

# **How Do Investors Assess the Relevance of Fair Value for Financial Instruments?**

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July 8, 2009

We thank the workshop participants at the University of Texas, Cornell University, and Nanyang Technological University for their helpful comments.

## **How Do Investors Assess the Relevance of Fair Value for Financial Instruments?**

**ABSTRACT:** For some time, a debate has existed on the relevance of fair value versus historical cost for the valuation of financial instruments. In this study, we conduct three experiments to test the idea that investors' views about fair value are contingent (that is, investors are not either "fair value" or "historical cost" supporters), depending on whether the item in question is an asset or liability and the situation being evaluated. Results are supportive of our predictions and also indicate that investors use a non-diagnostic "ease of acquiring or selling" heuristic to judge the relevance of fair value. Our results also reveal that attempts to debias investors' judgments by providing them with the economic intuition does work, although it may lead to unintended effects. Implications for standard setters and investors are provided.

**Keywords:** fair value; relevance; judgment bias

**Data Availability:** Contact the authors.

## I. INTRODUCTION

For some time, a debate has existed on the relevance of fair value versus historical cost for the valuation of financial instruments. Although many argue that information based on prices that reflect the current market assessment is more relevant to investors than information based on old market prices, not everyone agrees with this perspective. Supporters of historical cost maintain that it is the most relevant measure as it reflects the effects of transactions and events in which a company did participate (and not those in which the company did not participate) (e.g., Isaac 2008). In this paper, we maintain that these characterizations of fair value are too simplistic. That is, we argue that individuals are not either “fair value” or “historical cost” supporters. Rather, we assert that investors’ views about the relevance of fair value or historical cost are contingent (Payne 1982) and depend on whether the item in question is an asset or liability and the situation being evaluated.

Understanding how investors assess the relevance of fair value is important for several reasons. First, standard setters are moving toward a fair value accounting model. For example, fair value measurement is now used for employee stock options (Statement of Financial Accounting Standards (SFAS) 123R), business acquisitions (SFAS 141R), and most investments (SFAS 115). Companies also have the option to record financial instruments, including mortgage servicing rights, at fair value (SFAS 156, 159). Because of the increasing prevalence of fair value measurement, the Financial Accounting Standards Board (FASB) recently provided guidance on how to determine fair value under various circumstances (SFAS 157). Despite the FASB’s move toward fair value, there are strong opponents to this measurement (e.g., Benston 2008). Indeed, the recent (and ongoing) financial crisis has led to many arguments against fair value, suggesting its lack of universal acceptance (American Bankers Association 2009).

Second, very little research exists on the topic of how investors view fair value. The existing archival research is not directly on point to the relevance notion, as it generally involves a joint test of the relevance and reliability of the disclosed fair values of financial assets and liabilities (e.g., Barth 1994; Barth et al. 1996; Eccher et al. 1996; Nelson 1996). Stated differently, this research assumes (explicitly or implicitly) at least a minimum level of relevance, and investigates cross-sectional differences in the reliability of those estimates. Variation in investors' assessments of relevance is rarely mentioned and never investigated.

To address the general question of how investors assess fair value, we conduct three experiments using Masters of Business Administration (MBA) student participants in the role of investors. In experiment one, we hold constant the economics associated with a single financial instrument (i.e., fixed-rate security) and manipulate whether the investor participants are asked to consider the financial instrument as an asset (i.e., investment in bond) or liability (i.e., bond payable). That is, we hold constant management's intent toward that instrument (i.e., hold to maturity) as well as the reliability (i.e., publicly traded) and relevance of the instrument's fair value measurement. We test the idea that investors will not judge fair value relevance according to the underlying economics but rather will judge relevance based on how easy they consider it to acquire or dispose of the instrument. Because of such reasoning, we hypothesize that investors will assess fair value as more relevant for financial assets than for financial liabilities. We also predict that these differences in relevance judgments are meaningful, because they will translate into judged differences in firm value.

The results of experiment one are consistent with our predictions. In particular, we find that not all participants consider fair value to be relevant and, most interestingly, they consider fair value as more relevant for assets than for liabilities. This result obtains even though we hold

constant the characteristics of the underlying financial instrument, including the reliability and relevance of its fair value measurement. Additionally, we observe that the direction of the fair value change (i.e., gain or loss) does not influence relevance judgments, but it does interact with whether the instrument is an asset or liability to influence firm valuation judgments. That is, investors are more likely to adjust firm valuations when there are fair value gains and losses for the financial asset versus the financial liability.

In experiment two, we more fully investigate out theory behind the experiment one findings. Specifically, we conjecture that when making relevance judgments, investors rely on a non-diagnostic heuristic—namely, the ease of acquiring or disposing of the item in question. Fair value is judged more relevant when an entry or exit transaction is easy to accomplish. Arguably, this “ease” heuristic is non-diagnostic, or biased, when using it does not coincide with the underlying economics of the situation, as in our study (Kahneman et al. 1982). Because we hold constant the relevance of fair value in our experiment, we are able to conclude that using this ease heuristic represents a judgment bias.

The results of our second experiment support our predictions. Specifically, we show that investors do judge fair value as more relevant when an entry or exit transaction is easy to accomplish. That is, they base their fair value judgments on this non-diagnostic heuristic. In experiment two, we also provide evidence to rule out a possible liquidity explanation for our results. That is, we show that investors are not basing their relevance judgments on their perception that it is less constraining for a firm to receive cash than it is to dispense cash.

The goal of experiment three is to determine what might help investors to overcome their reluctance to embrace fair value as the most relevant measure for financial liabilities that are to be held to maturity (as in experiment one). We conjecture that if investors are provided with

information explaining the economic intuition behind the relevance of fair value for financial liabilities (i.e., they are debiased), they will reduce their reliance on the ease heuristic and, hence, increase the frequency with which they identify fair value as relevant. Moreover, we also predict that the effect of the debiaser will be greater in magnitude when management's intent is to hold to maturity the financial liability than when it is to be settled soon. In the latter situation, investors should be more inclined to identify fair value as relevant and, thus, the debiaser should have less impact.

Results for this experiment show that providing investors with information about the economics of fair value for financial liabilities to be held to maturity (i.e., debiasing them) does increase their tendency to choose fair value as the most relevant measure for these instruments, as predicted. Interestingly, though, it does not cause all participants to judge it as relevant, suggesting the difficulty of completely debiasing investor judgments. As predicted, we find that the debiaser has no effect when the financial liabilities are to be settled soon. There, participants appear to base their relevance judgments on the fact that the company will soon extinguish the liability. Other results from experiment three show that investors' relevance judgments do not translate into changes in the valuation assigned to the company (in contrast to experiment one). We suggest that this occurs perhaps because the particular debiaser used in our study is viewed by participants as creating an unfair scenario for the company being evaluated.

Conducting experiments to address these issues pertaining to fair value affords us a number of advantages. First, we are able to leverage the strength of experimental methods by holding constant the characteristics of the financial instrument (i.e., a publicly-trade fixed-rate security) for which there was a fair value change and focusing on its classification as an asset or liability. Second, experimentation permits us to directly measure investors' beliefs about the relevance of

fair value and their perceptions of its effect on firm value. These measurements are important, as they allow us to test ideas more directly than by using security prices and inferring investors' judgments. Third, we are able to study how participants react to the value of items that may be difficult to examine using archival methods. Although many assets have been recognized at fair value for a number of years (e.g., investments in equity and debt securities under SFAS 115), fewer liabilities have been recorded at fair value.<sup>1</sup> In addition, some items are recorded at fair value because of mandatory accounting standards (e.g., SFAS 115), and other items recorded at fair value by choice (e.g., SFAS 159). Furthermore, some items are recorded at fair value only because they are part of a derivative hedging transaction (SFAS 133). This diversity in the frequency and circumstances of fair value measurement makes examining the question of fair value relevance arguably more difficult with archival methods.<sup>2</sup>

Our results also have several important implications. From a regulatory standpoint, our study suggests that investors' fair value judgments are contingent. That is, they depend on whether the item in question is an asset or liability as well as the situation. For example, in experiment one, we demonstrate that individuals are more fair value oriented for financial assets than financial liabilities. In experiment three, we show that individuals are more fair value oriented when they expect the firm to settle or extinguish a financial liability in the near term and when they are given information to explain the intuition of fair value for a financial liability. It is possible (although not tested in our study) that these findings suggest that under the fair value option in

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<sup>1</sup> Zion et al. (2008) report that of the \$28 trillion in assets on the balance sheets at the end of the first quarter for the 380 companies in the S&P 500 with either a November or December year-end, they find that more than one-third of \$9.5 trillion are at fair value. However, they report only \$2.6 trillion of liabilities at fair value which is approximately 11 percent of the \$24 trillion in total liabilities.

<sup>2</sup> Since the early 1990's, SFAS 107 requires the fair value of financial instruments to be disclosed in the footnotes of financial statements. Claims have been made that footnoted data is not as reliable as recognized data (Frederickson et al. 2006; Libby et. al. 2006). As a result, it might be difficult to compare the fair value of financial assets and liabilities under that disclosure, particularly because some of the assets are also recorded at fair value in the financial statements.

SFAS 159, firms may gravitate to reporting only those financial instrument items that they (and investors) are most comfortable with. Such behavior may not lead to more widespread reporting of fair values, as the FASB hopes (SFAS 159, ¶A3).

From the perspective of investors, our study implies that they should be aware of a potential bias in their judgments when evaluating the relevance of fair value. Our results suggest that investors use an ease heuristic to judge the relevance of fair value. Situations exist where that heuristic may coincide with the underlying economics. However, it also may cause them to judge fair value less relevant merely because it is more difficult to execute the purchase or sale of the item. Indeed, we maintain that investors do not separate in their minds the issue of measurement relevance from other factors, such as ease of acquisition or disposition.

In the next section, we present theoretical arguments in support of our predictions. Sections 3 through 5 describe and present the results for each of our three experiments. Section 6 concludes the paper.

## II. THEORY AND PREDICTIONS

### Historical Cost versus Fair Value

The recent financial crisis has escalated the debate on the relevance of fair value.<sup>3</sup> The argument *against* the relevance of fair value is that unless the management of a company intends to sell or settle the item before its maturity, then changes in the value of assets and liabilities are not important to the current assessment of the company (Hague and Willis 1999; Dattatreya and Fabozzi 2005). That is, the company will not realize the fair value gain or loss (i.e., they will not

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<sup>3</sup> Another key aspect of the debate is the reliability of fair values. Some argue that fair values are relevant but of questionable reliability in illiquid markets (SFAC 2, ¶90), such as those seen in the recent financial crisis. To avoid the possibility that our study participants somehow make inappropriate tradeoffs between relevance and reliability (i.e., judge the fair value as not reliable and, therefore, not relevant), we hold constant both reliability and relevance at high levels in our study.

participate in a settlement transaction) and, as such, it does not provide relevant information to investors. Fair value proponents, on the other hand, maintain that fair value is relevant whether firm management decides to sell assets or settle liabilities before maturity *and* when they decide not to do this. That is, fair value can provide economic information about *foregone* opportunities that can affect the economics of the firm.

To be concrete, consider the following example. Company X issues bonds payable at par in the amount of \$1,000,000. Assume one day after issuing the bonds, interest rates fall and so the fair value of the bonds is \$1,200,000. Now consider an otherwise identical company, Company Y, who issues \$1,000,000 of bonds payable immediately after the interest rates fell. Company Y locks into a lower coupon rate.

A historical cost advocate would argue that the \$200,000 economic loss on the Company X bond is irrelevant to the current assessment of Company X *if* the company intends to hold that bond to maturity. That is, Company X will never pay the \$1,200,000. Indeed, the historical cost advocate argues that this \$200,000 will reverse over the remaining term of the bond; at maturity the fair value of the bond will be \$1,000,000—the amount to pay back at maturity.

A fair value advocate, in contrast, would argue that the \$200,000 represents how much worse off Company X is because of the fair value change. The \$200,000 represents the present value of the additional interest cost (i.e., above current market rates) that Company X will pay over the remaining term of the bond. Stated differently, the \$200,000 represents how much lower Company X's cash balance will be, as compared to Company Y's, at the end of the bonds' term.

### **Fair Value Relevance for Financial Assets versus Liabilities**

Drawing on psychology theory, we conjecture that investors' relevance judgments, on average, will not follow the economic logic of the fair value perspective, as presented by Hague

and Willis (1999) above. Rather, we conjecture that relevance judgments, on average, will be driven by how easy it is to acquire or dispose of the item. We hypothesize that investors will judge it relatively easier to acquire or dispose of an asset than a liability and, thus, will judge fair value more relevant for assets than liabilities. This idea comes from the line of reasoning that individuals generally think, for example, that they can more easily sell their personal car than dispose of a home equity loan. Disposing of the home equity loan requires having the appropriate amount of cash, getting the cash into a checking account, and then visiting the lender to do the paperwork to pay off the balance. Selling a car, in contrast, requires a visit to CarMax or listing the car on Craig's List. Once the buyer is found, the seller waits for the cash to be delivered. Although there are certainly exceptions to this characterization, we posit that this is the general thinking of individuals.<sup>4</sup>

Thinking that assets are easier to acquire and dispose of than liabilities is not troublesome in itself. However, the difficulty arises if individuals use it as a shortcut in judging how to measure the item in question. We theorize that individuals will be subject to an availability bias (Tversky and Kahneman 1973) when asked to judge the relevance of fair value for an asset or liability and, thus, will be likely to use information about ease of acquiring and disposing to judge relevance. Indeed, availability biases occur when judgmentally irrelevant information is brought to mind based on a particular prompt or question (Tversky and Kahneman 1972).<sup>5</sup> Thus, when asked about the fair value of an asset or liability, individuals are likely to automatically think about

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<sup>4</sup> Some of this differential thinking may also originate in the frequency with which we think about the fair value of assets versus liabilities. That is, we regularly think about the value of retirement savings or the fair value of our house. We argue that individuals less regularly think about the fair value of their obligations.

<sup>5</sup> A simple example illustrates the idea: In a psychology study by Kubovy (1977), participants are asked to report the first digit that comes to their mind. A small percentage (2.2%) reports the digit 1. However, when they are asked to report the first "one-digit" number that came to mind, a much larger 18.1% choose the digit of 1. This result is consistent with the notion of how memory works—namely, the priming that occurs when the question includes the word "one" creates a priming of the digit 1 in memory. Thus, it is more likely to be provided as a response.

how easy it is to acquire or dispose of the item than think through the economic logic of fair value. This process of judging fair value relevance is not diagnostic as the notion of fair value is arguably a neutral concept. Indeed, the use of the term fair value within accounting standards is independent of any reference to an asset or a liability. For example, though fair value is defined in SFAS 157 as "...the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants..." (SFAS 157, ¶5), the remainder of the standard discusses the measurement of fair value without any differences in the treatment of assets or liabilities.

As explained in more detail in the experiment one method section below, we examine investors' judgments of relevance for an asset versus liability where we hold constant all features of the financial instrument, management's intent toward the instrument, and also the relevance and reliability of its measurement (i.e., hold constant the economics). Indeed, it is exactly the same instrument, but we merely vary whether people are told that management owns the item (it is an asset) or that management owes it (it is a liability). In light of this research design, there *should* be no difference between judgments of fair value relevance both in situations where fair value leads to gains and to losses.<sup>6</sup> In summary, we posit the following hypothesis:

H1: Investors will judge the relevance of fair value as greater for a financial asset than a financial liability.

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<sup>6</sup> We argue that there is no theoretical basis to expect differences in relevance judgments for fair value gains versus losses. Although one might argue that conservatism implies that investors consider losses as more relevant than gains, the conservatism argument actually pertains to reliability and not relevance. Specifically, conservatism is defined as "the asymmetrical verification for gains and losses" (Watts 2003, 208) with the verification standards being higher for gains than losses. Because conservatism is a function of verifiability, it falls under the notion of reliability. Alternatively, one might argue that prospect theory suggests that losses are judged more relevant than gains because of the asymmetric value function that people use when judging losses and gains. However, that theory is based on the principle of near-term realization which is not descriptive of our setting where the fair value gains and losses will not be fully realized in the near term as the instrument is to be held to maturity. Because of the lack of theory suggesting that fair value gains and losses will be judged differentially relevant, we do not make any prediction to such effect.

An important question is whether these differences in relevance judgments translate into differences in investors' assessments of the firm's value. That is, do investors distinguish to a greater extent between fair value gains and fair value losses for assets than for liabilities? We argue that the differences in relevance judgments are meaningful because they will, in turn, directly influence the value placed on the firm. This expectation leads to our second hypothesis:

H2: Investors making firm valuation judgments will distinguish to a greater extent between fair value gains and losses for financial assets than for financial liabilities.

### **Debiasing Judgments regarding Fair Value Relevance for Financial Liabilities**

Based on the assumption that individuals will not rely on the economic arguments as articulated by Hague and Willis (1999) when judging the fair value of assets and liabilities but rather will rely on how easy it is to acquire or dispose of those assets and liabilities, we next address how the resulting judgment bias could be reduced. Recall that a finding of differential relevance of fair value is arguably a bias, as the measurement of the same financial instrument should not be different when all else is held equal except for whether it is considered from the asset or liability side.

Psychology research indicates that the fix for judgment biases or errors depends on the nature of the error (Arkes 1991). For example, if the error is because the individual is using a suboptimal solution strategy because of laziness, then raising the stakes for optimal performance should remedy the error. Because we theorize that the tendency to judge fair value as less relevant for assets than liabilities is because individuals will use the availability heuristic, a different fix is needed. To debias an availability bias, several approaches are possible including explicit feedback on the task at hand (Arkes 1991). One type of feedback is to tell participants that the relevance of fair value is *not* based on the ease of acquiring or disposing of the item. However, because of the association-based nature of this judgment bias, this approach would

likely only exacerbate the bias as participants would continue to dwell on the ease, making it even more accessible in their memory. Instead, we use a debiaser which speaks to the source of the judgment bias. Because we conjecture that participants will not base their fair value relevance judgments on the underlying economics (but rather will use an ease heuristic), we design the debiaser to reframe the situation in participants' minds, focusing them on the economics of a change in fair value. In short, we posit that this judgment error can be debiased with feedback about the economics.

While we anticipate this debiaser will influence judgments about fair value relevance when a financial instrument is to be held to maturity, we do not believe the debiaser will affect fair value judgments when the financial instrument is to be settled soon. In the latter situation, we anticipate that participants will invoke the logic that fair values are relevant when an item is to be purchased or disposed of soon (Dattatreya and Fabozzi 2005). We summarize our expectations in the following hypothesis.

H3: Individuals will (will not) increase the frequency with which they judge fair value relevant for financial liabilities to be held to maturity (to be settled soon) when they are given a debiaser.

For design reasons, we focus on financial *liabilities* in testing this idea. That is, if H1 is valid, then focusing on financial *assets* to test H3 would potentially lead to less observable change in the relevance frequency judgments.

### **III. EXPERIMENT ONE**

#### **Design and Participants**

Our first experiment tests H1 and H2. In this experiment, we employ a  $2 \times 2$  design, in which we vary between-participants whether the financial instrument is an asset (i.e., investment in bond) or a liability (i.e., bond payable) and whether the outcome from a subsequent interest

rate change leads to a fair value loss or gain. This design results in four between-participants conditions: *Asset-Loss*, *Asset-Gain*, *Liability-Loss*, and *Liability-Gain*. The experimental software randomly assigns participants to these conditions.

The experiment is web-based, using Qualtrics software. Participants access the materials by clicking on an internet link supplied in the email that solicits their participation. While responding to the questions, the case information (described below) remains displayed on the screen to allow participants to repeatedly access the information. Participants are not allowed to change their responses to a previous question once they move on to the next question.

Seventy-nine MBA students participate in the experiment. All participants in the study are from a top-ranked daytime MBA program, and have an average of five years full-time work experience, with a range from one to 15 years. All participants had completed coursework in financial accounting and finance. The software indicated that all participants who started the experiment successfully completed it.

We use MBA students as proxies for reasonably informed investors. Following the guidance set forth in Libby et al. (2002, 802), we match participants to the goals of the experiment and do not use more-sophisticated participants than necessary to achieve those goals. As noted by Libby et al. (2002), sophisticated participants are in short supply and should be used *only* when the research question necessitates it. Furthermore, the FASB, in its recent exposure draft on the new conceptual framework, assumes that users “have a reasonable knowledge of business and economic activities to be able to read a financial report” and “review and analyze the information with reasonable diligence” (FASB, 2008, ¶QC24). Ex ante, we judged that general knowledge of accounting, business finance, and financial markets is necessary and sufficient for our participants to respond meaningfully to our materials.

## Materials, Manipulations, and Questions

In the experiment, participants serve in the role of a potential investor evaluating a firm (Alpha Company). Participants in the *asset financial instrument* condition are informed that in year 1, Alpha Company purchases at par (\$10,000,000) an investment in publicly traded bonds issued by other companies. Moreover, they are told that the bonds are fixed-rate investments, indicating that the cash received by Alpha is fixed. Participants in the *liability financial instrument* condition receive information that was essentially a “mirror image” of the information provided in the asset condition. Specifically, in year 1, Alpha issues at par (\$10,000,000) publicly traded bonds payable. The bonds are fixed-rate bonds, indicating that the cash paid by Alpha is fixed. All participants are informed to assume that the dollar amounts involved in the case situation are highly significant.

After being provided with this information, participants in both the *asset* and *liability* conditions are told that in year 3, a change in interest rates occurs. In the *asset-loss (asset-gain)* condition, interest rates increase (decrease); in the *liability-loss (liability-gain)* condition, interest rates decrease (increase). All participants are then informed that Alpha Company intends to hold the investment in bonds (or bonds payable, as applicable) until their maturity which is years away. Finally, the investment in bonds (or bonds payable) maturity value is presented (always \$10,000,000 independent of the condition) and as well as the fair value of the same instrument (either \$8,459,100 or \$11,540,900, depending on the condition).<sup>7</sup> Figure 1 shows how this information is presented to participants in two of the four conditions.

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<sup>7</sup> The change in fair value for the gain and loss conditions is intentionally designed to be symmetric in dollar amount (i.e., at \$1,540,900). This design feature ensures that the percentage change in fair value (relative to the original maturity amount) is held constant across all conditions. One consequence of doing this, however, is that the current interest rate that produces such a change will not be exactly symmetric. We believe that it is more important to control the dollar amount of symmetry (versus the interest rate producing that dollar amount) because the dollar amount is likely to be more obvious to participants. Indeed, participants could not infer the interest rates that produced such changes, as we do not include the maturity year for the financial instrument.

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Insert Figure 1 here  
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Two aspects of our case materials avoid an alternative explanation for our results. First, we use the phrase maturity value instead of historical cost in the actual instrument. This choice is intentional and is designed to minimize participants bringing knowledge of accounting rules to the task, as our study is not about knowledge of such rules. Note that because the maturity value of a bond *issued at par* is equivalent to its historical cost, the two are the same. Second, both the investment in bond and the bonds payable are intended to be held to maturity by Alpha. Thus, if participants are using their knowledge of accounting rules to respond to the case, then we would observe results where no one considers fair value to be relevant (as historical cost would be the appropriate accounting for both the asset and liability).<sup>8</sup> We do not observe this result suggesting participants are not using knowledge of accounting rules to respond to experimental questions.

After being presented with the information described above, participants are asked four questions. The first two questions pertain to the relevance of the fair value measurement and differ in whether they focus on the fair value of the instrument itself or the resulting gain or loss from the fair value change. If our H1 is valid, then we expect a main effect for financial instrument, but no gain/loss main effect nor interaction. The first question asks which of the two amounts (that participants saw earlier in the instrument—namely, historical cost or fair value) is more important to their current assessment of the financial position of Alpha Company at the end of year 3. The question is a forced-choice question; accordingly, there are two possible answers: historical cost or current fair value. The second question asks participants to indicate the extent to which the difference between the current fair value and historical cost of the financial

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<sup>8</sup> Bonds payable can be accounted for at fair value under the fair value option in SFAS 159 (which was very new at the time of the experiment).

instrument makes a difference in their assessment of the current performance of Alpha Company.<sup>9</sup> Responses are elicited on a 101-point continuous scale, with endpoints of “does not make a difference” (0) and “does make a difference” (100).

The final two questions pertain to whether the fair value change influences the value of the company (H2). Specifically, the third question asks participants whether the difference between the current fair value and the historical cost of the financial instrument makes Alpha Company better or worse off. The response scale here ranges from –50 (“makes Alpha significantly worse off”) to 50 (“makes Alpha significantly better off”). The midpoint of the scale is 0 representing “makes Alpha neither worse off or better off.” The final question asks participants to make a judgment regarding the value they would place on the firm. They are told that any potential value change from the interest rate change is not already incorporated into the company’s stock price. Three response options exist—(1) increases the value, (2) decreases the value, or (3) neither increases or decreases the value. For those responding that the interest rate change either increases or decreases the value they would place on the company, they also indicate the magnitude of this increase or decrease. Zero on the response scale represents “slightly increases (or decreases, as applicable) how much I value the firm” and 100 represents “greatly increases (or decreases, as applicable) how much I value the firm.”

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<sup>9</sup> We chose to ask the relevance questions using the phrases “makes a difference” and “important” because these phrases are used throughout the FASB’s concept statement for this construct (SFAC 2, ¶46). However, to ensure that participants saw these phrases as being congruent with the notion of relevance, we collected additional data with participants having similar backgrounds as those in the main study. We asked 53 MBA students to indicate whether they agreed, disagreed, or had no opinion with respect to the statements “I believe when something is *relevant*, it is important” and “I believe when something is *relevant*, it makes a difference in a decision.” The most frequent response given was “agree” (n=31 and n=36, respectively). This response was statistically more frequent than the other responses (both *p*-values < 0.10), validating our presumption that participants viewed the two phrases used in our main experiment as referring to relevance. In the second data collection, a separate group of 55 MBA students were asked to indicate which of six phrases (important, free from bias, makes a difference in a decision, can be confirmed, timely, and represents what it is supposed to) they considered to be the most descriptive of the term relevance. The most frequent responses were “makes a difference” (n=30), “important” (n=11), and “represents what it is supposed to” (n=11), again validating the equivalence of our experimental phrases with the notion of relevance.

Although these questions are seemingly quite similar, we ask both in the event that participants make a distinction between a fair value loss or gain affecting the company but not its stock price. If our H2 is valid, then participants should distinguish to a greater extent between the two outcomes for assets than for liabilities (i.e., significant interaction). Stated differently, because we expect them to judge relevance of fair value greater for assets than liabilities, participants should distinguish discriminate the two fair value outcomes (i.e., gains and losses) to a greater extent for assets than liabilities.

### **Experiment One Results**

For our first two questions, we observe results that are consistent with our predictions. Question 1 asks participants which value—historical cost or current fair value—is more relevant. To analyze the responses, we use categorical modeling. The results of this  $2 \times 2$  analysis are shown in Panels A and B of Table 1.

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Insert Table 1 here  
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Results show that, as expected, over seventy percent of the participants (71.7%) judge fair value to be more relevant than historical cost for the investment in bond, while just less than forty percent (39.4%) judge fair value more relevant for the bond payable ( $\chi^2 = 8.42, p < 0.01$ ). As expected, whether the interest rate change causes a gain or loss is not considered important to participants' relevance judgments, nor does it interact with the type of instrument being evaluated (both  $p$ -values  $> 0.36$ ).

For question 2, results tabulated in Panels C and D of Table 1 reveal similar inferences. Recall that the second question asks participants to evaluate the relevance of the difference between the fair value and the historical cost of the financial instrument. Because of the continuous dependent measure for this question, we employ analysis of variance (ANOVA).

Participants judge the difference between current fair value and historical cost as more relevant for the investment in bond (mean of 54.50) than the bond payable (mean of 35.91) ( $F_{1,75} = 6.55$ ,  $p = 0.01$ ). Once again, we see no effect for sign of the outcome or for its interaction with type of financial instrument (both  $p$ -values  $> 0.30$ ). In sum, the results reported in Table 1 support H1. Because we hold constant both reliability and relevance at high levels for both the asset and liability, we can argue that these results represent a judgment bias on the part of our participants. That is, the relevance judgments should not differ between the asset and liability conditions and both frequencies should be at 100 percent.

The remaining questions provide tests of H2; those results are presented in Table 2. For question 3, we ask participants whether the difference between fair value and historical cost makes the company worse off or better off. Because we predict a specific type of (ordinal) interaction for this question (i.e., larger difference between gains and losses for assets than for liabilities), the default (disordinal or cross-over pattern) interaction statistic that is provided by the traditional ANOVA is not appropriate for our hypothesis. Although we report the default interaction statistic in Panel B of Table 2, we also estimate and rely on a planned interaction contrast that more appropriately tests our prediction (see Panel C). Specifically, we rely on weights of 2, -2, 1, and -1 for the asset/gain, asset/loss, liability/gain, and liability/loss conditions.<sup>10</sup>

Most central to testing H1, results show that our planned interaction contrast is significant ( $F = 6.02$ ,  $p = 0.02$ ). Follow-up simple main effect tests reveal that the difference in mean response for the asset (loss = -0.50; gain = 15.63) is statistically significant ( $F = 4.65$ ,  $p = 0.03$ ), while the difference for the mean response for the liability (loss = -1.78; gain = 8.68) is not significant ( $F$

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<sup>10</sup> The significance of our interaction is robust to alternative weight schemes that meet the requirement that the difference between the two asset conditions is larger than the difference between the two liability conditions.

= 1.38,  $p = 0.24$ ), again supporting the veracity of our interaction test. This pattern of means and results is consistent with H2. That is, fair value is more relevant for assets so the fair value gains and losses are incorporated into valuation in the asset conditions to a greater extent than in the liability conditions.

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Insert Table 2 here  
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Question 4 asks participants whether the fair value change affected the value of the company. Importantly, participants are told that any value change created by the interest rate change is not already incorporated into Alpha's stock price. Because of the categorical nature of this dependent measure, we conduct a categorical analysis of variance. Results are shown in Panels D through F of Table 2. There is a significant financial instrument  $\times$  outcome interaction ( $\chi^2 = 8.52, p = 0.01$ ) along with a main effect for sign of outcome ( $\chi^2 = 8.21, p = 0.02$ ). No financial instrument effect is observed ( $\chi^2 = 4.48, p = 0.11$ ). Follow-up contrasts indicate that participants' responses in the asset situations vary depending on whether the outcome is a gain or loss ( $\chi^2 = 13.23, p < 0.01$ ) but in the liability situations do not vary ( $\chi^2 = 2.17, p = 0.34$ ) where the most common response is "neither." This pattern of results is consistent with H2.

Recall that participants who answer "increase" or "decrease" to this fourth question also indicate the magnitude of this increase or decrease. We create a new variable that captures the joint effect of "increase" and "decrease" as well as the magnitude (i.e., increase coded as a 1 and multiplied by strength response; decrease coded as -1 and multiplied by strength response; "neither" coded as 0). This measure (not tabulated) reveals a significant interaction between our two manipulated variables ( $F = 11.15, p < 0.01$ ). That is, we see a larger difference in the mean judgments for the asset/gain (mean of 20.42) and asset/loss (mean of -13.41) conditions than the liability/gain (mean of 7.63) and the liability/loss (mean of -7.86) conditions. Simple main effect

tests confirm that the asset difference is statistically significant ( $F = 10.01, p < 0.01$ ) but the liability difference is not ( $F = 1.47, p = 0.23$ ). Again, this pattern of results is consistent with H2.

## IV. EXPERIMENT TWO

### Design and Participants

To provide evidence regarding the ease heuristic which we use to make our prediction in H1 (which is supported by our experiment one data), we conduct a second experiment at another top-ranked MBA program with a separate group of fifty participants with similar demographics as the first experiment. Using a paper-based experimental format, we ask participants a series of questions about six items—three of which are assets and three of which are liabilities. Key to our purposes, though, is that one asset is the same as used in experiment one (investment in bond) and one liability is the same as in experiment one (bond payable). This within-subjects manipulation of whether the item is seen from the asset or liability angle is of primary interest in our second study. We ask about four other items to ensure that the purpose of the questions is not overly transparent to participants.

Six of the questions are relevant to our theory. Two questions pertain to the ease of acquiring or disposing of an item, and two pertain to the relevance of fair value or historical cost. Two other questions address the likelihood of acquiring or disposing of an item. We use a 101-point response scale for all questions. For the ease questions, the scale has endpoints of 0 representing “not very easy” and 100 representing “very easy.” For the relevance questions, the scale endpoints are 0 “not very relevant” and 100 “very relevant.” For the likelihood questions, the scale endpoints are 0 “very unlikely” and 100 “very likely.”

We conduct three tests with these data. First, we determine whether our assumption that individuals find it easier to acquire and dispose of assets than liabilities is valid. Second, we

determine whether these ease judgments are related to judgments about fair value relevance (and, by extension, *not* related to judgments about historical cost relevance). Third, we use these data to rule out a possible alternative explanation for our results.

### **Experiment Two Results**

For our first set of tests, results (not tabulated) show participants judged it easier to acquire the investment in bond payable asset (mean of 75.08) than the bond payable liability (mean of 63.64) ( $F = 12.43, p < 0.01$ ). They also consider it easier to get rid of the investment in bonds payable before maturity (mean of 69.32) than to get rid of the bonds payable before maturity (mean of 54.72) ( $F = 12.05, p < 0.01$ ). In sum, these results are consistent with our assumption that individuals will judge it relatively easier to acquire or dispose of an asset than a liability.

Our second set of results (not tabulated) is consistent with our theory about investors using an ease heuristic to make judgments about fair value relevance. Specifically, we find that the ease measures are significantly correlated with the judgments about fair value relevance but are not correlated with the judgments about historical cost relevance. To make this determination, we regress the relevance judgments (fair value or historical cost) for the financial instruments (investment in bond payable or bond payable) on the ease measures (acquiring or disposing), for a total of eight regressions. Results generally reveal positive associations between the ease measures and the fair value relevance judgments (with one exception, all  $p$ -values  $< .05$ ). In contrast, the ease measures are not significantly associated with the historical cost relevance judgments (all  $p$ -values  $> 0.13$ ). Overall, these results are supportive of our theory.

Our experiment two data also rule out one possible alternative interpretation for our experiment one relevance results. It could be argued that study participants use liquidity, and not ease of acquiring or disposing, as a guide to their relevance judgments. In several ways, the

experiment two data rule out this possible interpretation of our results. First, as noted earlier, participants judge it easier to acquire the investment in bond asset (mean of 75.08) than the bond payable liability (mean of 63.64) ( $F = 12.43, p < 0.01$ ). If liquidity concerns are driving their relevance judgments, then participants should make the opposite judgment—namely, assess it as easier to acquire a bond payable (i.e., cash inflow) than an investment in bond (i.e., cash outflow). We do not see this pattern of results. Second, our results show that participants render it no more or less likely that the firm would dispose of the bond investment early (mean likelihood of 48.66) as compared to the bond liability (mean likelihood of 50.86) ( $F = 0.24, p = 0.63$ ). Further, participants conclude that it is no more or less likely that the firm would acquire a bond payable (mean likelihood of 58.72) than a bond investment (mean likelihood of 63.50) ( $F = 1.47, p = 0.23$ ). A liquidity interpretation of our results would suggest that firms would be more likely to dispose of (acquire) the bond investment earlier (later) than a bond liability. Because our results are not consistent with these patterns of results, we again rule out a liquidity interpretation.

## V. EXPERIMENT THREE

### Design and Participants

The third experiment tests H3. It was conducted at approximately the same time (i.e., within several days) as experiment one and in the same location as experiment two.<sup>11</sup> The paper-based experiment is with one hundred MBA student participants.

The design for the experiment involves a  $2 \times 2$  between-participants design. We vary between-participants whether the financial liability (i.e., the same fixed-rate instrument used in two conditions of experiment one) is to be held to maturity or settled soon. We also vary at two levels whether or not participants are provided with information that explains the economics of

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<sup>11</sup> Experiments one and three were conducted in April, 2008, while experiment two was conducted in November, 2008.

the fair value change, i.e., the debiaser. This design results in four between-participants conditions: *Held-to-Maturity/No-debias*, *Held-to-Maturity/Debias*, *Settle-Soon/No-debias*, and *Settle-Soon/Debias*. Participants are randomly assigned to these conditions.

## 5.2 MATERIALS, MANIPULATIONS, AND QUESTIONS

In the experiment, participants serve in the role of a potential investor evaluating a firm (Alpha Company). Participants are informed that Alpha Company, in the printing and publishing industry, uses bonds to finance their operations and long-term capital expenditures. Moreover, participants are informed that the company has fixed-interest-rate bonds payable that are issued at par in year 1 with a maturity in year 15. As noted previously, we focus on financial liabilities (versus financial assets) here to be able to demonstrate a change in the frequency that participants choose fair value.

Similar to experiment one, participants are then told that interest rates decreased in year 3. They are informed that the interest cash flow payment would remain the same. In addition, they are told the fair value amount that the company would have to pay to reacquire the bonds in the open market, should they choose to settle the bonds in year 3. All of this information is common to all conditions. After this information is presented, those in the two *held-to-maturity* conditions are told that Alpha Company intends to hold the bonds payable to their regularly scheduled maturity in year 15 and pay off the bonds at that time at the face value of the bonds. Those in the two *settle-soon* conditions are informed that Alpha Company intends to settle, or pay off, the bonds payable prior to maturity and then issue new bonds payable, at the current market rate of interest. This manipulation is illustrated in Figure 2.

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Insert Figure 2 here  
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After receiving this information, participants in the two *debias* conditions are then given information explaining the economics of the fair value change. In particular, the debiaser describes the alternative set of actions that Alpha Company did not take (i.e., foregone opportunity)—namely, extinguish their debt before rates change and then refinance at the current, lower rate of interest. The content of this debiaser is modeled after that provided by Hague and Willis (1999) and is shown in Figure 3. That is, the debiaser attempts to explain the economic intuition behind the fair value loss.

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Insert Figure 3 here  
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After being presented with the information described above, participants are asked a series of questions. Our primary dependent measure is the first question and is modeled after the primary dependent measure from experiment one. Namely, it is a forced-choice question, asking whether historical cost or fair value is more relevant to the current assessment of the financial position of Alpha. We also ask questions that are very similar to questions two and four from experiment one. In addition, we ask an investment question, but of only those participants in the two conditions that receive the debiaser. Specifically, we ask them whether they would, if they had the available resources, rather invest in the (1) actual Alpha Company, (2) the hypothetical Alpha Company (described in the debiaser), or (3) whether they were indifferent among the two. Finally, all participants evaluate Alpha Company's actual decisions relative to a hypothetical situation—namely, one in which Alpha might have taken a different set of actions. Those actions are to get rid of the old debt immediately prior to the interest rate change and then to immediately refinance after the rate change. Participants then rate how unfair or fair it is to compare Alpha's actual actions to the hypothetical set of actions.

### Experiment Three Results

The results for the primary relevance question are shown in Table 3.<sup>12</sup> As expected, without the debiaser, those who are told the company is holding the bonds to maturity judge fair value to be the least relevant. Stated differently, the percentage of participants choosing fair value as the most relevant measurement is lower in the *held-to-maturity/no-debiaser* condition (similar to experiment one) than in the *held-to-maturity/debiaser* condition (60.0% versus 84.0%) ( $\chi^2 = 3.38, p = 0.07$ ). The percentage of participants choosing fair value as most relevant did not differ in the two settle-soon conditions (both were 76.0%) ( $\chi^2 = 0.00, p = 1.00$ ). A planned interaction contrast for this predicted pattern of results is significant at 0.06 ( $\chi^2 = 3.37$ ). These results are consistent with H3.

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Insert Table 3 here  
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Two of the follow-up questions, similar to those in experiment one, surprisingly did not show results consistent with expectations and, thus, are not supportive of H3. Specifically, a question about the importance of the difference between the current fair value and historical cost of the bonds payable did not show significant results, nor did a question about whether the change in interest rates influences the value they would place on the firm. Although a majority of participants (i.e., 52%) in the two debiaser conditions (the only participants asked this particular question) did indicate that they would rather invest in the hypothetical Alpha Company (they had the foresight to refinance before rates changed), they also indicate something else perhaps

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<sup>12</sup> To check that all participants understood the management intent variable, we asked participants at the end of the instrument about management's intent regarding the debt. Ninety-four percent of participants in the *hold-to-maturity* conditions responded correctly to this question, and seventy-four percent responded appropriately in the *settle* conditions. These percentages are significantly associated with the experimental conditions ( $\chi^2 = 29.84, p < 0.01$ ), suggesting the effectiveness of our manipulation.

suggestive of why they did not adjust the value placed on the firm. This possible explanation is examined below.

Recall that *all* participants are asked about how fair it was to evaluate the company in light of a hypothetical set of transactions where the company refinanced before rates changed. Those in the debiaser conditions should recognize that the hypothetical set of transactions being referred to in this question as those previously received in the experiment (with much detail and quantitative analysis). Perhaps not surprisingly (particularly in hindsight), the participants in the debiaser conditions (as compared to the no-debiaser participants) indicated that it was significantly more unfair to compare the actual Alpha Company's actions to the hypothetical set of actions they could have taken ( $F = 3.08, p = 0.08$ ). That is, the participants in the debiaser conditions previously saw the specifics of the hypothetical set of actions and, undoubtedly, thought through them more extensively than those in the no-debiaser conditions. Thus, the debiaser participants could have considered the hypothetical actions (i.e., refinancing before rates changed) as less likely to have actually occurred and, as a result, more unfair. As a result, one possible explanation for the lack of significant results on some of the questions is that the debiaser was viewed as presenting an unfair scenario and, accordingly, should not be incorporated into the valuation of the company. In summary, the results for experiment three, while supporting the idea that the debiaser can alter relevance judgments, suggests that the content of debiaser is an important consideration.

## VI. CONCLUSIONS

Our study results suggest that assets are viewed differently than liabilities in terms of fair value relevance. In particular, investors consider fair value more relevant for assets than for liabilities, even when the underlying economics of the financial instrument are held constant,

suggesting they are exhibiting a judgment bias. These differential relevance judgments are meaningful as they in translate into differences in judgments about firm value. In particular, investors do not distinguish between fair value gains and losses when evaluating a financial liability but do make a distinction when the item in question is a financial asset. We find that this judgment bias is attributable to investors basing their fair value assessments not on economics, but on a non-diagnostic ease heuristic—namely, how easy an entry or exit transaction is to accomplish. We also rule out liquidity issues as a potential explanation for these results. Finally, we demonstrate that providing investors with information about the economics of fair value (i.e., debiasing them) does increase the tendency to assess fair value as relevant to financial liabilities, but only when those liabilities are held to maturity (and not when they are to be settled early). Additional data suggests that the particular debiaser used in our study might have been viewed as creating an unfair scenario for the company being evaluated.

Our study results should be informative to regulators and to investors. For regulators, they should be interested in knowing that investors do not behave as though fair value is a neutral concept. That is, investors appear more comfortable with the relevance of fair value for assets than for liabilities. This finding may be of potential concern to standard-setters it is possible that firms may gravitate, under the fair value option in SFAS 159, to recognizing fair values primarily for financial assets. Such biased reporting may further exacerbate investor reluctance to embrace fair values for liabilities. For investors, our study suggests that they are exhibiting a judgment bias when evaluating the relevance of fair value. Investors should be aware of this bias as it, in turn, causes them to ignore liability fair value gains and losses when valuing the firm. Arguably, these gains and losses are relevant as they ultimately affect the cash position of the firm over the longer term.

Although we believe our study has important implications, it also potentially has limitations that provide opportunities for additional research. For example, we study only one financial instrument—either from the asset side (investment bonds payable) or liability side (bond payable). While this item allows us many advantages from a design standard, it may limit the extent to which we can generalize our results. For example, do our findings hold for non-financial instruments, like tangible assets and performance obligation liabilities? Or do our results hold primarily for securities that have an explicit interest component? Extending our findings to other types of assets and liabilities would also add to the growing literature regarding how classification of transactions and financial statement items influences the judgments of market participants (e.g., McVay 2006; Gramling, et al., 2001; Hirst, et al. 2004).

Moreover, we investigate only one type of debiaser, fashioned off of the ideas in Hague and Willis (1999). Some additional data in our study suggest that investors thought this debiaser creates an unfair comparison to the actions actually chosen by the firm in question. Thus, research might identify other types of information that could be used to communicate to investors the economic implications of fair value.

As another example, we rely on MBA student participants rather than other types of individuals who might evaluate fair value information. We chose this group as they are representative of the users that the FASB is targeting in their reporting standards—that is, they have a reasonable knowledge of business and economics and can analyze financial information with diligence. We also study them as they appear to be representative of those who have previously raised concerns about the relevance of fair value (Sunshine 2008). Nevertheless, there are likely (what we believe) to be relatively small sub-groups of users that may respond systematically different to our experimental materials. For example, credit analysts may be more

inclined to judge fair value as relevant for financial assets and liabilities, as they are intimately involved in evaluating financial instruments of many firms. Given the continuing debate around fair value, though, we believe that it is important to explore those user groups who do not devote almost all of their time to analyzing financial instruments.

Finally, our study does not expose the participants' judgments to the economic incentives or the discipline of market forces. That said, in research studying financial markets, the overwhelming finding is that increased incentives do not change average behavior substantively (Camerer and Hogarth 1999). Moreover, as we argue earlier in the paper, the nature of the judgment bias that we study *should not* be sensitive to market forces. These limitations all create opportunities for future research in the important area of fair value relevance.

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**FIGURE 1**  
**Experiment One Stimuli<sup>a</sup>**

**Asset / Loss Condition:**

In Year 1, Alpha Company purchased an investment (i.e., asset) in publicly traded bonds issued by other companies. These bond investments were purchased at par (\$10,000,000). These bonds are fixed-interest-rate investments, indicating that the cash interest income received by Alpha is fixed.

In Year 3, an increase in market interest rates occurred. As a result, the fair value of these bond investments decreased.

In Year 3, Alpha Company indicated that it would hold its investments in these debt securities until their maturity which is still years away. That is, Alpha does not intend to sell these bond investments prior to maturity.

The maturity value and current fair value of these investments are as shown below:

<p>INVESTMENT <u>MATURITY VALUE<sup>b</sup></u> \$10,000,000</p>	<p>INVESTMENT <u>FAIR VALUE</u> \$8,459,100</p>
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**Liability / Gain Condition:**

In Year 1, Alpha Company issued publicly traded bonds payable (i.e., liability). These bonds payable were issued at par (\$10,000,000). These bonds are fixed-interest-rate bonds, indicating that the cash interest expense paid by Alpha is fixed.

In Year 3, an increase in market interest rates occurred. As a result, the fair value of these bonds payable decreased.

In Year 3, Alpha Company indicated that it would hold its bonds payable until their maturity which is still years away. That is, Alpha does not intend to settle (i.e., pay off) these bonds payable prior to maturity.

The maturity value and current fair value of these bonds payable are as shown below:

<p>BONDS PAYABLE <u>MATURITY VALUE<sup>b</sup></u> \$10,000,000</p>	<p>BONDS PAYABLE <u>FAIR VALUE</u> \$8,459,100</p>
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<sup>a</sup> The figure shows the Asset/Loss and the Liability/Gain conditions. The fair value amount for the Asset/Gain and Liability/Loss conditions is \$11,540,900.

<sup>b</sup> See section III for discussion regarding the use of the phrase “maturity value.”

**FIGURE 2**  
**Experiment Three<sup>a</sup>**

Consider the following information about Alpha Company. Alpha uses bonds to help finance their operations and long-term capital expenditures. Alpha is in the printing and publishing industry. Assume that all dollar amounts are highly significant / material.

**Alpha Company**

- In Year 1, the company issues 7% Bonds Payable outstanding with a maturity amount of \$10 million (i.e., \$10,000,000). These bonds were issued at par at \$10 million. Thus, their original issue dollar amount is what will be repaid at maturity. These bonds mature in Year 15.
- These Bonds Payable are fixed-interest-rate bonds.
- In December of Year 3, interest rates decreased to 5%.
- The impact of this interest rate change on Alpha is as follows:
  - Because Alpha has fixed-interest-rate bonds, their annual interest cash flow payments will remain the same at \$700,000.
  - If Alpha were to settle these bonds payable now, they would have to reacquire them in the open market (i.e., settle them) at their current fair value, which is \$11,772,000. This current fair value is greater than the maturity amount of the bonds.
- You learn that Alpha intends to hold the existing bonds payable to their regularly scheduled maturity in Year 15. That is, they will not reacquire them in the market (i.e., settle them) prior to their maturity which is in Year 15. At that time, they will settle the bonds payable (i.e., pay off) at their maturity amount of \$10,000,000.

<sup>a</sup> The figure shows the Held-to-Maturity condition. The Settle-Soon condition differs only in the last bullet point. In that condition, it reads:

You learn that Alpha intends to settle (i.e., pay off) the existing bonds payable prior to their maturity and then issue new bonds payable. That is, in the next several days, Alpha intends to settle the existing bonds in the market by buying them back from the bondholders at the current fair value (i.e., \$11,772,000). They then intend to issue new bonds at the current market rate of interest (i.e., 5%) with a maturity in 12 years (i.e., Year 15).

**FIGURE 3 – continued**  
**Experiment Three – Debiaser Manipulation**

You now run into an old friend who works in the industry. You show to this friend the information about Alpha. This friend indicates to you that one way to evaluate Alpha's situation is to think about an alternative set of actions that Alpha could have taken, as shown below. The differences in actions and consequences from what Alpha actually did as compared to what they could have done are **bolded** below.

**Another Set of Actions that Could  
Have Been Taken by Alpha**

- In Year 1, the Company issues 7% fixed-rate Bonds Payable outstanding with a maturity amount of \$10 million (i.e., \$10,000,000). These bonds were issued at par at \$10 million. Thus, their original issue dollar amount is what will be repaid at maturity. **These bonds mature in Year 3.**
- **In December, Year 3, the Company settles (i.e., pays off) these bonds on schedule at their maturity amount of \$10 million.**
- Later, in December of Year 3, interest rates decreased to 5%.
- **Shortly after the interest rate change, the Company issues new bonds payable in the amount of \$10 million with a fixed interest-rate of 5%. These new bonds mature in twelve years (i.e., in Year 15).**
- The impact of this is:
  - Because the Company has fixed-interest-rate bonds, their future interest cash flow payments will remain the same at **\$500,000 per year**.
  - If the Company were to settle these bonds payable now, they would have to reacquire them in the open market (i.e., settle them) at their current fair value, which is **\$10,000,000**. This current fair value is **equal to** the maturity amount of the bonds.

Your friend indicates that because Alpha did not undertake these actions, they were contractually bound to pay \$200,000 extra in interest per year for the next twelve years. The present value of this \$200,000 extra interest is the amount by which the fair value of the bonds exceeds the maturity value, or \$1,772,000. Your friend also points out that, in the future, Alpha's cash balance will be lower because they did not undertake these actions listed above.

**TABLE 1**  
**Experiment One: Results for Relevance Questions**

**Panel A: Descriptive Statistics for Question 1 – Percentage of Participants Choosing Fair Value as the Most Relevant Measure**

Outcome	Financial Instrument		Row
	Asset	Liability	
Loss	72.7% (16/22)	28.6% (4/14)	55.5% (20/36)
Gain	70.8% (17/24)	47.4% (9/19)	60.5% (26/43)
Column	71.7% (33/46)	39.4% (13/33)	

**Panel B: Categorical Modeling Statistics for Question 1**

Source	Chi-Square Statistic	<i>df</i>	Two-tailed <i>p</i> -value
Financial Instrument	8.42	1	$p < 0.01$
Outcome	0.52	1	$p = 0.47$
Financial Instrument $\times$ Outcome	0.82	1	$p = 0.36$

**Panel C: Descriptive Statistics for Question 2 – Mean Response (Standard Deviation) for Relevance of the Difference between Fair Value and Historical Cost**

Outcome	Financial Instrument		Row
	Asset	Liability	
Loss	61.23 (28.56)	37.14 (33.61)	51.86 (32.41)
Gain	48.33 (34.22)	35.00 (30.96)	42.44 (33.12)
Column	54.50 (31.96)	35.91 (31.61)	

**Panel D: Analysis of Variance Statistics for Question 2**

Source	Sums of Squares	<i>df</i>	Mean Square	Statistic	Two-tailed <i>p</i> -value
Financial Instrument	6629	1	6629	$F = 6.55$	$p = 0.01$
Outcome	1070	1	1070	$F = 1.38$	$p = 0.31$
Financial Instrument $\times$ Outcome	547	1	547	$F = 0.54$	$p = 0.47$
Error	75994	75	1013		

**TABLE 1 – (continued)**

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This table shows descriptive statistics and analysis for the two relevance questions in experiment one. In our  $2 \times 2$  experiment, we manipulate whether the financial instrument was an asset (i.e., investment in bond) or a liability (i.e., bond payable) and also whether the interest rate change caused an economic loss or gain. The first relevance question asks participants to choose either fair value or historical cost as more relevant to their current assessment of the company used in the experiment (Alpha Company). The second relevance question asks them to consider the difference between the current fair value and historical cost of the financial instrument and to rate the extent to which this amount makes a difference in their assessment of the current performance of Alpha.

**TABLE 2**  
**Experiment One: Results for Influence of Difference between Fair Value and Historical Cost on Company and its Valuation**

**Panel A: Descriptive Statistics for Question 3 -- Mean Response (Standard Deviation) for whether Difference between Fair Value and Historical Cost Makes Company Worse Off or Better Off**

Outcome	Financial Instrument		Row
	Asset	Liability	
Loss	-0.50 (31.32)	-1.78 (19.38)	-1.00 (26.99)
Gain	15.63 (23.47)	8.68 (23.56)	12.56 (23.49)
Column	7.91 (28.38)	4.24 (22.19)	

**Panel B: Traditional Analysis of Variance Statistics for Question 3**

Source	Sums of Squares	<i>df</i>	Mean Square	Statistic	Two-tailed <i>p</i> -value
Financial Instrument	320	1	320	$F = 0.50$	$p = 0.48$
Outcome	3349	1	3349	$F = 5.22$	$p = 0.03$
Financial Instrument × Outcome	151	1	151	$F = 0.24$	$p = 0.63$
Error	52260	75	641		

**Panel C: Planned Interaction Contrast and Follow-up Tests for Question 3**

Source	Mean Square	<i>df</i>	Statistic	Two-tailed <i>p</i> -value
Planned interaction contrast	3862	1	$F = 6.02$	$p = 0.02$
Simple main effect of:				
Loss/Gain for Financial Asset	2985	1	$F = 4.65$	$p = 0.03$
Loss/Gain for Financial Liability	884	1	$F = 1.38$	$p = 0.24$

**TABLE 2 – continued**

**Panel D: Descriptive Statistics (% Choosing Decrease, Increase or Neither)**

Outcome	Financial Instrument						Row		
	Asset			Liability			Dec.	Inc.	Neither
Loss	<u>Dec.</u> 68%	<u>Inc.</u> 18%	<u>Neither</u> 14%	<u>Dec.</u> 29%	<u>Inc.</u> 7%	<u>Neither</u> 64%	<u>Dec.</u> 53%	<u>Inc.</u> 14%	<u>Neither</u> 33%
Gain	<u>Dec.</u> 8%	<u>Inc.</u> 50%	<u>Neither</u> 42%	<u>Dec.</u> 32%	<u>Inc.</u> 26%	<u>Neither</u> 42%	<u>Dec.</u> 19%	<u>Inc.</u> 40%	<u>Neither</u> 41%
Column	<u>Dec.</u> 37%	<u>Inc.</u> 35%	<u>Neither</u> 28%	<u>Dec.</u> 30%	<u>Inc.</u> 18%	<u>Neither</u> 52%			

**Panel E: Traditional Categorical Modeling Statistical Test for Question 4**

Source	Chi-Square Statistic	<i>df</i>	Two-tailed <i>p</i> -value
Financial Instrument	4.48	2	<i>p</i> = 0.11
Outcome	8.21	2	<i>p</i> = 0.02
Financial Instrument × Outcome	8.52	2	<i>p</i> = 0.01

**Panel F: Follow-up Contrasts for Question 4**

Source	Chi-Square Statistic	<i>df</i>	Two-tailed <i>p</i> -value
Simple main effect of: Loss/Gain for Financial Asset	13.23	2	<i>p</i> < 0.01
Loss/Gain for Financial Liability	2.17	2	<i>p</i> = 0.34

This table shows the descriptive statistics and analysis for the experiment one questions designed to determine whether the difference between the fair value and historical cost of the financial instrument provided to study participants influences the firm and its valuation. In our 2 × 2 experiment, we manipulate whether the financial instrument was an asset (i.e., investment in bond) or a liability (i.e., bond payable) and also whether the interest rate change causes an economic loss or gain. The third question asked participants whether the difference between fair value and historical cost caused the company to be worse off or better off. The response scale is: -50 “makes Alpha significantly worse off,” 0 “makes Alpha neither worse off nor better off,” and 50 “makes Alpha significantly better off.” The fourth question asks participants whether the situation described in the case affects the value they would place on the firm (and told them to assume any value change is not already incorporated into the company’s stock price). Three options are provided: Increases the value placed on Alpha, decreases the value placed on Alpha, and neither increases or decreases the value placed on Alpha.

**TABLE 3**  
**Experiment Three: Percentage of Participants Choosing Fair Value as the Most Relevant Measurement**

**Panel A: Descriptive Statistics (% Choosing Fair Value)**

Debiaser	Management Intent		Row
	Hold to Maturity	Settle Soon	
No Debiaser	60% (15/25)	76% (19/25)	68% (34/50)
Debiaser	84% (21/25)	76% (19/25)	80% (40/50)
Column	72% (33/50)	76% (38/50)	

**Panel B: Traditional Categorical Modeling Statistical Test**

Source	Chi-Square Statistic	<i>df</i>	Two-tailed <i>p</i> -value
Intent	0.06	1	<i>p</i> = 0.80
Debiaser	1.74	1	<i>p</i> = 0.19
Intent × Debiaser	1.74	1	<i>p</i> = 0.19

**Panel C: Planned Interaction contrast and follow-up tests**

Source	Chi-Square Statistic	<i>df</i>	Two-tailed <i>p</i> -value
Planned interaction contrast	3.37	1	<i>p</i> = 0.06
Simple main effect of :			
Debiaser for Hold to Maturity Intent	3.38	1	<i>p</i> = 0.06
Debiaser for Settle Soon Intent	0.00	1	<i>p</i> = 1.00

This table shows the descriptive statistics and analysis for the two relevance questions in experiment two. In our 2 × 2 experiment, we manipulate whether management of the Alpha Company that holds the financial liability (i.e., bond payable) is intending to hold it to maturity or settle it soon (i.e., buying it back in the open market) and whether or not participants are provided with a debiaser designed to improve their understanding of fair value relevance. The question summarized above asked participants to pick either fair value or historical cost as more relevant to their current assessment of Alpha Company.