Estimate-related Disclosures, Investor Mindset and the Illusion of Precision in Financial Statement Estimates

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December 2011

I thank my dissertation committee members Brooke Elliott (Chair), Jessen Hobson (Reader), Mark Peecher (Reader), and Bob Wyer (Outside Reader) for their invaluable comments and advice. I am grateful for the financial support of the Department of Accountancy and the College of Business of the University of Illinois at Urbana-Champaign and the Deloitte Foundation. This draft is preliminary and incomplete; please do not quote or cite without the author's permission.

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ABSTRACT

This study examines the joint effect of disclosed measurement information and investor mindset on investors' judgments of estimate precision and firm value. Consistent with psychology theory, results reveal that short horizon investors adopt a relatively concrete mindset and long horizon investors adopt a relatively abstract mindset. As a consequence, disclosing that the fair value of an impaired asset was derived using a model with unobservable inputs strongly influences short horizon investors' judgments of estimate precision. By contrast, disclosing this information has significantly less impact on the precision judgments of long horizon investors.

Further evidence indicates that mindset and disclosed measurement information jointly influence investors' valuation judgments in a way that is inconsistent with standard models of firm value. Specifically, long horizon investors' valuation judgments reflect the negative effect of an asset impairment with no significant effect of differences in measurement, consistent with concerns about an illusion of precision in financial statement estimates. Contrary to such concerns, however, short horizon investors' concrete mindsets lead them to interpret higher (lower) estimate precision as a positive (negative) signal about firm value in its own right. Thus, rather than placing greater weight on a more precisely measured estimate, short horizon investors' fixation on measurement causes them to discount the negative effect of the asset impairment on firm value when it is measured relatively precisely, but amplify the negative effect in response to imprecise measurement.

These results may be useful in judging the effectiveness of existing and proposed disclosures in communicating information about estimate precision. Further, this study makes a unique contribution to the accounting literature by providing theory and empirical evidence that differences in mindset influence investors' interpretation and use of accounting information in ways that are likely unanticipated by regulators and standard setters relying on standard economic theory.

1. INTRODUCTION

In this study, I investigate (1) the effect of estimate-related disclosures¹ on investors' judgments of estimate precision (i.e., the level of random error in measurement and, by extension, uncertainty about an estimate's true value) and firm value, and (2) whether evaluating financial statement information with a relatively abstract or concrete mindset moderates investors' evaluation and weighting of estimate precision. I investigate (1) because of long-standing concerns that financial statements convey an appearance of precision that may obscure the vague nature of many accounting estimates. Further, the main regulatory response to these concerns has been to mandate disclosures whose purpose is, at least in part, to clarify the relative level of precision in recognized estimates. I investigate (2) because theory suggests that estimate-related disclosures will have a greater effect on the judgments of users who approach their evaluation of a firm with a concrete mindset compared to those with an abstract mindset. Moreover, investor mindset is likely to vary systematically with features of an investor's decision context; for example, in this study I investigate investment horizon – the period over which an investor expects to hold an investment – as a determinant of investor mindset.

To elaborate, regulators and standard setters have long been concerned that an "illusion of precision" in recognized estimates could adversely affect the decisions of financial statement users (e.g., AIA 1932, SEC 2002, Glassman 2006). Specifically, the concern is that the appearance of precision may result in users failing to fully account for measurement error in their decisions as, e.g., capital providers. The principal regulatory response to these concerns has been to increase disclosure requirements, and as a result, financial statement users face a large and growing number of estimate-related disclosures (e.g., SEC 2002, Paredes 2003, FASB 2010).

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¹ I define estimate-related disclosures as qualitative and/or quantitative descriptions of the inputs and processes used to arrive at the point estimate recognized on the face of financial statements.

Many of these disclosures are intended, at least in part, to clarify the relative level of uncertainty in recognized estimates (e.g., SEC 1997; FASB ASC 715, 860 and 820 [FASB 2011a]). However, there is little theory-based empirical evidence regarding the effect of these disclosures on investors' beliefs about estimate precision, or on whether these beliefs in turn influence more consequential downstream judgments about, for example, firm value.

I propose that the effect of estimate-related disclosures on investors' judgments is moderated by the mindset with which investors analyze financial statement information. Investors likely approach their investment analyses with a particular mindset (i.e., a disposition to interpret information in a concrete or abstract way).² While there are individual differences in investors' natural disposition to process information more concretely or abstractly (Vallacher and Wegner 1989), investor mindset also likely varies *systematically* with contextual determinants in the investment environment. According to construal level theory (CLT), people process information from varying levels of psychological distance, and distance arises along a number of dimensions, including time, space, social similarity and hypotheticality (e.g., Trope and Liberman 2000, 2010; Trope et al. 2007). Variation in psychological distance in turn affects mindset. Specifically, lower distance creates a disposition to focus on concrete information and higher distance creates a disposition to focus on abstract information.

In this study, I consider a setting in which mindset varies because of the temporal orientation of investors considering different investment horizons: short horizon investors adopt a concrete mindset and long horizon investors adopt an abstract mindset. Investment horizon is among the first and most important issues that individual investors and financial advisers consider when

² This definition is derived from the psychology literature on mindsets. For example, Freitas et al. (2004) define mindsets as the differing accessibility of cognitive operations. These operations create a general disposition to process and understand information in a particular manner. Thus, an individual with a concrete mindset will focus on a situation's low-level, contextualized features, while an individual with an abstract mindset will focus on the high-level, decontextualized features of a situation.

identifying investment objectives (CFA Institute 2010). Furthermore, although investment horizon has received some attention in the finance and accounting literature, the finance literature has focused largely on optimal portfolio allocation for investors with differing horizons (e.g., Samuelson 1994, Bierman 1998, Barberis 2000), while the accounting literature has considered the different trading strategies of transient versus dedicated institutional investors (e.g., Bushee 2001; Ke and Petroni 2004; Elliott, Krische and Peecher 2010). However, we know little about how this important feature of the investment context systematically influences the way in which investors interpret and use accounting information.

I expect the effect of estimate-related disclosures on investors' precision and valuation judgments to depend jointly on the measurement information contained in the disclosure and investor mindset. CLT suggests that an abstract mindset associated with a long investment horizon will cause investors to focus on the central feature of the information set related to an estimate, the value or change in value represented by the recognized point estimate. A short horizon investor with a relatively concrete mindset, however, will also consider peripheral information, such as disclosed information about the assumptions and measurement techniques used to derive the recognized point estimate. Thus, disclosures that reveal a high degree of uncertainty in the measurement process (for example, disclosing that a fair value was estimated via a model that incorporated significant unobservable inputs) will have a greater effect on the precision judgments of short horizon (versus long horizon) investors because of the relatively concrete mindset with which they process the available information.

Investor mindset also has implications for the effect of financial statement estimates and related disclosures on investors' judgments of firm value. An abstract representation of a financial statement item will emphasize the economic implication of the item, or *why* the item is

included in the firm's financial statements. By contrast, a concrete representation will emphasize the measurement characteristics of the item, or how the item was included in the financial statements. For example, I consider a setting in which the recognized value of an impaired asset is measured relatively precisely or imprecisely. Thus, the impairment can be represented abstractly as a decrease in value or concretely as a precise or imprecise measure. When considering the effect of the impairment on firm value, CLT predicts that long horizon investors' abstract mindsets will cause them to focus primarily on the decrease in value. Consequently, I expect an asset impairment to reduce the value that long horizon investors place on the firm, with little effect of disclosed differences in measurement. By contrast, short horizon investors will place more weight on the concrete representation of the value as a precise or imprecise measure. Further, whereas standard economic theory would predict that a more precisely measured impairment would have a more strongly negative effect on judgments of firm value, short horizon investors' concrete mindsets mean that they more likely interpret the measurement information as a positive or negative signal in its own right. Thus, compared to long horizon investors, I expect short horizon investors to discount the negative effect of the impairment on firm value when precision is high, but amplify the negative effect when disclosures reveal a low level of precision in the asset's measurement.

To test my predictions, I conduct an experiment that uses a 2 x 2 + control design, with investment horizon and fair value disclosures as between-subjects manipulated independent variables. Graduate students in accountancy take on the role of investors who are evaluating either a short-term or a long-term investment in a firm's common stock. All participants are provided with information from the firm's financial statements about an impairment charge to land that the firm is holding for development. In addition, participants are provided with

disclosures indicating that the fair value of the land was estimated using significant other observable (level 2) inputs or significant unobservable (level 3) inputs (or no disclosures in control conditions). All participants then judge the precision of the recognized value of the land and indicate how the impairment affects the value they place on the firm.

Results of the experiment support my predictions. First, I find that, compared to investors who observe level 2 disclosures, investors who observe level 3 disclosures judge a recognized fair value estimate to be less precise; however, the reduction in judged precision is amplified by a short investment horizon. Second, investment horizon affects the weight that investors place on disclosed precision information when they judge the effect of the impairment on firm value. Specifically, long horizon investors' valuation judgments reflect the negative effect of the impairment with no significant influence of disclosures. By contrast, the impairment does not significantly impact short horizon investors' valuation judgments when disclosures reveal level 2 inputs, but has a significantly negative effect when disclosures reveal level 3 inputs. Furthermore, the effect of fair value disclosures on the valuation judgments of short horizon investors is fully explained by their judgments of estimate precision. By contrast, judged precision does not significantly influence the valuation judgments of long horizon investors.

It is important to note that this pattern of results is inconsistent with standard models of firm value; nor can it be fully explained by situational differences in short and long horizon investors' risk tolerance. Furthermore, additional analyses provide corroborating evidence of the process underlying my results and rule out alternative explanations. Specifically, short horizon investors provide more concrete written descriptions of the firm than long horizon investors, consistent with investment horizon moderating investors' judgments via differences in mindset. In addition,

I confirm that the results of my hypothesis tests are unlikely to be explained by differences in participants' information acquisition, perceptions of bias, or their own subjective expertise.

This study contributes to the academic accounting literature and to practice. First, I present theory and evidence that investment horizon systematically affects the mindset with which investors process financial statement information. Although horizon is only one of several likely determinants of investor mindset, I examine horizon because it is a key contextual variable that psychology theory suggests may have unexpected consequences for investors' judgments and decisions. Second, my study extends our understanding of the way in which investors use measurement information in their valuation judgments, including circumstances in which measurement information is accorded too much emphasis (e.g., Kadous, Koonce and Thayer 2011). Third, I provide evidence that the effect of estimate-related disclosures on investors' judgments depends jointly on the content of the disclosures and investment horizon. This finding is likely useful to financial advisors and investor groups in anticipating the way in which features of individual investment decisions interact with the information environment. My study also responds to regulators' general concern with the protection of first-time and nonprofessional investors (SEC 2011), and specific concerns about the way in which an appearance of precision in financial statement estimates may impair investors' ability to understand firms' operating performance and financial position (SEC 2002). Specifically, my findings are likely to be of interest to standard setters and regulators in making judgments about the effectiveness of existing and proposed disclosures in communicating information about estimate precision.

The remainder of this paper is organized as follows. Section 2 provides appropriate background for the study. I develop hypotheses in Section 3 and discuss experimental design in

Section 4. Section 5 presents results of my hypothesis tests, while Section 6 presents several additional analyses. I summarize and conclude in Section 7.

2. BACKGROUND

Precision as a characteristic of accounting information

Although discussed in both SFAC 2 (FASB 1980) and SFAC 8 (FASB 2010), precision is not explicitly defined in the concept statements or elsewhere in authoritative standards. The *Oxford Dictionary of Statistical Terms* defines precision as "the property...of an estimate having small random error of estimation" (Dodge 2006). This definition conforms closely to the way in which the term is used in the concept statements and in accounting research. For example, SFAC 2 contains a discussion of "precision and uncertainty", which implicitly defines precision as reflecting the degree of uncertainty about an estimate's true value (para. 73). Similarly, analytical models define precision as the inverse of variance (e.g., Dye and Sridhar 2007). In this study, I define an accounting estimate as more precise the smaller the degree of random error in its measurement and, by extension, uncertainty about its true value.

The FASB has taken pains to distinguish precision from other qualitative characteristics, especially reliability and faithful representation. SFAC 2 states that "[r]eliability does not imply certainty or precision. Indeed, any pretension to those qualities if they do not exist is a negation of reliability" (para. 72). Despite this warning, however, many users seemingly do confuse reliability with precision (Schipper 2007, Jurney 2010). Indeed, SFAC 8 cites the confusion of precision with reliability as a key reason for replacing the term reliability with faithful representation. Furthermore, SFAC 8 states that precision is more closely related to *relevance* than reliability or faithful representation, stating "if the level of uncertainty in...an estimate is

sufficiently large, that estimate will not be particularly useful. In other words, the *relevance* of the asset being faithfully represented is questionable" (para. QC16).

Regardless of the extent to which precision is related, either descriptively or normatively, to other qualitative characteristics, the appearance of precision in financial statements is a longstanding concern among standard setters, regulators and academics. In the early 20th century, the American Institute of Accountants expressed concern that users viewed the balance sheet as "an instantaneous photograph" (AIA 1932). As current standards and practice have moved toward recognizing more estimates on the face of financial statements, regulators have renewed these concerns. In FR No. 60, for example, the SEC claims that "reported financial position and results often imply a degree of precision, continuity and certainty that can be belied by rapid changes in the...environment that produced those measures" (SEC 2002). commissioner Cynthia Glassman echoes this unease, worrying that "the various columns and rows and numbers that appear so definitive...are based in large part on estimates, assumptions and sampling" (Glassman 2006). Most recently, Peecher et al. (2010, p. 4) conclude that "there is a resilient myth afloat – that financial statements reflect historic facts." Moreover, they point out that this myth is perpetuated by sources that range in authoritativeness from bloggers to judges and even accounting professors.

Estimate-related Disclosures and Precision

There are several examples of required disclosures whose purpose is, at least in part, to provide information about estimate precision. These include the market risk disclosures required by FR 48 (SEC 1997), and the sensitivity analyses for other post-employment benefits required by FASB ASC 715 and for securitized financial assets in FASB ASC 860. However, in this

study, I focus specifically on the disclosures associated with inputs to fair value measurements required by FASB ASC 820.³

I focus on these disclosures for two main reasons. First, and most importantly, their purpose is clear: they are intended to facilitate assessments of uncertainty in estimates of fair value (FASB 2011b). In particular, the additional disclosures required for unobservable (level 3) inputs compared to quoted prices in active markets (level 1) and other observable inputs (level 2) highlight the uncertainty (i.e., the imprecision) in unobservable inputs (FASB 2011b, para. BC84). Second, because the requirements of FASB ASC 820 apply generally to fair value measurements, their influence will be broader than the disclosures required by other standards, which are related to specific estimates. Insights related to these disclosures thus more likely generalize to any setting in which estimates of fair value are recognized.

3. THEORY & HYPOTHESIS DEVELOPMENT

Psychological Distance and Mindset

Any phenomenon can be represented at varying levels of abstraction (Vallacher and Wegner 1987, Freitas et al. 2004). Thus a trip to Japan can be interpreted as either "an exciting getaway" or "a long plane ride"; soccer might be "the beautiful game" or "kicking a ball"; and driving a car is "commuting to work" or "pressing the accelerator and turning the wheel". While both descriptions in each pair are accurate, each constitutes a fundamentally different representation of the underlying phenomenon, the former more abstract and the latter more concrete. In general,

³ FASB ASC 820 defines fair value disclosure requirements. Specifically, paragraph 820-10-50-1 defines disclosures that are required for assets and liabilities that are measured at fair value on a recurring basis subsequent to initial recognition (e.g., financial securities), while paragraph 820-10-50-5 sets out disclosure requirements for items that are measured at fair value on a nonrecurring basis (e.g., impaired assets). Additional disclosures for fair values derived using significant unobservable inputs (designated "level 3" in the fair value hierarchy) appear in paragraph 820-10-50-2, which requires disclosure of the inputs and valuation technique(s) used to measure fair value.

abstract representations reflect the "why" of a phenomenon, while concrete representations reflect the "how" (Alter and Oppenheimer 2008).

The way in which people represent a phenomenon depends on the level of psychological distance between the person and the phenomenon (Trope et al. 2007, Trope and Liberman 2010).⁴ The greater the psychological distance between the phenomenon and the self, the more likely that people will represent it abstractly, focusing on central, high-level features that "extract the gist" from available information. When psychological distance is low, however, people also include low-level, peripheral features in their representations (Kim, Park and Wyer 2009).

Investment Horizon and Investor Mindset

Construal level theory (CLT) asserts that psychological distance arises along a number of dimensions, including time, space, social similarity, and hypotheticality (e.g., Trope and Liberman 2010). While recognizing the uniqueness of the various distance dimensions, CLT posits that these dimensions have similar effects on mindset. Specifically, low (high) psychological distance on any of these dimensions is associated with a relatively concrete (abstract) mindset. As such, there are several likely determinants of mindset in the financial reporting environment. Examples include geographic proximity (spatial distance), familiarity (social distance), and current versus prospective shareholder status (hypotheticality), all of which are known to influence investors' judgments and decisions (see, e.g., French and Poterba [1991] and multiple subsequent studies on home bias; Huberman [2001] on familiarity; and Hodge and Pronk [2006] on investor status).

In this study, I consider how temporal differences in investment horizon influence mindset.

Investment horizon affects investors' temporal orientation. Short horizon investors are oriented

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⁴ Psychological distance is "a subjective experience that something is close or far away from the self" (Trope and Liberman 2010, p. 440).

toward the present and the near future, while long horizon investors are oriented toward the more distant future. As a result, the mindset with which investors approach their investment analyses likely varies with their investment horizon. Specifically, I expect long (short) horizon investors to process financial statement information with a relatively abstract (concrete) mindset.

Hypothesis 1: Evaluating Estimate Precision

Mindset has important consequences for the effect of fair value disclosures in shaping investors' evaluation of estimate precision. Financial reporting standards and accounting convention dictate that the information set available to investors evaluating the precision of a fair value estimate includes (1) the recognized value or change in value, which is the central or focal feature of the information set, and (2) disclosed information about the assumptions and measurement technique underlying the point estimate, which is relatively peripheral. CLT suggests that long-horizon investors' abstract mindsets will lead them to focus on the recognized information. By contrast, the relatively concrete mindset associated with a short investment horizon will emphasize disclosed measurement information. Short horizon investors' focus on measurement is likely to increase the salience of uncertainty associated with unobservable inputs and the diversity of alternative outcomes that could arise if managers made other assumptions. Therefore, although I expect level 3 disclosures to reduce investors' perceptions of estimate precision compared to level 2 disclosures, I expect this effect to be greater for short-horizon investors because of the concrete mindset with which they process financial statement estimates and related disclosures.

This leads to the following hypothesis (depicted graphically in Panel A of Figure 1):

H1: Compared to level 2 fair value disclosures, level 3 disclosures will result in a greater reduction in judgments of estimate precision for short horizon investors than for long horizon investors.

Hypothesis 2: Weighting of Estimate Precision in Valuation

Differences in mindset also have implications for the effect of financial statement estimates and related disclosures on investors' valuation judgments. In considering the effect of an estimate on firm value, an investor with an abstract mindset will focus on the high-level economic implication of the estimate. By contrast, an investor with a relatively concrete mindset will focus on the low-level feature of the estimate's measurement. For example, I consider a context in which investors evaluate the effect of an impaired asset on firm value. When the asset's impaired value is measured with a low degree of error, it might be represented abstractly as "a decrease in value" or concretely as "a precise measurement". The representations may be consistent (i.e., both positive or both negative) or inconsistent (i.e., one is negative and one is positive, as when an impaired asset is measured with a low degree of error).

The relative weight that investors place on these representations likely depends on differences in mindset arising from investment horizon. Because of their abstract mindsets, long horizon investors will base their valuation judgments primarily on the economic implication of a recognized estimate, with little regard for differences in measurement. By contrast, short horizon investors' concrete mindsets will lead them to weight measurement information more heavily than long horizon investors. Furthermore, although standard economic theory, as reflected in SFAC 8, suggests that investors will place greater weight on the economic implication of a more precisely measured estimate in their valuation judgments (since there is more certainty about the estimate's value), short horizon investors are unlikely to interpret disclosed measurement

information in this way. Rather, they likely interpret high (low) estimate precision as a positive (negative) signal in its own right because their concrete mindsets emphasize the concrete representation of the estimate over more central economic implications. Moreover, when economic and measurement signals conflict, the influence of the economic signal will be diminished by short horizon investors' focus on the measurement signal.⁵

Consequently, I expect an asset impairment to reduce the value that long horizon investors place on a firm, with little effect of disclosed differences in measurement. By contrast, short horizon investors likely underweight the negative effect of an impairment when estimate precision is relatively high (i.e., the measurement signal is positive), but strongly reduce their valuation judgments in response to the negative signal of imprecise measurement.⁶ That is, I expect the effect of the impairment on short horizon investors' valuation judgments to be driven primarily by their precision judgments.

This leads to the following hypotheses (see Panel A of Figure 2):

H2a: The negative effect of an asset impairment on judgments of firm value will be smaller (larger) for short horizon investors than for long horizon investors when disclosures reveal level 2 (level 3) inputs.

H2b: The effect of fair value disclosures on short horizon investors' judgments of firm value will be mediated by their judgments of estimate precision.

⁵ To the extent that short horizon investors *do* increase the weight they place on an estimate's economic implication when it is measured more precisely, this biases *against* finding a result consistent with my prediction.

⁶ This pattern is inconsistent with standard models of firm value, which depend on expected future cash flows and firm-level cost of capital, neither of which vary with the period over which an individual investor expects to hold his or her investment in the firm. Further, to the extent that considering a short or long investment horizon instantiates situational differences in investors' risk tolerance, such an influence would suggest an overall main effect of horizon, rather than the conditional effect predicted by the influence of mindset.

4. EXPERIMENTAL METHOD

Design Overview and Participants

To test my predictions, I conducted an experiment with a full-factorial 2 x 2 + control between subjects design, with investment horizon (short vs. long) and fair value disclosures (level 2 vs. level 3) as manipulated independent factors. I manipulated horizon by asking participants to assume that they were considering either a short-term investment or a long-term investment in the common stock of a hypothetical real estate firm. I manipulated disclosures related to the fair value of land held for development that had suffered an impairment loss during the year by providing disclosures consistent with a fair value estimated using level 2 or level 3 inputs (or no disclosures in control conditions).

Participants were 140 masters of accounting students from a large state university. They participated in return for a guaranteed payment of \$10 and a chance to win one of five \$100 Amazon.com gift cards in a random draw. I selected this participant group because of their familiarity with the recognition and disclosure of accounting estimates, relevant fair value measurement techniques, and the fair value hierarchy defined in FASB ASC 820. Furthermore, at the time of the experiment twenty-eight percent (39 of 140) had previously invested in a firm's debt or equity securities and eighty-six percent (121 of 140) planned to do so in the next five years.

Case Materials and Procedures

On arrival at the session, each participant was randomly assigned to an experimental condition and given a packet of materials. After reading and signing a consent form, participants

assumed the role of investors evaluating a potential investment in "ArgyleBay Communities", a hypothetical real estate firm.⁷

Investment Horizon Manipulation

Participants in short horizon conditions were asked to assume that they were considering a short-term investment in the residential real estate industry and that they had identified ArgyleBay's stock as a potential investment. Furthermore, they expected to hold their investment for no more than three months. Participants in long horizon conditions were given identical instructions, except that they were considering a long-term investment that they expected to hold no less than five years. Next, short (long) horizon participants were asked to list three factors that would be important in predicting the performance of a short-term (long-term) investment in ArgyleBay stock and to list three ways in which they would use the money from their investment when they cashed it in (see Appendix A). Considering the expected holding period and the intended use of the proceeds from the investment mirrors the way in which horizon is incorporated into the decisions of individual investors; in addition, listing these factors ensured that participants actively considered the horizon over which they expected to hold their investment.

Background Information and Disclosure Manipulation

All participants then received background information about the firm, including its real estate holdings, its strategy and its reportable segments. After reviewing this material, participants provided written descriptions of the firm to provide corroborating evidence that the horizon manipulation caused differences in mindset (see "Manipulation Checks" in Section 5).

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⁷ Background and financial information were adapted from AvalonBay Communities, a publicly-traded real estate firm.

Next, participants reviewed selected information from the firm's financial statements,

including major income statement and balance sheet items, and ratios for each of the past three

years. In addition, they viewed two line items from the firm's most recent financial statements

related to an impairment loss on land held for development. The first line item came from the

income statement and listed an impairment loss of \$21,152 (all dollar amounts in thousands) on

land held for development. The second line item came from the balance sheet, and listed land

held for development at a carrying value of \$267,095, with a caption stating that this amount

represented the fair value of the land net of the impairment charge.

In addition to these line items, participants in level 2 and level 3 disclosure conditions viewed

a note related to the impairment charge. In both disclosure conditions, the note disclosed the

reason for the impairment and the designation of the fair value as either a level 2 or level 3 price

within the fair value hierarchy. In accordance with FASB's fair value disclosure requirements,

the level 3 disclosure also contained a description of the expected present value technique and

associated inputs used to generate the fair value. All disclosures were adapted from actual

disclosures and examples provided in accounting standards. Appendix B contains further details

of the disclosure manipulation.

After reviewing financial information, participants responded to dependent measures,

manipulation checks and other post-task questions.

Dependent Measures

Hypothesis 1: Precision

To test H1, I collected two measures of judged precision. First, I asked participants "How

sure are you that \$267,095 is the actual fair value of ArgyleBay's land held for development at

the end of Year 3?" Participants responded on 101-point Likert scales with endpoints 0 ("Not at

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all sure") and 100 ("Very sure"). Recall that I define precision as the level of random error in measurement and, by extension, uncertainty about an estimate's true value; thus judged precision should be positively associated with participants' certainty that the recognized value is the actual fair value of the land at the balance sheet date.⁸ Second, I provided participants with a definition of precision ("Precision is the level of error in measurement; the lower the error, the more precise the measure") and asked, "How precise is \$267,095 as a measure of the fair value of ArgyleBay's land held for development at the end of Year 3?" Participants responded on 101-point Likert scales with endpoints 0 ("Very imprecise") and 100 ("Very precise").⁹

Hypothesis 2: Valuation

To measure the effect of the impairment information on valuation judgments, I asked participants to assess how the impairment recognized in ArgyleBay's Year 3 financial statements affected the value they would place on the company. Participants responded on a Likert scale with endpoints -100 ("Greatly decreases how much I value the company") and 100 ("Greatly increases how much I value the company"); the midpoint of the scale was labeled 0 ("Neither increases nor decreases how much I value the company").

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⁸ Teigen and Jørgensen (2005) and others (e.g., Kahneman and Tversky 1982) distinguish between internal and external uncertainty, such that judgments reflect "(1) the judge's subjective expertise, and (2) the degree of variability believed to be associated with the target value." Although my prediction is primarily related to (2), I also measured participants' subjective judgments of their own expertise in order to disentangle these determinants in additional analyses (see Section 6 for details).

⁹ I also elicited participants' subjective probability density functions for the estimated fair value, including a median and 5th and 95th percentiles. The primary purpose of this question was to measure participants' perceptions of bias in the estimate, but the width of the confidence interval can also be interpreted as a measure of precision. However, I do not detect significant differences in confidence interval width across experimental conditions. Although a substantial literature in psychology confirms that measuring subjective probability density functions is tricky (see, e.g., Soll and Klayman 2004; Teigen and Jørgensen 2005), results of a supplemental experiment provide evidence that investment horizon and fair value disclosures can jointly affect elicited confidence intervals (see White 2011).

5. RESULTS

Manipulation Checks

To assess the effectiveness of the investment horizon manipulation, I asked participants whether they assumed the role of an investor considering a "short-term investment" or a "longterm investment". Ninety-nine percent of participants (138 of 140) correctly answered this question, indicating a successful manipulation of investment horizon. In addition, because I expected the investment horizon manipulation to instantiate differences in investor mindset, I collected additional corroborative evidence. Specifically, I asked participants to provide written descriptions of ArgyleBay Communities, Inc. in no more than three sentences, using their own words. In order to create a measure of the abstractness of these descriptions, an independent rater and I coded each description. Each description was coded as entirely or mainly abstract (given a value of 1), entirely or mainly concrete (given a value of 0), or a combination of abstract and concrete (given a value of 0.5); appendix C provides examples of descriptions given each rating. The coders rated eighty-one percent of the descriptions consistently (Cohen's $\kappa = 0.70$), and inconsistencies were resolved by mutual agreement. A Mann-Whitney U test on these ratings shows a significant difference between the ratings of short and long horizon participants. Participants in long horizon conditions provided more abstract descriptions of the firm than those in short horizon conditions (Z = 3.49, p < 0.001, one-tailed). Furthermore, there are no significant differences between disclosure groups within the short or long-horizon conditions (all p-values > 0.311, two-tailed).

To assess the effectiveness of the fair value disclosure manipulation, I asked participants which level of the fair value hierarchy the fair value of land held for development was considered to be: "Level 2", "Level 3", or "This information was not provided". Eighty-five

percent (119 of 140) of participants correctly answered this question. While this indicates a successful manipulation of fair value disclosures, I discuss participants' information acquisition further in Section 6.¹⁰

Hypothesis 1

H1 predicts that, compared to level 2 fair value disclosures, level 3 disclosures will result in a greater reduction in judgments of estimate precision for short horizon investors than for long horizon investors. Panel A of Table 1 reports cell sizes, means and standard deviations for my two measures of precision. In addition, I perform a factor analysis on these responses to create a single measure of precision. A single factor, labeled "precision score", explains 80% of the variance in responses (eigenvalue = 1.60).

Because H1 predicts an ordinal interaction (i.e., an asymmetric pattern of cell means), using contrast codes is the most appropriate way to test this hypothesis, improving statistical power over the interaction tested in a conventional ANOVA without increasing Type 1 error rates (Buckless and Ravenscroft 1990). Consistent with the prediction in H1, I apply contrast weights as follows: -3 in the short horizon/level 3 condition, -1 in the long horizon/level 3 condition, and +2 in the level 2 conditions (see, e.g., Rosnow and Rosenthal 1995, p. 7). Results presented in Panel B of Table 1 show that this planned contrast is statistically significant (F = 20.98, p < 0.001, one-tailed), consistent with the predicted interaction (see Panel B of Figure 2).

Results of follow-up simple effect tests presented in Panel C of Table 2 provide further support for the hypothesized interaction. Specifically, participants' precision scores are

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¹⁰ Results are inferentially identical to those reported if I exclude the responses of participants who failed manipulation checks.

¹¹ I do not expect differences in short and long horizon investors' precision judgments in level 2 conditions since information about assumptions and processes used to measure fair value is primarily contained in the additional disclosures required for level 3 inputs that are not required for level 2 inputs. The supplemental experiment discussed in White (2011) disentangles the effect of additional disclosures from change in input level.

significantly lower when disclosures reveal level 3 inputs compared to level 2 inputs, and this is true for both short horizon (p < 0.001, one-tailed) and long horizon (p = 0.009, one-tailed) participants. However, when disclosures reveal level 3 inputs, short horizon participants' precision scores are significantly lower than those of long horizon participants (p = 0.075, one-tailed). For completeness, I confirm that I do not detect a significant simple effect of horizon given level 2 disclosures (p = 0.505, two tailed). Further, a semi-omnibus test (untabulated) confirms that the residual variance attributable to main and interactive effects of investment horizon and fair value disclosures after accounting for my planned contrast is not significant (F = 0.43, p = 0.650).

Taken together, these results provide support for H1. Specifically, investment horizon and fair value disclosures jointly affect perceptions of precision in a manner consistent with the hypothesized ordinal interaction.¹²

Hypotheses 2a and 2b

Hypothesis 2a

H2a predicts that the negative effect of an asset impairment on judgments of firm value will be smaller (larger) for short horizon investors than for long horizon investors when disclosures reveal level 2 (level 3) inputs. Panel A of Table 2 reports cell sizes, means and standard deviations for the effect of the asset impairment on investors' valuation judgments. Because H2a assumes a negative effect of the asset impairment, a traditional analysis of variance (ANOVA)

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 $^{^{12}}$ To provide evidence of the default level of precision that investors attribute to a recognized estimate in the absence of disclosure, I also compare precision scores in disclosure conditions to those in control conditions. Results indicate that precision scores are significantly lower in level 3 conditions than in control conditions for both short horizon investors (F = 6.86, p = 0.01, two-tailed) and long horizon investors (F = 5.13, p = 0.03, two-tailed). By contrast, precision scores for level 2 conditions do not differ significantly from those in control conditions (both p-values > 0.33, two-tailed). These results suggest that, in the absence of disclosure, investors attribute a relatively high default level of precision to a recognized estimate, indicating that concerns about an illusion of precision in financial statements may be justified.

approach does not provide sufficient evidence in isolation, since ANOVA does not test the sign of observed responses. I therefore use a two-step approach to test this hypothesis. First, I use a regression approach to test the negative effect of the asset impairment and the fair value disclosure manipulation. Second, I test the interactive effect of horizon and fair value disclosure level with an ANOVA.

Panel B of Table 2 presents regression models of short and long horizon participants' valuation judgments, with level 2 disclosures coded as zero and level 3 disclosures coded as one. Thus, in each model, the intercept represents the effect of the asset impairment when disclosures reveal level 2 inputs, and the coefficient on the level 3 disclosure variable represents the incremental effect of disclosing level 3 inputs. For short horizon investors, results reveal that, when disclosures indicate level 2 inputs, the effect of the asset impairment on judgments of firm value is not significantly different from zero ($\beta = -3.09$, p = 0.636, two-tailed); however, the incremental effect of level 3 disclosure is significantly negative ($\beta = -20.91$, p = 0.014, onetailed). In addition, I confirm that the total effect of the asset impairment on short horizon investors' valuation judgments is significantly negative given level 3 disclosure (p < 0.001, onetailed). By contrast, for long horizon investors, results reveal that the effect of the asset impairment on judgments of firm value is significantly negative ($\beta = -12.93$, p = 0.003, onetailed), but the incremental effect of level 3 disclosure does not differ significantly from zero (B = -2.36, p = 0.705, two-tailed). I also confirm that the total effect of the asset impairment on long horizon investors' valuation judgments is significantly negative given level 3 disclosure (p = 0.003, one-tailed). Consistent with H2a, these results indicate that the asset impairment reduces the value that long horizon investors place on the firm, with no significant effect of disclosed measurement information. In contrast, short horizon investors appear to disregard the

negative effect of the impairment when disclosures reveal level 2 inputs, but strongly reduce their valuation judgments when disclosures reveal level 3 inputs.

Next, I test the interactive effect of investment horizon and fair value disclosures on participants' valuation judgments. Table 2, Panel C presents an ANOVA model of the effect of the asset impairment on participants' valuation judgments. Results reveal a significant horizon x fair value level interaction (p = 0.048, one-tailed), providing further support for H2. This interaction is represented graphically in Panel B of Figure 2. I also observe a significant main effect of fair value level (p = 0.019, one-tailed), indicating an overall negative effect of moving from level 2 to level 3 inputs on investors' valuation judgments. For completeness, Panel D of Table 2 reports follow-up tests of simple effects by condition. The negative effect of the asset impairment on short horizon investors' valuation judgments is significantly greater when disclosures reveal level 3 inputs than when they reveal level 2 inputs (p = 0.010, one-tailed). By contrast, fair value level does not significantly influence long horizon investors' valuation judgments (p = 0.761, two-tailed). Furthermore, compared to long horizon investors, short horizon investors' valuation judgments are higher (lower) when disclosures reveal level 2 (level 3) inputs. This effect is directionally consistent but not statistically significant at conventional levels when disclosures reveal level 2 inputs (p = 0.113, one-tailed) and statistically significant when disclosures reveal level 3 inputs (p = 0.091, one-tailed).

Taken together, these results provide support for H2a, and suggest that investment horizon moderates the effect of fair value disclosures on investors' valuation judgments in a manner consistent with the hypothesized interaction.

Hypothesis 2b

H2b predicts that fair value disclosure level influences the valuation judgments of short horizon investors via differences in judged precision. To test this hypothesis, I conduct a mediation analysis according to the four-step procedure specified by Baron and Kenny (1986). Panel A of Figure 3 summarizes the results of this analysis. Consistent with the results of H2a, step 1 indicates that moving from level 2 to level 3 disclosures negatively affects participants' judgments of firm value (p = 0.014, one-tailed). Consistent with the results of H1, step 2 confirms that moving from level 2 to level 3 disclosures negatively affects participants' judgments of estimate precision (p < 0.001, one-tailed). Step 3 confirms that participants' judgments of estimate precision (i.e., the mediating variable) positively influence participants' valuation judgments (i.e., the dependent variable; p = 0.006, one-tailed). Finally, Step 4 indicates that judgments of estimate precision fully mediate the influence of fair value disclosure level on short horizon participants' valuation judgments, as the effect of disclosure level is no longer significant when judgments of estimate precision are included in the model (p = 0.242, two-tailed). In contrast, Panel B of Figure 3 summarizes the same analysis for long horizon participants. This analysis reveals no direct or indirect effect of fair value disclosures on long horizon investors' valuation judgments.

These results provide support for H2b. Specifically, the effect of fair value disclosures on short horizon investors' valuation judgments is mediated by their judgments of estimate precision.

6. ADDITIONAL ANALYSES

To demonstrate the robustness of these results to other potential determinants of investors' precision and valuation judgments, I perform several additional analyses.

Information acquisition

The results of my hypothesis tests suggest that short and long horizon investors differentially evaluate and weight disclosed precision information in their judgments. However, differences in investors' acquisition of information may also influence these judgments (Hogarth 1987, Maines and McDaniel 2000). To confirm that the observed effects resulted from participants' evaluation and weighting of disclosed information, rather than their acquisition of the information, I asked participants to recall five pieces of disclosed information: the level of the fair value within the fair value hierarchy, the impaired value of the land held for development, the value of the impairment loss, the explanation for the impairment, and the discount rate used in calculating the recognized fair value. 13 Correct responses to each question average 89.5% for short horizon investors and 89.0% for long horizon investors, suggesting a high overall level of acquisition. In addition, to create an overall measure of information acquisition, I sum the number of correct and incorrect responses for each participant. The pattern of correct versus incorrect responses does not differ significantly between short and long horizon investors (χ^2 = 0.72, p = 0.868, two-tailed), suggesting that differences in information acquisition are unlikely to account for the observed differences in the judgments of short and long horizon participants.

Measurement bias

Compared to fair values that are estimated using level 2 inputs, the additional subjectivity in level 3 inputs may lead to additional bias as well as random error; thus, perceived bias may contribute to investors' certainty that an estimate reflects an item's true fair value. To construct a measure of perceived bias in the fair value estimate, I subtract the recognized fair value of ArgyleBay's land held for development from the value at which participants believe it is

¹³ Because some of this information was only provided in certain conditions (for example, only participants in level 3 disclosure conditions were provided with cost of capital information), one of the multiple choice options was "this information was not provided".

"equally likely" that the actual fair value is higher or lower. An ANOVA reveals an overall increase in perceived bias when moving from level 2 to level 3 inputs (F = 4.05, p = 0.047, two-tailed), but no main or interactive effects of investment horizon (both p-values > 0.303, two-tailed). Thus, although participants recognize the increased potential for bias when estimates are derived using unobservable inputs, I find no evidence that investment horizon significantly moderates this effect. Further, when I replicate the mediation analysis used to test H2b with bias as the mediator, I find that short horizon participants' judgments of bias do not mediate the relation between fair value disclosures and valuation.

Investors' subjective expertise

Teigen and Jørgensen (2005) and others (e.g., Kahneman and Tversky 1982) distinguish between internal and external uncertainty, such that judgments reflect "(1) the judge's subjective expertise, and (2) the degree of variability believed to be associated with the target value." Although H1 is related to investors' perceptions of external error or uncertainty, I also measured subjective expertise by asking, "How confident are you in your ability to assess whether \$267,095 is a reasonable measure of the fair value of ArgyleBay's land held for development at the end of Year 3?" To test whether my results are robust to controlling for participants' subjective expertise, I include this measure as a covariate in my test of H1. Controlling for participants' subjective expertise, I observe a pattern of cell means that is very similar to that displayed in Panel B of Figure 1, and the contrast used to test H1 remains highly significant (F = 17.30, p < 0.001, one-tailed).¹⁴

¹⁴ Further analyses confirm that the significance of this contrast is robust to controls for participants' judgments of short-term and long-term risk, as well as perceptions of management competence and the credibility of management's assertion that the recognized value represents the actual fair value of the land held for development (all p-values < 0.001, one-tailed).

7. CONCLUSION

This study presents theory and evidence consistent with the prediction that the effect of estimate-related disclosures on investors' precision and valuation judgments depends jointly on disclosure content and investor mindset. Specifically, I find that the effect of level 3 fair value disclosures on investors' judgments of estimate precision is amplified by a concrete mindset associated with a short investment horizon. Furthermore, the joint effect of mindset and fair value disclosures on investors' valuation judgments is even more striking. Consistent with concerns about an illusion of precision in financial statement estimates, differences in estimate precision do not significantly alter the impact of an asset impairment on long horizon investors' valuation judgments. Contrary to these concerns, however, my results suggest that, compared to long horizon investors, short horizon investors underweight the negative economic implication of an asset impairment when estimate precision is relatively high, but strongly reduce the value they place on the firm when the impaired asset is measured with a low degree of precision.

As the first study to consider a contextual determinant of investor mindset and subsequent effects of mindset on investors' judgments, the theory and findings I present here make several contributions. Specifically, I provide initial evidence that investor mindset varies systematically with investment horizon. While horizon is important because it plays a key role in many investment decision, it is just one of several likely determinants of investor mindset in the financial reporting environment. Thus, the theory and evidence presented here is likely to be useful in understanding a range of phenomena beyond the effects of horizon. In addition, I find that estimate-related disclosures interact with investor mindset to influence investors' judgments of estimate precision and firm value. A key takeaway of my study for professionals and standard

setters is that contextual variables, such as investment horizon, likely interact with the information environment to influence investors' judgments and decisions in unexpected ways.

My findings are also subject to certain limitations, which in turn raise interesting questions for future research. First, although I find that investment horizon influences judgments of estimate precision and firm value because of differences in mindset, considering a relatively short or long investment horizon may also instantiate situational differences in investors' risk tolerance. As a result, although the pattern of results that I predict and find cannot be explained by standard models of firm value, future research could investigate the way in situational risk tolerance associated with investment horizon affects the way in which investors' valuation judgments articulate with the price at which they are willing to commit their capital to a firm. Second, the multiple psychological distance dimensions identified in the psychology literature suggest another area for future work. Thus, although I focus here on differences in temporal orientation associated with investment horizon, future work might consider other determinants and consequences of investor mindset, including both main and interactive effects. Third, there are multiple ways in which an illusion of precision might manifest itself in financial statements. While I consider a context in which disclosures reveal information about the assumptions and processes underlying the valuation of a single line item, financial statement items covary in ways that may amplify or attenuate the effect of alternative assumptions on firm performance and value. Although a concrete mindset appears to magnify the effect of disclosures in my setting, theory suggests that a user with a relatively abstract mindset may be more likely to recognize the way in which financial statement items covary. Finally, my study considers the effect of estimate-related disclosures and mindset on the judgments of nonprofessional investors. Future research could consider whether experts (e.g., analysts) exhibit similar judgments in response to

determinants of mindset, or whether, for example, they systematically approach their analyses with a concrete mindset because of a chronic psychological proximity to information in their field of expertise.

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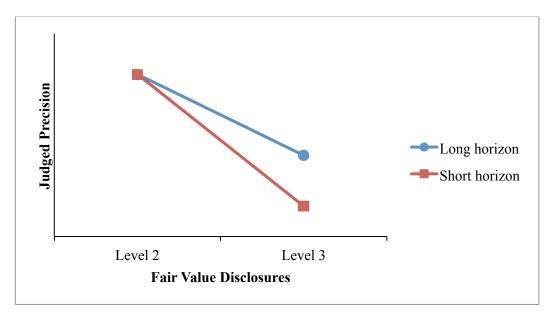
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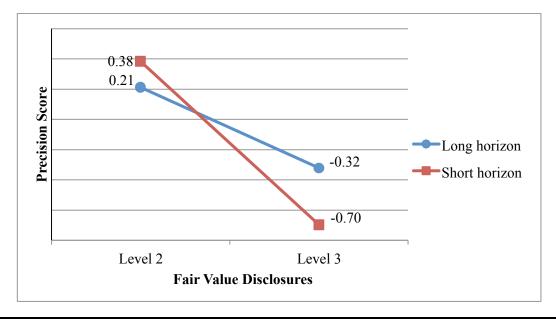
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FIGURE 1
The Effect of Fair Value Disclosures and Investment Horizon on Precision Judgments (H1)

Panel A: Predicted Effects



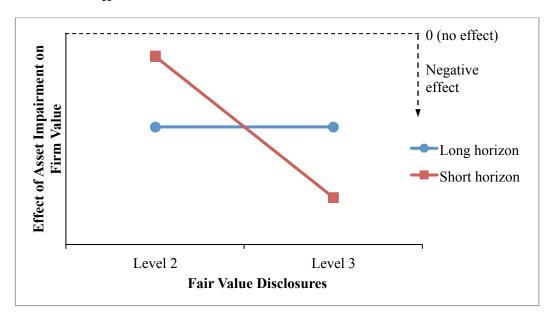
Panel B: Observed Effects



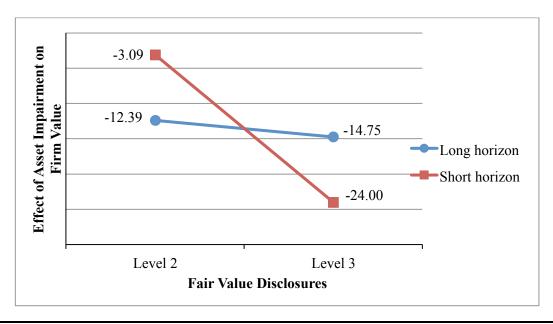
Panel A depicts the pattern consistent with the hypothesized ordinal interaction of *investment horizon* and *fair value disclosures* on participants' precision judgments (H1). The prediction in H1 maps reasonably in contrast weights of +2 -3 +2 -1 for short horizon/level 2; short horizon/level 3; long horizon/level 2; and long horizon/level 3 conditions. Panel B depicts the observed pattern of participants' precision judgments (see Table 1, Panel A). This pattern is tested using the planned contrast presented in Panel B of Table 1.

FIGURE 2
The Effect of Fair Value Disclosures and Investment Horizon on Valuation Judgments (H2)

Panel A: Predicted Effects



Panel B: Observed Effects

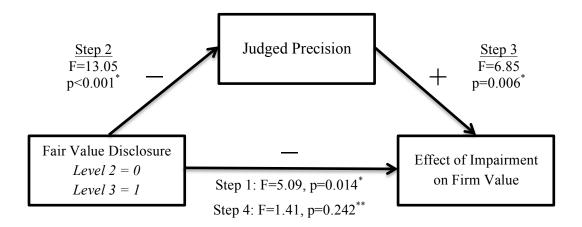


Panel A depicts the pattern consistent with the hypothesized interactive effects of *investment horizon* and *fair value disclosures* for the influence of an asset impairment on investors' judgments of firm value (H2a). Panel B depicts the observed pattern of cell means participants' valuation judgments (see Table 2, Panel A). This pattern is tested using the ANOVA presented in Panel B of Table 2.

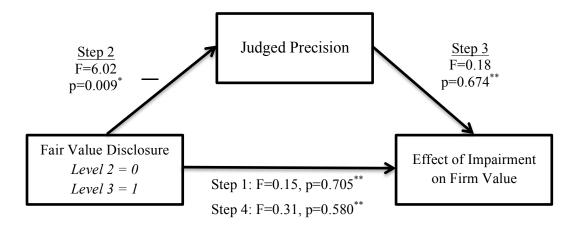
FIGURE 3

The Mediating Role of Judged Precision in the Relation between Fair Value Disclosures and the Effect of an Impairment Loss on Investors' Valuation Judgments (H2b)

Panel A: Short Horizon Investors



Panel B: Long Horizon Investors



This figure summarizes tests of the mediating role of judged precision in the causal relation between fair value disclosure level and the effect of an asset impairment on participants' judgments of firm value. Panel A (B) presents results for participants acting as short (long) horizon investors.

^{*} p-values are one-tailed, given directional predictions

^{**} two-tailed equivalent

TABLE 1
Descriptive Statistics and Test of Hypothesis 1

Panel A: Descriptive Statistics for H1 – Participants' precision judgment means [standard deviations]

aeviaiionsj				
		<u>Fair Value I</u>	Disclosure	<u></u>
	<u>n</u>	<u>Level 2</u>	<u>n</u>	Level 3
Short Horizon				
Precision 1	23	64.74 [17.64]	22	39.14 [23.86]
Precision 2	23	56.74 [20.88]	22	40.45 [23.44]
Precision Score	23	0.38 [0.94]	22	-0.70 [1.06]
Long Horizon				
Precision 1	23	61.35 [14.39]	24	44.67 [17.34]
Precision 2	23	53.39 [18.34]	24	49.54 [21.47]
Precision Score	23	0.21 [0.77]	24	-0.32 [0.71]
Panel B: Planned contrast coding for H1				
		<u>df</u>	<i>F</i> -ratio	<i>p</i> -value
Overall test [H1]:				
Level 3 disclosures will result in a gre	ater redu	ection in		

Contrast weights [+2 -3 +2 -1]

Panel C: Follow-up Tests of Simple Effects

than for long horizon investors.

judgments of estimate precision for short horizon investors

Effect of fair value level given short horizon Effect of fair value level given long horizon Effect of horizon given Level 2 disclosure Effect of horizon given Level 3 disclosure	<u>df</u> 1 1 1 1	13.05 6.02	<u>p-value</u> <0.001* 0.009* 0.505** 0.075*
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Participants responded to the following questions on 101-point Likert scales: Precision 1 – "How sure are you that \$267,095 is the actual fair value of ArgyleBay's land held for development at the end of Year 3?" with endpoints 0 ("Not at all sure") and 100 ("Very sure"). Precision 2 – "How precise is \$267,095 as a measure of the fair value of ArgyleBay's land held for development at the end of Year 3?" with endpoints 0 ("Very imprecise") and 100 ("Very precise").

20.98

< 0.001*

^{*} p-values are one-tailed, given directional predictions

^{**} two-tailed equivalent

TABLE 2
Descriptive Statistics and Test of Hypothesis 2a

Panel A: Descriptive Statistics – Participants' valuation judgment means [standard deviation]	Panel A: Descr	iptive Statistics –	Participants'	valuation	iudgment	means	Istandard	deviation
---	----------------	---------------------	---------------	-----------	----------	-------	------------------	-----------

		Fair Value Disclosures			
	<u>n</u>	Level 2	<u>n</u>	Level 3	
Short Horizon	23	-3.09 [37.70]	22	-24.00 [22.10]	
Long Horizon	23	-12.39 [17.67]	24	-14.75 [24.07]	

Panel B: Regression Model of Valuation Judgments

	Short Horizon		Long H	orizon
	Coefficient	<u>p-value</u>	Coefficient	<u>p-value</u>
Intercept	-3.09	0.636**	-12.93	0.003^{*}
Level 3 Disclosures	-20.91	0.014^{*}	-2.36	0.705**

Panel C: ANOVA Model of Valuation Judgments

Source of Variation	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F-ratio</u>	<u>p-value</u>
Horizon	0.02	1	0.02	0.00	0.996^{**}
Fair Value Level	3111.10	1	3111.10	4.44	0.019^{*}
Horizon x FV Level	1977.64	1	1977.64	2.82	0.048^{*}
Error	61721.80	88	701.38		

Panel D: Follow-up Tests of Simple Effects

	<u>df</u>	<u>F-ratio</u>	p-value
Effect of fair value level given short horizon	1	7.01	0.010^{*}
Effect of fair value level given long horizon	1	0.09	0.761**
Effect of horizon given Level 2 disclosure	1	1.42	0.113^{*}
Effect of horizon given Level 3 disclosure	1	1.83	0.091^{*}

Participants assessed how the impairment recognized in ArgyleBay's Year 3 financial statements affected the value they would place on the company. Participants responded on a Likert scale with endpoints -100 ("Greatly <u>decreases</u> how much I value the company") and +100 ("Greatly <u>increases</u> how much I value the company"); the midpoint of the scale was labeled 0 ("Neither increases nor decreases how much I value the company").

^{*} Reported p-values are one-tailed, given directional predictions

^{**} Two-tailed equivalent

APPENDIX A

Investment Horizon Manipulation

This appendix reproduces the instructions provided to participants in short and long investment horizon conditions, respectively. In addition to these instructions, participants in short (long) horizon conditions listed three factors that would be important in predicting the performance of a short-term (long-term) investment in ArgyleBay stock and three ways in which they would use the money from their investment when they cashed it in.

Part 1: Short Horizon Instructions

In the materials that follow, you will read background and financial information about ArgyleBay Communities, Inc., a firm operating in the residential real estate industry.

Please assume that you are a prospective investor considering a **short-term** investment of \$10,000 in the residential real estate industry. Based on your analysis thus far, you have identified ArgyleBay's stock as a potential investment. You expect to hold your investment for **no more than three months**.

Part 2: Long Horizon Instructions

In the materials that follow, you will read background and financial information about ArgyleBay Communities, Inc., a firm operating in the residential real estate industry.

Please assume that you are a prospective investor considering a **long-term** investment of \$10,000 in the residential real estate industry. Based on your analysis thus far, you have identified ArgyleBay's stock as a potential investment. You expect to hold your investment for **no less than five years**.

APPENDIX B

Fair Value Disclosure Manipulation

This appendix reproduces the financial statement line items and fair value disclosures provided to participants.

Part 1: Level 2 Disclosures

ncome Statement	
\$ in thousands)	Year 3
Expenses:	
Impairment loss – land held for development (see note 1)	21,152
1	, -
Polomos Shoot	
Balance Sheet	

Note 1

Assets measured at Fair Value on a Nonrecurring Basis

(\$ in thousands)		Fair Va	lue Measuremen	ts Using	
D 11	Fair Value at	Quoted Prices in Active Markets for Identical Assets	Significant Other Observable Inputs	Significant Unobservable Inputs	Total Gains
Description Land held for	End of Year 3	(Level 1)	(Level 2)	(Level 3)	(Losses)
development	\$267,095		\$267,095		\$(21,152)

Impairment Loss

During the year, the Company concluded that the economic downturn and the related decline in employment levels did not support the development and construction of certain new apartment communities that were previously in planning. Accordingly, two land parcels held for development with a carrying value of \$288,247 were written down to their fair value of \$267,095, resulting in an impairment charge of \$21,152, which was included in earnings for the period. Because the valuation of the land parcels incorporated significant other observable inputs, these values are considered to be Level 2 prices in the fair value hierarchy.

Part 2: Level 3 Disclosures

ncome Statement	
\$ in thousands)	Year 3
Expenses:	
Impairment loss – land held for development (see note 1)	21,152
impairment 1000 Iana 101a 101 ao telopinent (000 note 1)	21,132
Dolomos Chast	
Balance Sheet	

Note 1

Assets measured at Fair Value on a Nonrecurring Basis

(\$ in thousands)		Fair Va	lue Measuremen	ts Using	
		Quoted Prices in Active Markets for	Significant Other Observable	Significant Unobservable	Total
Description	Fair Value at End of Year 3	Identical Assets (Level 1)	Inputs (Level 2)	Inputs (Level 3)	Gains (Losses)
Land held for development	\$267,095	(Bever 1)	(Ecter 2)	\$267,095	\$(21,152)

Impairment Loss

During the year, the Company concluded that the economic downturn and the related decline in employment levels did not support the development and construction of certain new apartment communities that were previously in planning. Accordingly, two land parcels held for development with a carrying value of \$288,247 were written down to their fair value of \$267,095, resulting in an impairment charge of \$21,152, which was included in earnings for the period. Because the valuation of the land parcels incorporated significant unobservable inputs, these values are considered to be Level 3 prices in the fair value hierarchy.

Valuation Technique

The internal model used to generate the fair value of the land parcels employed an expected present value technique. The model used a set of probability-weighted future cash flows to generate a single stream of expected cash flows. These expected cash flows were then adjusted using a risk-adjusted discount rate. The discount rate used in generating the fair value of the impaired land parcels was the Company's estimated weighted average cost of capital (WACC) at the balance sheet date. The WACC is a weighted average of the Company's cost of equity capital, estimated using the capital asset pricing model (CAPM), and the Company's after-tax incremental borrowing rate for long-term debt. This valuation technique is the same as techniques used to measure similar assets in prior periods.

APPENDIX C

Coding of Participants' Written Descriptions

Participants provided written descriptions of ArgyleBay Communities, Inc. in no more than three sentences, using their own words. The order of the descriptions was randomized, and the independent rater was unaware of either the manipulations or the purpose of the study. Each description was coded as entirely or mainly abstract (given a value of 1), entirely or mainly concrete (given a value of 0), or a combination of abstract and concrete (given a value of 0.5). The independent rater was told that:

Concrete statements refer to specific, tangible objects. For example, you might describe the act of driving as sitting in a car, pushing the accelerator, and moving the steering wheel to point the wheels in the direction you want to go. This is a concrete description. An abstract description of driving a car might suggest that driving is the act of getting from one place to another. It is abstract because it describes the higher order concept rather than the mechanical specificities of driving. (Alter and Oppenheimer 2008)

The following are examples of descriptions given ratings of 1, 0, and 0.5:

- Coded as 1 (entirely or mainly abstract): "They seem like a company that knows what it takes to succeed. They have correctly predicted their clients' tastes and matched these with their building projects. They also seem like they're on the verge of growing even larger and faster than they have been."
- Coded as 0 (entirely or mainly concrete): "ArgyleBay Communities develops, redevelops, and runs apartment buildings. These buildings are on average 9 years old, newer than the market average. The company has diverse holdings across the United States (many states)."
- Coded as 0.5 (a combination of abstract and concrete): "ArgyleBay Communities is a developer & manager of more than 50,000 housing units in the United States. These communities are built to ensure a more convenient living experience, and often include amenities such as dry cleaning & restaurants. All employees aim to enhance the lives of people living in the communities."