**NANYANG
TECHNOLOGICAL
UNIVERSITY**

**DO INVESTORS OVER-ANTICIPATE? EVIDENCE FROM THEIR
REACTIONS TO GAIN AND LOSS CONTINGENCIES**

XU TU

NANYANG BUSINESS SCHOOL

2017

**DO INVESTORS OVER-ANTICIPATE? EVIDENCE FROM THEIR
REACTIONS TO GAIN AND LOSS CONTINGENCIES**

XU TU

NANYANG BUSINESS SCHOOL

A thesis submitted to Nanyang Technological University in partial fulfillment
of the requirements for the degree of Doctor of Philosophy

2017

ACKNOWLEDGEMENT

I am extremely grateful for the patience, inspiration, and support provided by my supervisor Prof. Tan Hun Tong. His mentorship allows me to grow not only as a scholar but also as a person. I would also like to thank my committee members, Prof. Premila Gowri Shankar, Prof. Tan Seet Koh, and Prof. Krishna Savani for their guidance and constructive feedback on my research.

In addition, I gratefully acknowledge the many parties who have provided assistance and feedback over the course of my dissertation including but not limited to Mr. Lukas Helikum, Dr. Feng Yeo, Dr. Huaxiang Yin, Dr. Yao Yu, and the NBS PhD office.

Finally, I am deeply grateful to all my family and friends who provided endless support over the course of my doctoral program. Most of all, I thank my wonderful wife Pang Xinrong, my parents, and my uncle Xu Jianxin.

TABLE OF CONTENTS

ACKNOWLEDGMENT.....	iii
LIST OF FIGURES	v
LIST OF TABLES	v
ABSTRACT.....	vi
1. Introduction.....	1
2. Background and Hypothesis Development.....	9
Standards and Research Related to Contingencies	9
Uncertainty and Anticipation	12
Investors' Anticipations and Judgments	14
3. Research Method	15
Participants	15
Incentives	16
Manipulations.....	16
Procedure.....	17
4. Results	18
Checks	18
Test of Hypothesis	19
Supplemental Analyses	21
Second-Stage Valuation Judgment as the Dependent Variable.....	21
Mediation Analysis.....	22
Within-Participants Test of Anticipation.....	24
The Relation between Uncertainty and Negativity Bias	27
5. Discussion and Conclusion	29
REFERENCES	34
APPENDIX A: EXPERIMENTAL INSTRUMENT	36
APPENDIX B: EXPERIMENTAL FLOWS.....	48

LIST OF FIGURES

FIGURE 1 Main Results	49
FIGURE 2 Mediation Analysis: The Effect of Realization in the Loss Domain	50

LIST OF TABLES

TABLE 1 Test of Hypothesis (Change in Valuation Judgments).....	51
TABLE 2 Test of Hypothesis (Second-Stage Valuation Judgment)	52
TABLE 3 Process Measures	53
TABLE 4 Within-Participants Test	54
TABLE 5 Absolute Change in Valuation Judgments	55

ABSTRACT

Firms are required to communicate uncertainties about their future earnings and cash flows to investors. In this thesis, I conducted a between-participants experiment to examine how investors anticipate firms' uncertain future outcomes in response to contingency disclosures. I find that, inconsistent with expected utility theory but consistent with findings from psychology, investors raise a firm's valuation in response to a gain contingency as if the gain contingency has realized its best possible outcome. At the same time, they lower a firm's valuation more for a loss contingency than for a realized loss that is essentially the worst possible outcome of the corresponding loss contingency. The effect of anticipation on investors' valuation judgments is mediated by investors' uncertainty perceptions. My findings have implications for investors, managers, and regulators.

I. INTRODUCTION

Standard setters stress the need for firms to provide investors with financial information to help them assess the uncertainty of (the prospects for) firms' future cash flows (FASB 2010; IASB 2015). For example, conceptual frameworks for financial reporting, issued by both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), maintain that financial information is relevant if it has predictive value, which means that "it can be used as an input to processes employed by users to predict future outcomes" (FASB 2010; IASB 2015). Accordingly, extant standards require firms to disclose potential losses (i.e., loss contingencies or contingent liabilities; ASC 450-20-50, FASB 2008; IAS 37 paragraph 86, IASC 1998) and allow firms to disclose potential gains (i.e., gain contingencies; ASC 450-30-50; IAS 37 paragraph 89) related to uncertain events that may or may not occur in the future when the potential outcomes' magnitude is material and their likelihood reaches a certain threshold. The maintained assumption behind these standards is that disclosing contingencies before their outcomes being realized allows investors to form appropriate expectations about firms' future financial performances and make informed investment decisions. In this study, I shed some light on the validity of this assumption by examining how investors anticipate the outcomes of gain and loss contingencies, and how anticipation shapes their investment judgments in response to contingency disclosures.

Examining my research question is important for a couple of reasons. Firstly, contingency disclosures are common. I observe that 85 (18) of the S&P 100 firms disclosed loss (gain) contingencies in their 2015 10-K filings. As firms

normally dedicate a footnote to contingencies, this information is easily accessible. Secondly, understanding how investors anticipate firms' uncertain future outcomes helps to explain documented household portfolio choice puzzles such as nonparticipation in equities, own-company stock ownership, and portfolio under-diversification (Dimmock, Kouwenberg, Mitchell, and Peijnenburg 2016).¹ As investors are frequently confronted with the uncertainties associated with contingencies, their distaste for uncertainty and potentially biased outlook would give them reasons for avoiding investing in the stocks that they are not familiar with or avoiding stock investments altogether.

Examining how investors anticipate firms' uncertain future outcomes necessitates a benchmark. I compare investors' reactions to a gain (loss) contingency with their reactions to the contingency's best (worst) realized outcome. Expected utility theory assumes that investors will weigh the probability of the contingency's realization, discount the contingency's expected outcome back to the present, and benchmark the contingency's discounted expected outcome against the realized outcome.² Assuming that the discount rate

¹ Specifically, nonparticipation in equities is a phenomenon that a large proportion of the US population does not participate in the stock market, given that the models using standard expected utility functions predict that all people will do so (Merton 1969). One potential reason why people do not participate in the stock market is that firms' contingencies are frequently uncovered and reported, creating an impression that the stock market is filled with uncertainties. The own-company stock puzzle means that households voluntarily hold significant amounts of their employers' stock (e.g., Benartzi 2001). Portfolio under-diversification refers to the fact that many households hold equity portfolios that are extremely under-diversified relative to mean-variance efficient benchmarks (e.g., Blume and Friend 1975). Both own-company stock and portfolio under-diversification puzzles arise from investors' avoidance of investment in the stock that they are not familiar with. Contingency disclosures may contribute to these phenomena as investors are likely to have more information about the firms that they are more familiar with, and their feelings of knowing potentially offset their feelings of uncertainty for the firms that they are more familiar with.

² Using a loss contingency with a likelihood of reasonably possible and a maximum possible magnitude of \$9 million as an example, and assuming that "reasonably possible" implies a probability of 60%, the expected maximum value of the potential loss of \$5.4 million can be

is non-negative, a contingency should not change this investor's valuation judgment to a greater extent than a realized outcome of the same magnitude. Should investors reason this way, it would be beneficial for the information about contingencies, regardless of gain or loss, to be made publicly available as soon as possible, as such information allows investors to adjust their investment strategies promptly. This logic appears to be consistent with standard setters' intent for mandating/allowing contingency disclosures.

On the other hand, findings in psychology suggest that individuals tend to react to uncertain future events more strongly than equivalent sure past events (e.g., Van Boven and Ashworth 2007; Caruso, Gilbert, and Wilson 2008). Individuals strive to resolve the uncertainties associated with future events (Hirsh, Mar, and Peterson 2012). The uncertainty inherent in anticipated outcomes evokes and intensifies affective reactions (Van Boven and Ashworth 2007). Consequently, individuals make more extreme judgments for future events than for equivalent past events (Caruso 2010). Furthermore, individuals have strong distaste for uncertainty and sometimes perceive uncertain prospects to be worse than their worst possible scenarios (Gneezy, List, and Wu 2006; Simonsohn 2009). As distaste for uncertainty is more relevant to potential losses than to potential gains in my setting, I predict that investors will react to contingencies more strongly than their matched realized outcomes, and that their relatively stronger reactions to contingencies are more likely to occur for loss contingencies than for gain contingencies.

obtained by multiplying \$9 million with 60%. This \$5.4 million can then be discounted to the time when the investor is making his/her investment decision using a proper discount rate, and the valuation for the firm is adjusted based on the contingency's discounted expected value.

To test my research question, I conducted a between-participants design experiment with Amazon Mechanical Turk (Mturk) workers as participants. My experiment employed a 2 x 2 design with outcome (gain vs. loss) and realization (realized vs. contingent) as the independent variables. I showed participants information about a lawsuit that represented either a gain/loss contingency with a likelihood of reasonably possible or a realized gain/loss, where the magnitude of the realized gain/loss equaled the maximum magnitude of the gain/loss contingency's potential outcome. I collected participants' valuation judgments both before and after the lawsuit information and used the difference as the measure of investors' reactions. To ensure that my results are not driven by a lack of effort, I also provided participants with an economic incentive for accuracy. My between-participants experiment was supplemented with a within-participants test where I showed, and instructed participants to compare, a contingency juxtaposed with its matched realized outcome.

Results are as follows. I find that investors react to a gain contingency as if the gain contingency has realized its best possible outcome and that they react *more* negatively to a loss contingency than its matched realized loss, despite the fact that the matched realized loss is essentially the worst possible outcome of the loss contingency. I term this finding the *uncertainty bias*.³ Results of my debriefing questions confirm that participants do not believe that the reporting firm understated the magnitude of the contingencies' potential outcomes.

³ Prior studies in economics and psychology term the phenomenon where individuals value a risky prospect less than its worst possible realization as the uncertainty effect (Gneezy et al. 2006) or direct risk aversion (Simonsohn 2009). While these terms are consistent with my finding in the loss domain, they do not capture my finding in the gain domain where investors' reactions to an uncertain gain are equally positive as their reactions to the best realization of the uncertain gain. Please see pages 7 and 31 for more discussions on the differences between my study and Gneezy et al. (2006)/Simonsohn (2009).

Moreover, results of my within-participants test contrast with the results of my between-participants experiment, suggesting that investors' uncertainty bias is smaller in a within-participants setting where differences between contingent losses/gains and realized losses/gains are made salient. In a mediation analysis, I show that the stronger reaction to a loss contingency relative to its matched realized loss is caused by investors' heightened uncertainty perceptions. Lastly, examining the absolute values of investors' reactions, I find that investors' stronger reactions to losses than equivalent gains are magnified when outcomes are anticipated rather than realized.

My study contributes to the accounting literature on contingencies in a number of ways. Firstly, to the best of my knowledge, my study is the first to examine how investors react to gain contingencies, in comparison with loss contingencies. While disclosures of gain contingencies are neither prohibited nor rare, they have been largely ignored by prior research. As accounting standards do not permit gain contingencies to be recognized, information about gain contingencies is normally buried in the footnotes of financial reports. This creates two challenges for archival researchers who wish to examine the effects of gain contingencies on the capital market. First, the magnitude of gain contingencies is difficult to quantify and extract. Second, analyses of market reactions are restricted to the financial report level, naturally confounded by the other information in the same reports. Utilizing the comparative advantage of an experiment, I isolate the effect of gain contingencies on investors' judgments from the effects of the other information in firms' financial reports.

Secondly, I contribute to the literature on loss contingencies. Prior studies examine how disclosure features (Amer, Hackenbrack, and Nelson 1995; Nelson and Kinney 1997; Kennedy, Mitchell, and Sefcik 1998) or contents (Fanning, Agoglia, and Piercey 2015) affect auditors' or investors' judgments in loss-contingency settings, however, they have not tested whether or how investors judge differently when loss-contingency disclosures are provided versus not provided before the occurrences of any real losses.⁴ My study fills this gap. Investigating this issue allows me to test standard setters' maintained assumption that disclosing loss contingencies prior to their outcomes being realized unambiguously benefits investors. The validity of this fundamental assumption determines the value of contingency standards. My paper provides evidence against this assumption, suggesting that mandating loss-contingency disclosures may backfire as investors may react to these disclosures improperly and make suboptimal investment decisions consequently.

My study also contributes to the emerging literature on the effect of uncertainty on investors' responses to accounting information. Williams (2015) shows that investors react more strongly to bad earnings news than good earning news when there is more uncertainty in the macroeconomic environment. It is, however, unclear whether the effect documented by Williams (2015) reflects investors' rational behavior or their psychological bias since Williams' (2015)

⁴ Specifically, Amer et al. (1995) show how event base rate affects auditors' interpretations of probability expressions. Nelson and Kinney (1997) test how auditors and financial statement users react to the ambiguity in the probability of loss. Kennedy et al. (1998) show how investors anchor on disclosed parameters to construct the remaining distribution of possible outcomes for contingent environmental liabilities. Fanning et al. (2015) show how the dilution effect causes investors' perceptions of disclosed risks to decrease as more items are included in loss-contingency disclosures. None of these studies test the possibility that the provision of loss-contingency disclosures *per se* (as opposed to its omission) could lead to biased judgments of investors.

archival method and setting do not allow him to establish a judgment benchmark or show the underlying mechanisms. The distinction between rational behavior and psychological bias is important because the existence of investors' psychological bias would imply a need for regulatory intervention. My paper extends this literature by providing evidence on the causal effect of uncertainty on investors' biased reactions to accounting information and the effect's underlying processes. This causal effect is new to the literature, and it has standard-setting implications.

On the theoretical level, my study mainly contributes to psychology by bridging the literature about temporal inconsistency with the literature about the uncertainty effect. The former literature (e.g., Caruso et al. 2008; Caruso 2010) examines individuals' differential reactions to past versus future events holding certainty constant (as certain), whereas the latter literature (e.g., Gneezy et al. 2006; Simonsohn 2009) examines individuals' evaluations of certain versus uncertain outcomes holding timing constant (as current). My study combines the features of the two settings (i.e., contingencies are uncertain future events while realized outcomes are certain past events) and extends to a firm valuation task with accuracy incentives. Specifically, when an uncertain gain is in the future and its matched realized gain is in the past, the prediction of the uncertainty effect that the uncertain gain will be judged inferior to the uncertain gain's worst realization may not hold. This is because individuals' tendencies to value future gains higher than equivalent past gains, as suggested by the temporal inconsistency effect, would counteract the negative impact of distaste for uncertainty for the uncertain future gains. My study indeed shows that individuals'

evaluations of uncertain future gains are as positive as their evaluations of the uncertain gains' best realizations.

My findings have the following practical and standard-setting implications. Firstly, to the extent that investors react to contingency disclosures more strongly than what normative theories would predict, there would be incentives for strategic managers to disclose gain (loss) contingencies as soon (late) as possible. Ironically, this strategy is the opposite to what accounting conservatism suggests (i.e., bad news should be disclosed earlier than good news). To counteract the effect of managers' strategic reporting of gain contingencies, standard setters may consider mandating timely disclosures of gain contingencies' realized outcomes because such timely disclosures decrease the duration of investors' exposures to uncertain gains. Secondly, my findings should motivate regulators to consider educating individual investors about the effects of uncertainties on their judgments and to remind investors of their tendencies to overreact to uncertainties, particularly in the loss domain. Thirdly, my within-participants results suggest that recommending firms to juxtapose information about uncertainties with a benchmark context showing the extreme realized outcomes of the uncertainties, if available, helps to mitigate investors' uncertainty bias. This is another viable improvement to the extant standards on contingencies. Lastly, my finding that investors' asymmetric reactions to losses versus gains are amplified with outcome uncertainty suggests that a smaller degree of accounting conservatism is perhaps warranted for information about uncertainties than for information about actual events.

The rest of my paper is structured as follows. The next section reviews related literature and develops my hypothesis. Section III describes my research design and experimental procedure. Sections IV reports my results. I conclude in Section V.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Standards and Research Related to Contingencies

Under the U.S. GAAP, a contingency refers to an existing condition, situation, or set of circumstances involving uncertainty as to possible gain (i.e., gain contingency) or loss (i.e., loss contingency) to an entity that will ultimately be resolved when one or more future events occur or fail to occur (ASC 450-10-20). Examples of gain contingencies include receipts of money from donations, impending lawsuits where the reporting firm is a plaintiff, and expected refunds from the government involving tax disputes. Examples of loss contingencies include injuries or damages caused by products, impending lawsuits where the reporting firm is a defendant, and product warranties. The likelihood for a given contingency is classified as either “probable,” “reasonably possible,” or “remote,” where “probable” means “the future event or events are likely to occur,” “reasonably possible” means “the chance of the future event or events occurring is more than remote but less than likely,” and “remote” means “the chance of the future event or events occurring is slight” (ASC 450-20-20). ASC 450-20-50 requires that firms disclose a loss contingency in financial statements when it is probable or reasonably possible that an asset had been impaired or a liability had been incurred at the date of the financial statements. Firms are also required to disclose the nature of the loss contingency as well as an estimate of the possible loss or range of loss or a statement that an estimate cannot be determined.

Moreover, ASC 450-30-50 allows firms to disclose gain contingencies, stating that “[a]dequate disclosure shall be made of a contingency that might result in a gain, but care shall be exercised to avoid misleading implications as to the likelihood of realization.”

The disclosure requirements under IAS 37 are similar to, if not slightly stricter than, ASC 450. Specifically, firms are required to disclose loss contingencies unless the possibility of future losses occurring is remote. The disclosures are required to include an estimate of the loss contingency’s financial effect, an indication of the uncertainties relating to the amount or timing of any outflow; and the possibility of any reimbursement (IAS 37 paragraph 86). IAS 37 also allows firms to disclose gain contingencies, but only when the occurrence of future gains is probable. It (IAS 37 paragraph 89) states that “[w]here an inflow of economic benefits is probable, an entity shall disclose a brief description of the nature of the contingent assets at the end of the reporting period, and, where practicable, an estimate of their financial effect, measured...” One key difference between IAS 37 and ASC 450 is the definition of the probability expression “probable.” ASC 450 defines “probable” as “likely,” whereas IAS 37 defines “probable” as “more likely than not.”

While the disclosures of both gain and loss contingencies are either required or allowed, prior accounting research has focused exclusively on loss contingencies. This literature consists of three main streams. The first stream is the pioneering works of Banks and Kinney (1982) and Frost (1991), which provide empirical evidence that firms with new loss contingencies have lower cumulative abnormal returns than matched firms without new loss contingencies, suggesting that loss contingencies signal lower earnings quality. These findings

demonstrate that information about loss contingencies matters to the capital market, laying the ground for future research. The second stream is a couple of experimental studies examining the production of loss contingency information. They specifically look at auditors' judgment biases in relation to loss contingencies. Amer et al. (1995) examine auditors' interpretations of probability expressions and find that auditors' interpretation of "probable" is affected by event base rate. Nelson and Kinney (1997) investigate how auditors and financial statement users react to the ambiguity in the probability of loss. They show that both groups react (un)conservatively to ambiguity when probability is low (high), and that auditors respond less conservatively than do users. It is important to note that audit standards have changed radically since the publication of these studies. At that time, auditors were required to modify audit reports (SAS No. 58; AICPA 1988) or even audit opinions to reflect loss contingencies (SAP No. 33; AICPA 1963). These requirements were removed in 1996 (SAS No. 79; AICPA 1996).

Lastly, the third stream examines financial statement users' judgments in relation to loss contingencies, and my paper fits into this stream. Kennedy et al. (1998) examine how financial statement users use disclosed parameters to construct the remaining distribution of possible outcomes for contingent environmental liabilities and whether users' own distributions affect their capital allocation decisions. The authors show that financial statement users anchor on the disclosed parameters, and thus their constructed distribution and investment decisions are biased by the disclosed parameters. Fanning et al. (2015) investigate the impact of a proposed change to SFAS No. 5 (subsequently codified as ASC 450) that lowers the disclosure threshold for a firm's litigation risk disclosures. These authors find that increased disclosures actually lower

potential investors' perceptions of disclosed risks due to the dilution effect. While prior studies have shown several judgment biases in the context of loss contingencies, they have not examined whether or how investors' judgments differ with and without disclosures of loss contingencies before the realization of loss contingencies' potential outcomes. Should investors over- or underreact to contingencies, they may misprice stock during the time when the contingencies are disclosed and the time when the contingencies' outcomes are realized. This temporal mispricing may imply unnecessary stock-price volatility, exaggerating investors' feelings of uncertainty and further influencing their investment decisions. In that case, it may be better to limit such disclosures. More importantly, this contingency setting affords an opportunity to examine a broader question of how investors anticipate firms' future events given information about firms' uncertainties.

Uncertainty and Anticipation

Comparing a contingency with a realized outcome whose magnitude is equal to the maximum possible magnitude of the contingency's potential outcome, one might naturally expect that investors will react more strongly to the realized outcome. The contingency may not materialize into any real gain or loss, and even if a gain or loss were realized, the magnitude may not reach its maximum possible magnitude. This conventional wisdom is in line with the prediction of expected utility theory, according to which investors will use the discounted expected value of the contingency to guide their valuation judgments. Since the probability of realization is lower than 100% for any contingency by definition, the impact of a contingency on investors' valuation judgments should always be smaller than that of its matched realized outcome, *ceteris paribus*.

This prediction, however, is at odds with findings from psychology that show how uncertainty shapes anticipation, which in turn influences judgments. Given a contingency disclosure, investors have to wait for the realization of the contingency's outcome. Anticipating a contingency's outcome, investors are susceptible to the psychological influence of uncertainty. Specifically, uncertainty has been shown to intensify affective reactions. For instance, individuals rate positive film clips more positively and negative film clips more negatively when being asked to repeat uncertain phrases during watching than when being asked to repeat certain phrases during watching (Bar-Anan, Wilson, and Gilbert 2009). When evaluating others, people tend to prefer potential to achievement although the achievement is objectively better (Tormala, Jia, and Norton 2012; Kupor, Tormala, and Norton 2014). For example, people prefer NBA basketball players with a potential to achieve certain performance statistics to the NBA players who have actually achieved those exact performance statistics. People are also shown to prefer a painting by an artist who has the potential to win an award to the exact same painting by an artist who has won that particular award (Tormala et al. 2012).

As future events are more uncertain than past events, the effect of uncertainty on affective reactions shapes individuals' anticipations. For example, people report more intense emotions when anticipating positive (e.g., Thanksgiving Day) and negative (e.g., annoying noises) events in the future than recalling the same event in the past (Van Boven and Ashworth 2007). Moreover, people judge future bad deeds more negatively, and future good deeds more positively, than equivalent behavior in the past (Caruso 2010). In addition, people value future tasks higher than equivalent past tasks, regardless whether they are

asked to pay for the tasks or are paid for the tasks (Caruso et al. 2008). While the exact mechanisms behind the effect of uncertainty on affective reactions and anticipation are still in question, it has been suggested that uncertain events promote greater interests and deeper processing than sure events (Van Boven and Ashworth 2007; Tormala et al. 2012). An example for this account is that people prefer watching live television than recorded programs because the uncertainty associated with live program creates more excitement (Vosgerau, Wertenbroch, and Carmon 2006).

Investors' Anticipations and Judgments

I posit that investors will anticipate firms' uncertain gains and uncertain losses differently. In the loss domain, I expect that investors' distaste for uncertainty will play a crucial role in forming their investment judgments. When waiting for an uncertain adverse outcome to resolve, people experience negative feelings such as worry and fear, triggering seemingly irrational decisions (MacGregor 1991; Hirsh et al. 2012). For example, people prefer receiving more voltage than waiting for cutaneous electric shocks (Berns et al. 2006). In a behavioral-economics experiment, individuals are willing to pay less for a gift certificate with uncertain value than the gift certificate's lowest possible value (Gneezy et al. 2006; Simonsohn 2009). These findings suggest that investors' feelings of uncertainty will cause negative affective reactions towards anticipated losses. On the contrary, when anticipating an uncertain positive outcome to resolve, investors are unlikely to experience negative affect, and their distaste for uncertainty is not expected to alter their judgments.

Based on the above discussion, I posit that investors' reactions to contingencies will be shaped by the uncertainties associated with contingencies.

In the loss domain, uncertainty will affect investors' judgments in two ways. First, uncertainty will create an over-anticipation effect, meaning that anticipated outcomes are more heavily weighed by investors and thus more impactful than retrospective outcomes. Second, uncertainty will evoke negative emotions such as worry. Both mechanisms contribute to the same prediction, which is that investors will react to a loss contingency more negatively than its matched realized loss. In the gain domain, uncertainty is also expected to create an over-anticipation effect, implying a stronger reaction to a gain contingency than its matched realized gain. Unlike the loss domain, uncertainty will not have an emotional impact on investors' investment judgments, as investors' distaste for uncertainty plays a smaller role in the gain domain.⁵ Therefore, I expect that investors' tendencies to over-anticipate are stronger in the loss domain than in the gain domain, implying a two-way interaction effect between outcome and realization of outcome on investors' investment judgments. I accordingly propose the following hypothesis:

Hypothesis: *Investors will react to a contingency more strongly than to a realized outcome whose magnitude is equal to the maximum possible magnitude of the contingency's potential outcome, with the differences in investors' reactions to the contingency versus the matched realized outcome being larger in the loss domain than in the gain domain.*

III. RESEARCH METHOD

Participants

Two hundred and sixty Mturk workers participated in my experiment. I screened Mturk workers with four criteria. Specifically, I restricted the

⁵ My prediction about the asymmetric effect of uncertainty between the gain domain and the loss domains is consistent with the intuition of prospect theory (Kahneman and Tversky 1979) and negativity bias (e.g., Rozin and Royzman 2001). However, neither prospect theory nor negativity bias prescribes how investors react to firms' uncertain future events versus certain past events.

participation to the workers who had: 1) had some college education or above; 2) taken at least one accounting course; 3) evaluated a company's performance by analyzing its financial statements at least once; and, 4) invested in individual company's stock directly. On average, participants were 36 years old with 16 years of work experience, and they had eight years of stock investment experience and had invested in the stock market (purchased stocks) 39 times. Mturk workers are appropriate for my study because I examine a fundamental psychological phenomenon, and I believe that my findings are generalizable to general investors (Farrell, Grenier, and Leiby 2017).

Incentives

Participants received a fixed base pay of \$0.75. On top of the base pay, participants were given an economic incentive to make valuation judgments as accurately as possible. Specifically, I gathered the valuation judgments from a panel of experienced investors, and I told participants that the top five participants whose valuation judgments were closest to those determined by this panel of experienced investors would get a bonus of \$5 each. On average, the experiment took participants 42 minutes to complete.⁶

Manipulations

My experiment employed a 2 x 2 between-participants design with random assignments. Participants received information about a patent infringement lawsuit between a hypothetical firm that they were evaluating and

⁶ I ran a supplemental experiment where participants received a fixed pay of \$1 without any accuracy incentive. This experiment recruited 261 Mturk workers with the same screening procedure as the main experiment. On average, participants spent 22 minutes on the supplemental experiment, approximately half of the time participants spent on the main experiment. I obtain similar results as my main experiment, suggesting that while accuracy incentives increase participant effort, they do not alter judgments in my setting. This supplemental experiment, along with my main experiment, shows that incentives that lead to a doubling of effort do not eliminate or even reduce the bias.

its competitor. The first manipulated factor is outcome, varying between gain and loss. In the gain condition, the hypothetical firm recently sued its competitor, whereas in the loss condition, the hypothetical firm was recently sued by its competitor. The second manipulated factor is realization (realized or contingent). In the realized (contingent) condition, the lawsuit had (not) been settled between the two parties. Further, in the contingent condition, the firm provided a maximum estimate for the total gain/loss, where the total gain was net of litigation expenses and the total loss was inclusive of litigation expenses. As discussed previously, the maximum total amount of the gain/loss that can be realized for the contingency was equal to the actual total amount of the realized gain/loss. The amount of the gain and that of the loss were identical and equal to the amount of the net income for the hypothetical firm's most recent fiscal year. I also held constant the timing of the lawsuit between the gain and the loss conditions. The experimental instrument is presented in Appendix A.

The contingencies were stated to be reasonably possible. I selected this probability because it is the lowest probability for a loss contingency to be disclosed under the U.S. GAAP. Using the lowest allowable probability has a couple of benefits. First, it is closer to 50% than a higher probability, implying a higher level of uncertainty and affording me a more powerful test. Second, it is further from 100% certainty than a higher probability, reducing the possibility that the expected values of the contingencies are believed to possibly exceed the value of the realized outcomes.

Procedure

I asked participants to assume the role of a general investor. Participants began by reading some background information and financial data about the

hypothetical firm and then made their initial valuation judgments. Following prior studies, I captured investors' valuation judgments on a 101-point scale, which asked participants to indicate what they believed to be an appropriate common stock valuation for the company, ranging from 0 = "low" to 100 = "high" (Koonce and Lipe 2010). Then participants received the information concerning the lawsuit, which was manipulated across conditions. Next, participants were instructed to make valuation judgments again. The change in their valuation judgments serves as my dependent variable. Then participants proceeded to the check questions. After the between-participants stage, I employed a within-participants test that examined the effect of anticipation. Following the within-participants test, my experiment concluded with a demographic questionnaire where I elicited participants' background information and their judgments about the probability expression "reasonably possible." The experimental flows are illustrated in Appendix B.

IV. RESULTS

Checks

I asked participants to indicate whether the company was the plaintiff or the defendant in the lawsuit as a manipulation check for outcome. Eighty-seven percent of the participants correctly answered this question. I also asked participants to indicate whether the case had been settled or not as a manipulation check for realization. Ninety-two percent of the participants correctly answered this question. Therefore, my manipulations were successful. I did not exclude those who failed the manipulation checks from my analyses as my theory development predicts an unconscious effect, although I obtain qualitatively similar results when excluding those who failed the manipulation checks.

The internal validity of my study hinges on the assumption that participants do not believe that the magnitude of the contingencies' outcomes possibly exceeds the magnitude of the matched realized outcomes. As a check on this assumption, I asked the participants in the gain (loss) contingency condition to indicate the maximum possible amount of total gain (loss) and the most likely amount of total gain (loss) that the firm would obtain (had to incur) as a result of this lawsuit, after they revised their valuation judgments in my between-participants stage.⁷ Out of all 62 participants in the gain contingency condition, four believe the maximum possible amount of the gain contingency's outcome to be larger than the amount of the realized gain. Out of all 66 participants in the loss contingency condition, six believe the maximum possible amount of the loss contingency's outcome to be larger than the amount of the realized loss. While I exclude the participants who failed this check from my analyses, I obtain similar results when including them. Additionally, participants judge the most likely amount of the gain (loss) contingency's outcome to be \$7.164 million (\$7.650 million) on average, suggesting that they do not believe that the firm's maximum estimation of \$9 million was an understatement. Finally, I asked participants to indicate what they believed the probability expression "reasonably possible" implied. The average response is 62%, consistent with the prior literature (58% in Reimers 1992; 59% in Amer et al. 1994).⁸

Test of Hypothesis

⁷ Participants were not allowed to go back and change their valuation judgments.

⁸ The minimum probability threshold for gain-contingency disclosures under IFRS 37 is probable, which is defined as more likely than not, meaning 50%. The average judged probability of reasonably possible by the participants in the gain contingency condition is 61%, exceeding that threshold. Therefore, my findings can be generalized to the investors in the IFRS-adopting economies.

I hypothesize that investors will react to a contingency more strongly than to a realized outcome whose magnitude is equal to the maximum possible magnitude of the contingency's potential outcome, and the differences in investors' reactions to the contingency versus the realized outcome will be larger in the loss domain than in the gain domain. Descriptive statistics are presented in Panel A of Table 1 and depicted in Figure 1. To test my hypothesis, I conducted a two-way analysis of variance (ANOVA) with outcome and realization as the independent variables and change in valuation judgments as the dependent variable. Consistent with my expectation, I find a significant interaction effect between outcome and realization ($p = 0.015$, one-tailed equivalent; see Panel B of Table 1).⁹

Results of simple effect tests (see Panel C of Table 1) show that participants raise their valuation judgments to a similar degree for the gain contingency as for the realized gain (means: 7.724 for gain contingency vs. 5.773 for realized gain; $p = 0.502$). Additionally, participants lower their valuation judgments significantly more for the loss contingency than for the realized loss (means: -22.350 for loss contingency vs. -15.379 for realized loss; $p = 0.008$, one-tailed). Therefore, my results generally support my hypothesis. These results suggest that, benchmarked with the normative prediction, investors tend to over-anticipate the outcomes of both gain and loss contingencies with the over-anticipation being stronger for loss contingencies than for gain contingencies.¹⁰

⁹ P-values are two-tailed unless stated otherwise.

¹⁰ As discussed previously, the expected values of both the gain contingency and the loss contingency are smaller than the value of the realized outcomes in the experiment. Accordingly, normative theories would predict that investors' reactions will be less positive for the gain contingency than for the realized gain and that their reactions will be less negative for the loss contingency than for the realized loss. However, I do not find that investors' reactions are less positive for the gain contingency than for the realized gain or that their reactions are less negative for the loss contingency than for the realized loss. Hence, these deviations from normative

[Insert Table 1 and Figure 1 about here]

Supplemental Analyses

Second-Stage Valuation Judgment as the Dependent Variable

As an alternative test of my hypothesis, I also conducted a two-way ANOVA with outcome and realization as the independent variables, second-stage valuation judgment as the dependent variable, and first-stage valuation judgment as a covariate. Descriptive statistics of second-stage valuation judgment are presented in Panel A of Table 2, and means for first-stage valuation judgment are presented in Panel B of Table 2. The mean first-stage valuation judgment is 48.596, and it does not vary across conditions ($p > 0.231$; not tabulated).

Consistent with the results on change in valuation judgments, there is a significant interaction effect between outcome and realization on second-stage valuation judgment ($p = 0.007$, one-tailed equivalent; see Panel C of Table 2). Results of simple effect tests (see Panel D of Table 2) show that participants' second-stage valuation judgments are similar in the gain contingency condition as in the realized gain condition (means: 54.328 for gain contingency vs. 52.803 for realized gain; $p = 0.500$). Additionally, participants' second-stage valuation judgments are significantly lower in the loss contingency condition than in the realized loss condition (means: 26.250 for loss contingency vs. 36.773 for realized loss; $p = 0.003$, one-tailed). Therefore, my results on the test of

predictions suggest that investors tend to over-anticipate firms' uncertain future outcomes, even in the gain domain.

hypothesis are robust to the specification with second-stage valuation judgment as the dependent variable and first-stage valuation judgment as a covariate.

[Insert Table 2 about here]

Mediation Analysis

I conducted a mediation analysis to show why investors react more strongly to a loss contingency than its matched realized loss. I depict my theoretical model in Figure 2. I posit that loss contingencies, relative to realized losses, will heighten investors' uncertainty perceptions (link 1), which in turn negatively affect their valuation judgments (link 2). Here, I conducted a bootstrap analysis to test the mediation path suggested by my theory development (see Preacher and Hayes 2004, and Zhao, Lynch, and Chen 2010 for a discussion).

Following my theory development, I measured three aspects of uncertainty. The first aspect is investors' *judgments* about the level of the firm's uncertainty. To capture this aspect, I asked participants to indicate how uncertain they felt about the company's future on an 11-point scale ranging from 1 = "not uncertain at all" to 11 = "very uncertain." The second aspect is investors' *information weighting* as my theory development posits that investors will weigh uncertainty information more heavily than certainty information. I captured this aspect with two questions. The first asked participants, "[h]ow much weight did you put on the lawsuit information (as a percentage of your total information set) when you made your final valuation judgment?" Participants responded on a slider ranging from 0% to 100%. The second asked participants to indicate the extent to which they found the lawsuit information to be important to their investment judgments on an 11-point scale ranging from 1 = "not at all" to 11 =

“very much.” The third aspect is investors’ uncertainty-related *emotions*. I captured this aspect also with two questions. The first question asked participants to indicate the extent to which the lawsuit information affected their feelings (as an investor) on an 11-point scale ranging from 1 = “not at all” to 11 = “very much.” The second asked participants to indicate the extent to which they were worried about the company’s future earnings on an 11-point scale ranging from 1 = “not at all” to 11 = “very much.”

As shown in Panel A of Table 3, the effects of realization on the process measures are consistent with my theory development. A factor analysis shows that the five process measures capture a single construct (the biggest eigenvalue = 3.135, followed by 0.650).¹¹ I termed this factor as the “uncertainty score,” and analyzed whether it mediates the effect of realization on change in valuation judgments in the loss domain. The factor loadings are presented in Panel B of Table 3.

As shown in Figure 2, loss contingencies, relative to realized losses, have a significant positive effect on the uncertainty score ($p = 0.005$; link 1), which in turn has a significant negative effect on change in valuation judgments ($p < 0.001$; link 2). The negative impact of loss contingencies (relative to realized losses) on change in valuation judgments becomes insignificant after controlling for the uncertainty score ($p = 0.436$; link 3). Overall, a bootstrapping process with 5000 samples (bias corrected) yields a 99% confidence interval of -9.724 to -0.740 for

¹¹ This factor analysis has principle axis factoring as the extraction method and Varimax as the rotation method, and it is based on the correlation matrix.

the indirect effect.¹² Because zero is not in this interval, I conclude that uncertainty perceptions fully mediate the effect of realization on investors' judgments in the domain of loss. In the domain of gain, there is no difference in investors' judgments between the realized gain and the gain contingency conditions ($p = 0.502$), indicating the absence of a mediation effect in this domain.

[Insert Table 3 and Figure 2 about here]

Within-Participants Test of Anticipation

After answering the debriefing questions, participants proceeded to a within-participants test on the effect of realization. This test's objective is two-fold. First, its results will reveal whether the effects documented in the between-participants experiment persist in a within-participants setting which is more informationally rich in that participants are exposed to both a realized loss/gain setting and a contingent loss/gain setting. Second, it helps to further rule out the possible alternative explanation that investors perceive the maximum possible magnitude of the contingencies' potential outcomes to be objectively larger than the magnitude of the realized outcomes. In this test, I presented the two scenarios of the lawsuit to each participant simultaneously. One scenario described the contingency, and the other described the matched realized outcome. The scenarios essentially repeated the wordings in the between-participants manipulations. Specifically, the participants who had been assigned to the gain conditions in the between-participants stage were presented with the information about the gain contingency and the realized gain side by side in this within-

¹² My mediation result is robust to alternative numbers of bootstrap samples including 2000, 10000, and 20000. Moreover, a traditional Sobel test confirms this mediation relation ($z = -2.618$, $p = 0.009$; not tabulated).

participants test. Likewise, the participants who had been assigned to the loss conditions in the between-participants stage were presented with the information about the loss contingency and the realized loss side by side.

I asked three questions. The first was, “[u]nder which scenario would you believe that the company has a higher common stock valuation?” Participants were instructed to respond on a nine-point scale with -4 indicating that the realized outcome was very much higher, 0 indicating no difference, and +4 indicating that the contingency was very much higher. The second question asked participants to select the scenario that was more favorable (or less unfavorable) for the company financially. The last question asked participants to select the scenario that they would prefer the company to be in as an investor of the company. The second and the third questions were multiple choice questions with two options, namely Scenario A (the realized outcome) and Scenario B (the contingency). I coded the option of Scenario A (the realized outcome) as 1 and the option of Scenario B (the contingency) as 2. Accordingly, a mean value of 1.5 would imply that investors have no clear preference between the two scenarios on average.

For the gain domain, the results are presented in Panel A of Table 4. I find that participants give a significantly higher valuation for the realized gain than for the gain contingency (mean = -2.419, p [test value: 0] < 0.001). Furthermore, participants believe that the realized gain is significantly more favorable to the company than the corresponding gain contingency (mean = 1.073, p [test value: 1.5] < 0.001), and they prefer the company to have the realized gain instead of the corresponding gain contingency (mean = 1.089, p [test value: 1.5] < 0.001).

These responses suggest that participants believe that the realized gain is objectively better than the corresponding gain contingency. These findings are inconsistent with the result of the between-participants test, where the change in valuation judgments does not differ between the realized gain and the gain contingency conditions.

Moving on to the loss domain, the results are presented in Panel B of Table 4. I do not find that participants value the realized loss versus the corresponding loss contingency differently in this within-participants setting (mean = 0.032, p [test value: 0] = 0.870). Similarly, participants believe the realized loss and the loss contingency to be equally unfavorable to the firm (mean = 1.516, p [test value: 1.5] = 0.723), and they have no clear preference between the realized loss and the loss contingency (mean = 1.476, p [test value: 1.5] = 0.595). These results also differ from the result of the between-participants test, where the change in valuation judgments is significantly more negative for the loss contingency than for the matched realized loss.¹³

Taken together, these results suggest that investors' investment judgments deviate less from the prediction of expected utility theory in a within-participants than a between-participants setting. Hence, investors' uncertainty bias is significantly smaller in a within-participants setting than in a between-participants setting. In addition, when simultaneously presented with both the

¹³ Standard economic theories that do not incorporate individuals' preferences about uncertainty would predict that investors will judge the loss contingency to be less negative than the corresponding realized loss. The result here suggests that investors have a conscious distaste for uncertainty, which causes them to judge the loss contingency to be similarly negative as the corresponding realized loss in a within-participants setting.

gain (loss) contingency and the realized best gain (worst loss), participants do not think that the gain (loss) contingency is better (worse) than the realized gain (loss).

Furthermore, these within-participants results suggest that when a maximum estimate for a contingency's potential outcome is disclosed, juxtaposing the contingency with its extreme realized outcome potentially mitigates investors' uncertainty bias. This suggests a viable improvement to the existing contingency standards: recommending firms to provide a benchmark context showing the scenario where the disclosed gain (loss) contingency's best (worst) possible outcome is realized, if available. Presented with this anchor, investors will be less likely to over-anticipate firms' uncertain future outcomes.

[Insert Table 4 about here]

The Relation between Uncertainty and Negativity Bias

The theory of negativity bias suggests that individuals respond more strongly to negative events than equivalent positive events (e.g., Rozin and Royzman 2001). Negativity bias is a phenomenon that can be explained by the loss aversion model (Kahneman and Tversky 1979). The literature on negativity bias has not examined whether this asymmetry is stronger or weaker when events are anticipated versus realized. Here, I analyze the between-participants sample of my main experiment described above and use the absolute value of change in valuation judgments as the dependent variable to test this question.

Accordingly, I conducted an ANOVA with outcome and realization as the independent variables and the absolute value of change in valuation judgments as the dependent variable to examine the relation between uncertainty and negativity bias. As described above, the first manipulated factor is outcome,

varying between gain and loss. The second manipulated factor is realization, varying between realized and contingent. Also recall that investors' valuation judgments were captured on a 101-point scale, which asked participants to indicate what they believed to be an appropriate common stock valuation for the company, ranging from 0 = "low" to 100 = "high." Participants were instructed to make valuation judgments before and after the information concerning the lawsuit, which was manipulated across conditions. A larger absolute value of change in valuation judgments in the loss domain than in the gain domain would suggest the existence of a negativity bias, and a bigger difference in the absolute value of change in valuation judgments between the loss domain and the gain domain would suggest a stronger negativity bias.

Descriptive statistics are presented in Panel A of Table 5. As shown in Panel B of Table 5, the ANOVA yields a significant main effect of outcome ($p < 0.001$) with the mean absolute value being larger for loss than for gain, consistent with prior findings on negativity bias. This main effect, however, is qualified by a two-way interaction between outcome and realization ($p = 0.034$), suggesting that the asymmetry in investors' reactions to losses versus gains is larger when the outcomes are anticipated than realized. Results of simple effect tests (see Panel C of Table 5) show that investors' stronger reactions to losses than gains are highly significant when outcomes are contingent ($p < 0.001$) while only marginally significant when outcomes are realized ($p = 0.063$, one-tailed), suggesting that negativity bias is strong for anticipated outcomes but only moderate for realized outcomes. Additionally, there is no significant difference in the magnitude of investors' reactions to realized versus contingent gains ($p = 0.426$), but there is a significant difference in the magnitude of investors'

reactions to realized versus contingent losses ($p = 0.014$, one-tailed), consistent with my main findings discussed previously.

Overall, these results provide evidence that negativity bias is stronger when outcomes are anticipated (uncertain) than realized (certain). This finding of a moderating role of uncertainty on negativity bias has not been established by either accounting or psychology studies.

[Insert Table 5 about here]

V. DISCUSSION AND CONCLUSION

In this study, I investigate how investors anticipate firms' uncertain future outcomes by comparing how they react to gain and loss contingencies to how they react to realized gains and realized losses. I show that, despite the presence of an accuracy incentive, investors react more negatively to a loss contingency than a realized loss that is equivalent to the loss contingency's worst possible outcome, and that they react to a gain contingency as if it has realized its best possible outcome. These findings suggest that investors tend to over-anticipate firms' uncertain future outcomes. I further find that investors' stronger reaction to a loss contingency than its matched realized loss is caused by their uncertainty perceptions. The results of my within-participants test deviate less from the prediction of expected utility theory than those of my between-participants test, suggesting that the effects documented in the between-participants are significantly reduced when the differences between contingent losses/gains and realized losses/gains are made salient. I triangulate my between-participants results with the results of my post-experimental checks and within-participants test, providing strong evidence against the normative explanation that participants believe the magnitude of the contingencies' potential outcomes can

exceed the magnitude of the realized outcomes. Lastly, I provide evidence that uncertainty magnifies the negativity bias of investors.

I contribute to the accounting literature on investors' judgment and decision-making by documenting a previously-unexamined psychological bias of investors. I demonstrate that this bias is caused by the uncertainty inherent in accounting information, extending the literature on the effect of uncertainty on investors' responses to accounting information. I also contribute to the literature on contingencies by being the first to examine the effect of gain contingencies on investors' judgments and being the first to show investors' stronger reactions to loss contingencies than to real losses. The latter result provides early evidence that disclosing loss contingencies prior to their outcomes being realized may lead to suboptimal investment decisions of investors, contrary to standard setters' intent and investors' own beliefs (Desir, Fanning, and Pfeiffer 2010).

My study also makes theoretical contributions to psychology. First, I contribute to the literature on temporal inconsistency. Prior studies document individuals' stronger reactions to future events than equivalent past events in positive event and negative event scenarios separately, and they provide no accuracy incentive to participants. I extend this literature by systematically comparing the effects of temporal inconsistency between positive and negative scenarios. I show that, in the presence of an accuracy incentive, the temporal inconsistency effect is stronger in a negative scenario than a positive scenario. Moreover, prior studies show the temporal inconsistency effect on individuals' self-imagined events, whereas my study shows that the effect persists when individuals react to another entity's reported information.

Second, while my findings in the loss domain are consistent with the intuition of the uncertainty effect shown by Gneezy et al. (2006) and Simonsohn (2009), my study differs from theirs in four ways. First, individuals react to one outcome only in my study, while individuals evaluate two outcomes in their studies. Second, my setting has a time dimension, meaning that the contingencies are anticipated future events, while that the realized outcomes are past events. This is because contingencies and realized outcomes naturally vary in both timing and uncertainty in practice. In contrast, both the gift certificates and the lotteries are current in their studies. Third, participants were asked to value a firm with uncertain events in my setting, whereas participants were asked to buy a lottery for themselves in their setting. These differences may contribute to the differences between my findings in the gain domain and their findings. Last, neither Gneezy et al. (2006) nor Simonsohn (2009) examines individuals' evaluations of uncertain losses. I show that when individuals were shown potential losses, judgment, emotions, and information weighting jointly cause investors to overreact to the uncertain losses. Neither Gneezy et al. (2006) nor Simonsohn (2009) provides evidence of the underlying process behind the uncertainty effect with their binary lottery setting.

Lastly, I contribute to the negativity bias literature by demonstrating the moderating role of outcome uncertainty. Prior psychology studies on negativity bias have not examined the effect of this moderator. My results, indicating that negativity bias is stronger with anticipated than realized outcomes, suggest a boundary condition of negativity bias such that investors' negativity bias is moderate when outcomes are certain whereas their negativity bias is strong when outcomes are uncertain.

My findings have important implications for investors, standard setters, and managers. First, to the extent that investors react strongly to firms' uncertain future outcomes, disclosing information about uncertain negative cash flows or earnings is not an ideal strategy for managers. More importantly, contrary to the argument in the conceptual frameworks for financial reporting, information about firms' uncertainties may not necessarily benefit individual investors. Given current regime, my findings highlight the need for a supplemental standard that mandates timely disclosures of contingencies' realization as a mechanism to reduce investors' exposures to firms' known uncertainties. Additionally, I show that accompanying information about firms' uncertainties with a benchmark context showing the scenario where the uncertainties' extreme outcomes are realized potentially lessens investors' tendencies to over-anticipate.

Second, given that many events are uncertain and unrealized, my results on negativity bias show that negativity bias may indeed be very prevalent. My results also raise the question of whether accounting conservatism should be applied to a similar extent both for information about actual events as well as for information about uncertainties. Specifically, investors may respond to accounting conservatism differently in actual versus anticipated scenarios. That is, an adequate degree of accounting conservatism for information about actual events may be excessive for information about uncertainties.

As anticipation is a fundamental psychological process, my findings can be applied to a wide range of accounting and business settings where decision-makers have to make important judgments while waiting for the resolution of uncertain future outcomes. For instance, Costello and Wittenberg-Moerman (2011) document that lenders decrease their reliance on the use of accounting-

based financial covenants following borrowers' internal control weakness reports but not following borrowers' restatements, despite that restatements are certain while internal control weakness merely suggests a possibility of future restatements. My findings provide a potential account for this counterintuitive finding, as lenders may over-anticipate the occurrence and consequences of borrowers' restatements when processing borrowers' internal control weakness reports. In scenarios like this, decisions are shaped by anticipation under uncertainty, and my findings are potentially relevant.

My paper has several limitations that open avenues for future research. First, to ensure a clean manipulation of realization, I kept my experiment relatively abstract. Future studies may examine whether specific accounting treatments of contingencies such as recognition can alter investors' tendencies to over-anticipate. Second, the magnitude of outcomes was held constant and relatively large in my experiment, providing power to my tests. Future studies may examine whether the magnitude of outcomes will moderate the effect of anticipation. Third, I measured investors' uncertainty perceptions in a post-experimental questionnaire. Advanced technologies such as fMRI and eye-tracking may provide more direct evidence on the underlying processes of the uncertainty bias demonstrated by my study.

REFERENCES

- Amer, T., K. Hackenbrack, and M. Nelson. 1995. Context-dependence of auditors' interpretations of the SFAS No. 5 probability expressions. *Contemporary Accounting Research* 12 (1): 25-39.
- American Institute of Certified Public Accountants (AICPA). 1963. *Statement on Auditing Procedures No. 33*. New York, NY: AICPA.
- . 1988. *Statement on Auditing Standards No. 58: Reporting on Audited Financial Statements*. New York, NY: AICPA.
- . 1996. *Statement on Auditing Standards No. 79: Amendment to Statement on Auditing Standards No. 58, Reports on Audited Financial Statements*. New York, NY: AICPA.
- Banks, D. W., and W. R. Kinney Jr. 1982. Loss contingency reports and stock prices: An empirical study. *Journal of Accounting Research* 20 (1): 240-254.
- Bar-Anan, Y., T. D. Wilson, and D. T. Gilbert. 2009. The feeling of uncertainty intensifies affective reactions. *Emotion* 9 (1): 123-127.
- Benartzi, S. 2001. Excessive extrapolation and the allocation of 401(k) accounts to company stock. *Journal of Finance* 56 (5): 1747-1764.
- Berns, G. S., J. Chappelow, M. Cekic, C. F. Zink, G. Pagnoni, and M. E. Martin-Skurski. 2006. Neurobiological substrates of dread. *Science* 312 (5774): 754-758.
- Blume, M. E., and I. Friend. 1975. The asset structure of individual portfolios and some implications for utility functions. *Journal of Finance* 30 (2): 585-603.
- Caruso, E. M. 2010. When the future feels worse than the past: A temporal inconsistency in moral judgment. *Journal of Experimental Psychology: General* 139 (4): 610-624.
- Caruso, E. M., D. T. Gilbert, and T. D. Wilson. 2008. A wrinkle in time: Asymmetric valuation of past and future events. *Psychological Science* 19 (8): 796-801.
- Costello, A. M., and R. Wittenberg-Moerman. 2011. The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports. *Journal of Accounting Research* 49 (1): 97-136.
- Desir, R., K. Fanning, and R. J. Pfeiffer. 2010. Are revisions to SFAS No. 5 needed? *Accounting Horizons* 24 (4): 525-545.
- Dimmock, S. G., R. Kouwenberg, O. S. Mitchell, and K. Peijnenburg. 2016. Ambiguity aversion and household portfolio choice puzzles: Empirical evidence. *Journal of Financial Economics* 119 (3): 559-577.
- Fanning, K., C. P. Agoglia, and M. D. Piercey. 2015. Unintended consequences of lowering disclosure thresholds. *The Accounting Review* 90 (1): 301-320.
- Farrell, A. M., J. H. Grenier, and J. Leiby. 2017. Scoundrels or stars? Theory and evidence on the quality of workers in online labor markets. *The Accounting Review* 92 (1): 93-114.
- Financial Accounting Standards Board (FASB). 2008. *Accounting for Contingencies*. Norwalk, CT: FASB.
- . 2010. *Statement of Financial Accounting Concepts No. 8*. Norwalk, CT: FASB.
- Frost, C. A. 1991. Loss contingency reports and stock prices: A replication and extension of Banks and Kinney. *Journal of Accounting Research* 29 (1): 157-169.

- Gneezy, U., J. A. List, and G. Wu. 2006. The uncertainty effect: When a risky prospect is valued less than its worst possible outcome. *The Quarterly Journal of Economics* 121 (4): 1283-1309.
- Hirsh, J. B., R. A. Mar, and J. B. Peterson. 2012. Psychological entropy: A framework for understanding uncertainty-related anxiety. *Psychological Review* 119 (2): 304-320.
- International Accounting Standards Board (IASB). 2015 *Conceptual Framework for Financial Reporting*. Exposure Draft. London, UK: IASB
- International Accounting Standards Committee (IASC). 1998. *Provisions, Contingent Liabilities and Contingent Assets. International Accounting Standard No. 37*. London, UK: IASC
- Kahneman, D., and A. Tversky. 1979. Prospect theory: An analysis of decision under risk. *Econometrica* 47 (2): 263-291.
- Kennedy, J., T. Mitchell, and S. E. Sefcik. 1998. Disclosure of contingent environmental liabilities: Some unintended consequences? *Journal of Accounting Research* 36 (2): 257-277.
- Koonce, L., and M. G. Lipe. 2010. Earnings trend and performance relative to benchmarks: How consistency influences their joint use. *Journal of Accounting Research* 48 (4): 859-884.
- Kupor, D. M., Z. L. Tormala, and M. I. Norton. 2014. The allure of unknown outcomes: Exploring the role of uncertainty in the preference for potential. *Journal of Experimental Social Psychology* 55: 210-216.
- MacGregor, D. 1991. Worry over technological activities and life concerns. *Risk Analysis* 11 (2): 315-324.
- Merton, R. C. 1969. Lifetime portfolio selection under uncertainty: The continuous-time case. *Review of Economics and Statistics* 51 (3): 247-257.
- Nelson, M. W., and W. R. Kinney Jr. 1997. The effect of ambiguity on loss contingency reporting judgments. *The Accounting Review* 72 (2): 257-274.
- Preacher, K. J., and A. F. Hayes. 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers* 36 (4): 717-731.
- Reimers, J. L. 1992. Additional evidence on the need for disclosure reform. *Accounting Horizons* 6 (1): 36-41.
- Rozin, P., and E. B. Royzman. 2001. Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review* 5 (4): 296-320.
- Simonsohn, U. 2009. Direct risk aversion: Evidence from risky prospects valued below their worst outcome. *Psychological Science* 20 (6): 686-692.
- Tormala, Z. L., J. S. Jia, and M. I. Norton. 2012. The preference for potential. *Journal of Personality and Social Psychology* 103 (4): 567-583.
- Van Boven, L., and L. Ashworth. 2007. Looking forward, looking back: Anticipation is more evocative than retrospection. *Journal of Experimental Psychology: General* 136 (2): 289-300.
- Vosgerau, J., K. Wertenbroch, and Z. Carmon. 2006. Indeterminacy and live television. *Journal of Consumer Research* 32 (4): 487-495.
- Williams, C. D. 2015. Asymmetric responses to earnings news: A case for ambiguity. *The Accounting Review* 90 (2): 785-817.
- Zhao, X., J. G. Lynch, and Q. Chen. 2010. Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research* 37 (2): 197-206.

APPENDIX A

Experimental Instrument

Informed Consent

You are invited to participate in a research study conducted by Prof. Tan Hun Tong and Mr. Xu Tu from Nanyang Business School, Nanyang Technological University. The purpose of this study is to investigate how investors make investment decisions in practice.

In this exercise, we will present you some background information about a hypothetical public company. You will assume the role of an investor for the company. Based on the information provided, we will ask you to make investment choices. We have limited the amount of information presented to limit the time necessary to complete the study. The task is expected to take approximately 15-20 minutes of your time, and you will be compensated upon your completion of the study.

There is no more than minimal risk during the survey. The probability and magnitude of discomfort anticipated for participation in the proposed research are not greater in and of themselves than those ordinarily encountered in daily life or during personal investment judgment and decisions or investment course examinations or tests. The information you provide will be kept strictly confidential and anonymous. Responses will be assigned a participant number, so that data files will not contain any identification of the names of individual participants. Your confidentiality is assured. Results of this experiment may be disseminated in academic workshops, conferences, and/or in academic journals at aggregated levels. Your participation in this study is completely voluntary, and you may withdraw from the study at any time without any penalty.

If you have questions or concerns about this study, you may contact the following researchers: Principal Investigator: Tan Hun Tong, Block S3-01C-78, Nanyang Technological University, 639798. Email: ahttan@ntu.edu.sg.

Co-Investigator: Xu Tu, Block S3-01B-73, Nanyang Technological University, 639798. Email: xutu0001@e.ntu.edu.sg.

NTU Institutional Review Board (IRB): Block N2.1 B4-07, Nanyang Technological University, 637331. Email: irb@ntu.edu.sg for questions regarding your rights as research participants.

I have read and understood the above information, and

☐ I agree to participate in the study

☐ I do not agree to participate in the study

Screening Questions:

Before starting the survey, please tell us more about your background and investment experience.

1. How many years of working experience do you have? _____

2. What is the highest level of education you have completed?

☐ High School Graduate or Some High School (9-12 years, but did not graduate)

☐ Some College (no degree) or 2-year College Degree (Associate's degree)

☐ 4-year College Degree (BS, BA, or similar)

☐ Some postgraduate (no degree)

☐ Postgraduate (MS, MA, PhD, MD, etc.)

3. How many Accounting courses have you completed?

☐ None

☐ 1-3

☐ 4-10

☐ 10+

4. Have you ever invested in an individual company's stocks?

☐ No

☐ Yes, through a pension or formal retirement account, but not never directly

☐ Yes, directly

5. How many times have you evaluated a company's performance by analyzing its financial statements (in a course or as part of an actual investment decision)?

☐ 0

☐ 1-5

☐ 5+

Main Experiment:

INSTRUCTIONS

In this study, please assume that you are a general investor. You will be asked to make several judgments and decisions about a hypothetical company (RF Inc.). The study contains five sections, and it should take about 20 minutes to complete.

Your compensation will be partly based on your responses to the questions. Specifically, your compensation may consist of two components. First, you will receive a fixed base pay of \$0.75 regardless of your responses to the survey questions. Second, there will be two stock valuation questions, one in Section I and one in Section II. The top five participants whose valuation responses in Sections I and II are closest to that determined by a panel of experienced investors will get a bonus of \$5 each.

Please answer all questions in each section without consulting anyone and any materials other than those provided. Your thoughtful and complete responses are crucial for us to learn from the study.

Please answer the following question based on the introduction.

Will you receive a bonus if your valuation responses in Sections I and II are the closest to that determined by a panel of experienced investors among all participants?

☐ Yes

☐ No

SECTION I

Company Background Information

RF Inc. is a publicly traded company that designs, manufactures, markets, and services products primarily for specialized applications in the analytical instruments markets. RF manufactures products by using similar techniques and methods at two plants located in the U.S. RF also provides on-site installation, service, and after-sale support of its products to ensure customer satisfaction.

The following are excerpts from the RF Inc. financial statements:

Three-Year Financial Summary (In millions, except per share data)

Year Ended: May 31	2016	2015	2014
Operation Performance			
Sales	\$76.6	\$74.0	\$80.1
Cost of goods sold	\$38.2	\$38.0	\$40.7
Selling, general and administrative expenses	\$22.5	\$23.2	\$22.4
Operating profit	\$15.9	\$12.8	\$17.0
Interest expense	\$3.1	\$3.1	\$3.1
Earnings before tax	\$12.8	\$9.7	\$13.9
Income taxes	\$3.8	\$3.2	\$4.2
Net income	\$9.0	\$6.8	\$9.7
Earnings per share (2 million shares of common stock)	\$4.5	\$3.4	\$4.9
Financial Position			
Total Assets	\$385.9	\$368.3	\$343.2
Total Liabilities	\$240.4	\$239.2	\$234.5
Total Stockholders' equity	\$145.5	\$129.1	\$108.7
Total Liabilities and Stockholders' Equity	\$385.9	\$368.3	\$343.2

RF's Price-Earnings ratio as at August 30, 2016: 15
(Industry average: 15)

Please answer the following question based on the above information.

On a scale from 0 to 100, please indicate what you believe to be an appropriate common stock valuation for this company.

You have completed this section. Please proceed to Section II.

SECTION II

Now please read the following important information about RF Inc.:

Manipulation: Realized Loss

In July 2016, the company was sued by its major competitor over an alleged patent infringement concerning one of the company's main products.

The company **has settled** this case with the plaintiff. This lawsuit, including its settlement and litigation expenses, costs the company **\$9 million (the amount of the company's fiscal 2016 profits)**. This amount will be recorded as an expense, reducing future earnings.

Manipulation: Loss Contingency

In July 2016, the company was sued by its major competitor over an alleged patent infringement concerning one of the company's main products. The plaintiff seeks damages of **\$9 million (the amount of the company's fiscal 2016 profits)**.

The company believes that it is **reasonably possible** that it will have to settle this case with the plaintiff in the near future. It estimates the total loss (any potential settlement and litigation expenses) from this lawsuit to be up to \$9 million. Any paid amount will be recorded as an expense, reducing future earnings.

Manipulation: Realized Gain

In July 2016, the company sued its major competitor over an alleged patent infringement concerning one of the company's main products.

The defendant **has settled** this case with the company. This lawsuit (the settlement net of litigation expenses) awards the company **\$9 million (the amount of the company's fiscal 2016 profits)**. This amount will be recorded as a gain, increasing future earnings.

Manipulation: Gain Contingency

In July 2016, the company sued its major competitor over an alleged patent infringement concerning one of the company's main products.

The company believes that it is **reasonably possible** that it will win this

case in the near future. It estimates the compensation (any potential damages awarded net of litigation expenses) from this lawsuit to be up to **\$9 million (the amount of the company's fiscal 2016 profits)**. Any received amount will be recorded as a gain, increasing future earnings.

Considering this piece of new information, please re-evaluate the company and answer the question on the next screen.

On a scale from 0 to 100, please indicate what you believe to be an appropriate common stock valuation for the company now. (Your previous valuation was: [participants' valuation in previous section])

If you have adjusted your investment judgment based on the new information, please tell us why you made the adjustment: _____

(For Loss Contingency condition only) What is the maximum possible amount of total loss that the company will have to incur due to this lawsuit? \$_____million

(For Gain Contingency condition only) What is the maximum possible amount of total gain that the company will obtain from this lawsuit? \$_____million

(For Loss Contingency condition only) What is the most likely amount of total loss that the company will have to incur due to this lawsuit? \$_____million

(For Gain Contingency condition only) What is the most likely amount of total gain that the company will obtain from this lawsuit? \$_____million

(For Realized Loss condition only) What is the amount of total loss that the company incurs due to this lawsuit? \$_____million

(For Realized Gain condition only) What is the amount of total gain that the company obtains from this lawsuit? \$_____million

You have completed this section. Please proceed to Section III.

SECTION III

Please answer the following questions based on your understanding of the case materials.

1. Has the lawsuit been settled?

☐ Yes

☐ No

2. Was RF Inc. the plaintiff or defendant in the lawsuit?

☐ Plaintiff

☐ Defendant

3. How **uncertain** do you feel about the company's future?

4. How **risky** do you find this company to be as an investment?

5. How **difficult** was it to value this company?

6. How **confident** are you in your valuation judgments?

7. To what extent did the lawsuit information affect your **feelings** (as an investor)?

8. To what extent did you **worry** about the company's future earnings?

9. To what extent did you find the lawsuit information to be **important** to your valuation judgments?

10. How much **weight** did you put on the lawsuit information (as a percentage of your total information set) when you made your final valuation judgment?

11. How **interested** would you be in receiving more information about the company?

12. How **volatile** do you think the stock price of the company will be in the near future?

13. To what extent do you find RF's top management to be **competent**?

14. To what extent do you find RF's top management to be **trustworthy**?

You have completed this section. Please proceed to Section IV.

SECTION IV

Manipulation: Loss conditions

Recall the previous case that:

In July 2016, the company was sued by its major competitor over an alleged patent infringement concerning one of the company's main products.

Now please consider the following two hypothetical scenarios (one was previously shown to you, and the other is new):

Scenario A (case settled)	Scenario B (case still pending)
The company has settled this case with the plaintiff. This lawsuit, including its settlement and litigation expenses, costs the company \$9 million. This amount will be recorded as an expense, reducing future earnings.	The plaintiff seeks damages of \$9 million. The company believes that it is reasonably possible that it will have to settle this case with the plaintiff in the near future. It estimates the total loss (any potential settlement and litigation expenses) from this lawsuit to be up to \$9 million. Any paid amount will be recorded as an expense, reducing future earnings.

Manipulation: Gain Conditions

Recall the previous case that:

In July 2016, the company sued its major competitor over an alleged patent infringement concerning one of the company's main products.

Now please consider the following two hypothetical scenarios (one was previously shown to you, and the other is new):

Scenario A (case settled)	Scenario B (case still pending)
The defendant has settled this case with the company. This lawsuit (the settlement net of litigation expenses) awards the company \$9 million. This amount will be recorded as a gain, increasing future earnings.	The company believes that it is reasonably possible that it will win this case in the near future. It estimates the compensation from this lawsuit (any damages awarded net of litigation expenses) to be up to \$9 million. Any received amount will be recorded as a gain, increasing future earnings.

1. Under which scenario would you believe that the company has a **higher** common stock valuation?

Scenario A very much higher	Scenario A substantially higher	Scenario A moderately higher	Scenario A slightly higher	Equal	Scenario B slightly higher	Scenario B moderately higher	Scenario B substantially higher	Scenario B very much higher
☐	☐	☐	☐	☐	☐	☐	☐	☐

2. Which scenario is the **more favorable (or less unfavorable)** for the company financially?

☐ A
☐ B

3. As an investor of the company, which scenario would you prefer the company to be in?

☐ A
☐ B

You have completed this section. Please proceed to the last section.

SECTION V Something about you

In order to better analyze our survey results, we need your background information as important inputs. We will carefully keep the information confidential.

1. Please assign a probability to the term “reasonably possible”

2. To what extent do you agree with the following statements?

- a. I must get away from all uncertain situations.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
☐	☐	☐	☐	☐	☐	☐

b. I can't stand being taken by surprise.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Agree	Strongly Agree
[]	[]	[]	[]	[]	[]	[]

3. In the following lottery you have a 50% chance of winning or losing money. The potential loss is given. Please state the minimum amount \$X for which you would be willing to accept the lottery.

50% chance loss of \$100

50% chance win of \$X

X should be at least \$_____ to make the lottery acceptable.

4. In the following lottery you have a 50% chance of winning or losing money. The potential loss is given. Please state the minimum amount \$Y for which you would be willing to accept the lottery.

50% chance loss of \$25

50% chance win of \$Y

Y should be at least \$_____ to make the lottery acceptable.

5. Gender: Male / Female

6. Age in years: _____

7. How many years of working experience do you have? _____

8. How many years of accounting and finance-related working experience do you have? _____

9. How many years of stock investment experience do you have? _____

10. How many accounting or finance courses have you taken? _____

11. How many times have you invested in the stock market (i.e. buying of shares)? _____

12. Please rate your familiarity with companies' contingent liabilities (or loss contingencies).

=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	2	3	4	5	6	7	8	9	10	11
Extremely unfamiliar			Moderately familiar				Extremely familiar			

13. Please rate your familiarity with companies' gain contingencies.

=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	2	3	4	5	6	7	8	9	10	11
Extremely unfamiliar			Moderately familiar					Extremely familiar		

14. Your Amazon Mechanical Turk worker ID (for bonus payment purpose):

YOU HAVE COMPLETED THIS STUDY.

**** WE THANK YOU FOR YOUR PARTICIPATION. ****

APPENDIX B

Experimental Flows

FIGURE 1: Main Results

FIGURE 2
Mediation Analysis: The Effect of Realization in the Loss Domain

This figure presents the results of a bootstrap analysis for the mediating role of uncertainty in the loss domain. Uncertainty was captured by a factor score consisting of five process measures shown in Table 2. A bootstrapping process with 5000 samples (bias corrected) yields a 99% confidence interval of -9.724 to -0.740 for the indirect effect

TABLE 1
Test of Hypothesis (Change in Valuation Judgments)

Panel A: Descriptive Statistics for Change in Valuation Judgments (Mean, SD, and Sample Size)

Realization	Outcome		
	Gain	Loss	Overall
Realized	5.773 (15.714) n = 66	-15.379 (17.360) n = 66	-4.803 (19.615) n = 132
Contingent	7.724 (12.407) n = 58	-22.350 (18.237) n = 60	-7.344 (21.326) n = 118
Overall	6.617 (14.047) n = 124	-18.341 (18.127) n = 126	

Panel B: ANOVA Results for Change in Valuation Judgments

Source	S. S.	df	M. S.	F	p-value
Outcome	40866.276	1	40866.276	156.995	< 0.001
Realization	392.431	1	392.431	1.508	0.221
Outcome x Realization	1239.867	1	1239.867	4.763	0.015 ^a
Error	64034.357	246	260.302		

Panel C: Simple Effects of Realization on Change in Valuation Judgments

Domain	S. S.	df	M. S.	F	p-value
Gain	117.557	1	117.557	0.452	0.502
Loss	1527.359	1	1527.359	5.868	0.008 ^b

I captured investors' valuation judgments on a 101-point scale, which asked participants to indicate what they believed to be an appropriate common stock valuation for the company, ranging from 0 = "low" to 100 = "high." Participants provided valuation judgments both before (i.e., first stage) and after (i.e., second stage) receiving the lawsuit information that contained my manipulations. The main measure shown in this table is the difference between these two valuation judgments. Panel A shows the descriptive statistics for change in valuation judgments. Panel B presents the results of the two-way ANOVA on change in valuation judgments. Panel C presents the results of simple effect tests on change in valuation judgments. ^a: one-tailed equivalent. ^b: one-tailed.

TABLE 2
Test of Hypothesis (Second-Stage Valuation Judgment)

Panel A: Descriptive Statistics for Second-Stage Valuation Judgment (Mean, SD, and Sample Size)

Realization	Outcome		
	Gain	Loss	Overall
Realized	52.803 (25.483) n = 66	36.773 (24.334) n = 66	44.788 (26.091) n = 132
Contingent	54.328 (25.430) n = 58	26.250 (18.027) n = 60	40.051 (26.031) n = 118
Overall	53.516 (25.366) n = 124	31.762 (22.117) n = 126	

Panel B: Means for First-Stage Valuation Judgment

Realization	Outcome	
	Gain	Loss
Realized	47.030	52.152
Contingent	46.603	48.600

Panel C: ANOVA Results for Second-Stage Valuation Judgment

Source	S. S.	df	M. S.	F	p-value
First-Stage Valuation	79825.054	1	79825.054	343.656	< 0.001
Outcome	38072.453	1	38072.453	163.906	< 0.001
Realization	547.564	1	547.564	2.357	0.126
Outcome x Realization	1446.045	1	1446.045	6.225	0.007 ^a
Error	56909.003	245	232.282		

Panel D: Simple Effects of Realization on Second-Stage Valuation Judgment

Domain	S. S.	df	M. S.	F	p-value
Gain	106.019	1	106.019	0.456	0.500
Loss	1900.738	1	1900.738	8.183	0.003 ^b

I captured investors' valuation judgments on a 101-point scale, which asked participants to indicate what they believed to be an appropriate common stock valuation for the company, ranging from 0 = "low" to 100 = "high." Participants provided valuation judgments both before (i.e., first stage) and after (i.e., second stage) receiving the lawsuit information that contained my manipulations. The main measure shown in this table is the second-stage valuation judgment. Panel A shows the descriptive statistics for second-stage valuation judgment. Panel B shows the means for first-stage valuation judgments. Panel C presents the results of the two-way ANOVA on second-stage valuation judgment with first-stage valuation judgment as a covariate. Panel D presents the results of simple effect tests on second-stage valuation judgment. ^a: one-tailed equivalent. ^b: one-tailed.

TABLE 3
Process Measures

Panel A: Comparison between Realized Loss and Loss Contingency (mean, SD)

Measure	Realized	Contingent	F _{1,124}	p-value
Uncertainty judgment	6.242 (2.083)	7.267 (2.074)	7.630	0.004
Information importance	8.242 (1.993)	9.067 (1.939)	5.518	0.010
Information weighting	58.712 (25.364)	65.200 (24.962)	2.088	0.076
Feelings	7.409 (2.493)	8.233 (2.554)	3.357	0.035
Worry	7.242 (2.354)	8.350 (2.073)	7.789	0.003

Panel B: Factor Loadings

Measure	Loading
Uncertainty judgment	0.595
Information importance	0.811
Information weighting	0.621
Feelings	0.764
Worry	0.854

To measure uncertainty judgment, I asked participants to indicate how uncertain they felt about the company's future on an 11-point scale ranging from 1 = "not uncertain at all" to 11 = "very uncertain." To measure information importance, I asked participants to indicate the extent to which they found the lawsuit information to be important to their investment judgments on an 11-point scale ranging from 1 = "not at all" to 11 = "very much." To measure information weighting, I asked participants, "[h]ow much weight did you put on the lawsuit information (as a percentage of your total information set) when you made your final valuation judgment?" Participants responded on a slider ranging from 0% to 100%. To measure investors' feelings, I asked participants to indicate the extent to which the lawsuit information affected their feelings (as an investor) on an 11-point scale ranging from 1 = "not at all" to 11 = "very much." Finally, to measure worry, I asked participants to indicate the extent to which they were worried about the company's future earnings on an 11-point scale ranging from 1 = "not at all" to 11 = "very much." Panel A shows the descriptive statistics and the results of one-way ANOVAs for the process measures. Panel B presents the factor loadings of a factor analysis conducted on the process measures. All p-values are one-tailed.

TABLE 4
Within-Participants Test

Panel A: Comparison between Realized Gain and Gain Contingency				
Measure	Mean	SD	t	p-value
Valuation	-2.419	1.926	-13.989	< 0.001 (vs. 0)
Favorability	1.073	0.260	-18.271	< 0.001 (vs. 1.5)
Preference	1.089	0.285	-16.043	< 0.001 (vs. 1.5)

Panel B: Comparison between Realized Loss and Loss Contingency				
Measure	Mean	SD	t	p-value
Valuation	0.032	2.165	0.165	0.870 (vs. 0)
Favorability	1.516	0.502	0.355	0.723 (vs. 1.5)
Preference	1.476	0.501	-0.533	0.595 (vs. 1.5)

The measure of valuation asked, “[u]nder which scenario would you believe that the company has a higher common stock valuation?” Participants were instructed to respond on a nine-point scale with -4 indicating that the realized outcome was very much higher, 0 indicating no difference, and +4 indicating that the contingency was very much higher. The measure of favorability asked participants to select the scenario that was more favorable (or less unfavorable) for the company financially. The measure of preference asked participants to select the scenario that they would prefer the company to be in as an investor of the company. The second and the third measures were multiple choice questions with two options, namely Scenario A (the realized outcome) and Scenario B (the contingency). I coded the option of Scenario A (the realized outcome) as 1 and the option of Scenario B (the contingency) as 2. Accordingly, a mean value of 1.5 would imply that investors have no clear preference between the two scenarios on average. Panel A presents the results for the gain domain. Panel B presents the results for the loss domain.

TABLE 5
Absolute Change in Valuation Judgments

Panel A: Descriptive Statistics for Absolute Change in Valuation Judgments (Mean, SD, and Sample Size)

Realization	Outcome		Overall
	Gain	Loss	
Realized	13.045	16.803	14.924
	(10.390)	(15.964)	(13.549)
	n = 66	n = 66	n = 132
Contingent	11.034	22.350	16.788
	(9.525)	(17.750)	(15.626)
	n = 58	n = 60	n = 118
Overall	12.104	19.444	
	(10.006)	(17.240)	
	n = 124	n = 126	

Panel B: ANOVA Results

Source	S. S.	df	M. S.	F	p-value
Outcome	3538.301	1	3538.301	17.993	< 0.001
Realization	194.722	1	194.722	0.990	0.321
Outcome x Realization	889.605	1	889.605	4.524	0.034
Error	48374.884	246	196.646		

Panel C: Simple Effects

Source	F	p-value
Effect of outcome when outcome is contingent	19.203	< 0.001
Effect of outcome when outcome is realized	2.369	0.063 ^a
Effect of realization in the gain domain	0.635	0.426
Effect of realization in the loss domain	4.918	0.014 ^a

I captured investors' valuation judgments on a 101-point scale, which asked participants to indicate what they believed to be an appropriate common stock valuation for the company, ranging from 0 = "low" to 100 = "high." Participants provided valuation judgments both before and after receiving the lawsuit information containing my manipulations. The measure shown in this table is the absolute value of the difference between these two valuation judgments. Panel A shows the descriptive statistics. Panel B presents the results of the two-way ANOVA. Panel C presents the results of simple effect tests.

^a: one-tailed