

Audit materiality and cost of debt^{*}

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Abstract

We examine whether lenders influence audit materiality judgments and its consequences over the firm cost of debt. We run our tests on a manually collected sample of materiality disclosures prepared by auditors of listed firms in the U.K and Ireland from 2013 to 2020. We predict and find evidence that lenders reward firms with lower audit materiality. Consistent with lenders facing asymmetric payoffs, we also document that lenders' demand for audit materiality is asymmetric: materiality adjust faster in reaction to increases in client business risk than to equivalent decreases. Our evidence is consistent with lenders being sophisticated users of the new extended audit reports. In particular, our evidence suggests that lenders consider audit materiality jointly with audit fees when making their screening and monitoring decisions.

Keywords: audit materiality; asymmetric materiality; cost of debt; lender pressure

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1 Introduction

We study whether lenders monitor audit materiality and, if so, how they incorporate it into their decision-making. Audit materiality is a major consideration during the audit planning and performing phases. The assessment and application of materiality requires professional judgment; it influences the scope of the audit, the type of audit tests that need to be done during the audit field work and, therefore, the final audit report. Materiality thresholds and the rationales supporting them used to be documented only on audit working papers, and therefore, not publicly available to financial statements' users. After the implementation of ISA 700, *Forming an Opinion and Reporting on Financial Statements*, materiality assessments (quantitative and qualitative) are observable in public firms in the United Kingdom and Ireland.¹ This new disclosure regime increases the transparency of audit work, and may reduce the expectation gap between auditors and financial statements users.²

Understanding how different stakeholders use this newly available information in extended audit reports is of substantial interest, to assess its net benefits (see, for a review, [Minutti-Meza \(2021\)](#)). We expect that lenders may particularly benefit from these disclosures and that they will monitor and influence firms' materiality thresholds, as well as consider materiality in setting loan contracting terms. This is because materiality disclosures provide a clear threshold for auditors' assurance on financial statements, where the lower the materiality quantitative assessment, the greater the assurance.³

We build our predictions on a growing literature in accounting that provides evidence that debt markets demand audit quality (e.g., [Armstrong, Guay and Weber, 2010](#); [Dedman and Kausar, 2012](#); [Kausar, Shroff and White, 2016](#)), and use the auditor's report in lending decisions. Recent evidence suggests modified audit opinions lead to increases in the cost of debt and that a growing number of covenants are directly tied to the auditor report ([Ruhnke, Pronobis and Michel, 2018](#)). This prior work is rooted in evidence that the audit report lends credibility to the firm's financial information (e.g., [Christensen, Glover and Wolfe, 2014](#)), helping users to assess future misstatements ([Chen, He, Ma and Stice, 2016b](#)).

¹The new PCAOB standard AS 3101 *The Auditor's Report on an Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion*, and the International Standards on Auditing (ISA) 700 (ISA 701) represent the first major change to public company audit reports in more than 70 years.

²Appendix A contains three examples (A.1, A.2, A.3) illustrating the content and different formats and structures of the materiality disclosures reported in the extended audit report.

³A low level of overall materiality leads to an increase in the quantity and quality of evidence needed to gather during the audit. To illustrate, for a given firm, a materiality quantitative assessment of 1 million (or 5% of pretax income) provides greater assurance than a materiality of 2 million (or 10% of pretax income). This is because the former gives lenders assurance that all significant transactions over 1 million have been audited, while the latter gives assurance only for transactions over 2 millions.

Against this backdrop, we make two predictions. First, we expect that lenders penalize borrowers with high audit materiality, and set a higher cost of debt for these firms. While this prediction makes intuitive sense, little is known about actual materiality quantitative assessments. If auditors set standard thresholds for all their clients, such as, for example, use a 5% pretax income rule of thumb, as suggested in [Acito, Burks and Johnson \(2009\)](#) or [Eilifsen and Messier Jr \(2015\)](#), materiality thresholds may still be considered by lenders (as clearly, such a threshold would fit some firms better than others), but materiality disclosures would then be relatively uninformative of audit effort and audit risk judgments, lowering their value for lenders.⁴

Second, we argue that because of their screening and monitoring, lenders may influence materiality assessments ex-ante. Auditors are predicted to set lower materiality in firms with greater lender monitoring. Lenders are likely to exert an asymmetric influence on audit materiality due to their asymmetric payoffs functions, which map back well into auditors' own asymmetric loss function. That is, lenders are predicted to demand low audit materiality when there is high risk that the firm defaults on its debt payments, while they are not expected to demand high materiality when default risk is low. While no prior work explores in detail whether lender pressures drive materiality decisions, existing experimental studies find that the higher the analyst following, the greater the likelihood of the auditor waiving misstatements ([Keune and Johnstone, 2012](#)), suggesting pressures to meet targets may lead to looser audit materiality thresholds. If these latter (target-beating) pressures dominate, we may not find evidence that lenders influence materiality thresholds.

To test our predictions, we manually collect 5,316 materiality disclosures from the audit reports of public firms in the U.K. and Ireland between 2013 and 2020. Sample firms use different bases to set materiality, where almost three out of every four firms chooses pretax income or adjusted pretax income as the base for setting materiality. Consistent with prior work by [Choudhary, Merkley and Schipper \(2019\)](#), we find that while 5% of pretax income is the most commonly used base, many firms deviate from this rule of thumb threshold. Interestingly, it is clients of large audit firms that are more likely to stick to this rule of thumb. Our descriptive evidence also suggests a certain convergence in materiality base and thresholds over time, which was noted as a concern in comment letters submitted to regulators before the mandatory disclosure was imposed ([Gutierrez, Minutti-Meza, Tatum and Vulcheva, 2018](#)). However, this convergence follows a downwards trend, indicating,

⁴In its second materiality review, the [Financial Reporting Council \(FRC\) \(2017\)](#), met with investors and found a general lack of understanding of the concept of audit materiality, with a common misconception being that there is a standard method of calculation across all audit firms. One investor noted that 'if you ask most investors they would not even have any appreciation that there is a range of numbers'.

if anything, that firms are converging towards lower materiality levels, which would mean greater assurance is provided by auditors.

In terms of our analyses of rationales, we find that not all firms explain how they set materiality thresholds.⁵ While relatively uncommon, our evidence suggest that some firms directly mention debt considerations in the rationales justifying their materiality judgments.⁶ This indicates auditors' materiality decisions are influenced by lenders, debt covenant compliance, and covenant calculations.⁷

To study the determinants of materiality and the asymmetric role of lenders on auditor's materiality judgements, we employ two proxies for financial pressure, firstly we use the firm financial health, as proxied by Altman (1968) Z-score. Second, we create a new measure of lender demand for assurance based on the most common financial covenants in debt contracting discussed in Demerjian and Owens (2016). We find that an increase in lender pressure is associated with lower materiality, a higher likelihood to use EBITDA as a base and a lower probability of making the default choice of basing overall materiality on the 5% of pretax income rule of thumb. We also find evidence of higher lender pressure leading to longer rationales as measured by the number of words. We find no evidence that lender pressure influences the likelihood of including a materiality rationale. Furthermore, we document the existence of audit asymmetric materiality. In firms that are not in financial distress, there is a positive relation between Z-score and the materiality threshold and, as predicted, materiality is asymmetrically lower for firms in financial distress. This effect accrues more to firms that have a leverage ratio above the median, consistent with lender monitoring considerations influencing materiality.

We obtain the residuals from our materiality regression and use them in a second step as an exploratory variable in a cost of debt model. Our findings suggest that firms with an abnormally high audit materiality threshold are penalized with higher cost of debt. Next, we run a differences-in-differences regression in the four-year window surrounding the adoption of ISA 700, when premium market firms first started disclosing materiality. This allows us

⁵In the first example in Appendix A (A.1) the materiality rationale is discussed plainly as part of the materiality disclosure while in the second example (A.2) the rationale features on a separate part of the disclosure. The third example (A.3) does not include materiality rationale. Only two-thirds of our sample firms actually include a rationale.

⁶While only around 2% of rationales mention lenders or covenants specifically, almost 56% of rationales indicate that the choice of base was influenced by the stakeholders of the firm.

⁷For example, in the 2019 extended audit report of Hochschild Mining PLC, Ernst & Young stated that: "adjusted EBITDA provides us with an earnings-based measure that is significant to users of the financial statements. This is considered to be a critical measure for users of the financial statements, given the focus on this metric by the Group's shareholders, investors and external lenders. In addition, the Adjusted EBITDA measure is used to assess the Group's compliance with key restrictive covenants on the Group's borrowings."

to test the effect on cost of debt of being revealed as a high materiality firm, and alleviate concerns that even if materiality was not public information pre-ISA 700, auditors could still communicate the materiality threshold to lenders privately. Results confirm that lenders penalize firms with high materiality. We find that this cost of debt effect is concentrated in the sample of firms with audit fees above the median. We posit that this indicates that lenders see audit materiality and audit fees as complements and thus penalize firms that were signaling high audit effort through a high audit fee when the materiality disclosure contradicts the previous signal.

We make several contributions to the literature. First, we provide comprehensive descriptive evidence of materiality quantitative assessments and rationales. We manually collect materiality information for a period of eight years. This allows us to add to existing research and respond to the recent call of [Doxey, Hatfield, Rippy and Peel \(2020\)](#) for research on materiality disclosure. We provide insights on how materiality judgments emerge and evolve over time and across auditors, the magnitude of audit materiality thresholds and bases, and the content and wording of materiality rationales. Our descriptive evidence also contributes to the literature on the determinants of audit materiality, where there is a dearth of research ([Amiram, Chircop, Landsman and Peasnell, 2017](#); [Choudhary et al., 2019](#); [Hallman, Schmidt and Thompson, 2018](#)). We provide insights for practitioners and academics into how materiality responds asymmetrically to the demands from lenders.

Second, our findings contribute to the relatively limited literature of auditors' verification role in the debt market ([Kausar and Lennox, 2017](#); [DeFond and Zhang, 2014](#); [Minnis, 2011](#); [Chy, De Franco and Su, 2021](#); [Porumb, Zengin-Karaibrahimoglu, Lobo, Hooghiemstra and De Waard, 2021](#)) and how lenders perceive the different proxies of audit effort. We add to the growing literature that, while not looking directly at materiality considerations, examines whether expanded audit reports have increased the role of audit information in debt markets. [Porumb et al. \(2021\)](#) examines the effect of the expanded audit report on loan conditions, focusing on risks mentioned in the auditor's report, but not in the report of the audit committee, while [Amiram et al. \(2017\)](#) finds a negative relationship between leverage and the materiality threshold which they interpret as lenders' demand for higher assurance. Our evidence adds to this prior work and suggests lenders reward firms with lower materiality. The results also indicate that lenders are sophisticated users of the new audit expanded reports, considering audit materiality alongside other audit quality signals.

The remainder of this paper is organized as follows. Sections 2 and 3 review prior literature and set the hypotheses. Section 4 presents the research design and descriptive evidence. Section 5 documents the findings and section 6 concludes.

2 Literature review

2.1 Audit materiality background

Materiality is the level of assurance auditors provide on their clients' financial statements. It is the monetary value for the financial statements of a company, above which the auditor considers a misstatement could influence the decision making of the users of the financial statement of said company as a whole independent of the transaction or account said misstatement appears in, and as such, above which every transaction needs to be thoroughly checked. Once materiality is set, it drives auditors' decisions in the planning and performing stages, and in resolving misstatements. The [International Auditing and Assurance Standards Board \(IAASB\) \(2009\)](#) and the [Financial Reporting Council \(FRC\) \(2016\)](#) define materiality in the context of the financial statements as the magnitude by which "misstatements, including omissions, individually or in the aggregate, could reasonably be expected to influence the economic decisions of users."⁸

Auditors set three materiality-related thresholds. The first two are (i) *overall* materiality, which is a quantitative materiality threshold for the financial statements as a whole; and (ii) *performance* materiality for segments of the audit, which is a materiality for particular classes of transactions, account balances, and disclosures. These materialities are interdependent, in that performance materiality should be set such that the probability that undetected or uncorrected misstatements, when aggregated, do not exceed overall materiality.⁹ In addition, auditors also report the (iii) 'clearly trivial threshold' to the audit committee.¹⁰ This is often set between 0 to 5% of overall materiality ([Financial Reporting Council \(FRC\), 2017](#)). Identified misstatements below the clearly trivial amount are not reported to those charged with governance. Appendix A provides an illustrative example of audit materiality reporting.

To set overall materiality auditors must decide on the materiality base to use, the percentage applied ([Steinbart, 1987](#)), and whether any adjustments to that base are needed

⁸In 2018, the IASB amended the definition of material, noting that "information is material if omitting, misstating or obscuring it could reasonably be expected to influence the decisions that the primary users of general purpose financial statements make on the basis of those financial statements." This definition provides a framework for auditors' materiality decisions.

⁹According to ISA 320, "performance materiality means the amount or amounts set by the auditor at less than materiality for the financial statements as a whole to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality for the financial statements as a whole" ([Financial Reporting Council \(FRC\), 2016](#)).

¹⁰ISA 450 stated "Clearly trivial is not another expression for 'not material.' It is limited to matters that are clearly inconsequential, whether taken individually or in aggregate and whether judged by any criteria of size, nature or circumstances. When there is any uncertainty about this, the matter is considered not to be clearly trivial."

(Choudhary et al., 2019; ICAEW, 2017). The most common materiality is five percent of pretax profit (Financial Reporting Council (FRC), 2013a, 2017; Acito et al., 2009; Eilifsen and Messier Jr, 2015). However, recent research increasingly documents a deviation from this ‘5% rule of thumb’ (Choudhary et al., 2019; Acito, Burks and Johnson, 2019), implying the exercise of professional judgments by auditors.

There are no ‘bright-line’ rules or right answers for setting materiality thresholds (De Zoort, Holt and Stanley, 2019). However, there are concerns that discretion in setting the threshold may threaten audit quality. Arthur Levitt, former SEC chairman, noted:

“Some companies misuse the concept of materiality. They intentionally record errors within a defined percentage ceiling. They then try to excuse that fib by arguing that the effect on the bottom line is too small to matter. If that’s the case, why do they work so hard to create these errors? When either management or the outside auditors are questioned about these clear violations of GAAP, they answer sheepishly ... ‘It doesn’t matter. It’s immaterial.’ In markets where missing an earnings projection by a penny can result in a loss of millions of dollars in market capitalization, I have a hard time accepting that some of these so-called non-events simply don’t matter.” Levitt (1998)

Aware of these concerns, regulators require auditors to consider both quantitative and qualitative factors in their materiality decisions. Qualitative characteristics include, for example, the impact of the small misstatement on meeting analysts’ consensus expectations, trends in earnings, executive compensation or any significant business combination, and changes in financial reporting standards (Financial Reporting Council (FRC), 2016; Securities and Exchange Commission (SEC), 1999). Prior work finds conflicting evidence on whether auditors apply both quantitative and qualitative considerations in determining materiality. Acito et al. (2009) and Choudhary et al. (2019) support this view, whilst Legoria, Melendrez and Reynolds (2013) find a higher reliance on quantitative characteristics.

To understand these differences, audit firm guidance appears relevant. Reviews prepared by the FRC and the Institute of Chartered Accountants of England and Wales (ICAEW) anonymously reveal the guidance prepared by the biggest accounting firms in the U.K., as well as how individual auditors apply the guidance in the field. ICAEW also provides auditors with examples of application and disclosure (ICAEW, 2017), while Eilifsen and Messier Jr (2015) provide a review of materiality guidance by the eight largest U.S. accounting firms. Our perusal of these documents suggests a high consensus between the guidance provided by audit firms in the U.S. and the U.K.¹¹ However, while this guidance sets the bounds for

¹¹A direct comparison is not possible because the auditors’ identity remain anonymous. Still, the quan-

materiality decisions, within those bounds, there is ample room for individual auditors to apply their judgment and set a numerical value for materiality.

Research on audit materiality is scarce, as historically, this data has not been available. Thus, prior research typically examines the determinants of materiality using indirect outcomes or experimental designs.¹² This experimental research examines the decision to consider a misstatement as material, focusing on deadline pressures, uncertainty about fair value estimates, and audit-client dimensions, such as client pressure or audit tenure (Bennett and Hatfield, 2017; Nelson, Smith and Palmrose, 2005; Messier and Schmidt, 2018). The exception and perhaps the study more closely related to ours is Choudhary et al. (2019). These authors obtain non-public PCAOB data and find that quantitative materiality judgments are associated with size-related financial statements outcomes. In their study, looser materiality is associated with lower audit effort as proxied by lower amount of proposed audit adjustments and a higher likelihood of restatements.

2.2 The role of auditors in debt contracting

Existing literature suggests that accounting information plays an important role in reducing information asymmetries in debt markets. Armstrong et al. (2010) argue that formal and informal debt contract elements, including the amount to be borrowed, interest rates charged, covenants and maturity, depend partly on the reputation the firm has established with regards to financial transparency, corporate governance, risk management and other strategic and operating policies that can be inferred from its accounting information. Accounting is important both in initial screening and subsequent monitoring (Graham, Li and Qiu, 2008). Therefore, when firms try to obtain or renegotiate debt financing, lenders demand assurance that they will be provided with timely information about the firm's financial conditions giving managers an incentive to obtain a reputation for high quality financial reporting (Watts, 2003). In addition, accounting numbers are used as inputs in debt covenants or performance pricing provisions (Smith Jr and Warner, 1979).

Auditors provide assurance for financial statement users. In the U.K., the audit is mandated for public firms and, also, for private firms above certain size thresholds. These thresholds have changed substantially since 1994, allowing research into the benefits of voluntarily audits. Firms that opt out of the audit are associated with lower credit scores (Dedman and Kausar, 2012), while firms that retain the audit voluntarily increase their

titative guidance percentages disclosed in Eilifsen and Messier Jr (2015) Table 3 and Financial Reporting Council (FRC) (2017) Section 3.2 are remarkably similar.

¹²See the work of Acito et al. (2009), Keune and Johnstone (2012), and Legoria et al. (2013).

debt and investment, and become more responsive to investment opportunities, specially if they were previously financially constrained (Kausar et al., 2016). This evidence is in line with lenders considering the audit in their decision making.

Furthermore, the auditor report not only adds assurance directly, but depending on its content, it can also communicate differences in the degree of assurance with which the financial statements reflect the firm’s economic activities, signalling the quality of financial reporting (Christensen et al., 2014). Chen, Peng, Xue, Yang and Ye (2016a) show that modified audit opinions lead to increased cost of debt, and affects the structure of the debt contract, in terms of number of financial covenants. Similarly, Chen et al. (2016b) find that lenders incorporate the information contained in modified audit opinions (explanatory content such as information denoting lack of accounting inconsistency, material uncertainty, or going concern) into debt contracting. Kausar and Lennox (2017) find that the issuance of a going concern prior to bankruptcy can help predict the wedge between the book values of assets and the future liquidation values of those assets.

3 Hypotheses development

When discussing the auditor’s role on loan negotiations in the lead-up to the expanded audit report regulation, the Basel Committee on Banking Supervision (BCBS) stated that “in the credit decision process, improvements to the auditor’s report may help banks improve their overall credit risk management” (BCBS 2012, 1). Moreover, Standard & Poor’s (S&P) highlighted that “the expanded disclosures. . . will create a better understanding of the financial statements and provide relevant information on issues identified in the audit that are meaningful to credit analysts” (S&P 2012, 2). This anecdotal evidence suggests lenders may benefit from the additional disclosures provided in extended audit reports. Auditor materiality is expected to be particularly useful to lenders, because it is a precise representation of the level of assurance that the auditor provides over their client’s financial information and it is dictated, at least partly, by the client firm’s inherent risk.

Against this backdrop, we expect that lenders will monitor and influence firms’ materiality thresholds, as well as incorporate materiality information in setting debt contract terms. From a lenders’ perspective, the prediction is straightforward: the lower the materiality, the higher the assurance provided by auditors. Thus, lenders have a strict preference for low materiality. This is because when materiality is set to be low, it lowers the dollar value of the potential misstatements auditors examine and report on, assuring no stone is left unturned.¹³

¹³In the extreme, if materiality was set to the lowest possible dollar value (1 dollar), every single trans-

There is no prior work investigating this issue, but existing research supports our line of argumentation.¹⁴ [Ruhnke et al. \(2018\)](#) performs an experiment using executive board members selected from German commercial banks and concludes that disclosing the overall materiality applied to an audit helps lenders to adjust a preliminary lending decision. [Amiram et al. \(2017\)](#) includes leverage as a control in a materiality regression and finds that an increase in leverage is associated with a lower materiality, which could be interpreted as a negative link between lender demands and the materiality decision and which is in line with our results. Next, we propose several testable implications of the above general prediction.

3.1 Lender’s pressure and asymmetric audit materiality

Lenders have asymmetric loss functions. Both their claims over the firm and their payoffs are asymmetric, and thus, they are more concerned with decreases than with increases in firm value. Thus, our first empirical prediction is that lenders’ demand for materiality thresholds is asymmetric. Lenders are expected to demand low audit materiality when downside risk is high, i.e., when there is high risk that the firm will default on its debt payments. In contrast, lenders are not expected to demand high materiality when default risk is low. In addition, given that the auditor’s materiality assessment is a matter of professional judgment affected by the auditor’s perception of the financial information needs of users, it may be the case that an increase in lenders’ demand for assurance may be reflected in other aspects of the materiality disclosure, such as the rationale provided or the choice of base.¹⁵

Prior literature documents that lenders demand assurance from auditors due to information asymmetry and contract efficiency. Lenders are a fundamental capital provider ([Cascino, Clatworthy, Garcia Osma, Gassen and Imam, 2014](#)). Lenders rely on auditors’ confirmatory role. The audit report provides assurance about the credibility of accounting numbers, reducing the information disadvantage between lenders and borrowers. When materiality is publicly observable, lenders have incremental information to infer audit effort and assess the reliability of accounting. In line with this view, [Gutierrez et al. \(2018\)](#) document an inverse relationship between disclosed materiality and audit quality in a cross-sectional analysis.

Auditors are likely to react to lenders’ pressures for a number of reasons. First, accord-

action of the company would be audited.

¹⁴[Porumb et al. \(2021\)](#) study the effect of the expanded auditor report on loan contracting and includes the natural logarithm of the overall materiality disclosed as one of the explanatory variables on its model for loan spread, loan maturity and number of lenders.

¹⁵Supporting this, the auditor report of Premier Oil PLC in 2017 contained the following explanation for its choice of EBITDA as the base of their overall materiality: ”We believe that EBITDA provides us with a suitable basis for setting materiality as this measure is a particular focus of lenders, which is the basis of the covenants included in the new loan agreements and is a key performance indicator of the Group.”

ing to ISA320, auditors must consider the common financial information needs of users as a group (i.e, banks, shareholders, bondholders, managers, or regulatory bodies) when setting materiality. Auditors are required to consider clients' compliance with loan covenants when evaluating the materiality of uncorrected misstatements individually or to the financial statement as a whole (PCAOB AS2810). In addition, prior literature finds that auditors' perceptions of users' information demands are considered in materiality decisions (Steinbart, 1987; Amiram et al., 2017). Moreover, auditors, in some instances, provide a negative assurance on certain covenant compliance subjected to the audit procedures in a separate report or in an audit report (PCAOB, 2003, 2010).¹⁶

Finally, the asymmetry in lenders' claims over the firm maps back into auditors' own asymmetric loss functions. Auditors are conservative in reaction to (i) litigation risk, which arises from undetected or uncorrected managerial income manipulation (Cahan and Zhang, 2006; DeFond, Lim and Zang, 2016; Kausar and Lennox, 2017), (ii) increases in the risk or awareness of sanctions (Defond, Francis and Hallman, 2018; Sun, Cahan and Xu, 2016), or (iii) higher public scrutiny (Feldmann and Read, 2010). Therefore, when lender's pressure is high, auditors are likely to set low materiality thresholds to protect themselves from audit risk (i.e., the risk of undetected material misstatements), auditor litigation risk, and auditor reputation risk. In contrast, auditors are likely to adjust materiality thresholds upward slowly, even absent lenders' influence, due to threat of potential scrutiny or suspect from market as materiality judgment and its rationale are publicly observable.

Lenders may also demand a more informative materiality disclosure, leading auditors to avoid the default decision of 5% of pretax profit. Lenders may also want materiality to be directly based on elements of the financial statements that are more directly tied to debt covenants such as EBITDA. Finally, it follows that when their demand for assurance increases, lenders will be interested in understanding the thought process behind the auditors choice of materiality threshold through a better explained rationale.

The above arguments leads us to state our first hypotheses as follows:

H1A: *Lenders demand low audit materiality.*

H1B: *Lenders demand more informative materiality disclosures.*

¹⁶Negative assurance means the borrower's compliance with the covenants in the debt contract is accurate since nothing came to auditors' attention (Baylis, Burnap, Clatworthy, Gad and Pong, 2017).

3.2 Audit materiality and cost of debt

Our second empirical prediction links with the above discussion. If lenders consider materiality in their screening and monitoring decisions, it follows that lenders may penalize borrowers with abnormally high audit materiality, raising the cost of debt financing for those firms.¹⁷

We argue that materiality reflects auditor effort in auditing clients' financial statements, and that it does so with greater precision than other audit quality measures, such as the audit fee. This is because materiality gives a single, precise, dollar amount of what assurance the auditor provides that material misstatements exist. Materiality can be directly compared with the loan size, any debt payments, or in assessing the likelihood that the firm is in violation of accounting-based debt covenants.¹⁸

It follows that high abnormal audit materiality is suggestive of abnormally low audit effort, and thus, reduced assurance and increased downside risk for lenders. Hence, lenders are likely to use this information in deciding cost of debt to compensate for information risk (Moscariello, Skerratt and Pizzo, 2014). Therefore, if abnormal audit materiality is high, this undermines the confidence of lenders on the quality of accounting numbers. Less credible accounting numbers could also increase the risk of asymmetric information. Thus, our second hypothesis is as follows:

H2: *High audit materiality is positively associated with cost of debt.*

3.2.1 The role of audit fees in lenders' use of materiality information

Our setting provides the perfect context to examine how new information is used by lenders to update their priors. Lenders are considered sophisticated users of financial statement information (Cascino et al., 2014), however, there is scarce previous evidence on how specific information may be incorporated into their decision-making. We expect that lenders incorporate materiality information against the backdrop of already existing audit information.

Prior literature notes audit fees are a good proxy for audit effort (Davis, Ricchiute and

¹⁷This prediction does not clash with H1. Granted, if lenders could perfectly influence auditor materiality disclosures ex-ante, there would be no need for an ex-post mechanism to punish high materiality firms. However, lenders have unconstrained incentives to demand higher assurance and as such, for their preferences to be perfectly met, materiality would need to be set at the lowest possible threshold so that every single transaction is checked and audited to the highest possible standard, which is not realistically possible.

¹⁸To illustrate, suppose a firm has an Debt-to-EBIT performance covenant set at 2.6. If reported EBIT is 100 and Debt is 250, the ratio is 2.5, not triggering the covenant. However, lenders may be concerned about the credibility of EBIT, given managerial incentives to manage it. If the materiality is set at 100, this means that the auditor provides assurance over this covenant. In contrast, with the same numbers, if the materiality was set at 80, concerns would exist (250 over 80 is 3.1, which is over the contracted covenant).

Trompeter, 1993; Choi, Kim, Liu and Simunic, 2009; Bronson, Ghosh and Hogan, 2017). If the disclosure of a high materiality threshold is, in fact, seen as a signal of poor audit effort, there may be two different interpretations for the combined use of audit fees and materiality, depending on whether they are seen as complements or substitutes. If audit fee and audit materiality are complements, when a firm with low audit fee discloses a high materiality threshold, there may be no reaction from lenders as that was already expected. Contrarily, if both measures are seen as substitutes, the fact that the firm signals low audit effort on both proxies could lead to lenders imposing a higher cost of debt. If firms with high audit fee are perceived as signalling high audit effort, if materiality and audit fees are substitutes they may not be affected by this disclosure. Conversely, if the two proxies are seen as complements, lenders may penalize firms that disclose a high materiality threshold since this would be unexpected and could be perceived as ‘damaging’ the existing signal.

Thus, we state our third hypothesis as follows:

H3: *The association between audit materiality and cost of debt depend on audit fees*

4 Research design

4.1 Lender’s pressure effects on audit materiality

4.1.1 Financial health and lender pressure

To test **H1**, we explore the audit materiality responsiveness to high versus low lender’s pressure by using the following model:

$$\begin{aligned} \text{Materiality outcomes}_{it} = & \beta_0 + \beta_1 \text{Audit Risk}_{it} + \beta_2 \text{Lender Pressure}_{it} + \\ & + \beta_3 \text{Audit Risk}_{it} \times \text{Lender pressure}_{it} + \Gamma X_{it} + \nu_t + \epsilon_i + \epsilon_{it} \end{aligned} \quad (1)$$

where i is the audit client indicator, and t is the time indicator. The main materiality outcome is Materiality_{it} , the ratio of overall materiality in pounds of client i in year t to its total assets. We multiply this ratio by one hundred for ease of interpretation.¹⁹ In addition, we also explore other dimensions of materiality. Particularly, we explore how lender pressure is associated with characteristics of the materiality disclosure (length of the materiality rationale (n_words)) and the base that are chosen by auditors.

¹⁹We scale materiality by total assets because of its low volatility, and importantly, it allows us to explore materiality relative to firm size. In an untabulated results, we also use natural logarithm of audit materiality as a dependent variables.

In our main specification, we proxy for Audit Risk_{it} using financial distress. We use the Z-score from Altman (1968) to measure firms’ financial health. Lender Pressure_{it} captures lenders’ asymmetric monitoring intensity. The likelihood of lenders bearing all downside risk is higher in case of default. Lender Pressure_{it} is a dummy variable equal to 1 if Z-score is lower than 1.81; 0 otherwise. A Z-score that is smaller than 1.81 means that the company is in financial distress. The coefficient of interest in Equation (1) is β_3 , which captures the asymmetric responsiveness of audit materiality to high *versus* low lender’s pressure. We predict that auditors will adjust materiality downwards in response to higher lender’s pressure relative to lower lender’s pressure. **H1** predicts that β_3 will be negative and larger in absolute value than β_1 , suggesting that lenders asymmetrically influence materiality.

X is a vector of control variables that are determinants of materiality in prior literature. We control for client’s size by including the natural logarithm of revenue (*ln_rev*). Choudhary et al. (2019) report a positive association between audit materiality judgments and income-related outcomes. These results suggest that client size is an important benchmark in setting quantitative materiality. And, variation in revenue plays an important role in explaining the changes in audit materiality decisions. We also include an indicator variable for Big4 auditing firms (*big4*). Blokdiijk, Drienuizen, Simunic and Stein (2003) report that Big N auditors set materiality threshold at smaller amounts than non-Big N auditors, but Messier Jr, Martinov-Bennie and Eilifsen (2005) show that research prior to 1982 provides evidence of the contrary. Hence, we make no directional prediction for *big4*. Busyness of auditors (*busy_audit*) is also incorporated in the model since it could affect auditors’ effort, the timing and extent of audit planning in each client.

We also control for client characteristics. In particular, we control for the performance of the client using ROA (*roa*), sales growth (*sales_growth*), earning volatility (*earn_vol*). We expect more profitable clients to be perceived as less risky and thus warrant a higher materiality. Thus, we predict a positive coefficient for ROA and sales growth and a negative one for earnings volatility and loss. Next, we control for the complexity of the audit client’s operations. We capture the operational complexity by the natural logarithm of the number of business segments in which the client operates (*num_seg_ln*), whether the client has undergone any restructuring in year *t*, acquisition activities or if the client operates in multiple regions (*multinational*). We expect lower threshold for more complex clients.

As noted, materiality judgments and decisions to waive misstatements may be influenced by pressures to meet earnings targets (Keune and Johnstone, 2012). Hence, we control for a number of proxies linked with target beating behaviour, and that are also included as controls in Choudhary et al. (2019). We control for profit streak (*positive_streak*), changes

in the earnings trend (*earn_trend*) and an indicator for small profits (*breakeven*).

Finally, we include industry- and year-fixed effects to control for unobservable industry characteristics and time trends, and cluster standard errors by audit firm to correct the potential existence of serial correlation in dependent variables.

4.1.2 Alternative lender pressure proxy

We create a new proxy to capture the effect of increases in lender’s demands for assurance on audit materiality outcomes. To do this, we start by calculating the most common debt covenants ratios as described in [Demerjian and Owens \(2016\)](#) in all firms in our sample and then decile rank the firms.²⁰ We then take the three top (bottom) deciles for each min (max) ratio covenant, under the assumption that firms in that group are at higher risk of triggering a covenant. Finally, we compute *pressure_covenants* by adding the number of covenants firm *i* is in risk of breaching in year *t*. We employ this new proxy in the following model:

$$\text{Materiality outcomes}_{it} = \alpha_0 + \alpha_1 \text{Lender Pressure}_{it} + \Gamma X_{it} + V_t + \mu_i + \eta_{it} \quad (2)$$

Where materiality outcomes and the list of controls are the same as before and Lender Pressure is the new proxy *pressure_covenants*. As before, the regression includes fixed effects for industry, auditor and year and the standard errors are clustered by auditor.

We validate *pressure_covenants* using Dealscan data, which allows us to find the data for specific debt contracts for close to 400 sample firms.²¹ While it is true that not all the firms featured in our sample will have all of these covenants in their contract, because these are the most common covenants featured in debt contracting, they no doubt indicate that these ratios are important for lenders. Thus, lenders are likely to pay attention to these ratios even if they are not featured specifically in a debt covenant.

²⁰[Demerjian and Owens \(2016\)](#) disclose (in Table 4) the 15 most common covenants in Dealscan. We cannot compute ‘max. Senior Debt-to-EBITDA’ and ‘max. Senior Leverage’ because of lack of data on the seniority of debt. Furthermore, we do not employ ‘min. EBITDA,’ ‘min. Net Worth,’ and ‘min. Tangible Net Worth’ because they are not ratios, and are greatly correlated with firm size, defeating the purpose of capturing firms that are potentially at risk of breaching a covenant.

²¹We employ the top/bottom third decile for each covenant ratio as the cutoff point for considering that a firm is in risk of potentially breaching a covenant after comparing different possible cutoffs against the limited Dealscan data we find for our sample of U.K. firms. If we used the top (bottom) second decile the cutoff value would fall below(above) the max(min) value featured for that specific covenant in five of the ratios we employ. If we used the top(bottom) quartile, the cutoff would fall below(above) the max(min) value featured for a covenant in four of the ratios. By using the third top(bottom) decile the cutoff value falls below the maximum value only for the covenant in the ‘max. Fixed Charge Coverage.’

4.2 Materiality and cost of debt

To test **H2**, we propose the following model:

$$\text{Cost of debt}_{it} = \alpha_0 + \alpha_1 \text{Materiality}_{it} + \Gamma Z_{it} + \epsilon_{it} \quad (3)$$

where, Cost of debt is the ratio of clients' interest expense in year t to the average long-term debt during years t and $t - 1$. In Equation (3), Materiality $_{it}$ is first measured as before. In addition, we consider abnormal materiality in our model, which we calculate using the residuals from Equation (1). Moreover, following Choudhary et al. (2019), we transform these residuals into deciles and incorporate them into our model. where D1 represents observations with the lowest abnormal materiality and D10 the highest abnormal materiality. D5 is excluded and captured by the intercept. The coefficient of interest in Equation (3) is α_1 . If lenders penalize firms with high materiality, α_1 should be positive and significant.

Z is a vector of control variables that have been found to influence cost of debt in prior literature. Following Kausar and Lennox (2017) and Moscariello et al. (2014), we control for the security for debt holders in the face of client default by using the ratio of property plant and equipment (PPE) to total assets (tangibility) and current assets to current liabilities (cr). We also control for the sensitivity of debt payments to firm performance using interest coverage (intcov). We expect all these variables will be negatively associated with cost of debt. Finally, we control for other forms of auditor's assurance by including the logarithm of audit fee (ln_aud).²² In Equation (3), standard errors are clustered by audit firm to correct the potential existence of serial correlation in dependent variables.

4.2.1 Differences-in-differences regressions

While audit materiality has only recently started to be publicly observable, auditors may have privately communicated audit materiality levels to certain stakeholders, such as creditors. Then, while high audit materiality still would be cause for concern (as a signal of low audit effort), lenders' reaction to the release of the new extended audit information would be attenuated, since they would already know which firms have high materiality and would already be charging an appropriate interest rate accordingly.

To better capture cost of debt consequences of materiality thresholds, we employ a

²²Some firm-specific risk or auditor's characteristics documented in prior papers (Kausar and Lennox, 2017; Moscariello et al., 2014) such as sales growth (sales_growth), earning volatility (earn_vol) and big4 are left out of the model because they were already included in Equation (1). As a robustness check, we also regress cost of debt on the actual materiality threshold and include these controls.

differences-in-differences (DiD) regression:

$$\text{Cost of debt}_{it} = \beta_1 \text{Post}_t + \beta_2 \text{MaterialityTreat}_i + \beta_3 \text{Post}_t * \text{MaterialityTreat}_i + \mathbf{Z}_{it} + \epsilon_{it} \quad (4)$$

where the window considered is the four-year period surrounding ISA 700 implementation. Audit materiality is reported by U.K. and Ireland premium listed firms for fiscal years beginning after September 30th, 2013. ISA 700 requires auditors to disclose materiality and its effects on the audit’s scope ([Financial Reporting Council \(FRC\), 2013b](#)), thereby opening up the black-box of audit procedures. We collect the information for the two fiscal years before and after this cut-off (2011 to 2015).

In Equation (4), Post is an indicator variable that equals to 1 if the fiscal year is after ISA 700 implementation; 0 otherwise. MaterialityTreat is an indicator variable for our treatment, and equals 1 if firms are revealed to have high materiality in the Post period; 0 otherwise. We consider as high materiality those firms that are in the top quintile of the annual distribution of Materiality or abnormal Materiality. Appendix C provides detailed definitions for all variables included in our models. The coefficient on Post*MaterialityTreat (β_3) is the DiD indicator and our main coefficient of interest, and it is expected to be positive and significant. We run Equation (4) for all firms, and then, only for premium firms.

Finally, Z is a vector containing the same control variables as Equation (2), except for earn_vol and sales_growth due to data constraints.

4.2.2 The role of audit fees

To test **H3**, we repeat the analyses in Equations (3) and (4), dividing the sample into firms that are above and below median audit fees (deflated by total assets). This allows us to examine the effect of being revealed as a high materiality firm separately for firms that pay high and low audit fees. We expect that, if audit fee and audit materiality are complements, Materiality in Equation (3) and Post*MaterialityTreat in Equation (4) will be positive and significant in the group of firms that are above the median. If audit fee and audit materiality are substitutes, Materiality in Equation (3) and Post*MaterialityTreat in Equation (4) will be positive and significant for those firms that are below the median.

4.3 Sample and data

Our sample comprises firms listed in the U.K. and Ireland from 2013 to 2020. We consider all non-financial firms in Audit Analytics European database.²³ Then, we manually collect audit materiality information including the quantitative materiality threshold, the percentage and base used in its calculation, the rationale disclosed for the decision, and the identity of the audit partner from the annual reports of the companies on their website.²⁴ This results in a sample of 5,316 materiality firm-year observations from 1,136 different firms. We merge our hand-collected database with financial information from Refinitiv Datastream. After dropping observations with missing values, we retain a sample of 3,718 firm-year observations for our materiality determinants tests, 2,827 observations for the cost of debt tests. and 720 firm-year observations for our differences-in-differences regression.²⁵

5 Empirical analyses and results

5.1 Rationales underpinning materiality judgments

Appendix A provides examples of materiality disclosures extracted from audit reports. They contain substantial justifications for auditor materiality judgments. We refer to these explanations as ‘materiality rationales.’ Audit firms can disclose a justification for their materiality decision either in the general ‘materiality application’ section or in a separately labeled section (i.e, Rationale for the benchmark applied). It is also possible that audit firms do not reveal any rationale to explain their materiality assessments.

Table 1 provides descriptive evidence of materiality rationales. Around 70% of firm-year observations include a rationale, even though their justification is relatively concise in some cases.²⁶ Table 1 shows the mean (median) number of words in the materiality rationale is 34 (29). Using the dictionary from [Loughran and McDonald \(2011\)](#), we find that, on average, the number of negative and uncertainty words is higher than positive and litigious words. Regulatory bodies and investors have raised concerns that materiality disclosure

²³Audit Analytics European databases track the FTSE100, FTSE250, FTSE small, FTSE AIM UK 50, FTSE AIM 100 indexes of the London Stock Exchange and the ISEQ20 index of the Irish Stock Exchange.

²⁴If annual reports are missing on clients’ websites, we find materiality information from website of Companies House, which is the United Kingdom’s registrar of companies. <https://find-and-update.company-information.service.gov.uk/>

²⁵For the DiD tests, we employ a dataset of 180 firms for the four years: two before and two after the cutoff year 2013 (ie. our period of analysis for this test is 2011-2015).

²⁶Of these 3,178 observations, the number of firm-year observations disclose materiality rationale is 2,604, which occupies approximately 70%.

contains boilerplate language (Lang and Stice-Lawrence, 2015). We employ textual analysis techniques to examine rationale content across a number of dimensions such as the length of the disclosure, its sentiment, the use of boilerplate language, and comparability as captured by the similarities in language between materiality-rationale pairs. The mean (median) value of similarity of materiality rationale within audit clients is 28% (13%). However, the similarity score of materiality rationale within industry-year and auditor-year is quite small, which are around 2% and 3%, respectively. In untabulated analyses, we find that boilerplate in materiality disclosure is high during the first years of expanded audit reports adoption, but has dropped in more recent years.

Next, we classify the rationales used, to evaluate how auditors identify an appropriate base for their materiality assessments (the base is the benchmark, i.e., materiality as a percentage of EBITDA, or total assets, or pretax profit, etc.) For this analysis, we build on ISA 320, *Materiality in Planning and Performing an Audit*. According to ISA 320 (paragraph A4), to be considered as appropriate, the chosen base should satisfy one of the five general conditions.²⁷ We identify, for each of these five conditions, keywords that serve as the basis of the content analysis of the rationale. We provide the list of keywords in Appendix B. To identify these keywords and classify the rationales we read each report and link it with one or more of the five conditions. The most commonly used rationales to justify the choice of materiality base are: a) directly referring to the elements of the financial statements (67% of firms), b) discussing items on which the attention of the financial statement users focus (34% of firms), c) the nature, industry and economic environment of the entity (21% of firms), d) the ownership structure (10% of firms in this category), and finally, e) the low volatility of the benchmark (20% of firms). As made clear by these percentages, it is common for firms to mention several of these rationales in a single disclosure.

5.2 Descriptive evidence

We obtain a number of qualitative and quantitative materiality assessments, including the base used, the absolute value of overall materiality, as well as the relative materiality (with respect to the base). To exemplify, a given firm may report a materiality of 1 million, corresponding to 7.5% of revenue, while another firm may also report a materiality of 1 million, in this case, corresponding to 1% of total assets. This example serves to illustrate

²⁷In particular, ISA 320 presents five factors that could affect the identification of an appropriate benchmark, including (1) the elements of the financial statement, (2) the users of entity's financial statements, (3) the nature of the entity, (4) the entity's ownership structure and (5) the relative volatility of the benchmark. Those factors are suggestive for auditors rather than obligatory in their materiality benchmark decisions.

one of the challenges in running our models. Because firms use different bases, we must either select a single base to scale the reported materialities, or use the absolute value of the materiality, to be able to meaningfully interpret our findings. In our main tests, we scale all materialities by total assets, to account for firm size and because total assets has lower volatility than other more commonly used bases, such as pretax income or revenue. We also run a number of sensitivity analyses using different materiality measures.

Compared with prior research in the U.K., we examine a wider sample of firms over a longer time period. This permits providing evidence on distribution and trends of materiality percentage over time. With respect to the materiality base, Figure 1, Panel A, illustrates the frequency distribution of overall materiality base for our full sample. Auditors commonly base overall materiality on an income statement item (62.7% of the whole sample). In particular, pretax income or adjusted pretax income is the most commonly used base. This is driven by Big4 auditors (75% of Big4 sample chooses adjusted or plain pretax income). For non-Big4 auditors, revenue and pretax income are both popular bases (around 31.5% to 33% of firms choose each), likely because clients of non-big 4 auditors are more likely to have low or negative pretax income. Figure 1, Panel B, documents the distribution of overall materiality percentage. We truncate it at 15% for ease of presentation.²⁸ The dashed blue line represents the 5% of pretax income rule of thumb in materiality assessments. Big4 auditors closely follow it. Non-Big4 auditors use this rule of thumb less, consistent with their lower likelihood of choosing pretax income as a base for their materiality decision. Given a larger base, revenue bases are typically associated with a percentage lower than 5%.

Figure 2, Panel A, shows the evolution of the materiality percentage over time. The graph reveals a steady drop in the percentage. Since audit materiality is a good indicator of audit quality, public disclosure of materiality could reflect a phenomenon of racing to the bottom and making auditor’s methodologies in deciding materiality less heterogeneous. However, what stands out in Table 2, Panel B, is the rapid increase in the materiality amount scaled by total assets. It reflects the fact that after considering firm size and making all firms comparable, materiality percentage does not race to the bottom as expected by users of financial statement.

Panels A and B of Table 2 present the descriptive statistics of variables used to estimate our hypotheses. Our main variable of interest, *Materiality*, has a mean (median) of 0.84% (0.56%). Therefore, on average, materiality is slightly below 1% of total assets. Average materiality in our sample is 10.47 million pounds, which is lower than in [Choudhary et al.](#)

²⁸There are only 2 observations on the dataset that have a percentage higher than 15, Drax Group PLC (17% of underlying EBITDA) and Balfour Beatty PLC (20% of normalised profit before tax), both reported in 2016. In both cases the resulting materiality amount is less than 0.25% of total assets.

(2019), but consistent with the data in [Amiram et al. \(2017\)](#) and [Gutierrez et al. \(2018\)](#). Regarding the control variables, 26% of sample firms face *Lender Pressure*, as measured by financial distress. 36% operate in several regions while 71% of the audits take place during busy season and 72% of the engagements are performed by Big4 auditing companies. This is consistent with prior literature. Turning to panel C, the average of *abnormal_materiality* is close to zero by construction. The ‘normal’ or expected materiality *normal_materiality*, which is the predicted value of audit materiality in Equation (1), has a mean (median) of 0.70% (0.62%). The mean of cost of debt is 0.18, which is significantly larger than the average cost of debt of 0.071 found by [Moscarello et al. \(2014\)](#) in their sample of U.K. and Italian firms. These statistics, however, are not unexpected since the firms in our sample are smaller than companies in their sample.²⁹

Table 3 shows the Spearman correlation matrix among all the variables included in Equation (1) and (3). In panel A, Materiality is negatively correlated with Lender Pressure, with proxies for size (i.e, revenue) and with the indicator of Big4 auditors. In panel B, we document that materiality variables have a positive correlation with cost of debt. It is also noteworthy that actual and normal materiality are negatively correlated with the natural logarithm of audit fees, whereas abnormal materiality shows a positive correlation.

5.3 Main results

5.3.1 Impact of lender pressure on audit materiality

The results from estimating Equation (1) are presented in Table 4. The coefficients of interest are Audit Risk and its interaction with Lender Pressure. The coefficient for Audit Risk is positive and significant, indicating that as the firm’s financial health improves, the materiality threshold chosen by the auditor also increases. As predicted under **H1**, the coefficient on the Audit Risk * Lender Pressure interaction is negative and significant, and larger than the coefficient on Audit Risk. This indicates higher lender’s pressure associated with higher risk of debt payment default, resulting in lower audit materiality. These results also confirm the asymmetric influence of Lender Pressure. In Column 4, we report a significant higher likelihood of choosing EBITDA as the base when lenders’ pressure is high.

The coefficients of the control variables are generally as expected, except for *roa*, which is negative and significant indicating that more profitable firms are subject to a tighter materiality threshold. Large firms have lower materiality (*ln_rev* is significantly negative).

²⁹[Moscarello et al. \(2014\)](#) found an average natural logarithm of revenue (*ln_rev*) of 5.93 compared to the 12.35 we present in panel A.

Besides, if firms show good performance in terms of positive changes in net income before extraordinary items, auditors are more likely to increase materiality. In contrast, auditors reduce materiality in case of not meeting earnings targets. This is reflected in the positive coefficient of *positive_streak* and negative coefficient of *break_even*.

The results of Equation (2) can be found in Table 5 . In Column 2, we can see that higher lender pressure is associated with lower materiality. We interpret this as lenders demanding higher audit assurance in firms that have a higher risk of breaking a debt covenant. Column 3 shows that there is a positive and significant effect of *pressure_covenants* on the length of the rationale offered to support the choice of materiality threshold as indicated by number of words. We find no evidence, in column 7, that lender pressure is associated with a higher probability to include a rationale. Columns 4, 5 and 6 show that an increase in lender pressure is positively linked with the choice of EBITDA as a base for the calculation of materiality, and lowers the likelihood of choosing 5% of pretax income (adjusted or unadjusted) as the threshold. We interpret these results to show a pattern of lender’s higher demand of assurance driving, at least partially, the materiality decision and disclosure of auditors, to one that offers a higher level of assurance and is more informative about the auditor’s professional judgment, offering support for our **H1**.

While these results offer support for our hypotheses, they could also reflect the auditor’s own asymmetric response to risk. To corroborate our evidence of lender’s asymmetric demand for assurance in the face of increasing risk, we perform a split sample analysis. Particularly, we estimate Equation (1) separately for high versus low leverage (*leverage*) firms. We argue that the asymmetry in lender’s demand for audit materiality is more pronounced for clients with higher reliance on debt. In Table 6, we present the results. Audit Risk is still positive and significant and the interaction is negative and significant in all columns, as predicted. However, the coefficient for the interaction is significantly lower for the high leverage partition (Columns 2 and 4) than for the low leverage partition (Columns 1 and 3). We also note that the coefficient for Audit Risk is also significantly higher for the sample of highly leveraged firms. This could be because as the firm improves its position and alleviates its financial distress, lenders’ stop demanding increased assurance leading to the auditor making a higher adjustment upwards.

5.3.2 Audit materiality and cost of debt

Table 7 presents the regression results of Equation (3). In columns 1 and 2, we use the abnormal (residual) and normal (predicted) materiality from Equation (1), respectively, as explanatory variable for the cost of debt. Consistent with **H2**, both coefficients of abnormal

and normal audit materiality are significantly positive, indicating that lower auditor assurance as proxied by a higher materiality threshold is penalized by lenders with a higher cost of debt. In column 3, we use Materiality and include sales growth, earnings volatility, size and Big4 indicators as controls to show that our effects are not the result of eliminating these variables. As expected, the cost of debt is positively associated with materiality.

In columns 4 and 5 we partition the materiality residual into 10 equal-sized groups and include them in the model as dummy variables. The results show that the coefficients for the deciles grow monotonically from the lowest abnormal materiality to the highest. The highest deciles, D9 and D10, are all positively significant and have a monotonically larger coefficient than the previous decile. It indicates that lenders charge a higher cost of debt to firms that are audited with an abnormally higher materiality. All in all, the results of Table 7 support our **H2** consistently showing that lenders penalize lower auditor assurance in the form of abnormally high materiality.³⁰ This is consistent with the lender’s demand for high audit quality.

Table 8 shows the results of our differences-in-differences regression, which also support **H2**. There is a positive and significant effect of being revealed as a high materiality firm during the post period. This indicates firms with a relatively high materiality threshold compared to their peers experience an increase in their cost of debt after this threshold becomes public. It is interesting to note that the dummy for *Post* is negative and significant, possibly indicating an effect of the expanded audit report and lenders being able to offer lower rates given the increased transparent which decreases the audit risk.

5.3.3 Audit materiality and audit fee

We test **H3** by splitting the sample used in the differences-in-differences analysis into sub-groups of above and below the median of audit fees deflated by total assets.

The results are found in Table 9. The interaction term *Post*MaterialTreat* is positive and significant in all three settings used for firms that are above the audit fee median, while it is not significant for the below-median sample. This indicates that lenders view audit fee and audit materiality as complement proxies for audit effort and thus, punish firms that were paying a high audit fee but then reveal a high audit materiality, while for firms that were paying a low audit fee, there is no effect of being revealed as a high materiality firm.

³⁰In an untabulated analyses, we employ a Wald test to examine the differences in coefficients of group D1 to D9 and group D10. We find that groups from D1 to D9 are differ from group D10 ($p < 0.01$).

5.4 Additional analyses

Prior literature investigates the role of auditor work on loan contracting and lenders' reliance on auditors' assessment (Menon and Williams, 2016; Chen et al., 2016b). This body of work provides evidence that auditors' verification role plays a vital role in contracting and monitoring. In our main tests, we find a positive relation between materiality and cost of debt. To maximize our sample size, we calculate cost of debt based on information reported on financial statements. This is in line with prior works such as Kausar et al. (2016), Moscariello et al. (2014). In this section, we provide further evidence using alternative pricing and non-pricing dimensions of firm loans (or tranches) using data from Dealscan on contracting features of loan agreements, including: spread, maturity, number of lenders, number of financial covenants, and loan amount.

We collect data of debt contractual terms from Dealscan and merge with materiality and financial characteristics information by matching company names (or borrower names). Consistent with Porumb et al. (2021), we use the most recent annual financial and auditor's report available before the active date of the loan contract. In line other work employing private debt contracts, we conduct our tests at the loan level. This merge results in 392 loans for 130 unique firms between from 2013 to 2020. Following prior studies (Porumb et al., 2021; Chen et al., 2016b; Robin, Wu and Zhang, 2017; Jiang and Zhou, 2017), we control for loan characteristics and include a set of firm characteristics. To control for time-invariant unobserved heterogeneity, we include industry, time, and market of syndication fixed effects. We also winsorize all continuous variables at the 1% and 99% levels to mitigate the influence of outliers. We cluster standard errors at firm and auditor level in both regressions.

The relation between materiality and loan features are shown in Table 10 and Table 11. Columns 2 of Table 10 provide evidence that lenders shorten the loan maturity when the expected audit materiality is high and statistically significant at the 5 percent level. This result is consistent with lenders reacting to information from expanded audit report and incorporate information of audit materiality in their loan decisions and monitoring. Columns 3-6 indicate there is no effect on the number of participating lenders, the number of financial covenants, loan size offered to borrowers with high expected materiality and probability of using collateral in loan contracts. The relation of abnormal materiality with loan contracting terms in Table 11 is quite surprising even though results in Column 1 marginally significant at 10 percent level. However, in Column 6, we report a higher probability that the loans are backed by collateral if borrowers have high abnormal materiality³¹

³¹We also regress the ratio of materiality over total assets on a set of loan contracting terms. We also find no effect on interest spread, number of lenders, loan maturity, number of financial covenants and loan

6 Conclusion

We examine whether lenders monitor the newly available audit materiality disclosures, and whether they incorporate information about materiality in their decision-making. In particular, we study if auditors respond to lenders' pressures when setting the materiality threshold and whether lenders consider that lower materiality creates a higher standard of audit assurance, and therefore, reward low materiality firms with better financing conditions.

We find that auditor materiality decision is asymmetrically related with our proxy for lenders' pressure. Materiality changes more substantially in response to deterioration of financial health than to an improvement in financial health. When we partition our sample into high and low leverage firms, we find the previous effect is not just a result of the auditor's own asymmetric relationship with risk. Our evidence indicates that the negative effect of financial distress on materiality is specially high in the sample of high leverage firms. This finding is consistent with audit materiality being affected by lender's pressure when downside risk is high. We also document a positive and monotonically increasing effect on cost of debt of materiality. These results support our prediction that lenders penalize firms that report an abnormally high materiality in their audit report compared to their peers.

Finally, we examine whether lenders interpret audit materiality as a proxy of audit effort that complements or substitutes for the already existing proxy of audit fees. Our findings indicate that lenders regard audit fee and audit materiality as complement and only reward firms that use both to signal high audit effort. That is, they only offer a lower cost of debt to firms that pay a high audit fee and disclose a low audit materiality. Overall, our findings suggest that lenders incorporate information of audit materiality in expanded audit reports jointly with audit fees in their lending decisions since materiality is the level of assurance provided by auditors.

size offered to borrowers. However, we find positive association of materiality ratio with the propensity of using collateral in a loan contract in this regression and statistically significant at the 5 percent level.

Appendices

A Examples of audit materiality disclosure

A.1 Example of materiality disclosure including a rationale

Example of materiality disclosure of Serabi Gold plc (the 'Parent Company') and its subsidiaries (the 'Group') for the year ended 31 December 2019.

[...] **Our application of materiality**

We apply the concept of materiality both in planning and performing our audit, and in evaluating the effect of misstatements. We consider materiality to be the magnitude by which misstatements, including omissions, could influence the economic decisions of reasonable users that are taken on the basis of the financial statements. In order to reduce to an appropriately low level the probability that any misstatements exceed materiality, we use a lower materiality level, performance materiality, to determine the extent of testing needed. Importantly, misstatements below these levels will not necessarily be evaluated as immaterial as we also take account of the nature of identified misstatements, and the particular circumstances of their occurrence, when evaluating their effect on the financial statements as a whole.

Our basis for the determination of materiality has remained consistent with the prior year. We consider Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) to be the most significant determinant of the Group's financial performance used by the users of the financial statements and it approximates to operating cash generation. The benchmark percentage used for calculating materiality was 5% of EBITDA which is consistent with the prior year.

Whilst materiality for the financial statements as a whole was 520;000 (2018: 500;000), each significant component of the Group was audited to a lower level of materiality. The Parent Company materiality was 310;000 (2018: 300;000), being 60% of Group materiality, with the other components varying from 100;000 to 310;000. These materiality levels were used to determine the financial statement areas that are included within the scope of our audit work and the extent of sample sizes during the audit.

Performance materiality is the application of materiality at the individual account or balance level set at an amount to reduce to an appropriately low level the probability that the aggregate of uncorrected and undetected misstatements exceeds materiality. **Performance**

materiality was set at 75% (2018: 75%) of the above materiality levels given there has been limited experience of past misstatements.

We agreed with the Audit Committee that we would report to those charged with governance all individual audit differences identified during the course of our audit in excess of 10;000 (2018: 10;000). We also agreed to report differences below these thresholds that, in our view warranted reporting on qualitative grounds.

An overview of the scope of our audit

Our Group audit scope focused on the Group's principal operating locations and legal structure. As a result of our audit approach, we achieved coverage of 100% of the Group's revenue and 100% of the Group's EBITDA. The Group has operating entities based in the U.K. and Brazil. The Parent Company, Serabi Mineração SA, containing the Palito and São Chico gold mines, Gold Aura do Brasil Mineração Ltda and Chapleau Resources Limited were the entities that were deemed to be significant components by virtue of size and risk.

The Parent Company was subject to a full scope audit by the Group auditor.

For Serabi Mineração SA, Gold Aura do Brasil Mineração Ltda and Chapleau Resources Limited, the BDO network firm in the Brazil completed full scope audits reporting to the Group auditor.

[...]

A.2 Example of a materiality disclosure that includes a rationale as a separately labeled section

Example of materiality disclosure of The Restaurant Group plc (the 'Parent Company') and its subsidiaries (the 'Group') for the year ended 31 December 2017.

[...]

Our application of materiality

We define materiality as the magnitude of misstatement in the financial statements that makes it probable that the economic decisions of a reasonably knowledgeable person would be changed or influenced. We use materiality both in planning the scope of our audit work and in evaluating the results of our work. Based on our professional judgement, we determined materiality for the financial statements as a whole as follows:

Materiality: £2.8m (2016: £3.5m)

Basis for determining materiality: We have used 5% (2016: 4.5%) of adjusted profit

before tax, calculated by adjusting statutory profit before tax for the exceptional charge for impairments, onerous leases and other exceptional costs.

Rationale for the benchmark applied: We consider a profit measure the most appropriate basis for determining materiality as this is the measure on which business performance is analysed. During the year the Group continued to incur a significant exceptional charge (£13.2m) relating to onerous leases, impairment and other exceptional costs. This has impacted the statutory profit before tax. We have therefore chosen profit before tax adjusted for the exceptional charges as the basis for determining our materiality to provide a consistent year on year basis and to exclude the impact of exceptional items.

We agreed with the Audit Committee that we would report to the Committee all audit differences in excess of £142,500 (2016: £70,000), as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds. We also report to the Audit Committee on disclosure matters that we identified when assessing the overall presentation of the financial statements.

An overview of the scope of our audit

Our group audit was scoped by obtaining an understanding of the Group and its environment, including group-wide controls, and assessing the risks of material misstatement at the Group level. Based on this assessment, and as in the prior year, our group audit scope focused on the Group's head office in London and the Pub's business office in Chester, which were subject to a full audit. This represents 100and profit before tax. Our audit work was executed at levels of materiality applicable to each individual subsidiary entity, which were lower than group materiality, ranging from £2.3m to £0.3m. All audit work was carried out by the group audit team.

[...]

A.3 Example of a materiality disclosure that does not include a rationale

Example of materiality disclosure of Surface Transforms plc (the 'Parent Company') and its subsidiaries (the 'Group') for the year ended 31 May 2018.

[...]

Our application of materiality

When establishing our overall audit strategy, we set certain thresholds which help us to determine the nature, timing and extent of our audit procedures and to evaluate the effects of

misstatements, both individually and on the financial statements as a whole. During planning we determined a magnitude of uncorrected misstatements that we judge would be material for the financial statements as a whole (FSM). During planning FSM was calculated as £102,000, which was not changed during the course of our audit. We agreed with the Audit Committee that we would report to them all unadjusted differences in excess of £2,500, as well as differences below those thresholds that, in our view, warranted reporting on qualitative grounds.

An overview of the scope of our audit

As part of our planning we assessed the risk of material misstatement including those that required significant auditor consideration. Procedures were then performed to address the risks identified and for the most significant assessed risks of material misstatement, the procedures performed are outlined above in the key audit matters section of this report.

[...]

B Materiality rationale keywords

| Classification Coding (ISA320) | Keywords |
|---|--|
| (a) The elements of the financial statements | |
| (b) Whether there are items on which the attention of the users of the particular entity's financial statements tend to be focused | KPI, Analysts, Board, Board of directors, Directors, Lenders, Management, Share owners, Shareholders, Stakeholders |
| (c) The nature of the entity, where the entity is in its life cycle, and the industry and economic environment in which the entity operates | Acquisition, Acquisition-related, Align, Asset heavy, Business, Business combination, Cash management, Cash generation, Cash generative, Cash held, Cessation, Coal prices, Combine, Commercial organisation, Commercial revenues, Commercialisation, Commodity markets, Comparable companies, Complexity, COVID-19, Covid-19, Cyclical nature, Development stage, Discontinued operations, Disposal, Divestment, Dividend paying strategy, Downsizing, Early phase, Early years of development, Expansion segment, Expenditure, Financial reporting council, Foreign exchange rates, Generally accepted auditing benchmark, Generally Accepted Auditing standard, Gold price, Growth, Growth phase, Holding company, Improvement results, Industry consensus, Industry peers, Industry standard benchmark, Initial Public Offering, Initial stages, Investment holding company, Investments, Invests, IPO |

Classification Coding (ISA320)**Keywords**

| | |
|--|---|
| (c) The nature of the entity, where the entity is in its life cycle, and the industry and economic environment in which the entity operates (continue) | Licensing, Lifecycle, Listed, Listing, Long term contract, Loss making, Losses, Low profit margins, Management's performance, Market practice, Markets/Market, Mature stage, Merger, Mineral exploration, Mining entity, Mining project, Nature of the business, New markets, Newly acquired, Newly restructured, Oil and gas exploration, Opening, Pandemic, Peers' materiality, Pre-trading phase, Preproduction phase, Pricing environment, Production, Profit oriented, Profitability, Profitable, Projects, R&D programmes, Recurring performance, Research activities, Research and development, Restructure, Restructuring, Retail industry, Revenue contracts, Revenue generating, Revenue growth, Roll-out activities, Sale activity, Scale of the business, Similar businesses, Similar organisations, Size, Smaller, Stage of development, Start-up phase, Start-up trading, Strategy, Structure, Subsidiaries, Trading activities, Trading performance, Underlying operations, Value of investments |
| (d) The entity's ownership structure and the way it is financed | Borrowing, Capital raised, Capital structure, Covenants, Debt, Equity fund, Equity funding, Interest paid, Joint venture, Loan, Privately Equity owned, Providers of capital, Raising of equity, Refinance of loan |
| (e) The relative volatility of the benchmark | Average, Averaging, Benchmark, Blended, Comparability, Comparable to other audits, Consistent, Distort, Fluctuate, Fluctuations, From year to year, Last three periods, Non-recurring, Over a three years, Over the last three years, Stable, Sustainable, Variation, Volatile, Volatility |

C Variable Definitions

| Variable | Definition (Datastream or Dealscan mnemonic in square brackets) |
|-----------------------|--|
| materiality | The actual materiality threshold deflated by total assets and multiplied by 100. |
| ln_materiality_amount | The natural logarithm of the monetary amount of materiality reported in thousand pounds. |
| materiality_amount | The monetary amount of materiality reported in thousand pounds. |
| materiality_reported | The materiality percentage which is reported in the audit report. |
| e_materiality | The average of 1% of total assets and 5% of profit before tax, which, according to previous literature and the materiality review by the FRC are the two most common bases and percentages applied respectively. |
| e_materiality2 | The average of 1% of total assets, 5% of profit before tax and 1% of revenue, which, according to previous literature and the materiality review by the FRC are three of the most common bases and their most common percentages applied respectively. |
| audit_risk | Altman (1968) Z-score, which is defined as $1.2*((\text{current assets} - \text{current liabilities})/\text{total assets}) + 1.4*(\text{retained earnings}/\text{total assets}) + 3.3*(\text{EBIT}/\text{total assets}) + 0.6*(\text{market capitalization}/\text{total liabilities}) + 0.99*(\text{net sales or revenues}/\text{total assets})$ |
| lender_pressure | An indicator that is 1 if Altman (1968) Z-score is lower than 1.81 and 0 otherwise. |
| pressure_covenants | A sum of the number of ratios that the firm is in the top(bottom) third decile of based on the most common covenants in debt contracting as disclosed by Demerjian and Owens (2016) |
| ln_rev | The natural logarithm of net sales or revenues [WC01001]. |
| leverage | Leverage ratio, which is defined as long-term debt [WC03251] divided by total assets [WC02999]. |
| roa | The ratio of net income before extraordinary items [WC01551] to total assets [WC02999]. |
| sales_growth | Sales changes , which is defined as net sales or revenues in year t minus net sales or revenues in year $t - 1$ and divided by net sales or revenues in year $t - 1$ [WC01001]. |
| earn_vol | The natural logarithm of standard deviation of net income before extraordinary items [WC01551] for the year t and the last three fiscal years ($t - 1$, $t - 2$, $t - 3$). |
| restructure | Restructuring activities, which is defined as restructure expense [WC18227] divided by total assets [WC02999]. |
| acquisition | Acquisition activities, which is defined as non-zero net assets from acquisition [WC04355]. |
| num_seg_ln | The natural logarithm of the number of geographic and product segments, which is defined by the number of non-missing geographic descriptions and product descriptions. |
| segments | The natural logarithm of one plus the number of geographic and product segments, which is defined by the number of non-missing geographic descriptions and product descriptions. |
| multinational | An indicator that is 1 if a company reports non-missing current foreign income tax [WC18187]. |
| busy_audit | An indicator that is 1 if the audit is for a client with a fiscal end from December to March. |
| big4 | An indicator variable that is 1 if a company has a Big 4 auditor (i.e, KPMG, Deloitte, PriceWaterhouseCoopers, Ernst & Young). |
| breakeven | An indicator that is 1 if pretax income [WC01401] in year t is less than 25% of prior three-year average of pretax income, and 0 otherwise. |

| | |
|------------------------|---|
| positive_streak | An indicator that is 1 if the change in net income before extraordinary items [WC01551] for the last three years is positive and zero otherwise. |
| earn_trend | An indicator that is 1 if either a) pretax income (pbt) $pbt_t < pbt_{t-1}$ and $pbt_{t-1} > pbt_{t-2}$ and $pbt_{t-2} > pbt_{t-3}$ or b) $pbt_t > pbt_{t-1}$ and $pbt_{t-1} < pbt_{t-2}$ and $pbt_{t-2} < pbt_{t-3}$ |
| cod | Cost of debt, which is defined as the ratio of interest expense on debt [WC01251] to average long-term debt [WC03251]. |
| spread | The interest rate, which is the all-in-drawn-spread (basis points over LIBOR) [all in spread drawn bps]. |
| maturity | The number of months between tranche active date and tranche maturity date [tenor maturity month]. |
| number_of_lenders | Number of participants in the loan agreement [number of lenders]. |
| fin_cov_num | The number of financial covenants in the loan contract [all covenants financial]. |
| loan_amount | The natural logarithm of the amount of loan in pounds [tranche amount] |
| collateral | A dummy variable equals to 1 if loan is backed by collateral and 0 otherwise [secured]. |
| term_loan | An indicator variable sets to 1 if the loan is loan term and 0 otherwise [tranche type]. |
| performance_pricing | An indicator variable sets to 1 if the loan has performance pricing provision and 0 otherwise [performance pricing]. |
| revolver | An indicator variable sets to 1 if the loan is revolver and 0 otherwise [tranche type]. |
| institutional_investor | An indicator variable sets to 1 if the loan has term loan B, C or D and 0 otherwise [tranche type]. |
| tangibility | The ratio of net value of property, plant and equipment [WC02501] to total assets [WC02999]. |
| intcov | Interest coverage, which is defined as the ratio of operating income [WC01250] to interest expense on debt [WC01251]. |
| cr | Current ratio, which is defined as total current assets [WC02201] divided by total current liabilities [WC03101]. |
| audit_fees | The natural logarithm of client's audit fee in pounds [WC01801]. |

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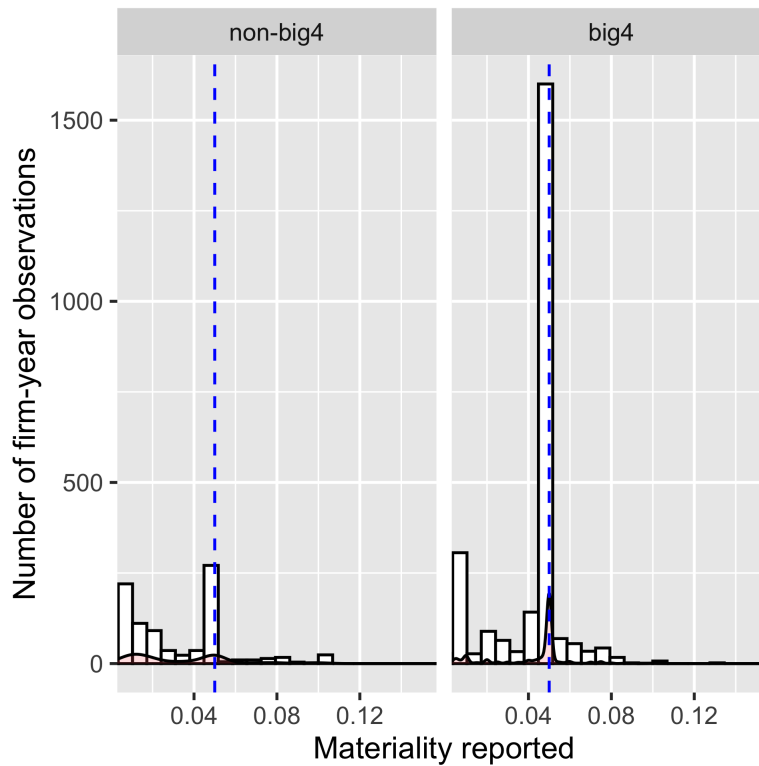
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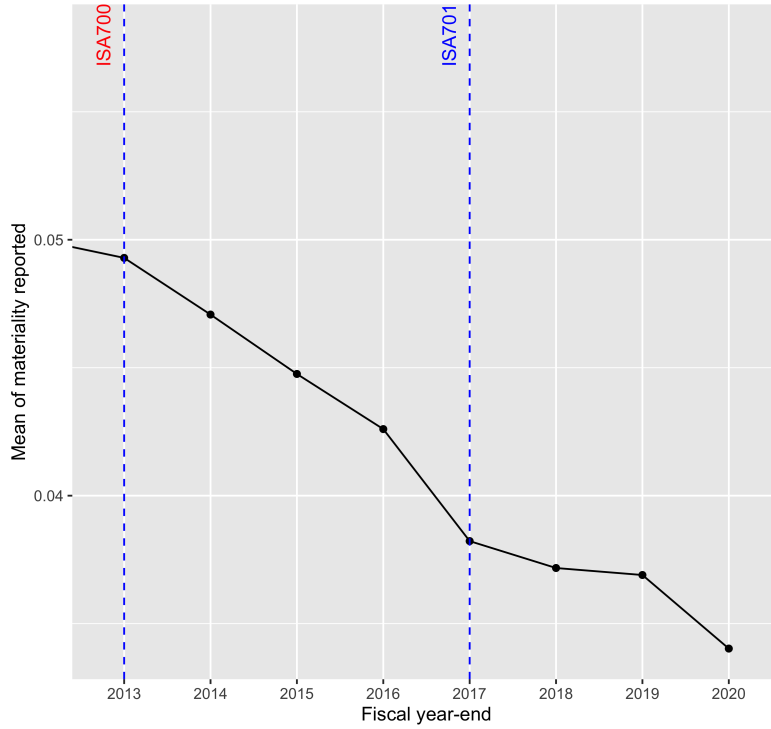


(a) Specific materiality base

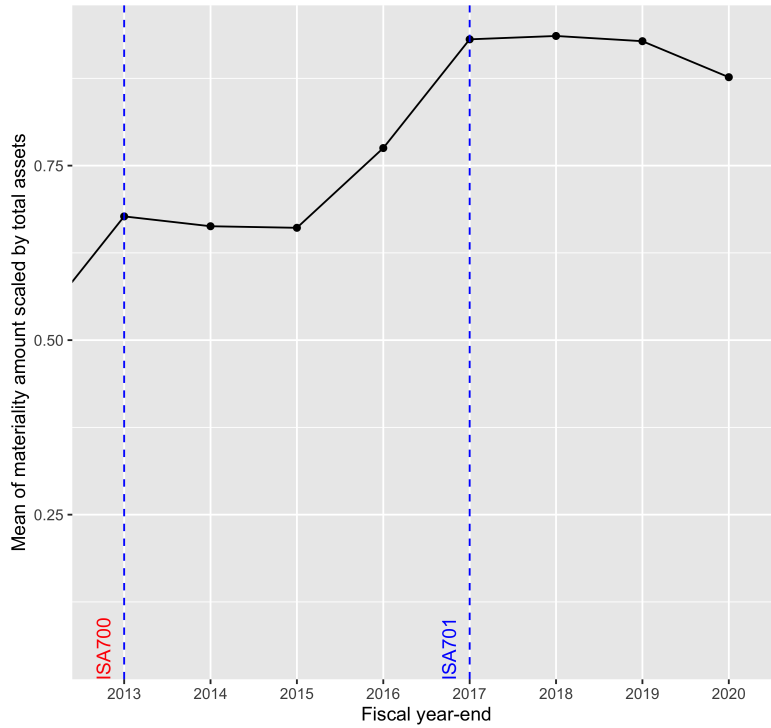


(b) Materiality reported

Figure 1: Distribution of overall materiality base and materiality reported for entire sample



(a) Materiality reported



(b) Materiality scaled by total assets

Figure 2: Overall materiality percentage evolution

Table 1: Descriptive statistics of materiality rationale for entire sample

| Variables | N | mean | sd | Q25 | median | Q75 | min | max |
|---------------------|---------|-------|-------|------|--------|-------|-------|--------|
| n_words | 3,718 | 33.79 | 34.64 | 0.00 | 29.00 | 51.00 | 0.00 | 513.00 |
| n_sentences | 3,718 | 0.70 | 0.46 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| pos_words | 3,718 | 0.29 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 9.00 |
| neg_words | 3,718 | 0.36 | 0.78 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 |
| unc_words | 3,718 | 0.39 | 0.71 | 0.00 | 0.00 | 1.00 | 0.00 | 7.00 |
| lit_words | 3,718 | 0.04 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| sentiment_score | 2,604 | -0.00 | 0.02 | 0.00 | 0.00 | 0.00 | -0.14 | 0.11 |
| firm_similarity | 7,900 | 0.28 | 0.33 | 0.04 | 0.13 | 0.43 | 0.00 | 1.00 |
| industry_similarity | 186,210 | 0.02 | 0.07 | 0.00 | 0.00 | 0.01 | 0.00 | 1.00 |
| auditor_similarity | 173,838 | 0.03 | 0.13 | 0.00 | 0.00 | 0.01 | 0.00 | 1.00 |

This table reports the descriptive evidence of materiality rationale disclosures. We manually collect text from audit reports of firms in the U.K. and Ireland. In particular, materiality rationale is either disclosed in a separate part (e.g, Rationale for benchmark applied) or presented in the application of materiality section. For the latter type of disclosure, we read the application of materiality section and manually find any sentences or words explaining auditors' materiality decisions. To compute the number of words and the number of sentences, we consider all audit clients that have non-missing values of materiality amounts. Additionally, we employ textual analysis techniques to investigate the varying of rationale content and the similarity of languages between materiality-rationale pairs within audit clients, within industry-year and within auditor-year. Degree of language similarity is the Tf-Idf cosine similarity scores that identify similarity in text based on weighting scheme that shows how important a word is to a document in a corpus. To determine the degree of similarity, we begin by considering all audit clients having non-missing values of materiality rationale and requiring at least two observations in each level (i.e., audit clients/industry-year/auditor-year) to get one pair of materiality rationale to compare. The cosine similarity of two documents will range from zero to one. Moreover, we also use the dictionaries from [Loughran and McDonald \(2011\)](#) to count the number of positive words, negative words, uncertainty words, litigious words and compute sentiment score.

Table 2: Descriptive statistics

| Variables | N | mean | sd | Q25 | median | Q75 | min | max |
|---|------|----------|----------|--------|---------|---------|--------|--------|
| <i>Panel A: Materiality amount and materiality percentage</i> | | | | | | | | |
| materiality | 3718 | 0.84 | 0.86 | 0.35 | 0.56 | 0.99 | 0.11 | 5.38 |
| ln_materiality_amount | 3718 | 7.44 | 1.92 | 5.99 | 7.33 | 8.76 | 3.51 | 12.24 |
| materiality_amount | 3718 | 10471.48 | 29456.30 | 400.00 | 1527.37 | 6394.43 | 33.59 | 207470 |
| materiality_reported | 3401 | 0.04 | 0.02 | 0.02 | 0.05 | 0.05 | 0.00 | 0.20 |
| <i>Panel B: Asymmetric audit materiality model</i> | | | | | | | | |
| audit_risk | 3718 | 4.01 | 6.30 | 1.74 | 2.92 | 4.68 | -13.30 | 41.84 |
| lender_pressure | 3718 | 0.26 | 0.44 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| ln_rev | 3718 | 12.21 | 2.56 | 10.60 | 12.44 | 13.97 | 5.26 | 17.47 |
| multinational | 3718 | 0.36 | 0.48 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| restructure | 3718 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 |
| acquisition | 3718 | 0.44 | 0.50 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| busy_audit | 3718 | 0.71 | 0.46 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| big4 | 3718 | 0.72 | 0.45 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| num_seg_ln | 3718 | 1.86 | 0.69 | 1.61 | 1.95 | 2.30 | 0.00 | 2.89 |
| roa | 3718 | -0.01 | 0.22 | -0.02 | 0.04 | 0.08 | -1.22 | 0.32 |
| sales_growth | 3718 | 0.15 | 0.42 | -0.01 | 0.07 | 0.17 | -0.55 | 2.99 |
| earn_vol | 3718 | 9.22 | 2.07 | 7.67 | 9.09 | 10.59 | 5.21 | 15.02 |
| breakeven | 3718 | 0.29 | 0.45 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| positive_streak | 3718 | 0.60 | 0.49 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| earn_trend | 3718 | 0.25 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| leverage | 3718 | 0.15 | 0.16 | 0.00 | 0.11 | 0.25 | 0.00 | 0.70 |
| <i>Panel B.2: Audit materiality model pressure_covenant</i> | | | | | | | | |
| materiality | 2775 | 0.64 | 0.56 | 0.31 | 0.48 | 0.78 | 0.11 | 3.48 |
| pressure_covenant | 2775 | 3.01 | 2.63 | 1.00 | 3.00 | 5.00 | 0.00 | 10.00 |
| ln_rev | 2775 | 12.84 | 2.15 | 11.42 | 12.91 | 14.35 | 6.96 | 17.47 |
| multinational | 2775 | 0.40 | 0.49 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| restructure | 2775 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 |
| acquisition | 2775 | 0.51 | 0.50 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| busy_audit | 2775 | 0.70 | 0.46 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| big4 | 2775 | 0.80 | 0.40 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| num_seg_ln | 2775 | 2.39 | 0.34 | 2.20 | 2.40 | 2.64 | 0.00 | 3.00 |
| roa | 2775 | 0.02 | 0.14 | 0.00 | 0.04 | 0.08 | -0.72 | 0.29 |
| sales_growth | 2775 | 0.10 | 0.27 | -0.01 | 0.06 | 0.15 | -0.56 | 1.53 |
| earn_vol | 2775 | 9.54 | 1.98 | 8.08 | 9.47 | 10.82 | 5.68 | 15.14 |
| breakeven | 2775 | 0.38 | 0.49 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| positive_streak | 2775 | 0.68 | 0.46 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| earn_trend | 2775 | 0.25 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |

This table presents descriptive statistics for the materiality disclosures we have collected (Panel A) and for the final sample included in our asymmetric audit materiality regression model (Panel B). All continuous variables are winsorized at 1st and 99th percentiles (except materiality_reported). All variables are described in Appendix C.

Table 2: Descriptive statistics (continued)

| Variables | N | mean | sd | Q25 | median | Q75 | min | max |
|--|------|-------|--------|-------|--------|-------|---------|--------|
| <i>Panel C: Cost of debt model</i> | | | | | | | | |
| materiality | 2827 | 0.67 | 0.65 | 0.32 | 0.48 | 0.78 | 0.11 | 4.49 |
| abnormal_materiality | 2827 | -0.02 | 0.47 | -0.29 | -0.10 | 0.13 | -0.99 | 2.16 |
| normal_materiality | 2827 | 0.70 | 0.44 | 0.46 | 0.62 | 0.83 | -0.23 | 4.14 |
| cod | 2827 | 0.18 | 0.61 | 0.04 | 0.06 | 0.10 | 0.01 | 5.10 |
| tangibility | 2827 | 0.27 | 0.25 | 0.07 | 0.19 | 0.40 | 0.00 | 0.92 |
| intcov | 2827 | 14.18 | 82.61 | 2.69 | 7.64 | 17.88 | -452.04 | 469.28 |
| cr | 2827 | 1.57 | 1.08 | 0.92 | 1.31 | 1.84 | 0.27 | 6.69 |
| audit_fees | 2827 | 6.30 | 1.49 | 5.22 | 6.21 | 7.24 | 3.47 | 10.29 |
| <i>Panel C.2: Cost of debt di -in-di model</i> | | | | | | | | |
| cod | 720 | 0.13 | 0.38 | 0.04 | 0.06 | 0.08 | 0.02 | 3.33 |
| tangibility | 720 | 0.28 | 0.23 | 0.09 | 0.22 | 0.39 | 0.01 | 0.89 |
| intcov | 720 | 20.21 | 46.37 | 3.97 | 8.19 | 16.43 | -9.19 | 365.98 |
| cr | 720 | 1.34 | 0.66 | 0.86 | 1.22 | 1.67 | 0.41 | 4.10 |
| audit_fees | 720 | 13.73 | 1.32 | 12.90 | 13.70 | 14.50 | 9.68 | 17.66 |
| audit_risk | 720 | 2.87 | 1.58 | 1.86 | 2.70 | 3.58 | -0.33 | 9.17 |
| ln_rev | 720 | 6.03 | 0.71 | 5.52 | 6.02 | 6.49 | 4.35 | 7.62 |
| big4 | 720 | 0.88 | 0.3251 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| sales_growth | 720 | 0.03 | 0.13 | -0.03 | 0.03 | 0.09 | -0.42 | 0.86 |

This table presents descriptive statistics for the final sample included in our and cost of debt models (Panel C). All continuous variables are winsorized at 1st and 99th percentiles (except materiality_reported). All variables are described in Appendix C.

Table 3: Spearman correlation matrix

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| (1) audit_risk | 1 | | | | | | | | | | | | | | | | |
| (2) lender_pressure | -0.76 | 1 | | | | | | | | | | | | | | | |
| (3) materiality | 0.21 | -0.02 | 1 | | | | | | | | | | | | | | |
| (4) ln_rev | 0.03 | -0.16 | -0.52 | 1 | | | | | | | | | | | | | |
| (5) leverage | -0.42 | 0.21 | -0.39 | 0.43 | 1 | | | | | | | | | | | | |
| (6) multinational | 0.02 | -0.03 | -0.06 | 0.12 | 0 | 1 | | | | | | | | | | | |
| (7) restructure | -0.16 | 0.05 | -0.22 | 0.21 | 0.17 | 0.08 | 1 | | | | | | | | | | |
| (8) acquisition | 0.01 | -0.15 | -0.31 | 0.36 | 0.24 | 0.11 | 0.16 | 1 | | | | | | | | | |
| (9) busy_audit | -0.1 | 0.09 | -0.04 | 0.07 | 0.08 | 0 | 0.04 | 0.06 | 1 | | | | | | | | |
| (10) big4 | 0.07 | -0.12 | -0.35 | 0.59 | 0.23 | 0.14 | 0.14 | 0.23 | 0.06 | 1 | | | | | | | |
| (11) num_seg_ln | 0.04 | -0.12 | -0.3 | 0.44 | 0.22 | 0.29 | 0.24 | 0.33 | 0.07 | 0.31 | 1 | | | | | | |
| (12) roa | 0.58 | -0.48 | 0.05 | 0.34 | -0.04 | 0.03 | -0.1 | 0.12 | -0.05 | 0.25 | 0.13 | 1 | | | | | |
| (13) sales_growth | 0.16 | -0.1 | 0.09 | -0.12 | -0.1 | -0.04 | -0.15 | 0.05 | 0.01 | -0.1 | -0.08 | 0.1 | 1 | | | | |
| (14) earn_vol | -0.17 | 0.08 | -0.37 | 0.77 | 0.4 | 0.12 | 0.2 | 0.24 | 0.13 | 0.53 | 0.38 | 0.11 | -0.16 | 1 | | | |
| (15) breakeven | -0.37 | 0.41 | 0.18 | -0.4 | -0.08 | -0.04 | 0.03 | -0.19 | 0.03 | -0.27 | -0.19 | -0.75 | -0.09 | -0.13 | 1 | | |
| (16) positive_streak | 0.26 | -0.22 | 0.03 | 0.11 | -0.04 | -0.03 | -0.1 | 0.08 | -0.04 | 0.06 | 0.02 | 0.35 | 0.08 | -0.05 | -0.29 | 1 | |
| (17) earn_trend | -0.04 | 0 | -0.02 | 0 | 0.03 | 0.01 | 0.03 | 0 | 0 | 0 | 0.01 | -0.06 | -0.08 | 0.01 | 0.01 | 0 | 1 |

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|
| (1) big4 | 1 | | | | | | | | | | | |
| (2) audit_fees | 0.53 | 1 | | | | | | | | | | |
| (3) tangibility | 0.11 | 0.02 | 1 | | | | | | | | | |
| (4) intcov | 0.21 | 0.09 | -0.12 | 1 | | | | | | | | |
| (5) cr | -0.09 | -0.16 | -0.1 | 0.2 | 1 | | | | | | | |
| (6) sales_growth | -0.12 | -0.15 | -0.1 | 0.1 | 0.03 | 1 | | | | | | |
| (7) earn_vol | 0.45 | 0.76 | 0.16 | -0.04 | -0.16 | -0.2 | 1 | | | | | |
| (8) ln_rev | 0.52 | 0.85 | 0.12 | 0.2 | -0.2 | -0.14 | 0.76 | 1 | | | | |
| (9) cod | -0.25 | -0.29 | -0.06 | -0.26 | -0.04 | 0 | -0.19 | -0.31 | 1 | | | |
| (10) materiality | -0.27 | -0.4 | -0.11 | 0.11 | 0.21 | 0.08 | -0.29 | -0.43 | 0.23 | 1 | | |
| (11) abnormal_materiality | 0.16 | 0.16 | -0.03 | 0.14 | -0.02 | -0.04 | 0.14 | 0.17 | -0.01 | 0.59 | 1 | |
| (12) normal_materiality | -0.56 | -0.73 | -0.09 | -0.11 | 0.26 | 0.14 | -0.53 | -0.76 | 0.34 | 0.51 | -0.28 | 1 |

Table 4: Asymmetric audit materiality

| | | materiality | | n_words | ebitda_base | pretax_income_base | pretax_income_no_adj_base | include_rationale |
|---|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------------|--------------------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| audit_risk | | | 0.029 (2.817) | -0.043 (-0.656) | -0.017 (-0.487) | 0.050 (3.500) | 0.014 (0.950) | -0.014 (-1.773) |
| lender_pressure | | | 0.017 (0.203) | 4.313 (1.659) | 0.303 (0.695) | -0.005 (-0.034) | -0.082 (-0.302) | 0.014 (0.058) |
| audit_risk | lender_pressure | | -0.138 (-4.746) | 0.025 (0.332) | 0.206 (2.263) | -0.202 (-4.193) | 0.019 (0.090) | 0.020 (0.636) |
| ln_rev | | -0.122 (-9.200) | -0.079 (-3.689) | 1.995 (2.250) | -0.056 (-0.776) | 0.250 (4.968) | 0.280 (3.195) | 0.101 (1.217) |
| multinational | | 0.008 (0.342) | 0.006 (0.243) | 0.719 (0.529) | -0.267 (-1.317) | -0.132 (-1.162) | -0.188 (-1.786) | 0.146 (2.232) |
| restructure | | -4.612 (-2.957) | -2.542 (-1.496) | 13.051 (0.203) | -1.294 (-0.128) | 3.596 (0.600) | -87.842 (-4.941) | -2.683 (-0.330) |
| acquisition | | -0.162 (-5.302) | -0.132 (-4.049) | 0.243 (0.128) | 0.636 (2.402) | 0.080 (1.298) | -0.152 (-1.042) | -0.093 (-1.170) |
| busy_audit | | 0.002 (0.043) | 0.011 (0.290) | 2.953 (1.628) | 0.512 (1.196) | -0.192 (-1.209) | -0.060 (-0.620) | 0.057 (0.378) |
| num_seg_ln | | -0.076 (-2.171) | -0.083 (-2.612) | 3.128 (3.685) | 0.370 (3.170) | 0.151 (2.817) | -0.212 (-1.123) | 0.294 (4.554) |
| big4 | | -0.195 (-1.689) | -0.213 (-2.008) | -0.513 (-0.051) | -1.429 (-2.005) | 0.813 (1.422) | 0.550 (1.327) | -0.387 (-0.477) |
| roa | | -1.535 (-5.085) | -1.147 (-3.755) | 0.905 (1.199) | 1.743 (3.022) | 0.375 (0.711) | 9.349 (7.233) | 0.058 (0.175) |
| sales_growth | | 0.033 (1.155) | 0.042 (1.078) | -0.048 (-0.721) | 0.051 (0.317) | 0.020 (0.130) | -0.000 (-0.002) | -0.195 (-2.289) |
| earn_vol | | 0.050 (5.214) | 0.039 (3.377) | 2.582 (7.011) | 0.193 (2.428) | -0.100 (-1.863) | -0.231 (-2.597) | 0.039 (0.744) |
| breakeven | | -0.300 (-5.107) | -0.173 (-3.355) | 4.759 (4.169) | 0.384 (3.096) | -0.425 (-2.802) | -1.664 (-3.198) | 0.408 (2.729) |
| positive_streak | | 0.114 (5.848) | 0.041 (2.099) | -3.525 (-2.689) | 0.140 (0.722) | 0.122 (1.291) | 0.437 (3.909) | -0.108 (-1.563) |
| earn_trend | | -0.046 (-3.857) | -0.022 (-1.583) | 0.093 (0.126) | 0.329 (2.163) | -0.122 (-1.825) | -0.184 (-1.286) | -0.072 (-0.922) |
| Adj.R ² /Pseudo R ² | | 0.33997 | 0.40995 | 0.10311 | 0.10063 | 0.07453 | 0.13437 | 0.22374 |
| Observations | | 3,718 | 3,718 | 3,718 | 3,520 | 3,520 | 3,523 | 3,520 |
| Industry and Year FEs | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports the asymmetry in lenders' demands for audit materiality threshold as hypothesized in Equation (1). Main variable of interest is the interaction term between audit risk and lender's pressure. We estimate the regressions in Column 4 - Column 7 by using the predicted probabilities from the logit models. All variables are described in Appendix C. T-statistics are reported in parentheses, and based on robust standard errors clustered by auditors. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 5: Materiality determinants model with pressure_covenants

| | materiality (1) | materiality (2) | n_words (3) | ebitda_base (4) | pretax_income_base (5) | pretax_income_no_adj_base (6) | include_rationale (7) |
|--|--------------------|--------------------|-------------------|--------------------|---------------------------|----------------------------------|--------------------------|
| pressure_covenants | | -0.015 (-4.18) | 0.785 (3.70) | 0.114 (1.72) | -0.054 (-3.36) | -0.103 (-2.53) | -0.009 (-0.27) |
| ln_rev | -0.120 (-7.58) | -0.117 (-7.62) | 1.157 (1.15) | -0.173 (-2.12) | 0.168 (2.67) | 0.324 (4.18) | 0.062 (0.66) |
| multinational | 0.001 (0.03) | -0.002 (-0.07) | 1.309 (0.78) | -0.200 (-0.63) | -0.141 (-2.96) | -0.266 (-1.81) | 0.094 (0.94) |
| restructure | 0.852 (0.74) | 0.807 (0.69) | 58.422 (0.40) | -11.414 (-0.80) | 3.968 (0.67) | -92.532 (-4.55) | -11.502 (-1.14) |
| acquisition | -0.124 (-4.09) | -0.124 (-4.14) | 1.041 (0.60) | 0.721 (2.12) | 0.163 (2.69) | -0.178 (-1.46) | -0.032 (-0.45) |
| busy_audit | -0.012 (-0.34) | -0.015 (-0.43) | 3.497 (2.00) | 0.621 (1.29) | -0.076 (-0.54) | 0.041 (0.35) | 0.215 (1.55) |
| big4 | -0.219 (-2.38) | -0.219 (-2.42) | -1.260 (-0.11) | -1.292 (-1.66) | 0.812 (1.51) | 0.451 (1.35) | 1.315 (5.20) |
| num_seg_ln | -0.043 (-0.96) | -0.049 (-1.08) | 2.561 (1.28) | -0.075 (-0.23) | -0.176 (-1.71) | -0.180 (-0.97) | 0.493 (3.24) |
| roa | -0.345 (-0.97) | -0.413 (-1.16) | -2.905 (-0.52) | 2.158 (2.57) | -0.016 (-0.02) | 9.736 (4.30) | -0.315 (-0.67) |
| sales_growth | -0.025 (-0.53) | -0.026 (-0.57) | -0.669 (-0.22) | 0.230 (0.75) | -0.063 (-0.32) | -0.110 (-0.46) | -0.091 (-0.93) |
| earn_vol | 0.048 (4.07) | 0.049 (4.26) | 3.226 (5.77) | 0.218 (2.34) | -0.029 (-0.74) | -0.258 (-2.61) | 0.086 (3.30) |
| breakeven | -0.119 (-3.33) | -0.111 (-3.17) | 1.686 (1.59) | 0.345 (1.56) | 0.072 (0.58) | -0.394 (-2.38) | 0.116 (0.92) |
| positive_streak | 0.134 (3.74) | 0.105 (3.03) | -2.615 (-0.98) | -0.176 (-0.82) | 0.713 (5.25) | 0.446 (1.16) | -0.320 (-1.19) |
| earn_trend | -0.017 (-1.14) | -0.018 (-1.18) | 1.112 (1.07) | 0.278 (1.33) | -0.101 (-1.42) | -0.041 (-0.34) | -0.170 (-1.37) |
| Adj. R ² /Pseudo R ² | 0.2268 | 0.2297 | 0.1523 | 0.0980 | 0.1071 | 0.1950 | 0.2674 |
| Observations | 2,775 | 2,775 | 2,775 | 2,775 | 2,775 | 2,775 | 2,775 |
| Industry and Year FEs | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Table 6: Asymmetric audit materiality for firms below versus above mean(median) of leverage ratio

| | | materiality | | | |
|--------------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|
| | | (1) | (2) | (3) | (4) |
| | | Below mean | Above mean | Below median | Above median |
| audit_risk | | 0.026 (2.673) | 0.131 (12.639) | 0.024 (2.425) | 0.084 (3.287) |
| lender_pressure | | 0.027 (0.275) | 0.403 (6.128) | -0.012 (-0.113) | 0.310 (3.258) |
| audit_risk | lender_pressure | -0.112 (-4.313) | -0.284 (-8.065) | -0.106 (-3.917) | -0.248 (-5.550) |
| ln_rev | | -0.061 (-2.667) | -0.096 (-4.462) | -0.055 (-2.214) | -0.091 (-4.743) |
| multinational | | -0.013 (-0.370) | 0.036 (0.941) | -0.021 (-0.512) | 0.017 (0.568) |
| restructure | | -2.492 (-1.153) | -0.019 (-0.010) | -2.591 (-1.154) | 0.031 (0.017) |
| acquisition | | -0.164 (-4.603) | -0.057 (-1.823) | -0.168 (-4.379) | -0.058 (-1.913) |
| busy_audit | | -0.038 (-0.601) | 0.040 (1.363) | -0.042 (-0.563) | 0.038 (1.520) |
| num_seg_ln | | -0.116 (-3.241) | -0.016 (-0.303) | -0.121 (-3.111) | -0.031 (-0.639) |
| big4 | | -0.256 (-2.408) | -0.104 (-1.101) | -0.304 (-2.768) | -0.073 (-0.830) |
| roa | | -1.272 (-4.066) | -0.872 (-1.948) | -1.295 (-4.124) | -0.700 (-1.622) |
| sales_growth | | 0.022 (0.484) | 0.129 (1.620) | 0.024 (0.484) | 0.102 (1.531) |
| earn_vol | | 0.026 (1.678) | 0.056 (4.714) | 0.024 (1.423) | 0.053 (5.137) |
| breakeven | | -0.178 (-2.566) | -0.167 (-2.728) | -0.185 (-2.624) | -0.147 (-2.523) |
| positive_streak | | 0.035 (1.108) | 0.017 (0.626) | 0.009 (0.273) | 0.044 (2.106) |
| earn_trend | | -0.051 (-2.304) | 0.028 (1.369) | -0.051 (-1.952) | 0.025 (1.803) |
| Within Adjusted R ² | | 0.35087 | 0.52415 | 0.33834 | 0.50008 |
| Observations | | 2,165 | 1,553 | 1,859 | 1,859 |
| Year FE | | Yes | Yes | Yes | Yes |
| Industry FE | | Yes | Yes | Yes | Yes |

This table reports the asymmetry in lenders' demands for audit materiality threshold as hypothesized in (1) for audit clients that below or above mean value of leverage ratio. Following [Francis, Hunter, Robinson, Robinson and Yuan \(2017\)](#), we measure leverage ratio by long-term debt divided by total assets. We expect that the asymmetry in lenders' demand for audit materiality is more pronounced for group of firms having high leverage ratio. All variables are described in Appendix C. T-statistics are reported in parentheses, and based on robust standard errors clustered by audit client. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 7: Audit materiality and cost of debt

| | (1) | (2) | cod (3) | (4) | (5) |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| abnormal_materiality | 0.158 (2.250) | | | | |
| tangibility | -0.111 (-1.880) | -0.136 (-2.178) | -0.108 (-1.872) | -0.158 (-2.310) | -0.144 (-2.232) |
| intcov | 0.000 (1.507) | 0.000 (2.068) | 0.000 (2.184) | 0.000 (1.517) | 0.000 (1.578) |
| cr | -0.009 (-0.574) | -0.021 (-1.319) | -0.019 (-1.190) | -0.009 (-0.583) | -0.013 (-0.828) |
| audit_fees | -0.055 (-4.198) | -0.034 (-2.288) | -0.023 (-1.227) | -0.068 (-4.876) | -0.067 (-4.661) |
| big4 | -0.054 (-1.153) | 0.006 (0.125) | -0.009 (-0.193) | -0.015 (-0.313) | -0.044 (-0.922) |
| normal_materiality | | 0.192 (2.583) | | | |
| materiality | | | 0.165 (2.669) | | |
| sales_growth | | | -0.055 (-0.821) | -0.031 (-0.497) | -0.045 (-0.686) |
| earn_vol | | | 0.009 (0.809) | 0.011 (1.258) | 0.011 (1.252) |
| ln_rev | | | -0.019 (-0.910) | | |
| D1 | | | | 0.100 (1.946) | 0.080 (1.692) |
| D2 | | | | 0.071 (1.554) | 0.063 (1.355) |
| D3 | | | | 0.059 (1.621) | 0.052 (1.497) |
| D4 | | | | 0.081 (2.132) | 0.078 (2.120) |
| D6 | | | | 0.111 (2.734) | 0.108 (2.674) |
| D7 | | | | 0.104 (3.016) | 0.111 (3.069) |
| D8 | | | | 0.088 (2.883) | 0.089 (2.722) |
| D9 | | | | 0.124 (3.705) | 0.123 (3.533) |
| D10 | | | | 0.258 (2.996) | 0.249 (2.943) |
| Within Adjusted R ² | 0.03594 | 0.03132 | 0.04950 | 0.031831 | 0.02914 |
| Observations | 2,827 | 2,827 | 2,827 | 2,827 | 2,827 |
| Year FE | Yes | Yes | Yes | No | Yes |
| Industry FE | Yes | Yes | Yes | No | Yes |

This table reports the relation between audit materiality and cost of debt as hypothesized in Equation (3). Expected (*normal_materiality*) and unexpected audit materiality (*abnormal_materaility*) are computed from column 3 in Table 4. All variables are described in Appendix C. T-statistics are reported in parentheses, and based on robust standard errors clustered by audit client. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 8: Audit materiality and cost of debt, differences in differences

| | Materiality (1) | | Expected Materiality (2) | | Expected Materiality2 (3) | |
|-------------------------|--------------------|-------------------|-----------------------------|-------------------|------------------------------|----------------------|
| Post | -0.003 (-3.87) | | -0.003 (-4.04) | | -0.003 (-3.72) | |
| MaterialTreat | -0.002 (-3.87) | | -0.002 (-4.04) | | 0.000 (-3.72) | |
| Post*MaterialTreat | 0.004 (2.01) | 0.002 (2.28) | 0.004 (2.40) | 0.003 (3.18) | 0.003 (1.79) | 0.002 (2.02) |
| audit_risk | -0.002 (-7.71) | -0.001 (-3.60) | -0.002 (-8.08) | -0.001 (-3.74) | -0.003 (-8.27) | -0.001 (-3.48) |
| ln_rev | -0.005 (-5.90) | -0.002 (-0.51) | -0.005 (-5.86) | -0.002 (-0.51) | -0.005 (-5.40) | -0.002 (-0.56) |
| cr | 0.001 (2.38) | 0.001 (1.52) | 0.001 (2.43) | 0.001 (1.52) | 0.002 (2.69) | 0.001 (1.62) |
| tangibility | 0.018 (10.97) | 0.015 (2.09) | 0.018 (11.00) | 0.015 (2.05) | 0.018 (11.03) | 0.016 (2.17) |
| intcov | -0.000 (-7.46) | -0.000 (-4.16) | -0.000 (-7.46) | -0.000 (-4.18) | -0.000 (-7.48) | -0.000*** (-4.17) |
| big4 | 0.004 (3.36) | | 0.004 (3.40) | | 0.004 (3.51) | |
| audit_fees | 0.003 (5.60) | 0.001 (2.42) | 0.003 (5.63) | 0.001 (2.43) | 0.003 (5.14) | 0.001 (2.45) |
| sales_growth | 0.007 (2.47) | 0.003 (1.54) | 0.007 (2.39) | 0.003 (1.42) | 0.007 (2.44) | 0.003 (1.54) |
| Adjusted R ² | 0.386 | 0.819 | 0.388 | 0.820 | 0.387 | 0.818 |
| Observations | 720 | 720 | 720 | 720 | 720 | 720 |
| Year FE | No | Yes | No | Yes | No | Yes |
| Firm FE | No | Yes | No | Yes | No | Yes |

This table reports the relation between audit materiality and cost of debt as hypothesized in Equation (4) by using a differences-in-differences model. All variables are described in Appendix C. T-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 9: Audit materiality on cost of debt moderated by audit fee

| fee_median | Materiality | | Expected Materiality | | Expected Materiality2 | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
| | below | above | below | above | below | above |
| Post | -0.002** (-2.08) | -0.004*** (-3.45) | -0.002* (-1.97) | -0.004*** (-3.42) | -0.002** (-1.99) | -0.004*** (-3.40) |
| HighMat | 0.002 (0.92) | -0.001 (-0.57) | 0.002 (1.33) | -0.002 (-1.15) | 0.002 (0.95) | -0.003 (-1.37) |
| Post*HighMat | 0.001 (0.23) | 0.005** (2.03) | 0.000 (0.01) | 0.005* (1.92) | 0.000 (0.02) | 0.005* (1.86) |
| audit_risk | -0.003*** (-5.81) | -0.003*** (-6.15) | -0.003*** (-6.07) | -0.002*** (-5.96) | -0.003*** (-5.82) | -0.002*** (-5.69) |
| tangibility | 0.015*** (7.74) | 0.021*** (6.73) | 0.015*** (7.77) | 0.020*** (6.61) | 0.015*** (7.74) | 0.020*** (6.59) |
| intcov | -0.000*** (-7.31) | -0.000*** (-4.21) | -0.000*** (-7.38) | -0.000*** (-4.19) | -0.000*** (-7.34) | -0.000*** (-4.25) |
| cr | 0.001 (1.07) | 0.003*** (3.64) | 0.001 (1.11) | 0.003*** (3.62) | 0.001 (1.05) | 0.003*** (3.53) |
| audit_fees | 0.002*** (2.89) | 0.004*** (5.33) | 0.002*** (3.00) | 0.004*** (5.21) | 0.002*** (2.94) | 0.004*** (5.22) |
| sales_growth | 0.003 (0.69) | 0.012*** (3.03) | 0.003 (0.86) | 0.012*** (3.05) | 0.003 (0.72) | 0.012*** (3.04) |
| ln_rev | -0.006*** (-4.66) | -0.006*** (-3.32) | -0.007*** (-4.90) | -0.006*** (-3.30) | -0.006*** (-4.64) | -0.006*** (-3.30) |
| constant | 0.036*** (5.75) | -0.007 (-1.19) | 0.037*** (5.84) | -0.007 (-1.09) | 0.035*** (5.68) | -0.006 (-1.03) |
| Observations | 360 | 360 | 360 | 360 | 360 | 360 |
| Adjusted R ² | 0.411 | 0.390 | 0.413 | 0.388 | 0.410 | 0.388 |
| Year FE | No | No | No | No | No | No |
| Firm FE | No | No | No | No | No | No |

This table reports the relation between audit materiality and cost of debt by using a differences-in-differences model in samples split across the median of audit fee deflated by total assets. All variables are described in Appendix C. T-statistics are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 10: Normal audit materiality and loan contracting terms

| | spread (1) | maturity (2) | number_of_lenders (3) | fin_cov_num (4) | loan_amount (5) | collateral (6) |
|---|---------------------|---------------------|--------------------------|--------------------|--------------------|--------------------|
| normal_materiality | 118.903 (1.635) | -19.249 (-2.930) | -2.264 (-1.322) | 0.396 (1.596) | 0.159 (0.609) | 1.404 (1.454) |
| loan_amount | -9.412 (-2.665) | 2.237 (1.360) | 1.177 (5.490) | -0.018 (-0.356) | | -0.198 (-2.473) |
| maturity | 1.384 (4.622) | | -0.021 (-3.741) | -0.001 (-0.423) | 0.008 (1.168) | 0.012 (1.209) |
| number_of_lenders | -3.630 (-1.279) | -0.459 (-3.544) | | 0.011 (1.269) | 0.086 (10.809) | -0.072 (-1.044) |
| fin_cov_num | 18.901 (1.935) | -0.399 (-0.449) | 0.336 (1.466) | | -0.040 (-0.374) | -0.274 (-0.688) |
| collateral | 31.146 (1.280) | 0.869 (0.353) | -0.909 (-1.710) | 0.030 (0.193) | -0.202 (-1.655) | |
| term_loan | -47.503 (-1.830) | 11.971 (5.143) | 1.137 (1.610) | 0.195 (0.869) | 0.376 (2.819) | 0.378 (0.856) |
| performance_pricing | -12.963 (-1.040) | 1.533 (0.354) | 0.669 (0.751) | -0.040 (-0.170) | 0.316 (3.012) | -0.540 (-1.179) |
| revolver | -89.903 (-3.829) | 13.853 (5.480) | 0.960 (1.167) | 0.253 (1.650) | 0.435 (2.366) | -0.324 (-0.433) |
| institutional_investor | 23.202 (0.735) | 9.295 (2.137) | -2.314 (-2.438) | 0.393 (3.396) | 0.750 (2.782) | 22.945 (27.184) |
| sales_growth | -2.234 (-0.058) | -1.711 (-0.670) | -1.168 (-1.147) | -0.078 (-0.648) | 0.159 (1.050) | 1.940 (2.491) |
| tangibility | 26.897 (1.187) | -9.863 (-3.869) | 1.350 (1.217) | 0.054 (0.159) | 0.235 (0.841) | 0.557 (0.820) |
| intcov | -0.771 (-5.213) | 0.045 (0.919) | -0.016 (-3.016) | -0.002 (-1.005) | 0.007 (3.287) | -0.008 (-0.547) |
| cr | 15.876 (0.638) | 2.111 (1.782) | -0.321 (-1.722) | -0.092 (-0.661) | 0.038 (0.556) | -0.354 (-1.125) |
| leverage | -55.234 (-1.360) | -5.837 (-0.745) | 1.440 (0.667) | -0.464 (-1.393) | 0.714 (1.935) | 4.837 (2.773) |
| ln_rev | -8.337 (-0.996) | -0.992 (-0.580) | 0.871 (9.094) | 0.030 (0.395) | 0.261 (4.160) | 0.431 (1.014) |
| audit_fees | 16.039 (1.342) | -0.624 (-0.405) | 0.722 (2.519) | -0.093 (-0.957) | 0.191 (4.194) | -0.112 (-0.298) |
| big4 | -56.592 (-1.963) | -3.636 (-0.817) | -0.354 (-0.361) | 0.346 (1.509) | 0.481 (2.901) | 1.060 (2.599) |
| Adj.R ² /Pseudo R ² | 0.27803 | 0.12298 | 0.51310 | 0.04006 | 0.51460 | 0.219283 |
| Observations | 392 | 392 | 392 | 392 | 392 | 392 |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Syndication market FE | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports the relation between audit materiality and pricing or non-pricing dimensions of loan contracts. Expected (*normal materiality*) audit materiality is computed from column 3 in Table 4. All variables are described in Appendix C. T-statistics are reported in parentheses, and based on robust standard errors clustered by firms and auditors. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.

Table 11: Abnormal audit materiality and loan contracting terms

| | spread (1) | maturity (2) | number_of_lenders (3) | fin_cov_num (4) | loan_amount (5) | collateral (6) |
|---|---------------------|--------------------|--------------------------|--------------------|--------------------|--------------------|
| abnormal_materiality | -54.602 (-2.147) | 3.335 (1.713) | 1.599 (1.892) | -0.209 (-1.342) | 0.028 (0.212) | 1.387 (2.733) |
| loan_amount | -8.835 (-2.515) | 2.212 (1.276) | 1.150 (5.892) | -0.016 (-0.319) | | -0.190 (-1.723) |
| maturity | 1.283 (3.891) | | -0.020 (-4.599) | -0.001 (-0.641) | 0.007 (1.109) | 0.007 (0.607) |
| number_of_lenders | -3.344 (-1.506) | -0.443 (-3.629) | | 0.013 (1.396) | 0.085 (12.082) | -0.066 (-1.014) |
| fin_cov_num | 18.383 (1.850) | -0.608 (-0.706) | 0.370 (1.624) | | -0.035 (-0.333) | -0.185 (-0.475) |
| collateral | 39.345 (2.171) | -0.307 (-0.136) | -1.067 (-2.471) | 0.057 (0.396) | -0.194 (-1.626) | |
| term_loan | -41.070 (-1.434) | 10.857 (4.948) | 1.035 (1.240) | 0.215 (0.926) | 0.390 (2.838) | 0.578 (1.119) |
| performance_pricing | -7.129 (-0.553) | 0.714 (0.149) | 0.540 (0.662) | -0.020 (-0.083) | 0.322 (3.106) | -0.493 (-0.858) |
| revolver | -83.493 (-3.530) | 12.965 (5.724) | 0.843 (0.898) | 0.273 (1.691) | 0.447 (2.346) | -0.139 (-0.183) |
| institutional_investor | 16.870 (0.581) | 9.990 (2.277) | -2.108 (-2.098) | 0.368 (3.445) | 0.752 (2.774) | 22.202 (37.244) |
| sales_growth | -5.903 (-0.146) | -1.539 (-0.558) | -1.044 (-1.037) | -0.091 (-0.772) | 0.161 (1.019) | 1.917 (2.905) |
| tangibility | 12.092 (0.653) | -9.125 (-2.772) | 1.759 (1.685) | -0.002 (-0.006) | 0.241 (0.906) | 0.726 (1.224) |
| intcov | -0.429 (-2.701) | 0.012 (0.268) | -0.024 (-3.283) | -0.000 (-0.246) | 0.007 (2.804) | -0.017 (-0.972) |
| cr | 21.718 (0.827) | 1.100 (1.146) | -0.417 (-2.535) | -0.072 (-0.553) | 0.047 (0.695) | -0.302 (-0.966) |
| leverage | -27.300 (-0.616) | -8.260 (-1.163) | 0.662 (0.306) | -0.359 (-0.985) | 0.711 (1.940) | 4.045 (2.692) |
| ln_rev | -18.023 (-1.942) | 0.440 (0.317) | 1.057 (8.173) | -0.003 (-0.039) | 0.251 (3.470) | 0.313 (0.754) |
| audit_fees | 16.167 (1.273) | -0.682 (-0.404) | 0.713 (2.729) | -0.093 (-0.988) | 0.192 (4.084) | -0.172 (-0.406) |
| big4 | -68.164 (-2.635) | -0.494 (-0.123) | -0.263 (-0.294) | 0.313 (1.442) | 0.442 (4.746) | 0.522 (0.919) |
| Adj.R ² /Pseudo R ² | 0.27937 | 0.10226 | 0.51935 | 0.04302 | 0.51437 | 0.22928 |
| Observations | 392 | 392 | 392 | 392 | 392 | 392 |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Syndication market FE | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports the relation between audit materiality and pricing or non-pricing dimensions of loan contracts. Unexpected (*abnormal_materiality*) audit materiality is computed from column 3 in Table 4. All variables are described in Appendix C. T-statistics are reported in parentheses, and based on robust standard errors clustered by firms and auditors. ***, ** and * indicate significance at the 1%, 5% and 10% levels in a two-tailed test.