

The Effects of Hindsight Bias and Experience on Auditors' Judgments Involving Clients with Going-Concern Issues

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Abstract

Hindsight bias has been defined in the literature as the proclivity for individuals who have been provided with the outcome of an uncertain event to overstate their abilities to have predicted that outcome in foresight. This study finds that both inexperienced and experienced auditors exhibit hindsight bias. However, the results also indicate that the bias neither diminishes nor intensifies with increased experience, but instead remains unchanged. Given that experience fails to decrease the biasing effects of outcome information and given that monetary incentives and accountability have been found ineffective in reducing the bias, it is imperative that public accounting firms devise debiasing strategies to effectively mitigate the bias at all experience levels.

Keywords: Hindsight Bias; Going-Concern Judgments; Auditor Judgments

I. Introduction

Hindsight bias is the proclivity for individuals who have been provided the outcome of an uncertain event to systematically overstate their abilities to have predicted that outcome in foresight when they would not have known how the event turned out. Individuals will deny that knowing how the event turned out has influenced their predictions. Hindsight bias has been found to affect several auditor judgments, including internal control evaluations (Reimers and Butler, 1992), preliminary analytic review judgments (Kennedy, 1995; McDaniel & Kinney, 1994), and going-concern judgments (Anderson, 2016; Kennedy, 1995).

In the context of going-concern judgments, the presence of hindsight bias creates two important implications for public accounting firms and their auditors. First, hindsight bias leads to a “knew-it-all-along” attitude, which may impede feedback learning (Fischhoff, 1975), thereby decreasing what auditors could learn from the feedback provided by actual bankruptcies. If auditors believe they “knew all along” that a failing company was indeed going to file for bankruptcy, they may not learn as much as they could from the outcome and may believe more often than they should that they are skilled at predicting bankruptcy. This overconfidence may lead auditors to believe they have little need for debiasing strategies aimed toward reducing hindsight bias.

Second, auditors who issue clean audit opinions to client companies that fail within one year of the opinion date may be unfairly judged, in hindsight, by interested third parties such as expert witnesses, jurors, the Securities and Exchange Commission, investors, creditors, and peers (Kennedy, 1995; Lowe & Reckers, 1994). These third parties may be unable to ignore the outcome information that they now have (i.e., that the company did indeed fail and file for bankruptcy) that the auditors would not have had at the time of issuing their audit opinion.

This paper explores the effects of auditor experience on hindsight bias using an auditing experiment involving going-concern judgments. Kennedy (1995) examined the extent to which auditor experience would decrease hindsight bias by conducting two experiments, one involving a going-concern judgment task and one involving an analytic review task. Using

theories from the psychological literature, this paper theorizes that auditor experience would increase hindsight bias.

Consistent with Kennedy's findings, this study's results find that, in an auditing domain, hindsight bias neither diminishes nor intensifies with experience, but instead remains unchanged. Kennedy (1995) concludes that the biasing effects of hindsight are "hardwired" in auditors and are unaffected by experience levels. Given that experience neither increases nor decreases hindsight bias and given that monetary incentives (Camerer et al., 1989; Hell et al., 1988) and accountability (Kennedy, 1995) have been found ineffective in counteracting the bias, it is imperative that debiasing strategies be developed and used by public accounting firms to mitigate the bias at all experience levels. Both preoutcome (Anderson, 2006) and postoutcome (Kennedy, 1995) debiasing strategies have been found to be somewhat effective in reducing the debiasing effects of hindsight for both inexperienced and experienced auditors.

The remainder of this paper is organized as follows. The second section presents the theory and hypotheses development. The research method used to test the hypotheses is described in the third section. The results are presented in the fourth section followed by a conclusions and discussion section.

II. Theory and Hypotheses Development

A. Presence of Hindsight Bias

Fischhoff (1975) coined the term "creeping determinism" to describe the process he believed was responsible for hindsight bias. According to Fischhoff, "Upon receipt of outcome knowledge judges immediately assimilate it with what they already know about the event in question. In other words, the retrospective judge attempts to make sense, or a coherent whole, out of all that he knows about the event" (1975, p. 297). Because the process was believed to be quick and unconscious, Fischhoff described the outcome knowledge as "creeping" into the subject's mental representation of the event resulting in cognitive restructuring. According to Hawkins and Hastie (1990), the characteristic effect of creeping determinism is the proclivity to view a known outcome as nearly inevitable, as revealed in retrospective probability judgments, because of the seemingly unalterable sequence of events leading up to it. The "creeping determinism" hypothesis is consistent with more of the hindsight literature results than any other explanation offered (Hastie and Hawkins, 1990).

Prior research reveals the presence of hindsight bias in several audit settings (Anderson, 2016). Based on these findings, the current study predicts that, despite instructions to ignore the outcome information, auditors provided with outcome information will exhibit hindsight bias when making going-concern judgments. This leads to the following hypothesis:

H1: As compared to auditors not provided with an outcome, auditors provided with an outcome will judge that outcome as more likely to occur, even when instructed to ignore the outcome and to make the judgment as they would have in foresight.

B. Reducing Hindsight Bias

Attempts to eliminate or even reduce hindsight bias have been only moderately effective. Exhorting subjects to work hard and cautioning them about the bias have been ineffective (Fischhoff, 1982; Wood, 1978). Hasher et al. (1981) were successful in eliminating hindsight bias, but only by discrediting the outcome information in such a way that subjects realized that it was completely unreliable. Wood (1978) found that preoutcome judgments can be used

to decrease hindsight bias, but only if subjects were encouraged to remember their previous judgments when making their postoutcome judgments. In an experimental markets study, Camerer et al. (1989) found that feedback and monetary incentives alone had no effect on the reducing hindsight bias; however, market forces reduced the bias by about fifty percent.

A postoutcome debiasing strategy, which involved instructing subjects to generate reasons for the alternative outcomes after the receipt of outcome information, has been found to significantly reduce, but not eliminate, hindsight bias both in the psychological (Davies, 1987; Slovic and Fischhoff, 1977; Arkes et al., 1988; Lowe and Reckers, 1994) and accounting (Kennedy, 1995) literature. A preoutcome debiasing strategy, which involved instructing subjects to generate reasons for the alternative outcomes before the receipt of outcome information, has also been found to significantly reduce, but not eliminate, hindsight bias in the psychological literature (Davies, 1987). However, this preoutcome debiasing strategy produced asymmetrical effects in an auditing study (Anderson, 2006) increasing the bias for some outcomes and decreasing the bias for other outcomes.

C. Effects of Experience

It is not clear in the literature to what effect experience has on hindsight bias. Davies reason, but did not empirically test, that experience might increase hindsight bias “because the greater knowledge base of the expert provides greater scope for the biasing of cognitive activity in hindsight, such as favoring evidence, reasons, and explanations which support the reported outcome” (1987, p. 66). Kennedy (1995) explored the extent to which experience decreases hindsight bias in both an analytic review task and a going-concern judgment task. Kennedy found that experience does not reduce hindsight bias due to the cognitive nature of the bias. This study theorizes that based on Fischhoff’s creeping determinism explanation for hindsight bias, experience would be expected to increase hindsight bias.

D. Experience Effects and Creeping Determinism

Based on Fischhoff’s (1975) creeping determinism explanation, it seems plausible that the more susceptible an individual is to creeping determinism (i.e., the greater the cognitive restructuring upon the receipt of outcome information), the greater the amount of hindsight bias exhibited. This is consistent with Schkade and Kilbourne’s (1991) findings that surprising outcomes result in greater cognitive restructuring and thus greater hindsight bias; however, they manipulated the surprisingness of the outcome only and not the experience of the subjects. In an auditing context, the more adept auditors are at restructuring their mental representations of an event scenario with the actual outcome, the greater the difference between their foresight and hindsight perspectives, and thus, the greater the amount of hindsight bias. Based on both psychological and accounting memory research, to be discussed next, it is likely that experienced auditors would be more prone to creeping determinism and therefore would exhibit greater hindsight bias than would inexperienced auditors.

E. Experience Effects and Prior Research

Prior auditing research (Libby and Frederick, 1990; Moeckel, 1990) has used theories of semantic memory networks to make predictions regarding the effects of experience on auditor judgment. According to semantic memory network models (e.g., Collins and Loftus, 1975; Smith, 1978), memory is organized in a hierarchical structure comprised of networks of nodes and the links among them. The nodes are grouped into subsets called schemata that represent prototypes of complex concepts or episodes (Thorndyke and Hayes-Roth, 1979; Moeckel, 1990). When new information is encountered, memories representing possibly related concepts or episodes are accessed through a spreading of activation along the links

among the nodes (Collins and Loftus, 1975). These activated schemata control all processing of the new information, including not only its comprehension and encoding, but also its subsequent storage in memory (Moeckel, 1990; also see Gibbins, 1984; Waller and Felix, 1984).

In an auditing study examining the effects of experience on memory errors, Moeckel (1990) reasoned that as experience increases, more elaborate schemata are developed, allowing more information to be stored in memory. In addition, with increasing experience, new situations similar to those encountered in the past would be more easily understood by referring to the richer, broader, more refined set of experiences already stored in memory (Gibbins, 1984; Moeckel, 1990). Moeckel (1990) concluded that although experienced auditors' more elaborate schemata may facilitate encoding by decreasing cognitive effort, such schemata also increase the tendency to engage in reconstruction.

Reconstruction is a memory error whereby an individual alters the mental representation of information to make it consistent with existing knowledge or schemata (Moeckel, 1990). In an audit workpaper review task, Moeckel (1990) found that increased experience led to increased reconstruction. Experienced auditors altered their mental representations of workpapers they had reviewed to induce consistency between contradictory pieces of information within the workpapers.

If experienced auditors are more prone to committing reconstruction errors, it is likely that they are also more prone to creeping determinism. In other words, if experienced auditors are more likely to induce consistency between contradictory information in foresight, it follows that they would also be more likely to induce consistency between an event scenario and its reported outcome in hindsight. Experienced auditors would be better able to rewrite or reconstruct their mental representations of the case scenario by adding semantic links signifying causal relations between events in the case and the actual outcome. Prior research (e.g., Fiske and Taylor, 1984; Moeckel, 1990) indicates that experience promotes the development of more links among the items being encoded and with those already stored in memory.

F. Summary of Hindsight Bias and Experience Effects

In summary, when an auditor processes new information, a schema is evoked which guides the processing of this information. Prior to learning the actual outcome, the auditor will have formulated a foresight mental representation of the event. Upon receipt of outcome information, the foresight mental representation of the event will be updated (Loftus and Loftus, 1980; Davies, 1987; Mazursky and Ofir, 1990) and reconstructed to make it consistent with the schema evoked by the new information (i.e., the actual outcome). The new hindsight mental representation of the event will differ from the old foresight mental representation due to the updating and reconstructing (i.e., due to creeping determinism).

This hindsight-foresight difference will be greater for experienced auditors due to their more elaborate schemata that enable greater updating and reconstruction. Because the old foresight mental representation is erased (Loftus and Loftus, 1980; Davies, 1987), when asked to ignore the outcome information and judge the outcome's probability as they would have in foresight, the auditors will use the representativeness and availability heuristics to reach their likelihood judgments (Fischhoff, 1975; Davies, 1987; Mazursky and Ofir, 1990). Due to the updating and reconstructing of memory, the features of the known outcome are likely to be perceived as matching or being representative of the salient features of the event, and

scenarios leading to the known outcome should be more available in memory, thus leading to an overestimation of the known outcome's likelihood.

In conclusion, experienced auditors' foresight-hindsight difference in their mental representations of the event will be greater than inexperienced auditors'. Further, experienced auditors when relying on the representativeness and availability heuristics to judge the outcome's probability will have more scenarios and their related features stored in memory. As a result, it is predicted that experienced auditors will judge the known outcome more likely in hindsight than will inexperienced auditors, which leads to the following hypothesis:

H2: Experienced auditors will exhibit greater hindsight bias than will inexperienced auditors.

III. Research Method

A. Subjects and Design

Subjects consisted of 114 professional auditors employed by large international public accounting firms. Of the 114 auditor subjects, 57 were experienced with an average of 9.4 years of auditing experience, and 57 were inexperienced with an average of 1.4 years of auditing experience. The overall average level of auditing experience was 6.2 years. They were randomly assigned to one of the three treatment conditions formed by a 2X3 (Experience by Outcome Type) design. The two levels of Experience were high (i.e., managers and partners) and low (i.e., staff auditors). The three levels of Outcome Type were: No Outcome (i.e., the foresight condition), Failure Outcome, and Success Outcome. The dependent variable was the auditor's probability judgment that the case company would succeed within the next year (hereafter referred to as a viability judgment).

B. Tasks

Each subject received a packet of materials, consisting of a page of general instructions, a sealed envelope, and the case data for a chemical manufacturer. The case data consisted of a narrative summary which contained an equal number of mitigating factors (cues pointing toward continued viability) and adverse factors (cues pointing toward failure) and three years of financial data, including the financial statements, a summary of financial highlights, and a set of financial ratios. After completing the case review task, the written instructions indicated that the subjects were to open the sealed envelope which contained: the outcome information (if provided), the viability judgment task, and the debriefing task. The subjects were required to work independently and were not allowed to use reference materials.

The subjects' first task was to review the case data for a troubled chemical manufacturer. They were instructed that the fieldwork had been completed, but the final audit opinion had not yet been written, and they were to assume the role of supervisor on the year-end audit. They were to review the company's financial statements in an attempt to assess viability. After reviewing the case data, subjects were instructed to begin the second task, the viability judgment. Before making their viability judgments, subjects in the success outcome condition were informed that the company continued as a going concern throughout the year subsequent to the year being audited. The subjects in the failure outcome condition were informed that the company filed for bankruptcy during the last six months of the year subsequent to the year being audited. Subjects in the no outcome condition were not provided with outcome information.

All subjects were instructed to assume that it was the last day of fieldwork for the year-end audit. At that time (when they would not have known what actually happened to the company), they were to estimate the likelihood that the company would or would not continue as a going concern throughout the year subsequent to the year being audited. The subjects in the success outcome and failure outcome conditions were instructed to ignore the outcome information. All of the subjects were informed that they could refer back to the case data if necessary before making their viability judgments.

Subjects were asked to assess the probability, existing at year end that the firm would continue as a going concern throughout the year subsequent to the year being audited by placing an "X" on a probability scale. Subjects were asked to express their judgment of the company's viability in terms of a probability between 0% and 100%, where 100% indicates that the company is certain to continue as a going concern, and 0% indicates that the company is certain NOT to continue as a going concern. The final task for all subjects was completing a one-page debriefing questionnaire.

IV. Results

A. Presence of Hindsight Bias

H1 predicted that: as compared to auditors not provided with an outcome, auditors provided with an outcome will judge that outcome as more likely to occur, even when instructed to ignore the outcome and to make the judgment as they would have in foresight. More specifically, auditors informed that the company failed (succeeded) would be more likely to judge the continued viability of the company as being less (more) likely than the auditors not provided with outcome information. The means and standard deviations for the viability judgment dependent variable are found in Table I.

Table I: Means and (Standard Deviations) of Viability Judgments by Experimental Conditions

	OUTCOME		
	No	Failure	Success
EXPERIENCE	57.37%	55.05%	64.42%
High	(17.19)	(17.66)	(18.67)
	n=19	n=19	n=19
Low	63.95%	53.68%	69.58%
	(17.12)	(16.90)	(17.00)
	n=19	n=19	n=19

B. ANOVA Results – Interaction Effects

To test the effect of outcome information and experience on auditors' viability judgments, a 2X3 (experience by outcome) ANOVA was performed. The experience factor had two levels (i.e., high and low), and the outcome factor has three levels (i.e., no, failure, and success).

The ANOVA results are presented in Table II. The two-way interaction between experience and outcome is not significant (p=0.80); therefore, H2 is not supported. Hindsight bias does not increase with experience. However, the main effect of outcome is significant (p=0.00).

Table II: ANOVA: Experience by Outcome on Viability Judgments

Source of Variation	SS	DF	MS	F	Sig. of F
Experience	0.038	1	.038	1.21	.272
Outcome	1.308	2	.654	20.91	.000
Experience by Outcome	0.014	2	.007	.22	.803

C. Simple Main Effects Tests

In order to test the effect of outcome on auditor viability judgment, simple main effect tests consisting of a series of contrasts were conducted. The means contrasted were the combined means for the experienced and inexperienced auditors taken from Table I as follows: No Outcome, 60.66%; Failure Outcome, 54.37%, and Success Outcome, 67.00%.

In order to test H1, it was necessary to determine if the failure outcome mean viability judgment of 54.37% and the success outcome mean viability judgment of 67% are significantly different from the no outcome mean viability judgment of 60.66%. The failure outcome subjects' mean viability judgment of 54.37% is significantly less than the no outcome subjects' mean viability judgment of 60.66% ($p=0.06$, one-tailed probability). This indicates that, despite instructions to ignore the outcome information, being informed of that the company failed caused the subjects in the failure outcome condition to judge continued viability as less likely than did the no outcome subjects. In other words, the failure outcome subjects were prone to hindsight bias.

In addition, the success outcome subjects' mean viability judgment of 67.00% is significantly greater than the no outcome subjects' mean viability judgment of 60.66% ($p=0.059$, one-tailed probability). This indicates that, despite instructions to ignore the outcome information, being informed that the company succeeded caused the subjects in the success outcome condition to judge continued viability as more likely than did the no outcome subjects. In short, both the failure outcome and the success outcome subjects were prone to hindsight bias. This provides support for H1; auditors with outcome information judged the reported outcome as more likely to occur than did auditors not provided with outcome information.

V. Discussion and Conclusions

The purpose of this study was to examine the effects of hindsight bias on auditor judgment and the degree to which the bias is influenced by experience. Consistent with prior auditing research (Kennedy 1995; Reimers and Butler, 1992), the current study found that auditors are prone to hindsight bias when making probability judgments (H1). Contrary to H2, the current study did not find that hindsight bias increases with experience, but instead the bias remains unchanged with experience. This finding of no experience effect is consistent with prior auditing research (Kennedy, 1995).

The primary explanation for not finding experience effects may be that the experienced subjects' foresight mental representations of the case did not substantially differ from the inexperienced subjects' foresight mental representations. In other words, the experienced subjects' going-concern schemata may not have been substantially more elaborate, and they may not have had significantly more adverse factors and mitigating factors stored in memory. If the inexperienced and experienced subjects' foresight mental representations of the case

did not significantly differ, there is little reason to expect their hindsight mental representations of the case to differ. If the experienced subjects do not have more elaborate going-concern schemata, then, upon receipt of outcome information, the experienced subjects' degree of cognitive restructuring should not be greater than the inexperienced subjects', resulting in similar hindsight mental representations between the two groups. If the foresight-hindsight difference in mental representations of the case does not significantly differ between the experienced and inexperienced subjects, then the degree of hindsight bias between the two groups should not significantly differ.

There are three plausible explanations that might account for these findings. First, although the experienced subjects were more experienced in terms of number of years of experience employed as auditors, they were not substantially more experienced in terms of number of engagements worked on in which going-concern problems existed. One of the questions on the debriefing questionnaire asked, "On how many audit engagements that you have been associated with did substantial doubt exist regarding the client's ability to continue as a going-concern?" The mean number of clients experiencing going-concern problems worked on by the inexperienced subjects was .93; for the experienced subjects it was 4.59. However, the 4.59 average included 11 (9.6%) experienced subjects who had worked on ten or more going-concern engagements. (One experienced auditor had worked on ten going-concern engagements, one on 12, three on 15, three on 20, one on 23, and two on 50). The mean number of going-concern clients for the remaining experienced subjects was only 2.65.

Second, the degree and type of formal training auditors receive regarding going-concern situations may be so standardized and similar that all auditors, regardless of experience level, share a nearly identical going-concern schema or mental model. This schema may be so well learned and entrenched that actual experience with going-concern situations changes it only slightly. If auditors do share a universal going-concern schema, it would be expected that their foresight mental representations of a specific case would be similar.

Third, experienced auditors may have more elaborate going-concern schemata as compared to less experienced auditors. However, in the current study, the inexperienced and experienced subjects inherited the same specific case data, and they may have relied on the same foresight mental representations of this case data. The hindsight literature has not yet established whether outcome information alters an individual's mental representation of the specific case evidence or the mental representation of the general domain under consideration. It is possible that the inexperienced and experienced subjects' mental representations of the specific scenario were altered and not their overall going-concern schemata (i.e., their mental representations of the general domain).

Although the current study predicted that experienced auditors would exhibit greater hindsight bias than would inexperienced auditors, the study's results indicated that the bias does not intensify or diminish with experience, but instead remains unchanged. One of the main contributions of this study is the potential need for continued, rather than reduced, reliance on training programs and decision aids as experience increases in the area of going-concern judgments.

Another main contribution of the current study is it further develops the creeping determinism explanation for hindsight bias and uses it to make predictions regarding the effects of experience on hindsight bias. In the past, hindsight researchers primarily used creeping determinism as a post hoc explanation for observed results rather than as a

theoretical basis for making a priori predictions. Unless the creeping determinism explanation is subjected to rigorous empirical testing, the extent to which it accurately explains the mechanisms underlying hindsight bias will not be fully understood.

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