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The Effect of Quantitative Materiality Approach on Auditors’ Adjustment Decisions

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ABSTRACT: Two alternative approaches are used in audit practice to provide quantitative materiality assessments about proposed audit adjustments. The cumulative approach compares to net income the total amount of misstatement existing at the end of the current period, while the current-period approach compares to net income the amount of misstatement added in the current period. Depending on the relation between total misstatement and current-period misstatement, either the cumulative approach or the current-period approach can calculate higher quantitative materiality. This paper reports an experiment that varies materiality approach between auditors by providing auditors with either the current-period or cumulative formats used by their firm to summarize proposed audit adjustments. Results indicate that, across a variety of experimental contexts (varying misstatement size, subjectivity, precision, and income effect, and varying whether auditors document effects on their client’s quality of earnings), auditors are more likely to require their client to book the misstatement under the approach that makes the misstatement appear more material. These results suggest that standard setters mandate that auditors require adjustment whenever a misstatement is material under either approach.

Keywords: materiality; auditing; adjusting entries; iron curtain; rollover; earnings management.

Data Availability: Contact the authors.

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I. INTRODUCTION

Two alternative approaches are used in audit practice to provide quantitative materiality assessments about proposed audit adjustments.\footnote{As used in this paper, “quantitative materiality assessments” and “quantitative materiality levels” refer to the quantitative materiality of a particular misstatement, rather than to a materiality threshold that the firm uses to delineate material and immaterial amounts.} The cumulative approach compares to net income the total amount of misstatement existing at the end of the current period (i.e., the amount necessary to correct the balance sheet), while the current-period approach compares to net income the amount of new misstatement added in the current period.\footnote{In practice, the “current-period” approach is often referred to as the “rollover” approach, since the effects of prior-period errors are “rolled over” to offset current-period errors and determine the net additional misstatement added in the current period. In practice, the cumulative approach is often referred to as the “iron curtain” approach, since no such offsetting is allowed (Taub 2004; Panel on Audit Effectiveness 2000).} As illustrated in the Appendix, either approach can make the assessment appear more material quantitatively, depending on the relation between total misstatement and current-period misstatement. Therefore, SEC personnel (Taub 2004; Turner 2000) and an SEC advisory panel (Panel on Audit Effectiveness 2000) have indicated concern that materiality approach could affect auditors’ adjustment decisions and therefore affect the amount of misstatement present in audited financial statements.

Our study provides descriptive evidence with respect to this concern by reporting the results of an experiment in which 234 audit partners and managers determined, for eight cases, whether the final outcome of an audit will be to book or waive a proposed adjusting journal entry. All participants are employed by a single Big 4 firm at which a choice is made upon client acceptance to use either the current-period or cumulative approach; therefore, for each of the eight cases, all aspects of the audit firm, the client, the misstatement, and the proposed audit adjustment are held constant. Across cases we manipulate qualitative and quantitative misstatement characteristics that prior research has indicated may affect materiality judgments and adjustment decisions. Between auditors we manipulate materiality approach by varying whether auditors receive the current-period or cumulative formats used at their firm to summarize proposed audit adjustments. We also manipulate between auditors whether auditors are required to document effects of waiving the misstatement on current and future quality of earnings.

We find waive rates ranging from 82 percent to 17 percent across the materiality approaches and the cases used in our experiment. These waive rates should not be viewed as indicative of actual waive rates in practice, given the abstraction inherent in experimentation. However, our cases were pilot-tested extensively and duplicate exactly the scoresheets used by the participants’ firm to evaluate audit adjustments. Therefore, because our data collection occurred in Autumn 2002, we view these results as providing evidence that auditors are willing to waive adjustments under at least some circumstances in the reporting climate subsequent to passage of the Sarbanes-Oxley Act, despite concerns about aggressive reporting and the potential for earnings management.

Our results indicate that, holding constant the actual misstatement in the financial statements, the proposed audit adjustment, all client characteristics, and all audit firm characteristics, auditors are less likely to require clients to book adjustments under whatever approach makes the misstatement appear to have lower quantitative materiality. These results are robust, being at least marginally significant for seven of eight cases. Materiality approach affects adjustment decisions regardless of misstatement subjectivity, the directional effect of the misstatement on net income, and the presence of a requirement to

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document the effect of waiving an adjustment on the client’s quality of earnings. Materiality approach influences adjustment decisions regardless of whether approach causes the quantitative materiality associated with a particular misstatement to exceed the 5-percent-of-net-income threshold used as a screen by the auditors’ firm. Also, materiality approach influences adjustment decisions regardless of whether auditors state that they believe that approach influences their adjustment decisions, indicating results cannot be attributed to the conscious application of a materiality policy. Thus, even though auditors have available all information necessary to consider a misstatement from the perspective of both materiality approaches, the approach presented to them affects their adjustment decisions persistently and in ways the auditors themselves do not realize.

Our results also indicate that the extent to which approach affects adjustment decisions depends in part on two of the qualitative materiality factors identified by SAB No. 99: misstatement subjectivity and misstatement precision. Regarding misstatement subjectivity, its strongest effect occurs in those cases for which materiality approach creates a large difference in quantitative materiality, with auditors more (less) likely to waive large (small) subjective misstatements than objective misstatements. Thus, although misstatement subjectivity is among the qualitative materiality characteristics highlighted by SAB No. 99, our results suggest that, in at least some circumstances, consideration of that characteristic can reduce the likelihood that a misstatement is adjusted.

Regarding estimate precision, our results indicate a significant effect of approach when a misstatement is defined as a point estimate, but an insignificant effect of approach when the same misstatement is defined as the lower bound of a range of possible misstatements. FIN No. 14 (FASB 1976) requires that such point- and range-defined misstatements be accounted for equivalently, but our results indicate that auditors still consider the possibility that the actual amount of misstatement exceeds the amount that financial accounting rules would require be booked. These results suggest a conservative response to imprecision that is consistent with SAB No. 99, and are similar to Kennedy et al.’s (1998) results involving financial statement users’ responses to SFAS No. 5 disclosures.

Overall, we believe our results suggest potential differences between the amounts of post-audit misstatement existing in the financial statements of companies audited under different materiality approaches. One possible remedy being considered currently by the SEC is to require disclosure of materiality approach along with other key accounting choices in the “significant accounting policies” section of financial statement footnotes (Taub 2004). However, this remedy would be of limited usefulness if users lack the information necessary to understand the implications of a particular approach for the audit adjustments waived by auditors of their company. Standard setters might instead consider mandating that auditor communications with audit committees include the materiality approach applied on the engagement and the implications of this application. The SEC has encouraged such communications (Turner 2000), but not required them. Another remedy would be for standard setters to mandate use of only one materiality approach on all audits. However, given that there are some contexts in which either the cumulative or the current-period approach provides the higher quantitative materiality, it is unclear which approach standard setters should mandate. Instead, we believe standard setters should mandate that auditors apply both approaches and only waive adjustments that are immaterial under both approaches.

In the rest of this paper, Section II provides background on professional standards and relevant research. Section III describes method, and Section IV provides results. Section V provides a summary and discussion of implications.

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II. BACKGROUND

In this section, we first discuss professional standards relevant to materiality, and then describe how our study builds upon prior academic research that examines materiality judgments and various additional factors that may influence auditors' decisions about whether to waive proposed audit adjustments.

Professional Standards Relevant to Materiality

In Concept Statement No. 2, the Financial Accounting Standards Board (FASB 1980) identified materiality as one of the fundamental qualitative characteristics of accounting information, and recognized that “those who make accounting decisions and those who make judgments as auditors continually confront the need to make judgments about materiality” (CON No. 2, para. 123). The auditor’s opinion states whether the financial statements are “presented fairly, in all material respects” in conformity with generally accepted accounting principles.

Standard setters have not promulgated quantitative materiality guides, methods, or criteria that preparers could look to for authoritative support, instead opting to discuss qualitative and quantitative materiality considerations. Although quantitative thresholds such as 5–10 percent of net income have long been used in practice (Pattillo 1976), the U.S. Supreme Court ruled in TSC v. Northway (426 U.S. 438, 449) that materiality should be determined with respect to the “total mix” of available information, and recent guidance from the SEC (SAB No. 99) and ASB (AU Sec. 312) emphasizes the importance of both qualitative and quantitative materiality dimensions. As indicated in SAB No. 99, “Quantifying, in percentage terms, the magnitude of a misstatement is only the beginning of an analysis of materiality; it cannot appropriately be used as a substitute for a full analysis of all relevant considerations” (SEC 1999, 2).

No accounting or auditing standards address directly the appropriateness of the cumulative and current-period approaches. Statement of Auditing Standards (SAS) No. 47 (AICPA 1984) implicitly permits both approaches by labeling the consideration of previously waived misstatements as an accounting choice that is not addressed in the Statement (footnote to para. 30). Yet, there are no accounting standards that deal with this choice. Also, unlike other important accounting choices, there exists no requirement for either issuers or auditors to disclose externally which approach is applied, and we are unaware of any instances of issuers or auditors voluntarily doing so. The Panel on Audit Effectiveness (2000) reported that both approaches are used in practice, and concluded that permitting both approaches is “potentially confusing.” Therefore, the Panel recommended that standard setters specify only one approach for handling prior-period uncorrected misstatements when determining whether proposed adjustments are material (Panel on Audit Effectiveness 2000, para. 2.177). SEC personnel have expressed a preference for the cumulative approach in prior speeches (Turner 2000), and have indicated intention by the SEC to revisit the issue of materiality approach (Taub 2004), but no SEC guidance has yet been provided.

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3 For examples of such discussions, see the FASB’s CON No. 2 (para. 131), the Securities Exchange Commission’s Staff Accounting Bulletin (SAB) No. 99 (SEC 1999), and Auditing Standards Board’s (ASB’s) Interpretations of AU Section 312, Audit Risk and Materiality (AICPA 2000b).
Research Related to Materiality Approach

A large archival and experimental literature has examined the extent to which auditors' materiality judgments appear to reflect consideration of various income statement and balance sheet numbers (for reviews, see Moriarity and Barron 1976; Holstrum and Messier 1982; Morris and Nichols 1988). In general, this literature highlights the importance of misstatement amount relative to net income as a determinant of materiality, with additional evidence that materiality decisions are affected by misstatement amount relative to gross or net assets. These studies do not address the effects of cumulative versus current-period approach on the amount of misstatement that is considered; rather, they examine the effects of various materiality bases against which a given amount of misstatement could be compared.

One way to view materiality approaches is that they are alternative methods for aiding the auditor when making quantitative materiality judgments. Given prior evidence that auditors face information-processing limitations associated with information recall and aggregation (see, e.g., Bonner et al. 1996), auditor judgment might be affected by alternative approaches that differ in the extent to which prior-period information is offset against current-period information. The current-period approach automatically offsets prior-period waived misstatements with current-period misstatements before computing quantitative materiality, potentially making it difficult for auditors to focus on cumulative effects by requiring auditors to back out any offset amounts. The cumulative approach does not automatically offset prior-period and current-period amounts, potentially making it difficult for auditors to focus on offsetting amounts by requiring auditors to recall prior-period waived misstatements and offset them with current-period misstatements.

This decision-aid perspective also highlights that an effect of materiality approach on adjustment decisions is not assured. Numerous studies provide evidence that auditors circumvent various decision aids if they see it as in their best interests to do so (Eining et al. 1997). For example, auditors may “work backward” from some intended conclusion to determine the inputs necessary to justify their preferred conclusion (e.g., Kachelmeier and Messier 1990; Messier et al. 2001), or may shift their judgments away from those recommended by an aid because of a preference for outcomes different from those indicated by the aid (e.g., Ashton 1990; Boatsman et al. 1997). More generally, research suggests that auditors make decisions largely consistent with their incentives when governed by subjective criteria like materiality. (See Nelson [2004] for a review and Libby and Kinney [2000] for recent evidence.)

We test whether current-period and cumulative approaches influence auditors’ decisions about whether to waive adjustment of a detected misstatement. We predict that, holding constant all aspects of prior-period and current-period misstatements, financial statements, company, etc., auditors are more likely to require adjustment under the approach that makes the misstatement appear most material quantitatively. To provide evidence about whether effects of materiality approach are conscious, we ask auditors during debriefing whether they believe materiality approach influences their decisions.

Research Concerning Other Factors Relevant to Materiality Assessments

Examining the effect of materiality approach in multiple circumstances allows us to assess the robustness of its effect, and also allows us to contribute to the literature that examines how various qualitative and quantitative materiality factors affect adjustment decisions. Therefore, we vary misstatement size, subjectivity, income effect, and precision between cases, and also vary between auditors whether auditors are required to document the effect of a misstatement on their client’s quality of earnings.

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**Misstatement Size**

Misstatement size represents a key element of materiality, and research indicates that auditors are more likely to waive smaller adjustments (Braun 2001; Houghton and Fogarty 1991; Icerman and Hillison 1991; Wright and Wright 1997). However, this research was conducted in the 1990s and before, and therefore it reflects adjustment decisions made prior to the arguably more conservative financial-reporting climate that has emerged following recent scandals, regulatory activity, and the demise of Andersen. For example, the SEC’s recently issued SAB No. 99 discourages registrants and auditors from relying on a heuristic such as the “5 percent rule” for determining materiality, and generally encourages auditors to use more stringent quantitative and qualitative materiality guidelines.

It is unclear how misstatement size interacts with materiality approach. Materiality approach may matter more when misstatements are of less than 5 percent materiality, because auditors in the post-Sarbanes-Oxley environment may adjust all misstatements that could be viewed as greater than 5 percent under any approach. Alternatively, materiality approach may matter more if it determines whether a misstatement exceeds the 5 percent threshold, because that threshold continues to be an important determinant in auditors’ adjustment decisions. Therefore, we compare the effect of materiality approach between large and small adjustments.

**Misstatement Subjectivity**

Misstatements can differ in the extent to which they involve judgment. For example, a cutoff error typically is objectively verifiable, whereas a reserve adjustment typically involves subjective assessment. SAB No. 99 includes “whether a misstatement arises from an estimate” among the qualitative materiality dimensions that auditors should consider. Several studies provide evidence that auditors are less likely to require adjustment when amounts are subjective (e.g., Wright and Wright 1997; Braun 2001; Nelson 2003). However, Libby and Kinney (2000) find that auditors are willing to waive adjustment of both objective and subjective amounts when amounts are small quantitatively (but material qualitatively), suggesting that subjectivity, and possibly materiality approach, might matter primarily when misstatements are of larger size. Therefore, we assess the generality of the effects of materiality approach by examining decisions with respect to misstatements that vary in their objectivity (cutoff misstatements versus reserve misstatements) as well as size (small versus large).

**Current-Year Income Effect**

Auditors’ risk of litigation is highest for overstatements of current income and equity (St. Pierre and Anderson 1984; Carcello and Palmrose 1994), and auditing texts encourage auditors to focus on detecting overstatements of current-year net income and equity (e.g., Arens and Loebbecke 1997). Prior studies have demonstrated that auditors tend to propose more income-decreasing adjustments (Kinney and Martin 1994), and are more likely to require that clients book income-decreasing adjustments (Braun 2001; Nelson et al. 2002), particularly when the adjustments are large (Wright and Wright 1997). Given the robustness of these effects, it may be that income-decreasing (income-increasing) adjustments are rarely (typically) waived, such that materiality approach has little effect. Therefore, we compare the effect of materiality approach between income-increasing and income-decreasing adjustments.

**Adjustment Precision**

FASB Interpretation No. 14 provides guidance about SFAS No. 5 implementation, and indicates that, if a range of contingent-liability amounts is equally likely, the low end of
the range should be accrued. Thus, GAAP accrual requirements make no distinction between a point estimate and the low endpoint of a range. Yet, SAB No. 99 includes “the degree of imprecision inherent in an estimate” among the qualitative materiality dimensions that auditors should consider. Consistent with this conjecture, Kennedy et al. (1998) find that various financial statement users respond to range-defined contingencies by projecting a higher expected loss than they do when presented with only the lower bound of the range, and Newton (1977) finds that auditors’ utility curves typically exhibit risk aversion with respect to materiality judgments. However, no research has investigated whether auditors’ adjustment decisions are affected by whether the misstatement is point- versus range-defined.

We believe the existence of a range of higher possible outcomes suggests additional uncertainty about misstatement size that will render auditors less likely to waive an adjustment. In those circumstances, materiality approach may have little effect. Therefore, we compare the effect of materiality approach between point estimates and ranges, holding constant the amount of adjustment proposed.

Quality of Earnings

Libby and Kinney (2000) provide evidence that SAS No. 89’s (AICPA 1999) requirement that auditors report waived adjustments to their clients’ audit committees has no effect on auditors’ adjustment decisions with respect to qualitatively material adjustments. As a result, Libby and Kinney (2000, 385) conclude that “SAS No. 89 is unlikely to eliminate ... opportunistic correction of quantitatively immaterial misstatements to manage earnings to forecasts.”

We provide a somewhat similar test with respect to SAS No. 90 (AICPA 2000a), which requires that auditors report to the audit committee about client’s quality of earnings. One possible outcome of the SAS No. 90 reporting requirement is that auditors consider more carefully the effect of waiving audit adjustments on their client’s current and future quality of earnings. However, this reporting requirement may lack sufficient immediacy to influence auditors’ adjustment decisions. Given that SAS No. 90 has been in effect since 2000, we cannot manipulate its existence as did Libby and Kinney (2000) with respect to SAS No. 89, but we can investigate the effects of a more salient intervention, which prompts auditors to document quality-of-earnings effects prior to making an adjustment decision. To the extent that a quality-of-earnings prompt reduces auditors’ willingness to waive audit adjustments, it should also reduce the effect of audit approach on adjustment decisions. Therefore, we examine whether the effects of audit approach depend on providing auditors with a prompt to document the effects of waiving an adjustment on current and future quality of earnings.

III. METHOD

Overview and Design

In our experiment, auditors from one Big 4 audit firm determine, for eight cases, whether the final outcome with respect to a proposed audit adjustment would be to waive the adjustment or require that it be booked. The experiment requires participants to read background information, complete the eight cases (each of which has them determine disposition of an audit adjustment for the client described in the background information), and complete a short debriefing questionnaire. Most participants completed the experiment in 40 minutes; none exceeded one hour.

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The experiment has a $2 \times 2 \times 8$ mixed design, with materiality approach (current-period versus cumulative) and Q of E (prompted versus not prompted to consider quality-of-earnings implications of the client’s preferred accounting treatment) manipulated between participants, and case (1–8) manipulated within participants.

Participants and Administration

The experiment requires relatively experienced auditors as participants, given that it involves decisions about disposition of audit adjustments. Materials were pilot-tested with four audit managers, and 234 auditors participated in the experiment (57 audit partners with an average of 21 years of experience; 177 audit managers with an average of 8.3 years of experience).

All participants are employed by a single Big 4 firm at which a choice is made upon client acceptance to use either the current-period or cumulative approach. This initial choice determines the format of the scoresheet used in future periods to accumulate proposed audit adjustments; it does not affect the amount of audit adjustments proposed, but does affect the quantitative materiality assessment listed on the scoresheet. Auditors at this firm must obtain permission before waiving adjustment of any misstatements that exceed 5 percent of net income under the chosen approach. However, auditors retain significant latitude with respect to their waive decisions, because (1) they never need permission to require a client to book an adjustment, (2) they never need permission to waive adjustment of misstatements that are less than 5 percent of net income under the chosen materiality approach, and (3) they may be able to get permission to waive adjustments of greater than 5 percent of net income under the chosen materiality approach.

The experiment was administered in six general partner or manager training sessions conducted by the participants’ firm during Autumn 2002. The first training session included only partner participants; subsequent sessions included only manager participants. Any significant effects of session are discussed in the “Results” section.

Cases

The first page of each case described a prior-year waived audit adjustment (or stated that none existed), and required participants to identify the direction and amount of the income-effect of the prior-year adjustment. Thus, regardless of the materiality approach to which they had been assigned, all auditors confirmed their understanding of prior-year waived adjustments before making current-year judgments. The second page of each case was a fold-out spreadsheet that exactly replicated the scoresheet format (either current-period approach or cumulative approach) used by the audit firm to record audit adjustments proposed for the current year.

Dependent Variable

Participants recorded their responses in the lower right-hand portion of the scoresheet. All participants answered two questions. Responses to the first question became our primary dependent variable. The question was: With respect to this specific case, the eventual outcome in the audit would be (circle one answer):

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4 Materials were identical in all sessions, except that after the first session we clarified wording and modified a number in one case to strengthen a manipulation. In Section IV we describe this modification in more detail and consider how it affects our interpretation of results.

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A. No adjustment of the client’s 2002 accounting treatment.
B. Partial adjustment of the client’s 2002 accounting treatment; amount of adjustment = $__________.
C. Total adjustment of the client’s 2002 accounting treatment.

For purposes of our analyses, the B and C responses are collapsed to yield a binary “adjust/don’t adjust” dependent variable.

Consistent with Libby and Kinney (2000), Ng and Tan (2002), Nelson et al. (2002), and Nelson (2003), we elicited judgments about final outcome of the audit. Final outcome is the dependent variable of most practical concern, as it determines any effect on the audited financial statements. Also, while audit managers may not be directly involved in auditor/client negotiations about whether audit adjustments must be booked by their client, they are involved in proposing adjustments as an input to negotiations and in booking those adjustments that are required as an outcome of any auditor/client negotiation, so an outcome-focused dependent variable ensured that both managers and partners could provide useful data.

To clarify the fiscal year being adjusted, participants also answered the following question: Any amount of adjustment I would require would be recorded as a (circle one answer):

A. Adjustment in 2002.

Independent Variables
Materiality Approach

The background information included a description of the materiality approach (current-period or cumulative) to which participants had been assigned. We adapted these descriptions, shown in Figure 1, from the audit manual provided by the participants’ firm, clarifying some wording and ensuring that the descriptions were of approximately the same length.

We manipulated materiality approach by varying whether the scoresheet accompanying each case used the firm’s current-period or cumulative approach. Regardless of approach, the scoresheet always used a single format to identify the proposed audit adjustment (including journal entry and explanation), as well as the before-tax effect of the proposed adjustment on the balance sheet, income statement, comprehensive income, and cash flows. Depending on whether the current-period or cumulative approach was used, the scoresheet either did or did not offset the before-tax income effect of the adjustments with prior year “rolled over” adjustments before listing a final before-tax and after-tax amount of adjustment and comparing the adjustment on a percentage basis to before-tax and after-tax net income.

Quality-of-Earnings Prompt

Participants assigned to the “quality-of-earnings prompt” condition were provided with the following instruction, placed on the scoresheet immediately above the area where participants made their adjustment decisions: “Write one or two short sentences that document your belief about how the client’s original 2002 accounting treatment, if not adjusted, would affect the client’s QUALITY OF EARNINGS in current and future periods.” Participants wrote their responses on blank lines on the scoresheet.

Case Attributes

As shown in Table 1, the eight cases varied in terms of the prior-year waived adjustment and current-year proposed adjustment in order to manipulate (1) the materiality approach
FIGURE 1
Descriptions of Materiality Approach Included in Instructions

Current-Period Approach (Called the “Rollover Method” in Practice)
The rollover method recognizes that unadjusted differences identified in the previous year that were not corrected may reverse in the current period, and that certain other differences have a continuing, but probably offsetting, effect in future periods. Therefore, under the rollover method, the effect of each waived adjustment on the prior year’s (scoresheet) should be evaluated separately to determine if it is appropriate to “roll over” its effect to the current year’s (scoresheet). The impact of “rolled over” adjustments from the prior year’s (scoresheet) is netted against the impact of proposed adjustments on the current year’s (scoresheet) to assess the materiality of current-year unadjusted differences to net income and comprehensive income.

Cumulative Approach ( Called the “Iron-Curtain Method” in Practice)
The iron-curtain method recognizes that current-year proposed adjustments capture the cumulative effect of adjustments waived on the prior year’s (scoresheet) as well as the effect of adjustments arising in the current year. Therefore, under the iron-curtain method, waived adjustments on the prior year’s (scoresheet) are not relevant to considering adjustments proposed on the current year’s (scoresheet). Only the impact of proposed adjustments on the current-year (scoresheet) is considered when determining the materiality of current-year unadjusted differences to net income and comprehensive income.

Participants saw the firm’s actual scoresheet name wherever “(scoresheet)” appears in the figure.

providing the higher quantitative materiality (current-period or cumulative higher), (2) level of adjustment materiality when viewed from the higher materiality approach (hereafter “size” from greater than 5 percent materiality down to 2.35 percent materiality), (3) misstatement subjectivity (objective cutoff errors versus subjective bad-debts reserves), (4) misstatement income effect (income increasing versus income decreasing), and (5) misstatement precision (proposed adjustment based on a point estimate versus the low end of a range of possible values). Because of concerns about time available during the data-collection sessions, we did not fully cross all case dimensions, but rather developed the cases to enable particular comparisons. Specific comparisons and cases are discussed in the “Results” section.

Cases appeared in 15 different orders. Five cases involved a bad debts reserve and three involved a cutoff error. Therefore, to reduce potential confusion of cases and carryover effects, each order of cases began with a bad-debts case, alternated bad-debts and cutoff cases, and ended with two bad-debts cases, with the case providing range information always appearing last to avoid contaminating other cases with range considerations. Subject to those constraints, orders were balanced. Order is not significant when included as a variable in any analysis.

Instructions
Participants were provided a hard copy of all instructions. Participants started the experiment by reading along while a researcher read aloud a letter from a well-known senior partner requesting their participation in the experiment. The letter stated that the firm worked with the researchers to ensure that the cases included all necessary information, that the anonymity of the auditors, the firm, and of all the firm’s audit clients was assured, and concluded with: “Therefore, although I realize that these sorts of judgments are of a sensitive nature, I ask that you act as you would on an actual client engagement when

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<table>
<thead>
<tr>
<th>Case Identification of higher-materiiality approach</th>
<th>Case A: Recurring Cutoff Error</th>
<th>Case B: Recurring Cutoff Error</th>
<th>Case C: Reversing Cutoff Error</th>
<th>Case D: Reduce Reserve</th>
<th>Case E: Overstating Reserve</th>
<th>Case F: Understating Reserve</th>
<th>Case G: Understating Reserve (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior year waived adjustment: Effect on prior pre-tax NI</td>
<td>Late cutoff: $8.9 increase</td>
<td>Late cutoff: $3.5 increase</td>
<td>Early cutoff: $5.45 decrease</td>
<td>Overstated reserve: $9.8 decrease</td>
<td>Overstated reserve: $5.5 decrease</td>
<td>Overstated reserve: $7.0 decrease</td>
<td>Understated reserve: $6.75 increase</td>
</tr>
<tr>
<td>Current year waived adjustment: Effect on current pre-tax NI</td>
<td>Late cutoff: $9.0 increase</td>
<td>Late cutoff: $4.0 increase</td>
<td>Late cutoff: $4.05 increase</td>
<td>Reduced reserve: $9.8 increase</td>
<td>Reduced reserve: $5.5 increase</td>
<td>Reduced reserve: $7.5 decrease</td>
<td>Understated reserve: $7.25 increase</td>
</tr>
<tr>
<td>Materiality under current-period approach (% of pre-tax NI)</td>
<td>$0.1 increase (0.06%)</td>
<td>$0.5 increase (0.29%)</td>
<td>$9.5 increase (5.59%)</td>
<td>$9.8 increase (5.76%)</td>
<td>$5.5 increase (3.24%)</td>
<td>$0.5 increase (0.29%)</td>
<td>$0.5 increase (0.29%)</td>
</tr>
<tr>
<td>Materiality under cumulative approach (% of pre-tax NI)</td>
<td>$9.0 increase (5.29%)</td>
<td>$4.0 increase (2.35%)</td>
<td>$4.05 increase (2.38%)</td>
<td>$0.0 increase (0%)</td>
<td>$0.0 increase (0%)</td>
<td>$7.5 decrease (4.41%)</td>
<td>$7.25 increase (4.26%)</td>
</tr>
<tr>
<td>Higher-materiality approach*</td>
<td>Cumulative</td>
<td>Cumulative</td>
<td>Current-period</td>
<td>Current-period</td>
<td>Current-period</td>
<td>Cumulative</td>
<td>Cumulative</td>
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<tr>
<th>Misstatement characteristics manipulated between cases</th>
<th>Objective</th>
<th>Objective</th>
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<th>Subjective</th>
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<tbody>
<tr>
<td>Subjectivityb</td>
<td>High (5.29%)</td>
<td>Low (2.35%)</td>
<td>High (5.59%)</td>
<td>Low (3.24%)</td>
<td>Medium (4.41%)</td>
<td>Medium (4.26%)</td>
<td>Medium (4.18%)</td>
<td></td>
</tr>
<tr>
<td>Highest quantitative materiality under either approach* (% of pre-tax NI)</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Income effectc</td>
<td>Point</td>
<td>Point</td>
<td>Point</td>
<td>Point</td>
<td>Point</td>
<td>Point</td>
<td>Point</td>
<td>Range</td>
</tr>
<tr>
<td>Precision of estimated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See Table 2 for analyses of the effect of materiality approach on auditors' adjustment decisions.

b See Table 3 for analyses of the effect of materiality approach, misstatement subjectivity, and misstatement size on auditors' adjustment decisions.

c See Table 4 for analyses of the effect of materiality approach and current-period income direction on auditors' adjustment decisions.

d See Table 5 for analyses of the effect of materiality approach and misstatement precision on auditors' adjustment decisions.
completing the case studies. The value of this research to the Firm depends on your providing responses that are as realistic as possible.”

Participants next read instructions emphasizing that they would be provided with background information about a client and then be presented with eight independent case scenarios about the client. They were again told to put themselves in the position of an auditor who has to make this particular decision, as if their typical SEC client was facing this set of circumstances.

**Background Information**

We adapted background information from materials developed by Braun (2001) and Libby and Kinney (2000). Participants were provided with current year pre-audit balances of key income-statement and balance sheet accounts, adapted from Braun (2001) and based on medians for SIC code 75, “Auto Repair, Services, and Parking.”

To portray a client of moderate risk that was near enough to important thresholds for audit adjustments to be of concern, the client, Capital Auto Parts, Inc. (hereafter CAP), was described as a medium-sized, SEC-listed client that has been profitable and growing for the prior five years, but with current year performance lagging prior-year performance. Participants were told that management and analysts foresee continued growth, but management remains very concerned about CAP’s ability to generate performance that consistently meets analyst forecasts. SAB No. 99 explicitly lists changes in trends and meeting analyst forecasts as qualitative materiality dimensions, so this aspect of the background also ensures that all cases contain qualitative as well as quantitative materiality considerations.

To portray a client of at least moderate importance to the auditor, CAP was described as providing a large share of the audit office’s work and fees, and as helping to maintain the office’s profile and status among competing auditing firms.

To alleviate any concerns about the audit other than those identified in the materials, CAP’s controls were described as adequate, and auditors were informed that all standard audit tests had been completed by competent staff and reviewed to the participant’s satisfaction, resulting in the adjustments proposed.

To ensure that auditors perceived a need to consider waiving proposed adjustments, they were told: “The client is strongly pressuring you to waive the proposed adjustments. They feel that the financial statements are fairly presented as is and therefore are eager to release the unadjusted figures to the financial press as soon as possible. The client expressed this opinion so strongly that you believe there is a risk of losing the client if you insist that the financial statements be adjusted. At the same time, the client insists on receiving an unqualified opinion on the financial statements.”

**IV. RESULTS**

**Comprehension Checks**

Analyses of debriefing questions indicate that participants understood the case materials. Participants correctly indicated that the client opposed the proposed audit adjustments (mean rating of 9.0 on a scale of 1 [slightly opposed] to 11 [extremely opposed]). Participants correctly indicated that the client was an important audit client (mean rating of 8.0 on a scale of 1 [not important] to 11 [extremely important]). Consistent with the manipulation of adjustment subjectivity via cases based on cutoff errors versus bad debts reserves, participants rated the subjectivity of cutoff errors at 2.3 and the subjectivity of bad debts reserves as 7.8 (on a scale of 1 [not subjective] to 11 [extremely subjective]). Consistent
with the quality-of-earnings prompt encouraging participants to consider these issues, participants generally wrote clear and reasonable explanations of current and future effects of the misstatement on quality of earnings. Participants processed information about prior-year waived adjustments, with 98.0 percent answering comprehension checks correctly, and no difference in the percentage of correct answers between materiality approaches (t = .12, p = 0.90) or between cases. Only four participants answered more than two comprehension checks incorrectly. Results do not change with these participants omitted from analyses.

**Overall Effect of Materiality Approach**

To test for an overall effect of materiality approach, we identify for each case the approach that provides the higher assessment of the adjustment’s quantitative materiality. Because each participant was assigned to either the current-period or cumulative treatment, a participant was in the treatment that showed higher quantitative materiality for some cases and lower quantitative materiality for other cases. For each subject and each case, we coded a variable, “perspective,” with a 1 (0) if the subject was in the treatment that yielded the higher (lower) quantitative materiality for that particular case.

Table 2 shows for each case the difference in proportion of adjustments waived between the lower and higher quantitative materiality perspectives. For all eight cases, a higher proportion of adjustments were waived under the perspective that indicated lower quantitative materiality, and for seven of eight cases that difference is at least marginally significant.\(^5\) To analyze all cases simultaneously, we performed a repeated-measures logistic regression with a dependent variable of adjust (coded as 1 if auditor adjusts and 0 if auditor does not adjust) and independent variables of perspective (higher or lower quantitative materiality) and session (session 1, containing only partners, versus sessions 2–6). Results indicate no significant interactions and a significant main effect of perspective (p = 0.0025), indicating that participants were more likely to require adjustments under the approach that yielded the higher quantitative materiality.\(^6\)

Results also indicate a significant main effect for session (p = 0.0078). However, this appears to be driven by the one case (Case C) for which we increased misstatement size between the first session and subsequent sessions.\(^7\) When this case is omitted from this analysis, session becomes insignificant, suggesting that the session effect is driven primarily by auditors’ unwillingness to waive adjustment of larger misstatements, rather than suggesting that results differ systematically between partners and managers.\(^8\) Regardless, the

---

\(^5\) We believe that one-sided tests are appropriate because these comparisons hold constant all aspects other than approach, and approach only varies the quantitative materiality associated with a misstatement. While we think it is possible for materiality approach to have no effect on adjustment decisions, we do not believe it reasonable to expect that auditors would be less likely to adjust misstatements that are larger quantitatively, holding constant all other aspects of the client, audit firm, and misstatement.

\(^6\) Results are based on score statistics for Type 3 GEE Analysis using Proc GENMOD in SAS, version 8. P-values are computed based on the Chi-square distribution. In all analyses, case (or variables based on case, like size, subjectivity, income effect, and precision) is treated as a repeated measure to ensure test statistics are computed appropriately.

\(^7\) Participants also identified whether any adjustments would be included in current-period earnings or shown as a prior period adjustment. For most cases, adjustments were all reflected in current-period earnings, with only between 5 percent and 11 percent of adjustments identified as prior-period adjustments. However, prior-period adjustments were required more frequently for cases involving reductions of “cookie-jar” reserves (56 percent of adjustments for “large reserve” Case D; 37 percent of adjustments for “small reserve” Case E).

\(^8\) Based on informal feedback received after the first session, we increased the prior-year error size of Case C from $3.45 million to $5.45 million, which has the effect of increasing the materiality of the error when evaluated using a rollover approach. Thus, for this case “session” captures the joint effect of experience differences and the modification of error size.

\(^9\) Case C is the only case whose omission renders the session main effect insignificant.
### TABLE 2
Effect of Materiality Approach, by Case, on Percent Waived

**Panel A: Difference in Proportion Waived between High-Materiality and Low-Materiality Approaches, By Case**

<table>
<thead>
<tr>
<th>Approach yielding highest materiality</th>
<th>Case A: Recurring Cutoff Error</th>
<th>Case B: Recurring Cutoff Error</th>
<th>Case C: Reversing Cutoff Error</th>
<th>Case D: Reduce Reserve</th>
<th>Case E: Reduce Reserve</th>
<th>Case F: Overstating Reserve</th>
<th>Case G: Understating Reserve</th>
<th>Case H: Understating Reserve (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of adjustments waived</td>
<td>Cumulative</td>
<td>Cumulative</td>
<td>Current-period</td>
<td>Current-period</td>
<td>Cumulative</td>
<td>Cumulative</td>
<td>Cumulative</td>
<td>Cumulative</td>
</tr>
<tr>
<td>Current-period approach (n)</td>
<td>70% (n = 118)</td>
<td>75% (n = 118)</td>
<td>17% (n = 116)</td>
<td>48% (n = 118)</td>
<td>74% (n = 117)</td>
<td>59% (n = 116)</td>
<td>48% (n = 116)</td>
<td>34% (n = 117)</td>
</tr>
<tr>
<td>Cumulative approach (n)</td>
<td>23% (n = 114)</td>
<td>67% (n = 114)</td>
<td>35% (n = 113)</td>
<td>58% (n = 112)</td>
<td>82% (n = 111)</td>
<td>47% (n = 114)</td>
<td>39% (n = 113)</td>
<td>33% (n = 113)</td>
</tr>
<tr>
<td>%waived, low materiality approach</td>
<td>47% (p &lt; 0.0001)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>8% (p &lt; 0.07)</td>
<td>18% (p &lt; 0.0009)</td>
<td>10% (p &lt; 0.07)</td>
<td>8% (p &lt; 0.08)</td>
<td>12% (p = 0.04)</td>
<td>9% (p = 0.08)</td>
<td>1% (NS)</td>
</tr>
<tr>
<td>%waived, high materiality approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Panel B: Auditor Adjustment Decisions: Logit of High versus Low Materiality Perspective and Session (1 versus 2–6)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perspective</td>
<td>9.15</td>
<td>0.0025</td>
</tr>
<tr>
<td>Session</td>
<td>7.08</td>
<td>0.0078</td>
</tr>
<tr>
<td>Perspective*Session</td>
<td>0.02</td>
<td>0.8796</td>
</tr>
</tbody>
</table>

---

<sup>a</sup> p-values are from one-sided tests of differences between the proportion waived under the approach that makes the misstatement appear less material and the proportion waived under the approach that makes the misstatement appear more material.
effect of materiality perspective does not interact with session, indicating that materiality approach affects partners and managers to the same extent.

Examining individual cases in Table 2 indicates that by far the largest effect of perspective is observed for Case A. This case involves an objective, income-increasing cutoff error that is greater than 5 percent of net income from a cumulative approach (as ending net assets and equity are misstated by that amount), but almost 0 percent of net income from a current-period approach (because adjustment of a similar-sized error was waived in the prior year, and reversal of the prior-year error in the current period offsets the current-year error). Auditors under a cumulative approach waived this error only 23 percent of the time, while auditors under a current-period approach waived this error 70 percent of the time. However, if Case A is dropped from the overall analysis, perspective is still significant (p = .003), indicating that the general effect of perspective is not driven by one case.

Previously we noted that the Panel on Audit Effectiveness (2000) suggested that standard setters mandate the use of one materiality approach. Our results demonstrate that it is unclear which approach standard setters should mandate, given that there are some contexts where the current-period approach provides a higher assessment of quantitative materiality, and others where it provides a lower assessment of quantitative materiality, depending on the relation between prior-period and current-period misstatements. Comparing Cases B and C illustrates this context-dependence, holding constant the current-year misstatement (except for a very small difference in amount to prevent participants from thinking they are seeing the same case again), and varying only the prior-year waived adjustment. Results of a repeated-measures logistic regression with approach (current-period versus cumulative) and case (B versus C) as independent variables reveal a significant interaction between approach and case (p < 0.0001). Simple effects tests indicate that waiving the adjustment is significantly more likely under the current-period approach for Case B (p < 0.07) and significantly less likely under the current-period approach for Case C (p < 0.0009).

Quality-of-Earnings Prompt

Although responses indicate that participants did document quality-of-earnings considerations when prompted to do so, “Q of E prompt” was never significant in any analysis. We view this negative result as indicating that unprompted auditors spontaneously consider quality of earnings issues sufficiently to negate any effect of prompt.

Tests of Case Attributes

Adjustment Size and Subjectivity

The cases used to assess robustness of the effects of materiality approach to adjustment size and subjectivity are shown in Table 3. We analyzed the $2 \times 2 \times 2$ contingency table formed by materiality approach (current-period versus cumulative), size of highest quantitative materiality (greater or less than 5 percent), and subjectivity (cutoff error versus reduction of cookie-jar reserve). Logistic regression results reveal a three-way interaction (p < 0.0007), indicating that the relation between materiality approach and size differs depending on subjectivity. We break the three-way interaction into two two-way interactions according to subjectivity. Focusing on only recurring cutoff errors (Cases A and B), there is a significant interaction between approach and case (p < 0.0001), and simple effects indicate that auditors are more likely to require adjustment under the cumulative approach when the misstatement is large than they are under the current-period approach and/or
TABLE 3
Effects of Approach, Subjectivity, and Size on Percent Waived

Panel A: Descriptive Data

<table>
<thead>
<tr>
<th></th>
<th>Case A: Recurring Cutoff Error</th>
<th>Case B: Recurring Cutoff Error</th>
<th>Case D: Reduce Reserve</th>
<th>Case E: Reduce Reserve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misstatement characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjectivity</td>
<td>Objective</td>
<td>Objective</td>
<td>Subjective</td>
<td>Subjective</td>
</tr>
<tr>
<td>Misstatement materiality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materiality under current-period</td>
<td>0.06% of NI</td>
<td>0.29% of NI</td>
<td>5.76% of NI</td>
<td>3.24% of NI</td>
</tr>
<tr>
<td>approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materiality under cumulative</td>
<td>5.29% of NI</td>
<td>2.35% of NI</td>
<td>0% of NI</td>
<td>0% of NI</td>
</tr>
<tr>
<td>approach</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Highest quantitative materiality</td>
<td>(5.29%)</td>
<td>(2.35%)</td>
<td>(5.76%)</td>
<td>(3.24%)</td>
</tr>
<tr>
<td>(&quot;size&quot;) under either approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent of adjustments waived</td>
<td>70%</td>
<td>75%</td>
<td>48%</td>
<td>74%</td>
</tr>
<tr>
<td>Current-period approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative approach</td>
<td>23%</td>
<td>67%</td>
<td>58%</td>
<td>82%</td>
</tr>
<tr>
<td>% waived, low materiality approach</td>
<td>47%</td>
<td>8%</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>(p &lt; 0.0001)</td>
<td>(p &lt; 0.07)</td>
<td>(p &lt; 0.07)</td>
<td>(p &lt; 0.08)</td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Logit of Materiality Approach, Subjectivity, and Size

3-Way Analysis: Approach by Subjectivity by Size

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>5.15</td>
<td>0.0233</td>
</tr>
<tr>
<td>Subjectivity</td>
<td>4.00</td>
<td>0.0454</td>
</tr>
<tr>
<td>Approach*Subjectivity</td>
<td>22.48</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Size</td>
<td>79.00</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Approach*Size</td>
<td>15.33</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Subjectivity*Size</td>
<td>0.13</td>
<td>0.7183</td>
</tr>
<tr>
<td>Approach<em>Subjectivity</em>Size</td>
<td>11.43</td>
<td>0.0007</td>
</tr>
</tbody>
</table>

2-Way Analysis: Effects of Approach and Level for Objective Misstatements

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>23.26</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Size (A versus B)</td>
<td>46.08</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Approach*Size</td>
<td>28.94</td>
<td>&lt; .0001</td>
</tr>
</tbody>
</table>

2-Way Analysis: Effects of Approach and Level for Subjective Misstatements

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>2.88</td>
<td>0.0894</td>
</tr>
<tr>
<td>Size (D versus E)</td>
<td>42.67</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Approach*Size</td>
<td>0.02</td>
<td>0.8789</td>
</tr>
</tbody>
</table>

*p-values are from one-sided tests of differences between the proportion waived under the approach that makes the misstatement appear less material and the approach that makes the misstatement appear more material.

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when the misstatement is small. The Effect of Quantitative Materiality Approach

10 Focusing on only reductions of reserves (Cases D and E), there is no interaction between approach and case (p = 0.8789), and main effects indicate that auditors are more likely to require adjustment under the current-period approach (which makes materiality appear higher, p < 0.05) and when the misstatement is large (p < 0.0001).

This analysis leads to a few conclusions. First, materiality approach has some effect in all cells, indicating that its effect is robust. Second, with large misstatements, approach matters more in the objective cutoff setting (Case A) than in the subjective reserve-reduction setting (Case D).

**Current-Period Income Effect**

Table 4 shows the cases used to assess robustness of the effects of materiality approach to directional income effect of the adjustment. For both cases, we held constant the amount of misstatement, and vary whether the misstatement decreases (Case F) or increases (Case G).

| TABLE 4 |
| Effects of Approach and Income Effect on Percent Waived |
| **Panel A: Descriptive Data** |
| Misstatement characteristic | Case F: Overstating Reserve | Case G: Understating Reserve |
| Effect of misstatement on current net income | Decrease | Increase |
| Percent of adjustments waived | | |
| Current-period approach | 59% | 48% |
| Cumulative approach | 47% | 39% |
| % waived, low materiality approach – % waived, high materiality approach | 12% | 9% |
| (p = 0.04)* | (p = 0.08) |

**Panel B: Logit of Materiality Approach and Current Income Effect of Misstatement**

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>3.21</td>
<td>0.0733</td>
</tr>
<tr>
<td>Income effect (F versus G)</td>
<td>8.85</td>
<td>0.0029</td>
</tr>
<tr>
<td>Approach*Income effect</td>
<td>0.03</td>
<td>0.8569</td>
</tr>
</tbody>
</table>

* p-values are from one-sided tests of differences between the proportion waived under the approach that makes the misstatement appear less material and the proportion waived under the approach that makes the misstatement appear more material.

10 In addition to showing that materiality approach is particularly important for the large, objective, income-increasing cutoff error Case A, this significant interaction also highlights that error size has a large effect on judgments under the cumulative approach, with the proportion of waived adjustments in the large error Case A (23 percent) significantly lower than the proportion in the small error Case B (67 percent, p < 0.0001).

11 In this 2 × 2 analysis, approach covaries with subjectivity, with the cumulative approach always indicating higher materiality for the objective cases and the current-period approach always indicating higher materiality for the subjective cases. This design choice enables cases to reflect common practice settings, but it allows an alternative interpretation of the interaction: rather than indicating auditors are more sensitive to approach when misstatements are large and objective, the interaction could be interpreted as indicating auditors are more sensitive to approach when misstatements appear larger under the cumulative approach. We are not aware of any theory or intuition that is consistent with this interpretation, but we cannot rule it out with our data.

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G) current-period net income. We analyzed the $2 \times 2$ contingency table formed by materiality approach (current-period versus cumulative) and income effect (increase versus decrease). Consistent with prior research, income effect is significant, indicating that auditors are less likely to waive adjustments of income-increasing misstatements than they are adjustments of income-decreasing misstatements ($p = 0.003$). Materiality approach is marginally significant ($p = 0.0733$). There is no interaction between approach and income effect, indicating that the effects of approach are robust to differences in directional income effect.

**Misstatement Precision**

Table 5 shows the cases used to assess robustness of the effects of materiality approach to misstatement precision. For both cases, we held constant the amount of misstatement, but varied misstatement precision by defining the misstatement as either a point estimate (Case G) or the low end of a range (Case H).\textsuperscript{12} We analyzed the $2 \times 2$ contingency table formed by materiality approach (current-period versus cumulative) and precision (point estimate versus end point of range). Results indicate a significant main effect of precision ($p = 0.0012$), but no significant interaction with or main effect of approach, although simple effects tests suggest that approach influences adjustment decisions when adjustments are defined by point estimates ($p = 0.07$), but not otherwise. These results are consistent with auditors being less likely to waive adjustment in the range setting, regardless of materiality

---

**TABLE 5**

**Effects of Approach and Precision on Percent Waived**

**Panel A: Descriptive Data**

<table>
<thead>
<tr>
<th>Misstatement characteristic</th>
<th>Case G: Understating Reserve (Point)</th>
<th>Case H: Understating Reserve (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precision of estimate</td>
<td>Point prediction</td>
<td>Lower end of range</td>
</tr>
<tr>
<td>Percent of adjustments waived</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current-period approach</td>
<td>48%</td>
<td>34%</td>
</tr>
<tr>
<td>Cumulative approach</td>
<td>39%</td>
<td>33%</td>
</tr>
<tr>
<td>% waived, low materiality approach – % waived, high materiality approach</td>
<td>(p = 0.08)\textsuperscript{a}</td>
<td>(NS)</td>
</tr>
</tbody>
</table>

**Panel B: Logit of Materiality Approach and Precision of Misstatement**

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>0.83</td>
<td>0.3615</td>
</tr>
<tr>
<td>Precision (G versus H)</td>
<td>10.48</td>
<td>0.0012</td>
</tr>
<tr>
<td>Approach*Precision</td>
<td>1.32</td>
<td>0.2510</td>
</tr>
</tbody>
</table>

\textsuperscript{a} p-values are from one-sided tests of differences between the proportion waived under the approach that makes the misstatement appear less material and the proportion waived under the approach that makes the misstatement appear more material.

\textsuperscript{12} The slight difference in misstatement of $7.25$ for the point estimate and $7.1$ for the range's lower bound is designed to bias against finding that auditors are more likely to require adjustment of a misstatement that was the low end of a range. The range's upper bound was $15.1$.

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approach, perhaps because of a concern that actual misstatements might exceed the lower-bound adjustment required by GAAP. Regarding effects of materiality approach, perhaps the only conclusion possible from this analysis is that approach has little effect when adjustments are defined as the endpoint of a range.

When session is added to this analysis, we find that it has a significant main effect (p = 0.0307) and interaction with precision (p = 0.0574). Simple effects tests reveal that managers rather than partners drive the main effect of precision in the preceding analysis. Specifically, when a misstatement is the lower end of a range, managers are significantly less likely to waive adjustment than are partners (29 percent waived by managers versus 49 percent waived by partners; p = 0.0057). When a misstatement is specified by a point estimate, managers are insignificantly less likely to waive adjustment than are partners (42 percent waived by managers versus 51 percent waived by partners; p = 0.2155). Thus, in general managers appear less likely to waive adjustment of these cases than partners, particularly when there is uncertainty about misstatement size.

Additional Analyses

Self-Insight

Responses to debriefing questions indicate 69 percent (31 percent) of participants believe their adjustment decisions are (are not) influenced by whether the current-period or cumulative approaches are used for a client. However, when added to the overall analysis, “belief” does not interact significantly with materiality perspective (p = 0.5654), indicating that the effect of materiality perspective does not depend on whether auditors think it has an effect. Also, when separate analyses are run for each level of belief, materiality perspective is significant for both the “believe it influences judgments” group (p = 0.0001) and the “believe it does not influence judgments” group (p = 0.0086), suggesting that many auditors lack self-insight concerning the effect of materiality approach on their adjustment decisions.

Experience with Materiality Approach

Responses to debriefing questions indicate 8 percent (35 percent) of auditors assigned to the cumulative (current-period) treatments lacked prior experience with that treatment. When added to the overall analysis, “prior experience with assigned method” does not interact significantly with materiality perspective (p = 0.3881), indicating that the effect of materiality perspective does not depend on whether auditors have experience with the method they were assigned.

Judged Appropriateness of Materiality Approach

Responses to debriefing questions indicate 60 percent (40 percent) of participants believe the cumulative (current-period) approach is more appropriate in general. When added to the overall analysis, “method appropriateness” does not interact significantly with materiality perspective (p = 0.5024), indicating that the effect of materiality perspective does not depend on judged method appropriateness.

Judged Appropriateness of Rollover of Specific Misstatements

Responses to debriefing questions indicate a lack of consensus among auditors concerning whether particular misstatements are appropriate for “rollover” (i.e., offset) between periods when the current-period approach is used. Seventy-seven percent indicated that rollover of cutoff errors was appropriate, and 52 percent indicated that rollover of bad
debts reserves was appropriate. In general, auditors who consider the current-period method to be more appropriate were more likely to indicate that rollover of particular misstatements was appropriate ($p = 0.0001$). Also, analyses of individual cases often reveal a significant effect of appropriateness judgment, indicating that auditors considered whether rollover of a particular misstatement was appropriate when making adjustment decisions. However, appropriateness never interacted with materiality approach or perspective in any analysis of auditors’ adjustment decisions, indicating that the effects of materiality approach do not depend on judged appropriateness of rollover.

V. DISCUSSION

The results of our experiment indicate a robust effect of materiality approach on auditors’ adjustment decisions. Holding constant all information relevant to the company, prior waived adjustments and current proposed adjustments, auditors were more likely to require adjustment under the materiality approach that made the misstatement appear more material quantitatively. This result held regardless of misstatement size, subjectivity, income effect, auditors' belief about whether approach influenced their judgments, or the presence of a prompt to consider the effect of the client's preferred accounting treatment on current and future quality of earnings.

The largest effect of materiality approach was observed for a case in which a large, repeating cutoff error increased current income. When evaluated under the cumulative approach, this case indicated an objective, income-increasing effect of greater than 5 percent of net income, and only 23 percent of auditors waived adjustment; when evaluated under the current-period approach, the effect of the error was close to zero, and 70 percent of auditors waived adjustment. This case highlights that differences in materiality approach can produce large differences between audit treatments of amounts that all auditors would agree are large and misstated.

These results cannot be attributed to auditors comparing quantitative materiality to a “bright-line threshold.” Although the firm providing participants requires auditors to get additional approval before waiving misstatements that exceed 5 percent of net income, approach is significant for four of the five cases in which quantitative materiality never exceeds 5 percent. Even when approach varies whether a misstatement exceeds 5 percent, the effect of approach interacts with misstatement subjectivity, indicating a more complex decision process than would be indicated by the 5 percent threshold.

The three-way interaction between subjectivity, size, and approach suggests that subjectivity offsets some of the effect of approach. In the objective setting, the cumulative approach highlights a clear balance sheet distortion and encourages auditors to require adjustment, and the current-period approach highlights a clearly negligible income effect, which encourages auditors to waive adjustment. In the subjective setting, the cumulative approach highlights a balance sheet correction that may be opportunistic, while the current-period approach highlights an income increase that could be the result of an honest revision of estimate, so auditors may be able to rationalize making both adjustment decisions. Thus, subjectivity appears to reduce the extremity of adjustment probabilities, and although misstatement subjectivity is listed explicitly in SAB No. 99 as a qualitative characteristic that increases materiality and thus presumably increases the likelihood that an auditor will require adjustment, our results indicate that auditors respond to subjectivity by being less likely to adjust large misstatements.

The only case producing an insignificant effect of materiality approach involved a reserve misstatement that was defined (as required by FIN No. 14) as the low point of a range of possible values. Regardless of materiality approach, auditors were more likely to
require adjustment of such “range-defined” misstatements compared to misstatements that were defined by a point estimate, consistent with SAB No. 99 and suggesting awareness that the actual amount of a “range-defined” misstatement might exceed the adjustment proposed. This case was also the only one for which we observed differences between partners and managers, with partners more likely to waive adjustment than managers. This result suggests that audit partners may counteract the conservatism that managers attempt to introduce with respect to imprecisely defined misstatements.

Our experiment is subject to the limitations common to experimental research. We believe the most important limitation is that, because cases necessarily abstract from actual audit practice, it is not possible to generalize to audit practice the levels of waived adjustments observed in the experimental setting. For example, it is possible that auditors would have required adjustment more often if our case had included more of the qualitative materiality dimensions mentioned in SAB No. 99. However, it is possible to infer that auditors are willing to waive at least some adjustments, and to generalize the directional effects that we identify to directional effects that would occur in practice. Similarly, we cannot prove economic significance of the results that we identify. However, we note that a single waived audit adjustment can be economically significant, should an audit be viewed as having failed as a result, so factors that reliably affect auditors’ propensity to waive adjustments are likely to be important.

One response to these results could be for standard setters to consider mandating either the cumulative or current-period approach, or at least for them to require that materiality approach be disclosed clearly among the accounting policies described in financial statements. However, as demonstrated in this study, the effects of approach are bi-directional, with the cumulative approach producing higher quantitative materiality in some settings and the current-period approach producing higher quantitative materiality in other settings. Thus, it is unclear which approach standard setters should mandate, or how financial statement users would interpret a simple disclosure of approach. We believe a better alternative would be to require adjustment of amounts that are material under either approach. Future research could address this issue by examining auditors’ adjustment decisions and varying whether auditors are provided with one or both materiality approaches.

Another interesting avenue for future research is to examine auditors’ decisions about which approach to adopt for a new client. It is possible that various factors that we hold constant in our experiment (e.g., client industry, client financial condition) influence approach adoption. Our study examines auditors’ adjustment decisions with respect to an ongoing client, and so could not examine the factors that auditors might consider when making their initial choice of materiality approach.

APPENDIX

Example of the Current-Period and Cumulative Materiality Approaches

“Cookie Jar” Reserves

Whether the current-period or cumulative approach yields a higher quantitative materiality depends on the specific context in which the approach is applied. For example, consider the case of “cookie jar” reserves, whereby firms overstate expenses to build an excess reserve that can be adjusted downward in a future period to increase income (Levitt 1998). Assume a company increases a bad-debts reserve by recognizing excess expense of $10 million in three consecutive periods, with the intention of reducing the reserve (and increasing income) by $30 million in the fourth period. The cumulative approach focuses on the amount of misstatement in the end-of-period reserve balance, so calculates quantitative materiality based on a misstatement of ($10) in period 1, ($20) in period 2, ($30) in

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period 3, and $0 in period 4 (since reduction of the reserve by $30 during period 4 eliminates any overstatement in the period 4 reserve balance). The current-period approach focuses on the new misstatement added in the current period, so calculates quantitative materiality based on a misstatement of ($10) in periods 1–3 and $30 in period 4 (since reduction of the reserve increases period 4 income by $30). For this example the cumulative approach provides higher quantitative materiality during the reserve build up, and so may reduce the likelihood that an auditor allows a large reserve to accumulate. The current-period approach assesses higher quantitative materiality during the period in which the reserve is reduced, and so may better highlight the need for a prior-period adjustment in that period.

Cutoff Errors

Materiality differences between current-period and cumulative approaches are not confined to reserves. Rather, holding constant a current-year misstatement, the current-period and cumulative approaches can yield different quantitative materiality whenever prior-year audit adjustments have been waived. As another example, assume a firm has a recurring “late cutoff” error, such that prior-year sales included $10 million of current-year sales, and current-year sales include $12 million of next-year sales. The cumulative approach focuses on the end-of-period error in accounts receivable and equity, and quantifies the misstatement as a $12 million overstatement. The current-period approach offsets the $10 million understatement or current-year sales that resulted from the prior-year late cutoff with the $12 million overstatement that resulted from the current-year late cutoff, and quantifies the misstatement as a net $2 million overstatement. Thus, the cumulative approach yields a higher quantitative materiality.

Now modify the cutoff example by instead assuming an early cutoff in the prior year, such that $10 million of prior-year sales are included in current-year sales, as well as retaining the assumption of a late cutoff in the current year, such that $12 million of next-year sales are included in the current year. In this case, the cumulative approach provides the same $12-million-based materiality as it did in the other example. However, the current-period approach views the prior-year and current-year misstatements as having compounding effects on current-year net income of $10 + $12 = $22 million, thus yielding a higher quantitative materiality. This example illustrates how differences between approaches are driven by prior-period waived misstatements, and that the relation between the prior-period and current-period misstatement determines which approach yields the higher materiality.

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