An Empirical Study of Auditor Judgment and Bias in Fair Value Accounting Assessments

Vera Douglas, Anderson Perry, Piper Graham

1 Introduction

The increasing prevalence of fair value accounting in financial reporting has elevated the importance of auditor judgment in valuation assessments, particularly for complex financial instruments and intangible assets. While extensive research has examined various aspects of audit judgment, the cognitive processes underlying fair value assessments remain inadequately understood. This study addresses this gap by investigating the manifestation and mitigation of cognitive biases in auditor fair value judgments through an innovative multi-method approach that integrates physiological, behavioral, and computational analysis techniques.

Fair value measurements, especially for Level 3 assets where inputs are unobservable, require significant auditor judgment and create substantial opportunities for cognitive biases to influence assessment outcomes. Previous research has primarily relied on self-reported data or outcome analyses, which provide limited insight into the real-time cognitive processes that generate biased judgments. Our research introduces a novel methodological framework that captures both conscious and unconscious aspects of auditor decision-making during fair value assessments.

The primary research questions guiding this investigation are: How do confirmation bias and anchoring effects manifest differently across various levels of fair value measurement

complexity? What physiological and behavioral markers reliably indicate the presence of specific cognitive biases during auditor judgment processes? To what extent can machine learning techniques identify auditor cognitive styles that predict susceptibility to particular bias patterns? How effective are existing debiasing interventions when applied to the unique context of fair value accounting assessments?

This research makes several original contributions to the auditing literature. First, we develop and validate a comprehensive framework for measuring cognitive biases in real-time during complex accounting judgments. Second, we identify previously undocumented interactions between asset complexity, time pressure, and cognitive bias manifestation. Third, we demonstrate the utility of machine learning in classifying auditor cognitive styles and predicting bias susceptibility. Finally, we provide evidence-based recommendations for developing targeted debiasing interventions specific to fair value assessment contexts.

2 Methodology

2.1 Research Design and Participant Selection

We employed a mixed-methods experimental design that combined quantitative measures of judgment outcomes with qualitative analysis of cognitive processes. The study involved 148 practicing auditors recruited from Big Four accounting firms (68 participants) and mid-tier firms (80 participants). Participants had an average of 7.3 years of auditing experience and specialized in financial instrument valuation. The sample included equal representation across partner, manager, and senior auditor levels to examine potential experience effects on bias susceptibility.

The experimental protocol consisted of eight simulated fair value assessment scenarios representing a balanced mix of Level 2 and Level 3 assets. Scenarios were developed in consultation with valuation experts and reflected realistic auditing contexts including business combinations, impairment testing, and financial instrument valuation. Each scenario

contained embedded bias triggers designed to elicit confirmation bias and anchoring effects through selective information presentation and reference point manipulation.

2.2 Data Collection Instruments and Procedures

We implemented a multi-modal data collection approach that integrated three complementary measurement techniques. Eye-tracking technology captured visual attention patterns and information search strategies during the assessment process. Galvanic skin response sensors monitored physiological arousal as an indicator of cognitive conflict or uncertainty. Concurrent think-aloud protocols provided verbalized reasoning processes that were subsequently analyzed using natural language processing techniques.

Participants completed the experimental tasks in controlled laboratory settings with standardized instructions and practice scenarios to ensure familiarity with the think-aloud procedure. Each session lasted approximately three hours, including breaks to mitigate fatigue effects. The experimental design incorporated counterbalancing of scenario presentation order and systematic variation of time pressure conditions to examine their moderating effects on bias manifestation.

2.3 Analytical Framework

Our analytical approach employed both traditional statistical methods and innovative machine learning techniques. We used multivariate regression analysis to examine relationships between experimental conditions, auditor characteristics, and judgment outcomes. Process tracing analysis of eye-tracking data identified patterns of information search and selective attention that indicate confirmation bias. Natural language processing of verbal protocols quantified linguistic markers associated with anchoring and adjustment heuristics.

The machine learning component utilized ensemble methods including random forests and gradient boosting to classify auditor cognitive styles based on the integrated physiological, behavioral, and verbal data. Feature importance analysis identified the most predictive vari-

ables for bias susceptibility across different fair value assessment contexts. Cross-validation procedures ensured the robustness of the classification models and mitigated overfitting concerns.

3 Results

3.1 Manifestation of Cognitive Biases

Our analysis revealed complex patterns of cognitive bias manifestation that varied significantly across fair value measurement levels. For Level 2 assets, where observable market inputs are available, auditors demonstrated moderate anchoring effects but minimal confirmation bias. In contrast, Level 3 asset assessments exhibited strong confirmation bias patterns characterized by selective information search and disproportionate weighting of confirming evidence. The eye-tracking data showed that auditors spent 42

Anchoring effects manifested differently depending on the source of anchor information. Management-provided anchors exerted significantly stronger influence on final judgments than internally generated reference points, particularly under time pressure conditions. The combination of client-provided anchors and time constraints resulted in adjustment insufficiencies of 28-35

3.2 Physiological and Behavioral Correlates

The integration of physiological measures provided novel insights into the unconscious aspects of bias manifestation. Galvanic skin response data revealed distinctive arousal patterns associated with cognitive conflict during bias-triggering scenarios. Specifically, auditors exhibited heightened physiological arousal when encountering disconfirming evidence following initial hypothesis formation, suggesting implicit recognition of contradictory information despite subsequent biased processing.

Eye-tracking metrics identified three characteristic visual attention patterns associated

with different bias types. Confirmation bias was marked by early fixation on hypothesis-consistent information and rapid dismissal of contradictory data. Anchoring bias manifested as prolonged fixation on anchor values and reduced visual exploration of alternative valuation ranges. A newly identified pattern, which we term "valuation uncertainty avoidance," involved oscillating visual attention between conflicting information sources without resolution.

3.3 Cognitive Style Classification and Prediction

The machine learning analysis successfully identified three distinct cognitive processing styles among auditors that predicted bias susceptibility with 87

Feature importance analysis revealed that the most predictive variables for bias classification included information search comprehensiveness, adjustment magnitude from anchors, linguistic certainty in verbal protocols, and physiological arousal patterns during evidence evaluation. The cognitive style classifications demonstrated strong predictive validity for actual judgment outcomes in holdout validation samples.

3.4 Intervention Effectiveness

Our evaluation of existing debiasing techniques revealed significant limitations in their application to fair value assessment contexts. Traditional interventions such as consider-the-opposite and accountability prompts showed variable effectiveness across different bias types and cognitive styles. While these techniques reduced anchoring effects by 22

The most effective intervention strategy involved cognitive style-matched approaches that addressed the specific information processing vulnerabilities of each auditor type. For selective confirmatory processors, structured alternative generation protocols that forced consideration of disconfirming evidence reduced confirmation bias by 38

4 Conclusion

This research provides comprehensive empirical evidence regarding the manifestation and mitigation of cognitive biases in auditor fair value assessments. Our multi-method approach has yielded several important theoretical and practical contributions to the auditing literature. The identification of distinct cognitive processing styles that predict bias susceptibility represents a significant advancement in understanding individual differences in auditor judgment.

The finding that traditional debiasing techniques show variable effectiveness across different bias types and cognitive styles has important implications for audit practice and training. Our results suggest that one-size-fits-all approaches to bias mitigation are insufficient for the complex judgment tasks involved in fair value accounting. Instead, targeted interventions that address specific cognitive vulnerabilities offer more promising avenues for improving judgment quality.

The methodological innovations introduced in this study, particularly the integration of physiological measures with behavioral and computational analysis, provide a template for future research on professional judgment in accounting and other domains. The ability to capture both conscious and unconscious aspects of decision-making processes offers new opportunities for understanding and improving complex judgments under uncertainty.

Several limitations warrant consideration in interpreting our findings. The laboratory setting, while providing necessary experimental control, may not fully capture the contextual factors present in actual audit engagements. The focus on confirmation and anchoring biases, while theoretically justified, excludes other potentially relevant cognitive limitations. Future research should examine the generalizability of our findings to field settings and explore additional bias types in fair value assessments.

In conclusion, this study demonstrates that auditor judgment in fair value accounting is influenced by complex interactions between task characteristics, individual cognitive styles, and contextual factors. By developing a more nuanced understanding of these dynamics, we

can design more effective interventions to enhance audit quality and protect the integrity of financial reporting in an increasingly complex valuation environment.

References

1. American Psychological Association. (2020). Publication manual of the American Psychological Association (7th ed.).

2. Bazerman, M. H., Moore, D. A. (2013). Judgment in managerial decision making (8th ed.). Wiley.

3. Bonner, S. E. (2008). Judgment and decision making in accounting. Pearson Education.

4. Griffith, E. E., Hammersley, J. S., Kadous, K. (2015). Audits of complex estimates as verification of management numbers: How institutional pressures shape practice. Contemporary Accounting Research, 32(3), 833-863.

5. Kahneman, D., Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47(2), 263-291.

6. Koonce, L., Mercer, M. (2005). Using psychology theories in archival financial accounting research. Foundations and Trends in Accounting, 1(3), 175-246.

7. Libby, R., Luft, J. (1993). Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. Accounting, Organizations and Society, 18(5), 425-450.

8. Nelson, M. W. (2003). Behavioral evidence on the effects of principles- and rules-based standards. Accounting Horizons, 17(1), 91-104.

9. Trotman, K. T., Wright, W. F. (2012). Triangulation of audit evidence in fraud risk assessments. Accounting, Organizations and Society, 37(1), 41-53.

10. Tversky, A., Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. Science, 185(4157), 1124-1131.