13 7.54 (1.56)
U.K.	n=24 6.79 (1.84)	n=19 7.05 (0.91)	n=21 6.33 (1.39)	n=19 6.84 (1.57)	n=17 6.71 (1.93)	n=14 7.14 (1.10)	n=12 7.33 (2.10)

'No Misstatements Exist' is bounded by not confident (0) and very confident (10).

Panel G: Mean (Standard Deviation) of Participants' Familiarity with Audit Materiality

	<i>MATERIALITY_LEVEL</i> —4%			<i>MATERIALITY_LEVEL</i> —10%			Control
	Private Equity	Public Debt	Public Equity	Private Equity	Public Debt	Public Equity	
U.S.	n=21 7.38 (1.77)	n=18 6.39 (2.12)	n=19 8.26 (1.41)	n=18 7.39 (1.61)	n=16 7.56 (1.55)	n=13 8.08 (1.85)	n=13 6.77 (1.92)
U.K.	n=23 6.83 (1.80)	n=18 6.67 (1.68)	n=21 6.38 (2.11)	n=19 7.16 (1.71)	n=17 6.65 (2.64)	n=14 6.86 (1.92)	n=12 7.75 (1.91)

'Familiarity with Audit Materiality' is bounded by not at all familiar (0) and very familiar (10).

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