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IAASB Invitation to Comment – ED Reporting on Audited Financial Statements: Proposed New and Revised International Standards on Auditing (ISAs)

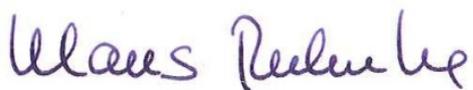
Dear Prof. Arnold Schilder,

Thank you very much for the opportunity to respond to the above-mentioned ED. Our main consideration is to contribute to the discussion by answering the question whether it is useful for the financial statement users to be informed about the materiality applied by the auditor.

ISA 320 notes that it is reasonable for the auditor to assume that users of the financial statements understand that the financial statements are prepared, presented and audited to levels of materiality. And it is also stated by the IAASB 2012, p. 21 that users “would like to understand more about how the audit was conducted, and key judgments made by the auditor in planning the audit, such like materiality”. In the above-mentioned ED, however, it is assumed that the application of materiality in the context of the audit is unlikely to be a key audit matter. There is no obligation to communicate such matters, but the auditor may judge it appropriate (Proposed ISA 706, par. A8)

Against the background that credit lenders are a primary group of financial statement users as mentioned in the IASB Framework.OB5, we have conducted an empirical study among all commercial banks available in the largest German company database “Hoppenstedt”. And it can be shown that reporting materiality is relevant for credit lending decisions. Overall, we conclude that materiality matters should be considered in any potential expansion of the audit report’s content (also as a means to decrease the existing expectation gap).

Attached you find a preliminary working paper version of our study presented at the 7th EARNet Conference 2012 in Trier. We hope that our remarks will be helpful for the IAASB. If you have any questions relating to our comment, we would be pleased to be of further assistance.



Prof. Dr. Klaus Ruhnke

Materiality and Creditor's Lending Decisions: A quasi-experimental survey on the relevance of reporting audit materiality

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Abstract

This study investigates the relevance of reporting audit materiality for credit lending decisions. Using a quasi-experimental research design, in which we survey German bankers credit decision responses to different materiality thresholds, our results suggest that materiality level disclosures matter. Further, we are able to document the elasticity function of creditors' lending decisions as a consequence of our manipulated levels of materiality disclosure. Also, we find that the relevance of reporting audit materiality for credit lending decisions is moderated by firm profitability. Finally, we find some moderating effect of professional experience with regard to audited financial statements. Our findings are robust to different credit decision aspects such as the likelihood of credit granting, the change in the risk premium, and collateral adjustments to the credit lending decision.

Keywords:

Materiality, Creditors, Credit Lending Decisions, Auditing.

1 Introduction

Information is material if omitting or misstating could influence the economic decisions of the users of financial statement (see IASB F.QC11; IAS 1.7). Therefore materiality is a key concept underlying the preparation and the audit of financial statement. Consequently, the concept of materiality is also applied by the auditor when planning and performing the audit and at the end of the audit, when evaluating the effect of uncorrected misstatements (see ISA 320). To this end, the auditor proposes to the client a list of corrections (audit adjustments) for the misstatements detected in the course of the audit. The auditor can accept that the client does not book an adjustment when the uncorrected differences do not result in a material misstatement of the financial statements (see ISA 700.12). That means that a financial statement with a clean audit opinion can include misstatements which are not material.

Thus, the practical application of the concept of materiality is a recurring theme of discussions amongst preparers, auditors, users, and regulators of financial statements (ESMA, 2011). Most recently, the European Commission (EC) has published a Green paper proposal for a re-regulation of the statutory audit of public-interest entities (EC, 2010; EC, 2011). Therein, the EC proposes to expand the content of the audit report – among other things – by explaining the levels of materiality applied to perform the audit (EC, 2011, *Article 22, par. 2 [jj]*). The EC argues that stakeholders “might be unaware of the limitations of an audit” such as the use of the concept of materiality, which can contribute to the expectation gap (e.g., Van Buuren, Litjens and Vergoosen, 2013; Houghton, Jubb and Kend, 2011; Hojskov, 1998). Auditor`s reporting is also on the top priority list of the International Auditing and Assurance Standards Board (IAASB). The IAASB has issued a consultation paper in May 2011 and an invitation to comment on the document “Improving the Auditor`s Report” in June 2012. In the consultation paper it is stated that “users have suggested that it would be helpful for information to be provided about ... [t]he level of materiality applied by the auditor to perform the audit” (IAASB, 2011, p. 17). In the invitation to comment the IAASB complementally stated that users “would like to understand more about how the audit was conducted, and key judgements made by the auditor in planning the audit, such like materiality” (IAASB, 2012, p. 21). Against this background it is important to thoroughly understand whether or not audit materiality disclosures would result in any benefits

to different financial statement users. Prior research has mainly focused on experimental equity markets thereby providing evidence for an efficiency improvement when audit materiality levels are disclosed.

In this paper, we investigate whether the disclosure of audit materiality would change creditors' behavior as an analysis of the potential benefits for this group of financial statements users is nonexistent. More specifically, we experimentally explore the elasticity function of creditors' lending decisions (i.e., credit risk assessment) to various materiality thresholds and under different profitability scenarios. The results of our quasi-experimental setting show that materiality level reporting matters for any of our materiality level manipulations. Specifically, we find that German bankers adjust their credit lending decision to a conservative materiality, and especially, for two specifications of a liberal materiality. Thereby, we are able to document the elasticity function of creditors' lending decisions as a consequence of our manipulated audit materiality reporting. Also, our empirical evidence suggests that firm profitability moderates the relationship of audit materiality level disclosure and the credit decision response. The empirical results are robust to different credit decision aspects such as the likelihood of credit granting, the change in the risk premium, and collateral adjustments to the credit lending decision. In addition, we provide evidence for the moderating role of the participants' experience with audited financial statements.

This study offers several contributions to the research literature and to accounting practice. First and foremost, no study has investigated the potential consequences of audit materiality level disclosure for credit lending decisions before. Second, by surveying executive board members' credit decision responses; we investigate the potential real-world behavior to audit materiality level reporting thereby mitigating external validity concerns. Third, our documentation of the elasticity function of creditors' lending decisions reveals that the credit decision response to our manipulated levels of materiality disclosure is disproportionately high. That is, the higher the materiality threshold the disproportionately higher is the adjustment to the likelihood of credit granting, the credit risk premium, and the credit collateral. Finally, we are the first to provide some evidence that the experience with audited financial statement (implicating a greater knowledge of the materiality concept) moderates the relationship between the credit lending decision, profitability, and materiality.

The remainder of this paper is organized as follows. The second section reviews prior literature and develops the hypotheses. The third section briefly motivates our research design choice and provides an overview over the applied quasi-experimental methodology. Section 4 documents the response to our survey and presents the empirical analyses. Section 5 concludes the paper.

2 Background and Hypotheses

2.1 Prior Literature

The issue of materiality has resulted in much detailed research. There is a large body of studies analyzing the determinants of materiality thresholds (see the literature reviews and meta-analysis, respectively, by Vance, 2011; Messier, Martinov-Bennie, and Eilifsen, 2005; Iskandar and Iselin, 1999; and Holstrum and Messier, 1982). As this study examines the relevance of reporting audit materiality, we focus our literature review on prior studies investigating the (potential) consequences of materiality level reporting on the decisions of financial statement users and the existence of an expectation gap. For reporting purposes, it is also of interest whether materiality judgements vary between auditors, preparers and different user groups.

After decades of research on how materiality judgements affect users' decisions, important factors have remained unexplored. Thus, Church et al. (2009), p. 85 request researchers "to continue studying materiality disclosures, systematically altering features of the laboratory setting". Studies addressing this research request have been conducted by Haka et al. (1986), Fisher (1990), Tuttle et al. (2002), Davis (2007), Van Buuren et al. (2013) and Vanstraelen et al. 2012.

Haka et al. (1986) provides experimental evidence that materiality has an impact on the functional fixation and stimulus encoding biases. Undergraduate participants with more accounting training make relatively superior investment decisions in an experimental equity markets setting when materiality levels are higher and disclosed. The materiality level threshold in their study is manipulated as a percentage difference (at 2, 10, and 20 %) of the dollar difference between the sales price and cost.

Fisher (1990) also investigates the effect of audit materiality disclosure within an experimental equity market thereby focusing on potential consequences for security prices, trading

volume, and trading profit. Graduate and undergraduate students participated in repeated single-period, two-asset (cash and shares), double-auction markets where the materiality disclosure is manipulated (i.e., no disclosure versus private disclosure versus public disclosure). The results show that disclosure of materiality leads to greater market efficiency and that public disclosure appeared to be more useful than private disclosure.

The experimental equity market approach of Tuttle et al. (2002) examines the appropriateness of common materiality thresholds employed by auditors from a user perspective. The undergraduate participants in this study are provided either with correctly stated financial information, information containing immaterial misstatements or material misstatements. Further, the manipulation of materiality thresholds includes a conservative audit materiality level (based on the larger of 5 % of income before taxes or 0.25 % of net sales), and respectively, a liberal materiality (based on the larger of 10 % of income before taxes or 0.5 % of net sales). The results provide evidence that undisclosed misstatements within materiality thresholds that are consistent with current audit practice (i.e., at or below materiality threshold) do not affect market prices, whereas large misstatements do affect market prices.

Using an experimental equity market setting, Davis (2007) investigates the extent to which public disclosure of auditor materiality thresholds affects both investors' perceptions of the auditor's report and equity market behavior. Her study shows that disclosing auditor materiality thresholds (i.e. 5 % and 10 %) increases the accuracy of investors' perceptions (using undergraduate and graduate students as participants) of the auditor's report due to the fact that the materiality disclosure is able to reduce investors' overconfidence. Thus, experimental equity markets are more efficient when auditor materiality levels are disclosed as investors are more able to price-protect themselves.

Using data obtained from a questionnaire survey, Van Buuren et al. (2013) provide evidence that information about materiality is beneficial in reducing the audit expectations gap. Thereby, it can be shown that information needs with regard to the audit materiality level used are higher for bankers in comparison to managers, and respectively, for managers they are higher than for auditors. Overall, the authors conclude that financial statement users are better informed and accordingly better able to draw correct information when the applied audit materiality level is reported.

Finally, the interviews conducted by Vanstraelen et al. (2012) among audit report users (e.g., financial analysts, credit analysts, as well as corporate and investment bankers) and auditors revealed that a disclosure of materiality levels is seen to generally increase the information value of the audit report. That is, some audit report users would like to receive additional information on the level of materiality used during the audit engagement.

In summary, prior research has mainly focused on experimental equity markets thereby providing evidence for an efficiency improvement when audit materiality levels are disclosed. However, as study participants have always been students, some external validity concerns remain as the results have not been proven to hold in a real-world setting. Further, as to our knowledge there has been no prior study which investigated whether the positive equity market effects of audit materiality reporting can also be observed in credit markets. In other words, there is a research gap with regard to potential real-world consequences of audit materiality level reporting as well as with regard to the relevance of reporting audit materiality for credit lending decisions. The concurrent study tries to provide initial evidence to address these voids.

2.2 *Hypothesis Development*

Building upon the identified need to investigate the potential consequences of audit materiality reporting for credit materiality decisions of real-world credit decision makers and following previous studies (Haka et al., 1986; Fisher, 1990; Tuttle et al., 2002; and Davis, 2007), we suggest the following hypotheses:

Hypothesis 1 (H1): The disclosure of a conservative audit materiality level does not affect creditor's lending decisions.

Hypothesis 2 (H2): The disclosure of a liberal audit materiality level does affect creditor's lending decisions.

Hypothesis 3 (H3): The effect of audit materiality level disclosure on creditor's lending decisions is moderated by the profitability of the firm.

3 Method

3.1 *Design, Survey Participants, and Overview of Quasi-Experiment*

We find a survey methodology to best balance the strength and weaknesses of experimental (Kachelmeier and King, 2002, Maines et al., 2006) and empirical archival research designs (Allee et al. 2007) by directly investigating subjects' attitudes, and thus, mitigating internal validity concerns (Gassen and Schwedler, 2010). Also, participants are questioned about real-life behavior, which addresses the general external validity concern of laboratory experiments. In addition, materiality thresholds in the context of an individual audit are usually unknown to the public as well as to the researcher making empirical archival research difficult in this area.

We conduct a quasi-experimental survey among all 951 commercial banks (including saving banks) available in the largest German company database "Hoppenstedt" (<http://www.firmendatenbank.de/>). The survey population comprises 735 or 77.3 % cooperative banks (so called "Genossenschaftsbanken"), 36 or 3.8 % thrifts (so called "Sparkassen"), 174 or 18.3 % private banks, and 6 or 0.6 % other banks (e.g. leasing companies, financial service companies, etc.). The survey participants were randomly chosen from the executive boards of the respective commercial banks under study. In order to increase the response rate, we limited the length of the survey so that the completion time should not exceed 10 minutes. We conducted a pre-test by sending a previous version of the survey instrument to five subjects including representatives of an audit firm, a credit bank and a financial expert. The feedback resulted in some minor adjustments to the questionnaire.

The quasi-experimental questions were distributed by mail, accompanied by a one-page letter explaining the survey's purpose and importance. The survey was initiated on October 8, 2012. By the final response deadline (November 20, 2012) 85 responses had been received. Thus, the response rate equals 8.9 %. One observation has to be discarded due to missing information within the questionnaire.

3.2 *Procedures*

Upon distributing the survey, we randomly assigned the participants to one of two between-participant conditions. The high profitability condition (*High_Profitability*) includes a quasi-

experimental credit lending decision (long-term investment loan) to be made by the participants regarding an audited firm with total assets of EUR 200 Mio., earnings before taxes of EUR 12 Mio., and a base line risk premium of 200 basis points¹. Respectively, the low profitability condition (*Low_Profitability*) includes a quasi-experimental credit lending decision (long-term investment loan) to be made by the participants regarding an audited firm with total assets of EUR 200 Mio., earnings before taxes of EUR 1.8 Mio., and a base line risk premium of 200 basis points. In addition, an audit materiality level disclosure is reported to the survey participants. This materiality level disclosure is manipulated within participants. That is, different materiality levels (EUR 0.6 Mio.; EUR 1.8 Mio.; EUR 12 Mio., respectively) are presented to the surveyed executive board members. The survey participants have to perform a credit decision with regard to

1. the likelihood of granting the credit loan (credit lending vs. no credit lending) measured on a 7-point Likert scale, coded from 1 (very high increase) to 7 (very high decrease);
2. the risk adjustment (unchanged, increase or decrease, respectively) of the lending decision stated in basis points' changes to the base line risk premium of 200 basis points;
3. the collateral adjustment (the extent of the lender's pledge of specific property to secure repayment of the loan and the interests) of the credit lending decision measured on a 7-point Likert scale, coded from 1 (very high decrease) to 7 (very high increase).

Finally, the questionnaire asked the bankers for the professional experience with credit lending decisions (in years) and the professional experience with audited financial statements in the context of credit lending; coded as 0 for "no experience", 1 for "some experience" and 2 for "high experience". Over and above, we surveyed the executive board members experience regarding the volume of regular credit lending decisions; coded as 0 for "below EUR 5 Mio.", 1 for "between EUR 5 Mio. and EUR 10 Mio.", and 2 for "above EUR 10 Mio."

¹ We verified the external validity of this assumption during our pre-test based on the responses of representatives of a credit bank and a financial expert.

4 Results

4.1 Manipulation Check

Table 1 reports the professional information about the participants. The descriptives and test-statistics are computed using the Taylor series variance estimation procedure including a finite population correction (SAS/STAT, 2011). As Panel A of Table 1 shows, the average participant has a working experience (*Yrs_Experience*) of 20.83 years. The participants' response regarding the volume of regular credit lending decisions (*Credit_Vol*) reveals that around two third of the surveyed executive board members are mainly deciding on credits below EUR 5 Mio, on average. Along, most of the participants are highly experienced with regard to audited financial statements (*F/S_Experience*) as indicated by the mean of 1.87. Accordingly, we assume the average participant has a reasonable understanding of the concept of materiality, and thus, the response sample provides suitable data to investigate the potential relevance of reporting audit materiality in a real-world quasi-experimental setting.

As further presented in Panel A of Table 1, the professional background of the surveyed executive board members is similar in the two different profitability scenarios. A Mann-Whitney-Wilcoxon test² for group heterogeneity shows that the difference between the high profitability scenario and the low profitability scenario is not statistically significant; similar results can be shown by applying a t-test for mean difference (not reported). Consequently, the two independent samples seem to be drawn from the same population (Siegel and Castellan, 1988). The results of these tests are presented in Panel B of Table 1.

Table 1 about here

4.2 Univariate Analyses

Table 2 presents the results of our univariate analysis of the relevance of reporting audit materiality. As can be seen in Panel A, column 5 of Table 2, the overall reaction to the disclosure of a materiality level is 5.32 for the likelihood of granting the credit loan (*Credit_Grant*), 39.41 basis points for the risk adjustment of the lending decision (*Risk_Adj*), and respectively, 5.17 for the

² Due to the fact that most variables used in the concurrent study are ordinal while the continuous variables violate the normal distribution assumption, we present the non-parametric Mann-Whitney-Wilcoxon test statistics as our primary analysis.

collateral adjustment of the lending decision (*Collateral_Adj*). In other words, the surveyed executive board members are strongly reacting to the overall materiality level disclosure (statistically significant Mann-Whitney-Wilcoxon test \neq mid-point of the scale (4) – not reported). For example, the increase from the base line risk premium of 200 basis points to 239.41 basis points represents a 19.71 % overall risk adjustment. Overall, our results seem to be in line with prior studies showing that the interest cost savings associated with voluntary audits in comparison to financial statements which have not been audited ranges from about 56 to 124 basis points (see Allee and Yohn 2009, Kim et al. 2011). This follows from the rationale that applying a very high audit materiality is comparable to no auditing, at all.

In order to test H1 and H2, we split up the credit decision response (*Credit_Grant / Risk_Adj / Collateral_Adj*) according to the different materiality levels presented to the participants: the conservative materiality level (EUR 0.6 Mio.), the first specification of a liberal materiality level (EUR 1.8 Mio.), and the second specification of a liberal materiality level (EUR 3.0 Mio.). As shown in Panel B of Table 2, we test for median differences among the different materiality levels and per credit decision response. The results of the Mann-Whitney-Wilcoxon tests (mean difference t-tests – not reported) indicate that the disclosure of a conservative audit materiality level of EUR 0.6 Mio. results in a statistically significant response for all of our credit decision response metrics (when tested against the scale midpoint of 4 for *Credit_Grant and Collateral_Adj*, and respectively, 0 for *Risk_Adj*). Further, the response to a liberal materiality level of EUR 1.8 Mio. is significantly greater than the response to a conservative materiality level of EUR 0.6 Mio (or respectively, the scale midpoint – not reported). Eventually, the response to a relatively higher liberal materiality level of EUR 3.0 Mio. is significantly greater than the response to a relatively lower liberal materiality level of EUR 1.8 Mio (or respectively, the conservative materiality level of EUR 0.6 Mio and the scale midpoint – not reported). Figure 1 documents the elasticity function of the creditors' lending decisions as a consequence of our manipulated levels of materiality disclosure. In summary, our univariate analysis provides evidence for the rejection of H1 and the support of H2.

Table 2 about here

Figure 1 about here

To investigate the moderating role of the profitability of the firm (H3) on the effect of audit materiality level disclosure, we extend our univariate analysis by further splitting our sample into the high and low profitability scenarios. The results for the mean credit decision responses conditional on the materiality level as well as the profitability scenario are presented in Table 3, Panel A. The Mann-Whitney-Wilcoxon tests for the difference in medians (mean difference t-tests – not reported) between the two profitability scenarios – but within a certain materiality level – are shown in Panel B of Table 3. As can be seen, *Credit_Grant* and *Collateral_Adj* are statistically different between the two profitability scenarios for any level of materiality ($p < 0.05$). In contrast, *Risk_Adj* seems not to differ significantly between the high and the low profitability scenario. This result holds for the conservative materiality level ($p > 0.15$) as well as for both of the liberal materiality levels ($p > 0.27$; $p > 0.18$). Figure 2 summarizes the results of the moderating role of firm profitability on the relevance of reporting audit materiality for the statistically significant mean differences (within one materiality level). To sum up, we find evidence for the support of H3 for two out of three credit decision responses (*Credit_Grant* and *Collateral_Adj*).

Table 3 about here

Figure 2 about here

4.3 Multivariate Analyses

While informative, the univariate analyses presented above do not control for all the interactions within the relationship of audit materiality level disclosure and the credit decision response. That is, the analysis needs to discriminate between the main and the interactive effects of materiality and the profitability scenarios on *Credit_Grant*, *Risk_Adj*, and respectively, *Collateral_Adj*. Because we collect one data point (per credit decision response) from each participant for each materiality level, we also encounter dependence in our error terms from repeated measures taken on each individual. This form of dependence violates the assumption in an ANOVA-based

model, as it can result in Type I / Type II errors (Yandell, 1997; Judd et al., 1995). To solve this problem, we use a mixed-effect, repeated-measures model which controls for the correlation between credit decisions responses from the same participant (Littell et al. 2006; SAS/STAT 2011; Ying and Lu, 2006). Also, while our univariate analysis has shown that the professional background of the surveyed executive board members is similar in the two different profitability scenarios, we cannot rule out that these factors moderate the relationship of audit materiality level disclosure and the credit decision response. Thus, we include *Yrs_Experience*, *Credit_Vol*, and *F/S_Experience* as control variables to our multivariate regression models. To detect potential multicollinearity between the independent variables, we compute variance inflation factors. No multicollinearity issues are apparent.

Table 4, Panel A reports the results of our mixed-effects, restricted maximum likelihood (REML) estimation for the dependent variables *Credit_Grant*, *Risk_Adj*, and *Collateral_Adj*, respectively (Model No. 1 to 3). H1 predicts that reporting a conservative audit materiality level does not affect creditor's decisions. However, we do find a statistically significant intercept (capturing the relative effect of disclosing a conservative materiality in the high profitability scenario) for *Credit_Grant* and *Collateral_Adj*, respectively, as well as a statistically significant coefficient of *Low_Profitability* (capturing the relative effect of disclosing a conservative materiality in the low profitability scenario) for *Collateral_Adj*. H2 predicts that the disclosure of a liberal audit materiality level does affect creditor's lending decisions. Consistent with this prediction, we find significant coefficients as well as main effects for *Liberal_Materiality_Lev1* and *Liberal_Materiality_Lev2* on all of our three credit decision response measures; i.e., *Credit_Grant*, *Risk_Adj*, *Collateral_Adj*. H3 predicts that effect of audit materiality level disclosure on creditor's lending decisions is moderated by the profitability of the firm. In conjunction with H3, we find a significant coefficient and main effect for the interaction of *Liberal_Materiality_Lev1 * Low_Profitability* on *Credit_Grant* and *Collateral_Adj*, and respectively, *Liberal_Materiality_Lev2 * Low_Profitability* on *Risk_Adj*. Finally, the analysis of the incremental effects of the professional background variables reveals that the experience with audited financial statements is influencing the risk adjustment of the credit lending decision. As shown in Model 2 of Table 4, the coefficient of *F/S_Experience*, 31.025, is positive and significantly greater than zero (this result is confirmed by the F-test for main effects; Pr > F of 0.03) indicat-

ing that a higher experience with audited financial statements has a positive effect on *Risk_Adj*. Accordingly, the disclosure of materiality levels seems to matter more when the financial statement user has more experience with audited financial statements. This can be explained against the background that only experienced users are able to understand that a certain materiality threshold might represent a misstatement by the same amount within the financial statements. However, the moderating effect of *F/S_Experience* warrants further research.

Further analysis (not reported), shows that the participants with a relatively higher experience with audited financial statements are responsible for the disproportionate reaction of *Risk_Adj* to the liberal audit materiality disclosure in the low profitability scenario (F-test for main effect of *Liberal_Materiality_Lev2 * F/S_Experience * Low_Profitability* reports $p < 0.01$). Overall, the multivariate results support H2 and H3 while partially rejecting H1.

Table 4 about here

Conclusion

In this study, we examine whether reporting audit materiality levels affects credit lending decisions. Using a quasi-experimental research design, we investigate the potential real-world behavior to audit materiality level reporting by directly observing executive board members' credit decision responses, and thus, mitigating external validity concerns. Our results show that materiality level disclosure is relevant in the credit lending decision process for any of our materiality level manipulations; i.e., for a conservative materiality as well as for two specifications of a liberal materiality. Second, we document the elasticity function of creditors' lending decisions as a consequence of our manipulated levels of materiality disclosure. Third, our results suggest that the relevance of reporting audit materiality for credit lending decisions is moderated by the profitability of a firm. Finally, we find moderate evidence for the fact that the credit decision response can also be influenced by the participants' experience with audited financial statements. Overall, we conclude that materiality matters, and thus, should be considered in any potential expansion of the audit reports' content. Therefore, our results support the EC's proposal to expand the audit report by explaining the levels of materiality applied to perform the audit (EC, 2011, *Article 22, par. 2 [jj]*).

References

- Allee, K. D., N. Bhattacharya, E. L. Black, and T. E. Christensen (2007) Pro Forma Disclosure and Investor Sophistication: External Validation of Experimental Evidence Using Archival Data, *Accounting, Organizations and Society*, Vol. 32, pp. 201-222.
- Allee, K.D., and Yohn, T.L. (2009) The Demand for Financial Statements in an Unregulated Environment: An Examination of the Production and Use of Financial Statements by Privately Held Small Businesses, *The Accounting Review*, Vol. 84, S. 1-25.
- Church, B. K., S. M. Davis, and S. A. McCracken (2008) The Auditor's Reporting Model: A Literature Overview and Research Synthesis, *Accounting Horizons*, Vol. 22, pp. 69-90.
- Davis, S. (2007) Market Response to Auditor's Reports: A Reexamination of Auditor Materiality Thresholds, *Working Paper*.
- European Commission (EU-Commission) (2010) Green Paper. Audit Policy: Lessons from the Crisis (available at: http://ec.europa.eu/internal_market/auditing/re-form/index_en.htm).
- European Commission (EU-Commission) (2011) Proposal for a Regulation of the European Parliament and the Council on specific requirements regarding statutory audit of public-interest entities (available at: http://ec.europa.eu/internal_market/auditing/reform/index_en.htm.)
- European Securities and Markets Authority (ESMA) (2011) Consultation Paper, Considerations of materiality in financial reporting, November 2011, ESMA/2011/373 (available at http://www.esma.europa.eu/system/files/2011_373.pdf).
- Fisher, M. H. (1990) The Effects of Reporting Auditor Materiality Levels Publicly, Privately, or Not at All in an Experimental Setting, *Auditing: A Journal of Practice & Theory*, Vol. 9 (Supplement), pp. 184-223.
- Gassen, J., and K. Schwedler (2010) The Decision Usefulness of Financial Accounting Measurement Concepts: Evidence from an Online Survey of Professional Investors and their Advisors, *European Accounting Review*, Vol. 19, pp. 495-509.
- Gray G. L., J. L. Turner, P. J. Coram, and T. J. Mock (2011) Perceptions and Misperceptions Regarding the Unqualified Auditor's Report by Financial Statement Preparers, Users, and Auditors, *Accounting Horizons*, Vol. 25, pp. 659-684.

- Haka, S., Friedman, L. and Jones, V. (1986) Functional fixation and interference theory: A theoretical and empirical investigation, *The Accounting Review*, Vol. 61, pp. 455-474.
- Hojskov, L. (1998) The Expectation Gap between Users' and Auditors' Materiality Judgements in Denmark, *Working Paper*.
- Holstrum, G. L., and M. F. Messier (1982) A Review and Integration of Empirical Research on Materiality, *Auditing: A Journal of Practice & Theory*, Vol. 9 (Supplement), pp. 184-223.
- Houghton, K. A., and C. Jubb (2011) Materiality in the Context of the Audit: the Real Expectations Gap, *Managerial Auditing Journal*, Vol. 26, pp. 482-500.
- IAASB (2011) Enhancing the Value of Auditor Reporting: Exploring Options for Change, Consultation Paper May 2011, IFAC, London.
- IAASB (2012) Improving the Auditor's Report, Invitation to comment June 2012, IFAC, London.
- Iskandar, T. M., and E. R. Iselin (1999) A Review of Materiality Research, *Accounting Forum*, Vol. 23, pp. 209-239.
- Judd, C. M., G. H. McClelland, and S. E. Culhane (1995) Data-Analysis – Continuing Issues in the Everyday Analysis of Psychological Data, *Annual Review of Psychology*, Vol. 46, pp. 433-465.
- Kachelmeier, S. J., and R. R. King (2002) Using Laboratory Experiments to Evaluate Accounting Policy Issues, *Accounting Horizons*, Vol. 16, pp. 219-232.
- Kim, J.-B., Simunic, D.A., Stein, M.T. and Yi, C.H. (2011) Voluntary Audits and the Cost of Debt Capital for Privately Held Firms: Korean Evidence, *Contemporary Accounting Research*, Vol. 28, pp. 585-615.
- Litell, R. C., G.A. Milliken, W. W. Stroup, R. D. Wolfinger, and O. Schabenberger (2006) SAS for Mixed Models, *Second Edition*, Cary, NC.
- Maines, L. A., G. L. Salomon, and G. B. Sprinkle (2006) An Information Economic Perspective on Experimental Research in Accounting, *Behavioral Research in Accounting*, Vol. 18, pp. 85-102.
- Messier, W. F., Jr., N. Martinov-Bennie, and A. Eilifsen (2005) A Review and Intergration of Empirical Research on Materiality: Two Decades Later, *Auditing: A Journal of Practice & Theory*, Vol. 24, pp. 153-187.
- SAS Institute Inc. (2011) SAS/STAT User's Guide, Version 9.3, Cary, NC.

Siegel, S, and N. J., Jr., Castellan (1988) *Nonparametric Statistics for the Behavioral Sciences, Second Edition, McGraw-Hill, New York.*

Van Buuren, J., R. Litjens, and R. Vergoossen (2013) Addressing information needs to reduce the Audit Expectation GAP: Evidence from Dutch bankers, audited companies and auditors, *Working Paper.*

Vanstraelen, A., C. Schelleman, R. Meuwissen, and I. Hofmann (2012) The Audit Reporting Debate: Seemingly Intractable Problems and Feasible Solutions, *European Accounting Review*, Vol. 21, pp. 193-215.

Yandell, B. S. (1997) *Practical Data Analysis for Designed Experiments, Edited by C. Chatfield and J. V. Zidek, Chapman & Hall, UK.*

Ying, G., and C. Liu (2006) Statistical Analysis of Clustered Data Using SAS® System, *Paper read at North East SAS Users Group Inc. 19th Annual Conference Proceedings, September 17-20, 2006, at Philadelphia, PA.*

Appendix for the manuscript “Materiality and Creditor’s Lending Decisions”

Appendix 1

Variable Definitions

Variable	Description
<i>Collateral_Adj</i>	- survey participants' response on a 7-point Likert scale regarding the collateral adjustment of the credit lending decision; coded from 1 (very high decrease) to 7 (very high increase)
<i>Cons_Materiality</i>	- indicator variable equal to 1 when the materiality level presented to the survey participant is EUR 0.6 Mio., and equal to 0 otherwise
<i>Credit_Grant</i>	- survey participants' response on a 7-point Likert scale regarding the likelihood of granting the credit loan (credit lending vs. no credit lending); coded from 1 (very high increase) to 7 (very high decrease)
<i>Credit_Vol</i>	- survey participants' response on a 3-point Likert scale regarding the volume of regular credit lending decisions; coded as 0 for "below EUR 5 Mio.", 1 for "between EUR 5 Mio. and EUR 10 Mio." and 2 for "above EUR 10 Mio."
<i>F/S_Experience</i>	- survey participants' response on a 3-point Likert scale regarding the professional experience with audited financial statements (F/S); coded as 0 for "no experience", 1 for "some experience" and 2 for "high experience"
<i>High_Profitability</i>	- indicator variable equal to 1 when the credit lending decision presented to the survey participant is to be made for the high profitability scenario; i.e., long-term investment credit for a firm with total assets of EUR 200 Mio., Earnings before taxes of EUR 12 Mio., and a risk premium of 200 basis points
<i>Lib_Materiality_Lev1</i>	- indicator variable equal to 1 when the materiality level presented to the survey participant is EUR 1.8 Mio., and equal to 0 otherwise
<i>Lib_Materiality_Lev2</i>	- indicator variable equal to 1 when the materiality level presented to the survey participant is EUR 3.0 Mio., and equal to 0 otherwise
<i>Low_Profitability</i>	- indicator variable equal to 1 when the credit lending decision presented to the survey participant is to be made for the low profitability scenario; i.e., long-term investment credit for a firm with total assets of EUR 200 Mio., Earnings before taxes of EUR 1.8 Mio., and a risk premium of 200 basis points
<i>Materiality</i>	- materiality level presented to the survey participants and coded as 1 for a materiality level of EUR 0.6 Mio., 2 for a materiality level of EUR 1.8 Mio., and 3 for a materiality level of EUR 3.0 Mio.
<i>Risk_Adj</i>	- survey participants' response on the risk adjustment of the credit lending decision; increases (decreases) are stated in basis points' changes from the base line risk premium of 200 basis points
<i>Yrs_Experience</i>	- survey participants' years of professional experience in credit lending decisions

Tables for the manuscript “Materiality and Creditor’s Lending Decisions”

Table 1

Descriptive Statistics for the Response Sample

Panel A: Professional Information about the Respondents

<i>Mean (Std.Err.) conditional on profitability scenario</i>	High_Profitability		Low_Profitability		Overall	
Variables	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
<i>Yrs_Experience</i>	21.62791	1.28802	19.98781	1.44007	20.82738	0.93940
<i>Credit_Vol</i>	0.23256	0.08503	0.43902	0.11355	0.33333	0.06924
<i>F/S_Experience</i>	1.88372	0.04833	1.85366	0.05467	1.86905	0.03536
Number of Observations	43		41		84	

Panel B: Tests for Respondent's Group Heterogeneity

Mann-Whitney-Wilcoxon test for Median Difference (two-tailed)		
<i>Yrs_Experience</i> _{HIGH_PROF} vs. <i>Yrs_Experience</i> _{LOW_PROF}		Pr > Z-statistic (0.9581) = 0.3408
<i>Credit_Vol</i> _{HIGH_PROF} vs. <i>Credit_Vol</i> _{LOW_PROF}		Pr > Z-statistic (1.433) = 0.1556
<i>F/S_Experience</i> _{HIGH_PROF} vs. <i>F/S_Experience</i> _{LOW_PROF}		Pr > Z-statistic (0.3982) = 0.6915

Table 1, Panel A presents summary statistics of the professional background variables for the whole sample, and respectively, conditional on our profitability scenarios (HIGH vs. LOW). Panel B tests whether the medians of the two scenarios (groups) are significantly different using a Mann-Whitney-Wilcoxon test. The descriptives are computed using the Taylor series variance estimation procedure including a finite population correction (total population = 951 observations). The response sample contains all survey participants which provided professional information on Yrs_Experience, Credit_Vol, and F/S_Experience. All variables are defined in Appendix 1.

Table 2*Univariate Analysis of the Relevance of Reporting Audit Materiality**Panel A: Credit Decision Response (Credit Granting, Risk, and Collateral) per Materiality Level*

<i>Mean (Std.Err.) conditional on materiality level</i>	Conservative_Materiality		Liberal_Materiality_Lev1		Liberal_Materiality_Lev2		Overall	
Variables	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
<i>Credit_Grant</i>	4.21429	0.10613	5.47619	0.12153	6.28571	0.10797	5.32540	0.07401
<i>Risk_Adj</i>	2.84810	1.67087	32.97468	4.14430	82.40506	8.76824	39.40928	3.45771
<i>Collateral_Adj</i>	4.25000	0.05082	5.23810	0.11042	6.04762	0.11076	5.17857	0.06313
Number of Observations	84		84		84		252	

*Panel B: Tests for Difference between two Materiality Levels (per Credit Decision Response)***Mann-Whitney-Wilcoxon test for Median Difference (one-tailed)**

<i>Credit_Grant</i> _{Cons_Mat} > Response Scale Midpoint (4)	Pr > Z-statistic (3.12) = 0.00
<i>Credit_Grant</i> _{Lib_Mat_L1} > <i>Credit_Grant</i> _{Cons_Mat}	Pr > Z-statistic (6.50) = 0.00
<i>Credit_Grant</i> _{Lib_Mat_L2} > <i>Credit_Grant</i> _{Lib_Mat_L1}	Pr > Z-statistic (4.59) = 0.00
<i>Risk_Adj</i> _{Cons_Mat} > Response Scale Midpoint (0)	Pr > Z-statistic (1.59) = 0.06
<i>Risk_Adj</i> _{Lib_Mat_L1} > <i>Risk_Adj</i> _{Cons_Mat}	Pr > Z-statistic (6.35) = 0.00
<i>Risk_Adj</i> _{Lib_Mat_L2} > <i>Risk_Adj</i> _{Lib_Mat_L1}	Pr > Z-statistic (4.45) = 0.00
<i>Collateral_Adj</i> _{Cons_Mat} > Response Scale Midpoint (4)	Pr > Z-statistic (4.55) = 0.00
<i>Collateral_Adj</i> _{Lib_Mat_L1} > <i>Collateral_Adj</i> _{Cons_Mat}	Pr > Z-statistic (6.66) = 0.00
<i>Collateral_Adj</i> _{Lib_Mat_L2} > <i>Collateral_Adj</i> _{Lib_Mat_L1}	Pr > Z-statistic (4.67) = 0.00

Table 2, Panel A presents summary statistics of the credit decision response (*Credit_Grant* / *Risk_Adj* / *Collateral_Adj*) for the whole sample, and respectively, conditional on our materiality levels (*Conservative_Materiality* / *Liberal_Materiality_Lev1* / *Liberal_Materiality_Lev2*). Panel B tests whether the difference in medians between two materiality levels (the response rate midpoint, respectively) is statistically significant using a Mann-Whitney-Wilcoxon test. The descriptives are computed using the Taylor series variance estimation procedure including a finite population correction (total population = 951 observations). The response sample contains all survey participants which provided professional information on *Yrs_Experience*, *Credit_Vol*, and *F/S_Experience*. Per materiality level there are 5 missing observations for *Risk_Adj*. All variables are defined in Appendix 1.

Table 3

Moderating Role of Profitability on the Relevance of Reporting Audit Materiality

Panel A: Credit Decision Response (Credit Granting, Risk, and Collateral) per Materiality Level and Profitability Scenario

Mean (Std.Err.) conditional on materiality level and profitability scenario	Conservative_Materiality				Liberal_Materiality_Lev1			
	High_Profitability		Low_Profitability		High_Profitability		Low_Profitability	
Variables	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
Credit_Grant	4.09302	0.09654	4.34146	0.19804	5.13954	0.15790	5.82927	0.18045
Risk_Adj	1.27907	1.86152	4.72222	3.02575	27.67442	4.41784	39.30556	7.61423
Collateral_Adj	4.09302	0.05455	4.41463	0.08351	4.95349	0.14885	5.53659	0.16058
Number of Observations	43		36		43		36	

Mean (Std.Err.) conditional on materiality level and profitability scenario	Liberal_Materiality_Lev2				Overall			
	High_Profitability		Low_Profitability		High_Profitability		Low_Profitability	
Variables	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
Credit_Grant	6.04651	0.15915	6.53659	0.14532	5.09302	0.10100	5.56911	0.12333
Risk_Adj	68.95349	8.57324	98.47222	16.59607	32.63566	3.84589	47.50000	6.80027
Collateral_Adj	5.81395	0.16662	6.29268	0.14591	4.95349	0.09258	5.41463	0.09810
Number of Observations	43		36		129		123	

Panel B: Tests for Difference between two Materiality Levels (per Credit Decision Response and Profitability Scenario)

Mann-Whitney-Wilcoxon test for Median Difference (one-tailed)

$Credit_Grant_{Cons_Mat*LOW_PROF} > Credit_Grant_{Cons_Mat*HIGH_PROF}$	Pr > Z-statistic (2.09) = 0.02
$Credit_Grant_{Lib_Mat_L1*LOW_PROF} > Credit_Grant_{Lib_Mat_L1*HIGH_PROF}$	Pr > Z-statistic (2.76) = 0.00
$Credit_Grant_{Lib_Mat_L2*LOW_PROF} > Credit_Grant_{Lib_Mat_L2*HIGH_PROF}$	Pr > Z-statistic (2.51) = 0.01
$Risk_Adj_{Cons_Mat*LOW_PROF} > Risk_Adj_{Cons_Mat*HIGH_PROF}$	Pr > Z-statistic (1.06) = 0.15
$Risk_Adj_{Lib_Mat_L1*LOW_PROF} > Risk_Adj_{Lib_Mat_L1*HIGH_PROF}$	Pr > Z-statistic (0.61) = 0.27
$Risk_Adj_{Lib_Mat_L2*LOW_PROF} > Risk_Adj_{Lib_Mat_L2*HIGH_PROF}$	Pr > Z-statistic (0.91) = 0.18
$Collateral_Adj_{Cons_Mat*LOW_PROF} > Collateral_Adj_{Cons_Mat*HIGH_PROF}$	Pr > Z-statistic (3.00) = 0.00
$Collateral_Adj_{Lib_Mat_L1*LOW_PROF} > Collateral_Adj_{Lib_Mat_L1*HIGH_PROF}$	Pr > Z-statistic (2.50) = 0.01
$Collateral_Adj_{Lib_Mat_L2*LOW_PROF} > Collateral_Adj_{Lib_Mat_L2*HIGH_PROF}$	Pr > Z-statistic (2.09) = 0.02

Table 3, Panel A presents summary statistics of the credit decision response (Credit_Grant / Risk_Adj / Collateral_Adj) for the whole sample, and respectively, conditional on our materiality levels (Conservative_Materiality / Liberal_Materiality_Lev1 / Liberal_Materiality_Lev2). In addition, the summary statistics are disaggregated according to our profitability scenarios (HIGH vs. LOW). Panel B tests whether the difference in medians between the two profitability scenarios (within one materiality level) is statistically significant using a Mann-Whitney-Wilcoxon test. The descriptives are computed using the Taylor series variance estimation procedure including a finite population correction (total population = 951 observations). The response sample contains all survey participants which provided professional information on Yrs_Experience, Credit_Vol, and F/S_Experience. In the low profitability scenario there are 5 missing observations per materiality level for Risk_Adj. All variables are defined in Appendix 1.

Table 4

Multivariate Analysis of the Relevance of Reporting Audit Materiality

Model No.		1				2				3			
Method		Mixed-Effects Restricted Maximum Likelihood				Mixed-Effects Restricted Maximum Likelihood				Mixed-Effects Restricted Maximum Likelihood			
Standard Errors		Clustered for repeated measurement of subjects				Clustered for repeated measurement of subjects				Clustered for repeated measurement of subjects			
Dependent Variable		Credit_Grant				Risk_Adj				Collateral_Adj			
Source of Variance	Hypothesis	Coefficient	t-statistics	VIF	F-tests for main effects	Coefficient	t-statistics	VIF	F-tests for main effects	Coefficient	t-statistics	VIF	F-tests for main effects
Intercept	H1	4.4106 ***	7.88	0.00	n/a	-9.6009	-0.28	0.00	n/a	3.9684 ***	7.93	0.00	n/a
Liberal_Materiality_Lev1	H2	1.4878 ***	9.26	2.60	127.24 ^{§§§}	26.3953 ***	3.06	2.45	9.35 ^{§§§}	0.8605 ***	7.15	2.60	51.08 ^{§§§}
Liberal_Materiality_Lev2	H2	2.1951 ***	13.66	2.60	340.97 ^{§§§}	67.6744 ***	7.84	2.45	61.47 ^{§§§}	1.7209 ***	14.29	2.60	204.33 ^{§§§}
Low_Profitability	H1 + H3	0.2206	0.94	3.04	0.88	4.5998	0.39	3.03	0.15	0.3306 *	1.67	3.04	2.78 [§]
Liberal_Materiality_Lev1 * Low_Profitability	H3	0.4413 **	1.96	3.27	3.86 ^{§§}	8.1880	0.64	3.12	0.41	0.2615 **	1.52	3.27	2.30
Liberal_Materiality_Lev2 * Low_Profitability	H3	0.2416	1.08	3.27	1.16	26.0756 **	2.04	3.12	4.16 ^{§§}	0.1571	0.91	3.27	0.83
Yrs_Experience		-0.0020	-0.17	1.10	0.03	-0.0102	-0.02	1.08	0.00	-0.0020	-0.20	1.10	0.04
Credit_Vol		0.1129	0.75	1.07	0.56	-3.0271	-0.42	1.05	0.17	-0.0459	-0.35	1.07	0.12
F/S_Experience		-0.0430	-0.14	1.13	0.02	31.025 **	2.15	1.11	4.63 ^{§§}	0.0949	0.36	1.13	0.13
Pseudo R²		0.426				0.3287				0.4394			
Number of Observations		252				237				252			

Table 4 reports the results of a mixed-effects, repeated measures model which controls for subject dependency in the error terms. The response sample contains all survey participants which provided professional information on Yrs_Experience, Credit_Vol, and F/S_Experience. VIF is the variance-inflation-factor calculated in order to test for multicollinearity. ***, **, and * denote significance of the t-statistics at the 1%, 5% and 10% levels, respectively. ^{§§§}, ^{§§}, and [§] denote significance of the F-tests for main effects at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix 1.

Figures for the manuscript "Materiality and Creditor's Lending Decisions"

