

## Auditor Materiality in Expanded Audit Reports: More (Disclosure) is Less

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*The United Kingdom (UK) Financial Reporting Council (FRC) introduced expanded audit reports to improve audit report disclosures and render audits more transparent to financial statement users. This study examines audit materiality threshold disclosures, providing descriptive evidence of how auditors disclose materiality information in UK audit reports. This research uses manual content analysis (i) to assess auditors' benchmarks and the percentages auditors apply to those benchmarks. The analysis examines (ii) auditors' use of non-GAAP benchmarks, including non-recurring and recurring item exclusions and (iii) auditors' rationales for their benchmark choices. The research finds that auditors choose a wide variety of benchmarks and apply a wide range of percentages to the chosen benchmarks. Non-GAAP adjustments are pervasive. Auditors' rationales for benchmark choices include that the benchmark is a financial statement performance measure, and the benchmark eliminates volatility. The authors question whether the FRC's expanded disclosures have met its transparency objectives and concludes that 'more (disclosure) is less'.*

**A**udit materiality thresholds (derived by multiplying a chosen benchmark by a percentage rate – See example in Appendix 1) are critical auditor planning and performance judgements (Financial Reporting Council (FRC) 2010). Audit materiality thresholds influence audit quality. Higher audit materiality thresholds may result in less audit work, fewer proposed audit adjustments and more restatements (Choudhary et al. 2019). We examine three aspects of audit materiality threshold disclosures in expanded audit reports:<sup>1</sup> (1) auditor benchmark choice and benchmark percentage rates; (2) auditor non-GAAP (Generally Accepted Accounting Principles) benchmarks and auditor non-GAAP benchmark exclusions;<sup>2</sup> and (3) auditors' rationales for their benchmark choices.<sup>3</sup> These three aspects are the three key influences on auditor computations of audit materiality thresholds.

Following the 2008 financial crisis, the United Kingdom (UK) FRC introduced expanded audit reports to improve audit disclosures for financial statement users (FRC 2013b). The FRC (2013b: Paragraph 14) highlighted the limitations of binary audit reports: Many investors comment that auditors' reports currently contain largely standardised language, which has little informational value beyond the binary audit opinion. Regulators introduced expanded audit reports to increase audit opinion usefulness as the following quote indicates:

In the wake of the financial crisis, improving the auditor's report has been a focus for US, global and EU regulators and standard-setters ... All of them envisage a more bespoke and informative auditor's report that will supplement the binary 'pass/fail' audit opinion with greater insight about the audit and key areas of focus in it (Institute of Chartered Accountants in England and Wales (ICAEW) 2017).

The FRC assumed requiring auditors to provide greater transparency about audits would improve audit information for investors:

concerns were raised about whether the binary (i.e. pass/fail) auditor's report continued to be fit for purpose in providing adequate transparency about the audit and the auditor's insights about the company, based on its work... Greater transparency was addressed by requiring auditors to include within their reports:

a) A description of those assessed risks of material misstatement that were identified by the auditor and which had the greatest effect on the overall strategy; the

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allocation of resources in the audit; and directing the efforts of the engagement team;

b) An explanation of how the auditor applied the concept of materiality; and

c) A summary of the audit scope, including an explanation of how the scope was responsive to the assessed risks of material misstatement described in (a) and the concept of materiality as described in (b). (FRC 2015: 4).

In interviews with relevant stakeholders, Kend and Baisioudis (2018: 594, 595) find positive perceptions of UK and EU audit reforms. They recommend that audit materiality threshold disclosures be extended to Australian audit reports. Following adoption of audit reforms in Australia (which did not extend to audit materiality disclosures), Kend and Nguyen (2020) examine over 3000 Australian audit reports. They find that 70% of the companies in their sample disclose the same key audit matters (KAMs) (i.e., auditor-identified risks). For the same sample, Kend and Nguyen (2022) explore the disclosure of audit procedures relating to COVID-19,<sup>4</sup> concluding by questioning whether KAMs provided investors with useful information during a global pandemic crisis.

However, Gutierrez et al. (2018) and Lennox et al. (2022) find that disclosures in expanded audit reports do not provide incremental information to investors. In our conclusions, we discuss why this might be the case.

The UK FRC and the Netherlands' Autoriteit Financiële Markten (Nederlandse Beroepsorganisatie van Accountants 2014) are only two of 58 (International Forum of Independent Auditing Regulators 2020) international audit regulators to date (to our knowledge) to require audit materiality threshold disclosures in expanded audit reports. Following deliberations, the International Auditing and Assurance Standards Board (IAASB) and the United States (US) Public Company Accounting Oversight Board (PCAOB) decided against requiring audit materiality threshold disclosures. IAASB and the PCAOB stakeholders thought that audit materiality threshold disclosures might overstate the importance of quantitative rather than qualitative materiality. Other stakeholders thought that audit materiality threshold disclosures might confuse users of financial statements who may not understand the concept of materiality. Stakeholders thought that it would be too difficult to describe the complex nature of materiality in an audit report. However, they may reconsider their decisions in the future. We provide insights for international regulators considering introducing audit materiality threshold disclosures in expanded audit reports in the future.

We collect audit materiality threshold disclosures from the expanded audit reports of 328 FTSE-350 companies with 2015 year-ends. These detailed materiality disclosures are not available in financial reporting

or audit databases (e.g., Datastream, FAME, Compustat or Audit Analytics). Our data (collected as part of a larger study) examines expanded audit reports 2 years after ISA 700 (FRC, 2013a) became effective. To assess whether the picture subsequently changed, we examine auditor benchmark choices of a more up-to-date 2020 year-end sample, finding similar practices in the 2015 and 2020 samples. The revised audit materiality standard (FRC 2016b) did not amend guidance around audit materiality or the use of 'normalised income' for computing non-GAAP benchmarks.

The study makes three contributions to the literature. First, we conduct a deep descriptive analysis of auditor benchmark choices and benchmark percentage rates in the expanded audit reports of 328 UK FTSE-350 companies. Our descriptive analysis extends Amiram et al.'s (2017) and Choudhary et al.'s (2019) materiality threshold quantitative monetary measures. Second, we examine auditors' use of non-GAAP benchmarks. We also compare auditor and manager non-GAAP exclusions and assess whether non-GAAP benchmarks increase or decrease audit materiality thresholds. We also consider auditor non-GAAP non-recurring versus recurring exclusions. Thus, our study complements the work of Hallman et al. (2022). Third, we provide novel evidence on auditors' rationales for their benchmark choices. To our knowledge, our study is the first to examine the type and most common rationales auditors use to justify their benchmark choices. These disclosures may provide greater insights into the choice of benchmark and may have consequences for users' understanding of audit materiality thresholds. The FRC (2016: 4) reports investor demand for such disclosures.

The FRC's objective of providing greater transparency about audits prompts us to adopt a transparency lens to interpret our findings and assess whether audit materiality threshold disclosures meet the FRC's objective. We consider that three transparency aspects apply to audit materiality threshold disclosures: (1) audit materiality threshold disclosures are complex and therefore difficult for investors to interpret; (2) audit materiality thresholds are sometimes disclosed out of context making them difficult to understand; and (3) the difficulty in interpreting and understanding the new audit materiality threshold disclosures. We question whether users of audit reports are any the wiser from the additional disclosures in expanded audit reports. This prompts us to turn the maxim 'less is more' on its head, and conclude, in relation to these disclosures, that 'more (disclosure) is less'. We are concerned that audit materiality threshold disclosures do not meet the FRC's objective of providing greater audit transparency. Our insights may explain why international regulators other than those mentioned earlier have not mandated similar disclosures. More information can lead to less transparency, which may result in less user understanding.

## Prior Research on Audit Materiality Thresholds

This section reviews the audit materiality threshold literature: auditor benchmark choice and benchmark percentage rates, non-GAAP benchmarks and auditor rationales for benchmark choices.

### Auditor benchmark choice and benchmark percentage rate

Prior research has examined auditor benchmark choices and benchmark percentage rates, with early studies relying on indirect data. In US/Australian studies, Eilifsen and Messier (2015) and Martinov and Roebuck (1998) examine the components of audit materiality thresholds using indirect internal audit-firm audit methodology materiality guidance. They call for a more direct analysis of audit materiality thresholds. The FRC (2015: 11) directly examines materiality disclosures in expanded audit reports but the FRC acknowledges that its sample is not representative: 'there was no particular science behind our selection'. In a more recent study, Choudhary et al. (2019) also directly examine audit materiality thresholds by accessing US Public Company Accounting Oversight Board (PCAOB) inspection data.<sup>5</sup> Steinbart (1987) examines the factors that determine audit materiality thresholds, identifying the nature of the client, future client plans and perceptions of the needs of financial statement users as key influences.<sup>6</sup> Amiram et al. (2017) find that highly leveraged firms and higher insider managerial shareholdings are associated with lower audit materiality thresholds. They also find that earnings multiples between high-and low-materiality firms narrow, suggesting that more stringent materiality thresholds improve financial statement perceived reliability. Choudhary et al. (2019) examine the properties (e.g., company characteristics) and implications (e.g., financial statement restatements) of audit materiality thresholds of 2150 US audit clients of the eight largest US audit firms.<sup>7</sup> They find looser (i.e., higher) materiality to be associated with fewer audit hours, lower audit fees, lower proposed audit adjustments and, in extreme cases, a greater incidence of restatements. They conclude that auditor materiality assessments are important for financial reporting reliability.

### Non-GAAP benchmarks

Auditor non-GAAP benchmarks are GAAP benchmarks complying with International Financial Reporting Standards (IFRS) adjusted for financial statement line items (e.g., restructuring charge). The use of auditor non-GAAP benchmarks may alter the auditing process. Items that are material using auditor GAAP benchmarks may

become immaterial when using auditor non-GAAP benchmarks. Non-GAAP performance measures (i.e., alternative performance measures) have become increasingly prevalent in financial reporting, drawing concerns from financial statement regulators (Black et al. 2018). In their annual reports, managers predominantly report adjusted profit as alternative performance measures (PwC, 2016). Managers argue that non-GAAP performance measures help stakeholders evaluate firm performance by excluding less relevant items. However, some are concerned that managers' use of non-GAAP performance measures may mislead investors (Black et al. 2018). Hallman et al. (2022: 7) outline that the FRC and the US Securities Exchange Commission (SEC) 'have expressed concern that companies exclude non-recurring losses from non-GAAP earnings but include nonrecurring gains'. In response to arguments against using non-GAAP performance measures, the European Securities and Markets Authority introduced alternative performance measure guidelines in 2015. Hallman et al. (2022) examine auditor non-GAAP benchmarks (in expanded audit reports) and manager non-GAAP metrics (in annual reports). Due to the lack of data until the introduction of expanded audit reports, few studies examine or question auditors' use of normalised income to compute audit materiality thresholds. While auditing standard-setters allow 'normalised'<sup>8</sup> for exceptional increases or decreases (i.e., non-recurring exclusions) in profit, auditing standard-setters provide no further guidance on the use and disclosure of auditor non-GAAP benchmarks. Hallman et al. (2022) examine whether auditor non-GAAP benchmark exclusions are one-off (i.e., non-recurring exclusions) or persistent items (recurring exclusions). Hallman et al. (2022: 2–3) suggest that auditors' use of non-GAAP benchmarks may be an issue because they can indirectly affect investors by reducing audit rigour. We identify the types of items auditors exclude from their non-GAAP benchmarks (non-recurring and recurring), highlighting that some auditors do not explain their non-GAAP benchmarks in their audit reports.

### Auditor rationales for their benchmark choices

Few studies examine auditors' rationale for their benchmark choices. Steinbart (1987) constructs a rule-based expert system (software tool) and identifies the rules used to make specific materiality judgements. One audit partner's judgement model using hypothetical cases (i.e., an experiment) forms the basis for auditors' knowledge. Disclosures of auditors' rationale helps understand the inputs into auditors' knowledge and judgements. The FRC (2016a) examines whether auditors include a rationale for their benchmark choices and finds that less than half of their sample (45% of 278

**Table 1** Population and company-level sample size

	No.
Population: FTSE-350 companies	350
Companies audited by non-Big 4 auditors <sup>9</sup>	(9)
Companies audited by non-UK auditors not applying ISA (UK and Ireland)	(10)
Companies listed for the first time in November 2015	(3)
Sample of companies	328

audit reports) includes a rationale for auditor benchmark choice.

## Research Questions and Method

This section outlines the research questions, sample, data, and analytical methods.

### Research questions

The research addresses three research questions as follows:

RQ1: What benchmark choices and benchmark percentage rates do auditors/audit firms use to compute audit materiality thresholds?

RQ2: How do auditors use non-GAAP benchmarks to compute their audit materiality thresholds; How do their non-GAAP exclusions compare with those of management? Do audit materiality thresholds increase or decrease when auditors adopt non-GAAP benchmarks?

RQ3: What rationales do auditors disclose for their benchmark choices?

### Sample and data

The population comprises all companies listed on the London Stock Exchange in the FTSE-350 Index. We exclude 22 companies from the population of 350 companies for various reasons. Table 1 summarises the population and sample of companies (328).

This study includes financial sector companies omitted from prior expanded audit report studies (Amiram et al. 2017; Gutierrez et al. 2018; Reid et al. 2019; Smith 2021). We hand-collect the data from 2015 annual reports for each company. We examine data from 2015 because the ISA 700 (FRC 2013a) became effective for financial statement audits for periods commencing on or after 1 October 2012. We examine companies 2 years after the implementation of expanded audit reports (i.e., 2015) because we expect audit materiality threshold disclosures to be more consistent as the first year (i.e., 2014) may have suffered implementation issues (FRC 2015: 57–60). We collect audit materiality threshold data (i.e., auditor benchmark choices, auditor

benchmark percentage rates, auditor non-GAAP benchmarks, auditor non-GAAP benchmark exclusions and auditor rationales for their benchmark choices) from the expanded audit reports of each company. We collect manager non-GAAP metric exclusions data from company annual reports (e.g., performance highlights or directors' reports).

### Content analysis

We apply manual content analysis as our research objective is to analyse audit materiality threshold data in expanded audit reports and manager non-GAAP metric exclusions in annual reports. Our content analysis adheres to coding instructions for each research question (available from the authors on request). The first author completed the coding, which was overseen by the other two authors. To address RQ1 (i.e., benchmark choice and benchmark percentage rates), we examine one benchmark choice for each company in our sample.<sup>9,10</sup> We classify audit materiality thresholds into categories and sub-categories (Krippendorff 2004). We adopt an abductive approach (Krippendorff 2004) to develop our coding categories and sub-categories. This involves an iterative process of going back and forth between requirements in auditing standards, the prior literature and our data (Brennan et al. 2013). We classify auditor benchmark choices into four categories and 10 sub-categories.

To address RQ2, we classify auditor non-GAAP benchmark exclusions into four categories: ① Excluding non-recurring items; ② Excluding mix of non-recurring and recurring items; ③ Excluding recurring items; ④ Average profits (see Table 3). We define non-recurring/recurring exclusions as financial statement line items unlikely/likely to occur in the future. We draw on prior research (Black et al. 2018) and use our judgement to classify exclusions as non-recurring/recurring. Restructuring charge is an example of a non-recurring exclusion as the same restructuring charge is unlikely to occur in the future. Interest expense is an example of a recurring exclusion, as it recurs annually. Our coding instructions (available from the authors on request) define each type of non-recurring exclusion (e.g., restructuring charge) and each type of recurring exclusion (e.g., foreign exchange and fair value movements or impairment of goodwill) (see Table 3). Auditor non-GAAP benchmark exclusions represent nine of the 11 auditor non-GAAP benchmark sub-categories (see Table 3). We compare auditor non-GAAP benchmark exclusions with managers' non-GAAP metric exclusions (i.e., alternative performance measures). We also identify whether auditors quantify their non-GAAP benchmark exclusions and whether auditors cross-reference their non-GAAP benchmark exclusions in their audit reports to

notes in the financial statements. To analyse whether audit materiality thresholds increase or decrease when auditors adopt non-GAAP benchmarks, we compute the non-GAAP/GAAP threshold difference. Appendix 1 illustrates Rolls-Royce's non-GAAP/GAAP threshold-difference computation. The auditor applies 4.5% to an adjusted non-GAAP benchmark of £1466 million (i.e., £160 million GAAP profit before tax plus non-GAAP adjustments of £1300 m gains and losses), which results in a materiality threshold of £66 million. We assess whether auditors' non-GAAP benchmarks increase or decrease audit materiality thresholds. The difference can be substantial. For example, had Rolls-Royce's GAAP audit materiality threshold been computed, it would have been £7.2m compared with the actual non-GAAP threshold of £66m, a difference of £58.8m (see Appendix 1).

To address RQ3, we identify whether auditors report a rationale for their benchmark choices in expanded audit reports. We define auditor rationale for benchmark choice as auditors' justification for selecting a benchmark or a percentage rate disclosed in their audit reports. For example, Rolls-Royce's auditor provides the following rationale to justify its non-GAAP materiality threshold computation: 'normalised to exclude the volatility in reported profit due to gains and losses on revaluation of foreign currency and other derivative financial instruments which could otherwise result in an inappropriate materiality level being determined' (see Appendix 1). We count the number of rationales auditors report for their benchmark choices in their audit reports. We compare the number of rationales auditors report when they adopt GAAP versus non-GAAP benchmarks. Adopting an abductive approach as explained earlier, we classify rationales into four categories and six sub-categories.

## Findings and Discussion

This section presents and discusses the findings by reference to our research questions.

### Auditor benchmark choice and auditor benchmark percentage rates (RQ1)

We find that auditors choose a wide variety of benchmarks and apply a wide range of percentages to their chosen benchmarks (Table 2, Panel A). We identify ten categories of benchmarks (Table 2, Panel A) which are broadly similar to Eilifsen and Messier (2015: 11), who identify 14 categories, and Choudhary et al. (2019: 17), who identify 13 categories. We find similar categories of benchmarks (e.g., net assets, revenue, profit before tax, and adjusted profits) as identified in the literature (Eilifsen and Messier 2015; Choudhary et al. 2019)

and those suggested in the materiality auditing standard (FRC 2010). Panel B of Table 2 shows that auditors adopt non-GAAP benchmarks for almost half of the sample (49%, 160 companies). This frequency of auditor non-GAAP benchmarks is consistent with Hallman et al. (2022) and the FRC (2015). Eilifsen and Messier (2015) examine internal audit-firm guidance and find seven of the eight largest US audit firms use normalised earnings as a benchmark choice. On the other hand, Choudhary et al. (2019: 17) examine PCAOB data obtained from inspections of the eight largest US audit firms from 2005 to 2015 and find that auditors use normalised income or earnings before interest, taxes, depreciation and amortisation (EBITDA) as a benchmark choice for 6.6% (174 of 2647 auditor benchmark choices) of their sample. Therefore, we find that UK auditors adopt non-GAAP benchmarks more frequently than US auditors (Choudhary et al. 2019). Auditors' extensive use of non-GAAP benchmarks emphasises the importance of examining this issue. Turning to benchmark percentage rates, we find that auditors apply a range of between 0.41% and 3% to asset and other benchmarks (83 companies)<sup>11</sup> and between 2% and 8.6% to profit and adjusted profit benchmarks (245 companies).<sup>12</sup> Our findings for benchmark percentage rates are in line with auditing standards (FRC 2010) and are similar to Eilifsen and Messier (2015: 11–13), who find that seven of their eight US audit firms apply ranges between 0.25% and 2% to asset or total revenue benchmarks and between 2.5% and 10% to profit and adjusted profit benchmarks (e.g., EBITDA). Choudhary et al. (2019) confirm Eilifsen and Messier's (2015) findings. We show that auditors have considerable latitude when choosing audit materiality thresholds. The level of variation may suggest flexibility within the audit process.

### Non-GAAP benchmarks (RQ2)

Table 3 shows that most auditors adopting non-GAAP benchmarks (160 companies) exclude items (153 companies – see Table 3 Note 2). Auditors exclude a diverse range of items. When we analyse non-recurring exclusions (23% of the sample: 76 companies), we find that auditors predominantly exclude exceptional items (14% of the sample: 46 companies). Exceptional items are non-recurring exclusions because they 'give rise to an exceptional decrease or increase in profit' (FRC 2010: 6) and therefore are unlikely to occur in the future. We find most auditors that exclude exceptional items do not describe the type of exceptional item (37 of 46 companies, 80%). We find that auditors exclude recurring items or a mix of non-recurring and recurring items for nearly half (43%) of the auditor non-GAAP benchmark sub-sample (160 companies). Our findings for type of

**Table 2 Auditor benchmark choice and auditor GAAP/non-GAAP benchmarks (RQ1)**

	No. of companies	% of companies			
Panel A: Auditor benchmark choice					
<b>1</b> Assets (GAAP)					
① Total assets	18	6%			
② Net assets	53	16%			
Total - Assets	71	22%			
<b>2</b> Profits (GAAP)					
③ Profit before tax	80	24%			
④ Profit from continuing operations	5	2%			
Total - Profits	85	26%			
<b>3</b> Other (GAAP)					
⑤ Revenue	9	2%			
⑥ Other line items	3	1%			
Total - Other	12	3%			
<b>4</b> Adjusted profits (Non-GAAP)					
⑦ Excluding non-recurring items	76	23%			
⑧ Excluding mix of non-recurring and recurring items	48	15%			
⑨ Excluding recurring items	16	5%			
⑩ Average profits	20	6%			
Total - Adjusted profits (Non-GAAP)	160	49%			
Sample of companies	328	100%			
Panel B: Auditor GAAP/Non-GAAP benchmark					
Auditor GAAP benchmark	168	51%			
Auditor Non-GAAP benchmark	160	49%			
Sample of companies	328	100%			
Panel C: GAAP/non-GAAP benchmarks by audit firm					
Audit firm	GAAP benchmark			Non-GAAP benchmark	
	No. of companies	No. of companies	Audit firm %	No. of companies	Audit firm %
PwC	100	41	41%	59	59%
KPMG	90	52	58%	38	42%
Deloitte	85	47	55%	38	45%
EY	53	28	53%	25	47%
Sample of companies	328	168		160	

**Key: 1234:** Four categories of auditor benchmark choice.

①②③④⑤⑥⑦⑧⑨⑩: Ten sub-categories of auditor benchmark choice

Note 1: Audit firm %: The % of companies audited by each audit firm adopting a GAAP/ non-GAAP benchmark.

exclusions are similar to Hallman et al. (2022: 3), who find that ‘auditor adjustments are persistent’.<sup>13</sup> We find that recurring-item exclusions relate to a broad range of recurring accounting adjustments (Table 3). While

the materiality auditing standard (FRC 2010) permits the use of ‘normalised income’ for exceptional increases or decreases, we question why auditors strip out non-volatile items (i.e., the same recurring item each year)

**Table 3 Auditor non-GAAP benchmarks and auditor non-GAAP benchmark exclusions (RQ2)**

	No. of companies	% of companies
Adjusted profits (Non-GAAP)		
❶ Excluding non-recurring items		
① Excluding exceptional items	46	14.0%
② Excluding restructuring items	14	4.0%
③ Excluding mix of/other non-recurring items	16	5.0%
Total: Excluding non-recurring items	76	23.0%
❷ Excluding mix of non-recurring and recurring items	48	15.0%
❸ Excluding recurring items		
④ EBIT(D)A/Adjusted EBIT(D)A	3	1.0%
⑤ Excluding foreign currency and fair value movements	5	1.5%
⑥ Excluding recurring goodwill impairment	1	0.5%
⑦ Excluding recurring impairment/amortisation of intangibles	2	1.0%
⑧ Excluding mix of /other recurring items	5	1.0%
Total: Excluding recurring items	16	5.0%
❹ Average profits		
⑨ Average two or three-year profits	4	1.0%
⑩ Prior year profits	3	1.0%
⑪ (i) Average profits and recurring exclusions	5	1.5%
⑪ (ii) Average profits and non-recurring exclusions	8	2.5%
Total: Average profits	20	6.0%
Total Adjusted profits (Non-GAAP)	160	49.0%
Sample of companies	328	100.0%

**Key:** ❶❷❸❹: Four categories of auditor non-GAAP benchmarks.

①②③④⑤⑥⑦⑧⑨⑩⑪: Eleven sub-categories of auditor non-GAAP benchmarks

Note 1: Recurring items: 48 companies excluding mix of non-recurring and recurring items + 16 companies excluding recurring items + 5 companies: average profits and recurring exclusions = 69 companies (43% of 160 companies).

Note 2: Exclusions in auditor non-GAAP benchmarks: 76 companies exclude non-recurring items + 48 companies exclude mix of non-recurring and recurring items + 16 companies exclude recurring items + 5 companies average profits and recurring exclusions + 8 companies average profits and non-recurring exclusions = 153 companies.

to compute their audit materiality thresholds. For auditors excluding items (153 companies – see Table 3 Note 2), we compare auditor and manager non-GAAP exclusions. Auditor exclusions match manager exclusions in only 41 (27%) of the 153 cases, with auditor exclusions not matching manager exclusions in 112 cases (73%).

Auditors exclude non-volatile/recurring items such as depreciation, amortisation of intangibles and interest costs. Many auditors who adopt non-GAAP benchmarks describe their motivation as ‘eliminates volatility’ (Table 6, Panel D). However, our findings suggest that some exclusions are not volatile (e.g., interest and depreciation). In addition, as discussed above, many auditors do not describe their exceptional items in their audit reports (37 of 46 companies, 80%), which may raise questions about whether the items truly represent non-recurring items, as defined by the FRC. Auditors should further explain their non-GAAP benchmarks to help justify their use. The absence of clear explanations (e.g., the type of exceptional item) may raise questions about their appropriateness. Our findings suggest that variation in exclusions from audit materiality thresholds makes it difficult to compare audits across companies.

We find that most auditors (122 (80%) of 153 companies) adopting non-GAAP benchmark exclusions do not quantify the value of their exclusions in their au-

**Table 4 Audit materiality thresholds (AMT) and auditor non-GAAP benchmarks (RQ2)**

	No. of companies	% of companies
AMT increases when auditors adopt non-GAAP benchmarks	128	80%
AMT decreases when auditors adopt non-GAAP benchmarks	32	20%
Sub-sample of companies	160	100%

dit reports. We also find that most auditors (116 (63%) of 153 companies) adopting non-GAAP benchmark exclusions do not cross-reference their non-GAAP benchmark exclusions to notes in the financial statements.

Table 4 shows that 80% (128 of 160 companies) of auditor non-GAAP benchmarks result in higher audit materiality thresholds compared with the estimated audit materiality threshold using profit before tax (i.e., the auditor GAAP benchmark) for the same company. Consistent with Hallman et al. (2022), our findings suggest that auditors’ use of non-GAAP benchmarks may have audit quality implications because items that are material using auditor GAAP benchmarks may become immaterial using auditor non-GAAP benchmarks.

We make three expanded-audit-report recommendations relating to auditor non-GAAP benchmark disclosure. First, we suggest auditors explain exceptional items they exclude from their benchmarks. This complements investors' calls for more meaningful explanations of exclusions (FRC 2016a: 28). Second, we suggest that auditors quantify the value of their exclusions in their audit reports so financial statement users understand how auditors compute their non-GAAP benchmarks. Finally, we recommend that auditors include GAAP and non-GAAP benchmarks in their audit reports, which may enhance audit comparability across companies. To achieve consistency in approach, we suggest that auditing standard-setters provide specific guidance regarding non-GAAP benchmark disclosures.

### Auditor rationales for their benchmark choices (RQ3)

For the sample (328 companies), we find that 75% of auditors report a rationale for their benchmark choice (i.e., justification for selecting a benchmark disclosed in audit reports) (Table 5, Panel A). We analyse the 25% of the reports (81 companies) with no rationale and find that 55 relate to auditor GAAP benchmarks and 26 relate to auditor non-GAAP benchmarks. Consistent with the FRC (2016a), we find that the practice of including rationales varies among audit firms (Table 5, Panel B). PwC and EY report rationales for their benchmark choices for most companies (100% and 91%, respectively) compared with KPMG and Deloitte (49% and 65%, respectively) (Table 5, Panel B). Almost half of the audit report sample include one rationale (162 (49%) of 328 companies). Almost one-quarter of the sample of audit reports include two rationales (78 (24%) of 328 companies), and a few audit reports include three rationales (2%, seven companies) (Table 5, Panel C). Next, we analyse the types of rationales auditors report (Table 5, Panel D). We observe that the most common rationale auditors include justifying adopting a benchmark is that the benchmark is a financial statement performance measure (154 (45%) of 339 rationales). The next most common rationale is that the benchmark eliminates volatility or is a consistent benchmark (115 (34%) of 339 rationales).

Turning to the difference between rationales when auditors adopt GAAP versus non-GAAP benchmarks (Table 5, Panel D), consistent with the FRC (2016a), we find that most audit reports that include 'eliminates volatility' rationales use non-GAAP benchmarks (97 (29%) of 339 rationales). We recommend that auditing standard-setters address the inconsistency in some auditors disclosing a rationale for their benchmark choice while others do not.

### Additional analysis of auditor benchmark choice for companies with 2020 year-ends

Our analysis focuses on data from 2015. However, to assess whether the picture changed substantially in 5 years from 2015, we examine auditor benchmark choices for a representative sample of 25 companies with 2020 year-ends. The companies range in size and industry, and have Big 4 auditors. For comparative purposes, we select companies audited by the same audit firm in 2015 and 2020. We find that most Big 4 audit firms (18 of 25 companies, 72%) adopt the same or similar underlying benchmark (e.g., asset benchmark or adjusted profits benchmark) for 2015 and 2020 for the same company. Auditors adopt the same percentage rate for 11 of the 18 companies (61%) with the same underlying benchmark. We find that auditors adopt asset benchmarks for three of 25 companies (12%) (2015, 22%), profit before tax benchmarks for three of 25 companies (12%) (2015, 26%), another benchmark for one of 25 companies (4%) (2015, 3%), and adjusted profit (non-GAAP) benchmarks for 18 of 25 companies (72%) (2015, 49%). It is reasonable to expect more adjusted profit (non-GAAP) benchmarks for 2020 following COVID-19, when companies are likely to experience more volatility.

We examine 18 of the 25 companies with adjusted profit (non-GAAP) benchmarks and find that most auditors exclude items (16 of 18 companies, 88%) (2015, 95%). Similar to our findings for 2015 year-ends, we find that auditors continue to exclude a broad range of recurring and non-recurring items for the 2020 year-ends. Consistent with our findings for the main sample, we find that: (i) most auditors (six of seven companies, 85%) (2015, 80%) excluding exceptional items do not describe the type of exceptional item; (ii) most auditors (15 of 16 companies, 94%) (2015, 80%) do not quantify the value of their exclusions; and (iii) most auditors (12 of 16 companies, 75%) (2015, 63%) adopting exclusions do not cross-reference their non-GAAP benchmark exclusions to notes in the financial statements. Therefore, auditors have not responded to investors' calls for more meaningful explanations of exclusions (FRC 2016a: 28). Finally, we find that auditors' reporting of rationales for benchmark choice for 2020 improved compared with 2015. Most auditors for the 2020 representative sample (24 of 25 companies, 96%) report a rationale for their benchmark choice compared with 75% for 2015.

### Transparency and audit materiality threshold disclosure

Drawing from regulators' intentions for improved transparency in expanded audit reports, and prior re-

**Table 5 Auditor rationale for their benchmark choices (RQ3)**

Panel A: Number of companies with auditor rationales for benchmark choices							
Number of rationales			No. of companies			% of companies	
Companies with rationale(s) for benchmark choices			247			75%	
Companies without rationale(s) for benchmark choices			81			25%	
Total			328			100%	

  

Panel B: Audit firm reporting of rationales for their benchmark choices			
Audit firm	No. of companies	Rationale (one or more) reported by audit firm	Audit firm %
PwC	100	100	100%
KPMG	90	44	49%
Deloitte	85	55	65%
EY	53	48	91%
Total	328	247	

  

Panel C: Frequency of auditor rationales for benchmark choices							
Frequency of rationales	No. and % of companies		No. and % of companies with GAAP benchmarks		No. and % of companies with Non GAAP benchmarks		No. of rationales
No rationale	81	25%	55	17%	26	8%	0
<i>One or more rationales</i>							
One rationale	162	49%	86	26%	76	23%	162
Two rationales	78	24%	24	7%	54	17%	156
Three rationales	7	2%	3	1%	4	1%	21
One or more total	247	75%	113	34%	134	41%	339
Total companies	328	100%	168	51%	160	49%	

  

Panel D: Type of rationales auditors report for their benchmark choices						
Type of rationale	No. and % of rationales		No. and % of rationales for GAAP		No. and % of rationales for non-GAAP benchmarks	
<b>1</b> Financial statement performance measure						
① Shareholders	58	17%	34	9%	24	7%
② Management	9	3%	3	1%	6	2%
③ General company performance	46	13%	19	6%	27	8%
④ More than one/other user group	41	12%	18	6%	23	6%
Total	154	45%	74	22%	80	23%
<b>2</b> Eliminates volatility	115	34%	18	5%	97	29%
<b>3</b> Accepted auditing benchmark	48	14%	34	10%	14	4%
<b>4</b> Other rationale	22	7%	17	5%	5	2%
Total number of rationales	339	100%	143	42%	196	58%

(Continued)

**Table 5 (Continued)**

**Key:** ①②③④: Four categories of auditor rationale for benchmark choices

①②③④: Four sub-categories of auditor rationale for benchmark choices

Note 1: Audit firm %: The percentage of companies audited by each audit firm reporting a rationale for their benchmark choice.

Note 2: There are 32 auditing benchmark rationales and 16 industry benchmark rationales.

search on investor understanding of audit materiality thresholds, we consider three aspects of the transparency literature to interpret our findings: (i) complexity; (ii) context; and (iii) 'more is less'.

### Complexity

PwC (2015: 4) comments that audits involve multiple decisions and judgements and that the expanded audit report 'allows the true complexity of the audit to be understood'. Tsoukas (1997) suggests that expert systems (e.g., doctors and engineers) cannot be fully transparent because of their complexity. Tsoukas (1997: 835) illustrates how doctors cannot be fully transparent using an example of a camera installed in an operating theatre.

A surgeon draws on a set of skills that are collectively sustained as well as applied ... A camera hears only what can be articulated, not what is tacit; it conveys only what can be seen, not what is taken for granted.

We suggest that it may be impossible for auditors to be fully transparent about their audit materiality thresholds in expanded audit reports because of the complexity involved in their judgements.

In their Australian study, Houghton et al. (2011) interview audit stakeholders and find that they do not understand audit materiality concepts. In their experimental study, Christensen et al. (2020) investigate whether financial statement users increase their investments when auditors disclose higher (e.g., 10% of profit before tax) or lower (e.g., 4% of profit before tax) audit materiality thresholds. They find that investors increase their investments when auditors disclose higher audit materiality thresholds. Therefore, Christensen et al. (2020: 12) suggest that users do not understand the inverse relationship between audit materiality thresholds and audit effort. Based on these findings, users seem unlikely to understand the nuances in materiality disclosures that we report.<sup>14</sup> We find evidence that audit materiality thresholds are complex. For example, auditors choose a wide variety of benchmarks and apply a wide range of percentages to their chosen benchmarks. Moreover, auditors adopt non-GAAP benchmarks for almost half of the sample, and the computation of these benchmarks is complex. For example, auditors exclude a diverse range

of recurring and non-recurring items. We find auditors disclose a variety of rationales for their benchmark choices, and find links between types of rationales (e.g., eliminates volatility) and non-GAAP benchmarks. Our findings suggest that the variety in audit materiality thresholds, non-GAAP benchmark exclusions and rationales for benchmark choices may make it difficult for investors to compare auditor benchmark choices across companies. Consistent with Tsoukas (1997), who suggests that expert systems (e.g., doctors and engineers) cannot be fully transparent because of their complexity, we suggest that expanded audit reports cannot be fully transparent about audit materiality thresholds because of the complexity involved in audit materiality threshold judgements.

### Context

Investors' difficulty in understanding audit materiality may be due to disclosures being outside the context of the conduct of the audit. Tsoukas (1997: 835) highlights that 'the decontextualized nature of information requires that it be placed into a context in order to be made intelligible'. Strathern (2000) states that transparency involves a simple abstraction and de-contextualisation from the world's complexity. In their study of a publicly owned hospital, Robbins and Lapsley (2015) find that accounting information is not context-specific, despite more volume and visibility. Consequently, they conclude that more accounting information is less meaningful. The Big 4 audit firms' responses to the FRC consultation paper on expanded audit reports also express concern about decontextualising audit judgements, as illustrated by the following quote:

Disclosure of only a few audit input judgements may not be very meaningful, particularly as it will necessarily be divorced from the context needed to explain the rationale for the judgements made. Without the broader context, the judgements are also not easily comparable between audits, even in the same industry (PwC 2013: 6).

We find evidence that auditors disclose their audit materiality thresholds without context. For example, auditors predominantly adopt asset benchmarks for companies in the financial industry. Industry is an important contextual factor. Investors would need specific industry knowledge or would need to conduct research similar to this study to understand the choice of benchmarks by industry. Moreover, we find evidence that auditors do not include explanations of audit materiality thresholds in expanded audit reports. For example, some expanded audit reports do not explain exceptional items, do not quantify the value of non-GAAP benchmarks exclusions, do not cross-reference non-GAAP benchmark exclusions to notes in the financial statements, and do not

include rationales for their benchmark choices. Explanations provide a context for audit materiality thresholds. Investors may find it difficult to understand audit materiality thresholds without such explanations. We find that 80% of auditor non-GAAP benchmarks result in higher audit materiality thresholds, which has implications for the audit process (Choudhary et al. 2019: 2). The FRC does not require auditors to explain the link between audit effort and audit materiality thresholds. We recommend that standard-setters consider requiring auditors to include the link between audit effort and audit materiality thresholds in their audit reports. The concept of audit materiality thresholds can be misunderstood without providing the context for this inverse relationship, as Christensen et al. (2020) identified. We find examples of non-volatile/recurring exclusions. Investors may be unable to conclude whether these exclusions are appropriate without further discussing the rationale with auditors. Investors may also need to talk to auditors to discover why some auditor benchmark choices match managers' metrics, while others do not. These 'without context' examples illustrate how audit materiality threshold disclosures in expanded audit reports may only provide half the story. We question whether giving some of the story is worse than giving no story.

### *More is less*

Prior studies discuss the paradox of transparency (Roberts 2009, 2018; Tsoukas 1997). Smith and Lewis (2011: 382) define paradoxes as 'contradictory yet interrelated elements that exist simultaneously and persist over time'. The self-contradictory nature (i.e., paradox) of transparency arises for two reasons: (1) it is impossible to be fully transparent; and (2) by becoming transparent, we become less transparent (i.e., 'more is less'). Issing (2005) examines the transparency of central banks' monetary policies (e.g., via quarterly and annual reports). Issing (2005) discusses the 'mirage of unlimited transparency' and 'overflow of information' and concludes that there may be an 'optimum amount of information' between the suppliers and receivers of information. In the following quote, O'Neill (2002: 15) comments that increasing transparency can result in more confusion (i.e., less understanding): 'Increasing transparency can produce a flood of unsorted information and misinformation that provides little but confusion unless it can be sorted and assessed'.

Conversely, in the context of expanded audit reports, Smith (2021) considers there to be an information gap between information publicly available to financial statement users and information not publicly available, that financial statement users believe would be helpful in investment decision making. She cites survey evi-

dence to argue that financial statement users would prefer more information in audit reports.

Bird et al. (2021) title their paper 'more is less' to reflect their findings that policies designed to 'level the playing field' through regulators disclosing internal information can have unintended consequences by reducing the informativeness of prices for real decisions, with prices being less informative to managers due to the crowding out of external information gathering.

As discussed in the Introduction, the FRC argues that auditors achieve greater transparency when they include more information (e.g., audit materiality thresholds) in their audit reports. Our study shows that expanded audit reports now include extensive information on auditor benchmark choices, non-GAAP benchmarks and rationales for benchmark choices. However, our findings suggest that the complexity of audit materiality thresholds, and their de-contextualisation in expanded audit reports, leads to a 'more is less'<sup>15</sup> syndrome, consistent with Bird et al.'s (2021) paper title. We find that the number of pages in expanded audit reports increased compared to the binary (pass/fail) audit reports (i.e., one- or two-page boilerplate audit reports). For example, the expanded audit reports of HSBC, Rolls-Royce, Tesco and Lloyds Banking are 12, eight, eight and four pages, respectively. We question whether there may be information overload (Issing 2005) in expanded audit reports, which in turn may be a source of reader confusion (O'Neill 2002).

In summary, the complexity of audit materiality thresholds may make it impossible for auditors to be fully transparent in their expanded audit reports. The de-contextualisation of audit materiality thresholds in expanded audit reports may lead to less transparency. Therefore, more information in expanded audit reports may result in less transparency (i.e., more is less transparent). Our investigation of the three transparency aspects leads us to question whether the FRC's requirement for expanded disclosures have met the transparency objective of providing greater audit transparency. We agree with Minutti-Meza (2021), who concludes, 'I believe that expanded reports offer a promise that is yet to be fulfilled'. Underpinning the expanded audit report is the implied assumption that more information leads to greater transparency. Recognising that complete transparency is impossible, we question whether regulators should insist on transparency since more transparency seems to create more problems than solutions. As discussed in the Introduction, Kend and Basioudis (2018: 595) recommend that 'Australian audit reports should contain disclosures of materiality thresholds considered useful for shareholders and potential investors' but Australian audit reforms did not include audit materiality disclosures. While audit materiality disclosure may be warranted, we question whether more information in expanded audit reports may lead to more

problems. We advise international regulators to exercise caution before requiring more information in expanded audit reports or other documents because more information can lead to less transparency (more is less) and less user understanding.

## Conclusion

Our study examines three audit materiality threshold disclosures: (i) auditor benchmark choice and benchmark percentage rates; (ii) auditor non-GAAP benchmarks; and (iii) auditors' rationales for their benchmark choices.

By examining expanded audit reports of 328 FTSE-350 companies, we provide evidence that auditors choose a wide variety of benchmarks and apply an extensive range of percentages to them. We find that auditors extensively adopt non-GAAP benchmarks (49%) and exclude non-recurring and recurring items. Our findings indicate that there is considerable leeway for auditors to adjust their underlying benchmarks when computing audit materiality thresholds. The two most common rationales auditors use to justify adopting a benchmark are: (1) the benchmark is a financial statement performance measure (45%); and (2) the benchmark eliminates volatility (34%).

We contribute new insights by adopting a transparency perspective that, to our knowledge, has not been mobilised in the expanded audit report literature. The findings indicate that audit materiality thresholds are complex and auditors sometimes disclose them without context. We question whether audit materiality threshold disclosures have met the FRC's objective of providing greater audit transparency ('more is less'). We advise international regulators to take caution before requiring more information in expanded audit reports or other documents because this may lead to less transparency (more is less) and, in turn, less user understanding. Our conclusions are consistent with Gold et al.'s (2012) and Coram and Wang's (2021) experimental findings that additional explanations/key audit matter disclosures do not reduce the expectation gap between financial statement users and auditors. Similarly, Kend and Nguyen (2022) question whether KAMs provided investors with useful information during the COVID-19 pandemic.

Our study has some limitations. First, we acknowledge that our results cannot be generalised because the sample is restricted to 1 year (i.e., 2015), one jurisdiction, large UK-listed companies, and companies audited by Big 4 auditors. To assess whether the picture has changed substantially since 2015, we examine auditor benchmark choices for a representative sample of 25 companies with 2020 year-ends. Our findings indicate that the picture has not changed substantially. We be-

lieve our findings are as applicable as in 2015 when we collected the data. Second, we acknowledge that content analysis may expose researchers to judgement and bias (Smith and Taffler 2000). We attempt to overcome this limitation using a systematic coding approach. Third, our study is limited to the supply side (i.e., disclosures in expanded audit reports), and we do not examine the demand side (i.e., investors' consumption of disclosures in expanded audit reports). Finally, some financial statement users may question whether what auditors 'report' is a true reflection of what they 'actually do'. We rely on quality controls and regulator visits to monitor auditors' performance. We acknowledge that some of our recommendations in the paper's Findings section may appear contradictory. On the one hand, if the current regulations are retained, they require improvement in the quality of audit report disclosures. On the other hand, we question whether investors can understand the disclosures, which leads us to recommend less (disclosure) is more.

Based on our results, we offer suggestions for future research. Researchers can use our evidence to examine whether the underlying components of audit materiality thresholds influence audit outputs. Relying on the same sample, Dwyer et al. (2022) examine the association between audit effort (proxied by audit fees) and audit materiality thresholds, finding a negative relation. Other potential audit outputs to examine include audit opinions issued, reporting to audit committees and audit quality. Future research could interview auditors to explore: (i) their rationales in their audit reports; and (ii) the paradox of transparency. An analysis at the individual audit partner level is necessary. Researchers could track over time how different audit partners change or retain auditor benchmark choices for the same company (i.e., audit partner rotation). Moreover, future research could track how different audit partners' benchmark choices in the same audit firm compare for companies within the same industry. We suggest that researchers extend the research on user understanding of audit materiality thresholds. Our findings on transparency would lead to the expectation that investors may not understand audit materiality thresholds in expanded audit reports. Future researchers could interview analysts (i.e., sophisticated investors) to determine whether they understand audit materiality thresholds in expanded audit reports. The richness of our data allows for deep insight into audit materiality threshold disclosures. These findings should interest regulators, researchers, auditors and financial statement users.

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## Notes

- 1 Following prior studies (Gutierrez et al. 2018; Lennox et al. 2022; Sierra-García et al. 2019), we use the term ‘expanded’ audit report to describe the new-form audit report. Practitioner reviews (FRC 2015, 2016) refer to new-form audit reports as ‘extended’ audit reports.
- 2 Auditor non-GAAP benchmark exclusions are items auditors exclude from GAAP profit before tax.
- 3 We define auditors’ rationales for benchmark choice as auditors’ justification for selecting benchmarks disclosed in their audit reports.
- 4 The acronym COVID-19 stands for Corona Virus Disease-2019. Following an outbreak in Wuhan China in December 2019, COVID-19 led to the first worldwide pandemic in over 100 years.
- 5 US PCAOB inspection data may not be representative, as audits inspected are based on judgement of audit risk, that is, that the audit contains deficiencies.
- 6 Steinbart (1987: 96) finds that auditor benchmark choice depends on the nature of the company (e.g., public/private company), future plans of the company, and financial statement user needs. The percentage rate depends on the intended use of the financial statements and the nature of the audit engagement (e.g., first-time auditor).
- 7 Choudhary et al. (2019: 5) find that ‘looser materiality amounts are positively associated with client financial performance and earnings volatility, while stricter judgments are associated with contextual factors ... such as small profits, poorer financial reporting system quality, and new clients’.
- 8 Normalised: ‘circumstances that give rise to an exceptional decrease or increase in profit may lead the auditor to ... use a normalised profit before tax’ (Paragraph A5, FRC 2010: 6).
- 9 We exclude non-Big 4 auditors because they may not have the same characteristics as Big 4 audit firms (e.g., size and structure) and, as there are only nine of them, they represent a small proportion of the population (3%).
- 10 We examine each company’s benchmark for computing the audit materiality threshold. We do not examine other audit materiality threshold levels (e.g., class of transactions). Therefore, we have one benchmark for each company.
- 11 Auditors adopt asset (71 companies) and other (12 companies) benchmarks for 83 companies.
- 12 Auditors adopt profit (85 companies) and adjusted profit (160 companies) benchmarks for 245 companies.
- 13 Hallman et al. (2022) mean by ‘persistent’ that audit adjustments/exclusions recur/persist in future periods, which is inconsistent with the notion that these adjustments/exclusions relate to one-off items.
- 14 We are grateful to an anonymous reviewer for providing this observation.
- 15 From a psychological perspective, Goldstein and Gigerenzer (2002) consider heuristics (rules of thumb) in the context of missing information. They conclude that less knowledge is better than more for making accurate inferences – which they call the counterintuitive less-is-more effect.

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## Appendix 1

### Auditor non-GAAP benchmark

Independent auditor's report to the members of Rolls-Royce Holdings plc

Our application of materiality and an overview of the scope of our audit

Our measure of materiality for the Group financial statements as a whole has reduced in line with the reduction in the Group's profit. This was set at £66m<sup>①</sup> (2014: £70m) and was, as last year, determined with reference to a benchmark of Group profit before taxation, normalised to exclude the volatility<sup>n</sup> in reported profit due to gains and losses on revaluation of foreign currency and other derivative financial instruments<sup>②</sup> which could otherwise result in an inappropriate materiality level being determined. This materiality measure represents 4.5%<sup>③v</sup> (2014: 4.6%) of this benchmark and 41.3%<sup>④u</sup> (2014: 34.3%) of total reported profit before tax. We carry out audit procedures to assess the accuracy of the gains and losses on these derivative financial

instruments (which this year amounted to a 1.3bn (2014: £1.1bn) loss) as part of our audit of the Groups treasury operations. Source: Rolls-Royce Holdings plc annual report 2015: 173

#### Key to disclosures in the audit report:

① Audit materiality threshold: £66 million

② Auditor benchmark choice: Group profit before taxation, normalised to exclude volatility re gains and losses on revaluation of foreign currency and other derivative financial instruments, i.e., a non-GAAP benchmark

③<sup>v</sup> Benchmark percentage rate – Non-GAAP: 4.5%

④<sup>u</sup> Benchmark percentage rate – GAAP: 41.3%

<sup>n</sup> Auditor rationale for benchmark choice: Eliminates volatility/Consistent benchmark with prior year

#### Calculating the non-GAAP/GAAP audit materiality threshold difference:

Non-GAAP threshold	<sup>u</sup> 41.3% Non-GAAP benchmark percentage * £160m GAAP profit (Rolls-Royce Holdings plc annual report: 107)	=	£66.0m
GAAP threshold	<sup>v</sup> 4.5% GAAP benchmark percentage * £160m GAAP profit (Rolls-Royce Holdings plc annual report: 107)	=	£ 7.2m
Non-GAAP/GAAP threshold difference			£58.8m

Consistent with Hallman et al. (2022), we apply the same non-GAAP percentage rate to the GAAP profit of £160 million. However, we acknowledge that we do not know whether an auditor would apply the same percentage rate.