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**Are Investors Warned by Disclosure of Conflicts of Interest?
The Moderating Effect of Investment Horizon**

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Are Investors Warned by Disclosure of Conflicts of Interest? The Moderating Effect of Investment Horizon

ABSTRACT

Financial analysts are required to disclose conflicts of interest (COI) in their research reports, but there is limited evidence on the effectiveness of COI disclosures. We investigate whether the influence of disclosing COI in analyst reports on investors' decision making depends on investment horizon. Experimental results show that short-term investors who view a COI disclosure are significantly less willing to invest in the recommended stock compared to short-term investors who do not view such a disclosure, while the presence of a COI disclosure does not significantly affect long-term investors' willingness to invest. Results further demonstrate that the COI disclosure decreases short-term investors' willingness to invest by reducing their perception of analysts' trustworthiness and expertness. This study provides evidence on when and how the COI disclosure can influence investors' behavior and enhances our understanding of investors' reactions to cautionary disclaimers.

Keywords: Conflicts of interest, Construal level theory, Analyst reports, Investment horizon

Data Availability: Contact the authors.

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I. INTRODUCTION

Financial analysts are important financial intermediaries in capital markets. Conflicts of interest (COI) may arise when financial analysts' interests align with the companies they cover rather than with the investors they advise. Analysts' COI may compromise their independence in providing equity research and have been a serious concern to regulators, investors, and researchers.¹ Following a series of regulatory reforms, including the National Association of Securities Dealers (NASD) Rule 2711, the New York Stock Exchange (NYSE) Rule 472, and the Global Research Analyst Settlement (Securities and Exchange Commission (SEC) 2003; Government Accountability Office (GAO) 2012), sell-side analysts are now mandated to disclose any COI they have in their research reports.

The regulators' intent with such a mandatory disclosure requirement is to alert investors, particularly nonprofessional investors,² to analysts' COI and provide the investors with better information concerning the limitations of analyst research (SEC 2003, 2010; GAO 2012). Prior evidence shows that nonprofessional investors are at a higher risk of over-relying on positive forward-looking statements than professional investors (Asay and Hales 2018), and that they tend to be credulous about analysts' recommendations (Malmendier and Shanthikumar 2007). It is commonly believed that COI disclosures can attenuate the unwanted consequences of COI by making individuals aware of the potential bias in expert advice (Fischhoff, Slovic, and Lichtenstein 1978; Crockett, Harris, Mishkin, and White 2003). However, there is little evidence that the

¹ See Ramnath, Rock, and Shane (2008) and Bradshaw (2011) for a comprehensive review of this issue.

² "Individual investors," "nonprofessional investors," and "retail clients" are used interchangeably in this paper. Nonprofessional investors are investors who manage their own equity investments (Barber and Odean 2000).

presence of a COI disclosure effectively influences individual investors' behaviors (Kelly, Low, Tan, and Tan 2012).

We seek to shed light on this issue by investigating how investment horizon influences the effectiveness of COI disclosures on nonprofessional investors' investment decisions. Investment horizon refers to the length of time that investors plan to hold an investment and realize the investment returns; it is generally grouped into two categories: short-term or long-term time horizons. Individual investors exhibit diverse investment horizons ranging from days to years (Barber and Odean 2000), and investment horizon is a crucial factor for investors when they make investments in capital markets (CFA Institute 2013).³

Based on the well-documented “construal fit” effect in Construal Level Theory (CLT) (Liberman and Trope 1998; Trope and Liberman 2000, 2003, 2010), we predict that investment horizon will moderate the effectiveness of COI disclosure. CLT posits that people construe or mentally represent objects and events at either a high or low level. Individuals construing at a high level tend to put more weight on information associated with high-level features (e.g., central and primary information) and those construing at a low level tend to put more weight on information associated with low-level features (e.g., peripheral and secondary information). Thus, a piece of information is most influential in decision making when its construal-level features match the decision makers' mental construal levels (Petty and Wegener 1998; Fujita, Eyal, Chaiken, Trope, and Liberman 2008; Lee, Keller, and Sternthal 2009).

³ According to Barber and Odean (2000) who study individual investors in a large U.S. discount brokerage firm, individual investors on average purchase 6.49 percent and sell 6.34 percent of their stock portfolio each month. The annual turnover rate is about 75 percent, which translates into an average holding period of 16 months (Barber and Odean 2013, 1539). In this paper, we consider that stocks are bought over a short horizon if investors trade them within one week, consistent with prior studies (Barber and Odean 2000; Kaniel, Saar, and Titman 2008; Andrade, Chang, and Seasholes 2008).

When an analyst issues a report with both a stock recommendation⁴ and a COI disclosure, the stock recommendation represents the relatively central and primary feature of the analyst report because it is the key message that the analyst intends to convey, while the COI disclosure represents a relatively peripheral and secondary feature of the analyst report because it points to the potential bias of the recommendation and is only meaningful in the presence of the stock recommendation (Trope and Liberman 2010). Investment horizon may influence the effectiveness of the COI disclosure because it affects investors' construal-level mindset and thus generates the "construal fit" effect with the COI disclosure. Prior research shows that individuals with a proximal (distal) temporal perspective tend to form a low-level (high-level) construal mindset that carries over to their evaluations of other objects and events (Kivetz and Tyler 2007; Rogers and Bazerman 2008; Fujita et al. 2008; Weisner 2015; White 2017). Investors with a short (long) investment horizon arguably hold a proximal (distal) temporal perspective, which activates a low-level (high-level) construal mindset that carries over to their evaluation of the analyst report. Since the COI disclosure represents a relatively secondary feature that fits a low-level construal mindset, short-horizon investors are likely to place more weight on the COI disclosure than long-horizon investors, which in turn affects their investment intention. This line of reasoning suggests that investment horizon moderates the effectiveness of the COI disclosure. Specifically, given a favorable stock recommendation, the presence of a COI disclosure is more likely to decrease investors' willingness to invest in the recommended stock when the investment horizon is short

⁴ Analysts' stock recommendations are conventionally classified into "Strong Buy," "Buy," "Hold," "Underperform," and "Sell." We focus on analyst reports with favorable stock recommendations (i.e., "Strong Buy" or "Buy") for two reasons. First, prior studies reveal that more than 95 percent of the analysts' stock recommendations are positive or neutral (i.e., they are "Strong Buy," "Buy," or "Hold") (Malmendier and Shanthikumar 2007). Favorable stock recommendations remain the most common type of stock recommendations even after the Global Research Analyst Settlement (Kadan, Madureira, Wang, and Zach 2009). Second, regulators are particularly concerned about analysts who optimistically bias their stock recommendations (i.e., issue favorable stock recommendations when they should not) due to their COI. Prior research finds that analysts who are more likely to have COI (e.g., affiliated analysts) bias the stock recommendations more (Malmendier and Shanthikumar 2007, 2014).

than when it is long.

We conduct a 2×2 between-subjects experiment to test our prediction. Given our interest in nonprofessional investors, we recruit participants from Amazon's Mechanical Turk (MTurk), an online labor market, as prior studies suggest that the background of MTurk workers represents that of nonprofessional investors (e.g., Rennekamp 2012; Koonce, Miller and Winchel 2015; Farrell, Grenier, and Leiby 2017; Asay and Hales 2018). In the experiment, participants indicate investment intention based on the financial information of a hypothetical company and an analyst report with a "Strong Buy" recommendation. We manipulate the presence or absence of the COI disclosure in the analyst report and the investment horizon as short-term or long-term. Consistent with our expectation, results show that the presence of a COI disclosure significantly reduces participants' willingness to invest in the recommended stock when they make a short-term investment. In contrast, participants making a long-term investment exhibit no significant difference in willingness to invest regardless of the presence of the COI disclosure.

To examine the psychological mechanisms underlying the moderating effect of investment horizon, we test whether investors' perception of source trustworthiness and expertness, the two critical dimensions of source credibility (Hovland and Weiss 1951; Hovland, Janis, and Kelley 1953), mediate the moderating effect of investment horizon. As predicted, results show that when investment horizon is short-term, participants presented with a COI disclosure view the analyst as less trustworthy and having a lower level of expertise than participants who are not presented with the COI disclosure. In comparison, participants in the long-term investment conditions do not exhibit significant differences in their perception of trustworthiness and expertness regardless of the presence of the COI disclosure.

Our paper contributes to research that examines how cautionary disclaimers influence nonprofessional investors' decisions. While prior studies primarily focus on the cautionary disclaimers made by managers when providing forward-looking statements (e.g., Johnson, Kasznik, and Nelson 2002; Nelson and Pritchard 2007; Asay and Hales 2018), our study sheds light on the effect of cautionary disclaimers made by potentially biased third-party information intermediaries. We find that presenting COI disclosures in the analyst reports is more likely to reduce nonprofessional investors' willingness to invest when they are making short-term investments and that perceived trustworthiness and expertness, as dimensions of source credibility, function as the psychological channels that mediate the moderating effect of investment horizon on the effectiveness of the COI disclosure.

In addition, our research adds to the discussion of the economic consequences of mandatory COI disclosures. While the mixed findings from prior work (e.g., Cain, Loewenstein, and Moore 2005; Church and Kuang 2009; Taha and Petrocelli 2014) indicate that COI disclosures do not always influence individuals' behavior effectively, the boundaries are largely under-researched. We identify and test a theory-motivated boundary condition and the underlying psychological mechanisms. Our findings enhance the understanding of when and how COI disclosures can effectively influence nonprofessional investors' investment decisions. Importantly, nonprofessional investors are able to obtain information about the analysts' recommendations from various secondary sources in a digital world (e.g., Yahoo! Finance). The issue is that they are likely to obtain such information without being properly informed about the analysts' COI. Our findings suggest that the COI disclosure can be effective in alerting nonprofessional investors when they are making short-term investments, and as such, it would be beneficial to make the COI disclosure more salient not only in analyst reports but also in other secondary information channels.

This study also extends the literature on investment horizon. Investigating how evaluations and decisions vary with time horizon has been a central topic in behavioral science (Liberman and Trope 2008). Prior accounting research shows that managers' and institutional investors' behavior can be affected by time horizon (Dechow and Sloan 1991; Bushee 2001). The current study adds to this stream of research by incorporating investment horizon into the investigation of how individual investors process information disclosed by information intermediaries in making investment decisions.

Finally, there is a growing body of behavioral accounting studies that apply CLT to examine decision making.⁵ The current study contributes to the CLT literature by investigating how investment-horizon-induced mental construal level influences nonprofessional investors' behaviors. Because investment returns are often realized in the future, investment decisions are essentially intertemporal choices. In this sense, CLT is particularly relevant in demonstrating investment decisions in accounting since it provides a framework to study intertemporal decision making.

The remainder of the paper is organized as follows. We present background information regarding the mandatory COI disclosures in financial analyst reports and develop the hypotheses in the next section. In Section III we elaborate on research methods, followed by a discussion of the pretests in Section IV. We discuss results and additional analyses in Section V and conclude the paper in Section VI.

⁵ Recently published papers that use CLT as the theoretical underpinning include Elliott, Grant, and Rennekamp (2017), Choi, Hecht, Taftkov, and Towry (2016), Elliott, Rennekamp, and White (2015), Rasso (2015), Taylor and Curtis (2013), and Koonce, Seybert, and Smith (2011).

II. BACKGROUND AND HYPOTHESES DEVELOPMENT

Disclosure of COI in Analyst Reports

Sell-side analysts face many conflicts of interest (e.g., investment banking fees, trading commissions, and favorable access to managers) which can compromise their independence and give rise to optimistic biases in stock recommendations (SEC 2010; Schipper 1991; Hong and Kubik 2003; O'Brien, McNichols, and Lin 2005). Regulators have long been concerned about analysts' impaired independence caused by their COI. Following a number of SEC investigations (Richards 2002), a set of regulatory reforms and enforcement actions were undertaken to tackle analysts' COI, starting with Section 501 of the Sarbanes-Oxley Act (SOX).

SOX Section 501 requires registered securities associations and national securities exchanges to design and adopt rules to address analysts' COI and to protect the independence of financial analysts. In July 2002, NASD implemented Rule 2711, with the SEC's approval, to require brokers to disclose material COI on the front page of their research reports or provide a front-page reference to the page on which such a disclosure could be found. The Global Research Analyst Settlement further enhanced the disclosure requirement by mandating each sanctioned broker to state on the first page of every research report that it "does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report." (SEC 2003).

Influence of COI Disclosures on Nonprofessional Investors

Nonprofessional investors are important participants in capital markets. According to the Securities Industry and Financial Market Association (2018), roughly 40 percent of U.S. equities are held by U.S. households. However, several prior studies reveal that nonprofessional investors often underperform by being net buyers of stocks with weak future performance and, therefore,

earn poor returns (Barber and Odean 2000; Grinblatt and Keloharju 2000; Barber, Lee, Liu, and Odean 2009).

Regulators' interest in mandating analysts' disclosure of any COI largely stems from the belief that investors, especially nonprofessional investors, may not be fully aware of analysts' COI and, thus, are misled into making suboptimal investments (Mikhail, Walther, and Willis 2007). Although nonprofessional investors do not have the same extensive access to analyst reports as professional investors, analyst reports and their stock recommendations have become easily accessible to nonprofessional investors through various online sources. Most brokerage firms make their research reports and recommendations available to their clients and, in some cases, allow clients to download reports from other brokerage firms with which they have partnerships (Malmendier and Shanthikumar 2007). For example, Merrill Edge, an online broker and part of Bank of America's retail banking division, gives account holders access to equity research by Morningstar and S&P in addition to Merrill Lynch Global Research. Charles Schwab, another online brokerage firm, gives account holders access to equity research by Morningstar and S&P in addition to Credit Suisse.

While nonprofessional investors value analysts' stock recommendations as important advice in making investment decisions (SRI International 1987; Yeen and Hong 2016),⁶ they tend to be unaware of or ignore the fact that analysts' stock recommendations are potentially optimistically biased. For example, Engelberg, Sasseville, and Williams (2012) find that individual

⁶ In the survey report "Into the Minds of Investors: Investors' View of Financial Reporting, Audit and Corporate Governance," Yeen and Hong (2016) document that 91 percent of the retail investors said that analyst reports are at least "somehow important," and 52 percent of them considered analyst reports "important" or "very important." In an experiment, Asay, Elliott, and Rennekamp (2017) find that investors rely on outside information sources more when managers' disclosure is less readable and most of their participants chose to access financial analyst reports or reports summarizing the analyst consensus. Such findings further support the importance of financial analysts reports to the individual investors.

investors react to stock recommendations made by Jim Cramer, a former hedge fund manager and host of the television show *Mad Money*, resulting in significant overnight returns that are subsequently reversed. Evidence from Malmendier and Shanthikumar (2007) suggests that while institutional investors are largely aware of the potential COI faced by affiliated analysts and discount the analysts' stock recommendations accordingly, individual investors appear to follow the analysts' stock recommendations.

Proponents of mandatory COI disclosures argue that the revelation of the fact that the analysts' interests are not aligned with investors' interests should generate suspicion of the analysts' recommendations and reduce investors' overreliance on such information. While the mandatory COI disclosure is expected to increase awareness of the analysts' COI (Fischhoff et al. 1978), such a disclosure may not exert the intended effect on nonprofessional investors. Psychology literature shows that people suffer from a "curse of knowledge" (Fischhoff 1977; Camerer, Loewenstein, and Weber 1989) such that they often fail to sufficiently discount advice which is highlighted as potentially biased (Gibbons et al. 1998). Consistent with this line of reasoning, Kelly et al. (2012) find that warning participants about the potential bias in analysts' recommendations, combined with instructing them to form their own independent stock recommendations, reduces investors' reliance on analysts' stock recommendations. However, it is not clear whether such a disclosure on its own reduces investors' reliance on analysts' recommendations, although the authors conjecture that it does not.⁷

⁷ Findings from Kelly et al. (2012) suggest that warning investors about analysts' COI is effective in influencing investors' behaviors if the investors exert cognitive effort to form their own stock recommendation. Our study focuses on investment horizon and its influence on investors' construal level that ultimately affects the salience of the COI disclosure in the investors' mindsets. Both studies shed light on the boundary conditions under which the COI disclosure would be effective or ineffective in influencing investors' behaviors.

Moderating Effect of Investment Horizon

We posit that the impact of COI disclosure on investors' willingness to invest in the recommended stock varies with investment horizon. We rely on CLT and its application in the field of communication effectiveness to develop our arguments. The central premise of CLT is that individuals' mental representations of objects and events range from a low construal level emphasizing peripheral details and secondary features to a high construal level focusing on central meaning and primary features (Liberman and Trope 1998; Eyal, Liberman, Trope, and Walther 2004). It is well established that temporal distance activates different mental construal levels: individuals construe near-future events at a low construal level and distant-future events at a high construal level (Trope and Liberman 2000; Liberman, Sagristano, and Trope 2002; Eyal et al. 2004; Herzog, Hansen, and Wänke 2007; Trope, Liberman, Wakslak 2007).

Temporal distance alters construal levels not only when actual temporal distance varies but also when subjective temporal perspectives change (Kivetz and Tyler 2007; Fujita et al. 2008; Weisner 2015). While actual temporal distance reflects the difference between the present time and a future event, a subjective temporal perspective is a proximal-future- or distal-future-oriented time perspective on which individuals make decisions irrespective of the actual event timing.⁸ For example, Rogers and Bazerman (2008) document that, holding constant the actual temporal distance from the event to the decision while varying the timing of the outcomes and consequences of the event, people are tempted to construe the event at a high (low) level and focus on the high-level (low-level) features when the consequences occur in the distant future (near future).

This line of research on subjective temporal perspectives rests on the rationale that an individual can be primed to adopt a high or low construal-level mindset that carries over to the

⁸ See Weisner (2015) for a review with respect to subjective temporal perspectives.

mental representation of other objects or events (Freitas, Gollwitzer, and Trope 2004; Fujita, Trope, Liberman, Levin-Sagi 2006). For instance, Kivetz and Tyler (2007) document that when individuals are primed to think about themselves in one week (in 10 years), they form a short-term (long-term) oriented temporal perspective that influences their subsequent decisions (e.g., choosing banks). In the current investment setting, we posit that a short-term (long-term) investment horizon entails the consideration of investment returns realized in the near (distant) future and should prompt the investors to adopt a proximal (distal) temporal perspective and thus a low-level (high-level) construal mindset. That low-level or high-level mindset carries over to the subsequent evaluation of available information, which, in our setting, is the analyst report.

The follow-up question is how low-level or high-level construal mindsets influence investors' evaluation of analyst reports containing COI disclosures and, consequently, their investment decisions. Financial analyst reports are by nature a type of communication that aims to influence investors' decisions. Prior studies show that decision makers tend to put more weight on information in line with their construal-level mindsets (Petty and Wegener 1998; Fujita et al. 2008). This “construal fit” effect has been documented in various communication scenarios, such as political campaigns (Kim, Rao, and Lee 2009), advertisements (Hernandez, Wright, and Rodrigues 2015), and peer recommendations (Zhao and Xie 2011), where individuals with a proximal (distal) temporal perspective are more influenced by information associated with low-level (high-level) features.

Based on Trope and Liberman (2010), we posit that a stock recommendation represents the relatively central and primary feature of the analyst report while the COI disclosure represents a relatively peripheral and secondary feature of the report. Trope and Liberman (2010) propose two criteria to assess whether a feature is high-level or low-level: *centrality* and *subordination*.

Centrality indicates that “changing a high-level feature has a greater impact on the meaning of an object than does changing a low-level feature” while subordination means that “the meaning of low-level features depends on high-level features more than vice versa” (Trope and Liberman 2010, 441). The stock recommendation is more central than the COI disclosure, because changing the stock recommendation (e.g., from Buy to Sell) essentially alters the advice conveyed by the analyst report but changing the COI disclosure does not. In addition, given that the COI disclosure points to the potential bias in the stock recommendation, it is only meaningful when the stock recommendation is present.

Given that the COI disclosure represents a relatively peripheral and secondary feature of the analyst report, the “construal fit” effect predicts that such disclosure should receive greater attention from investors construing at a low level than from those construing at a high level. Short-term investors with a low-level construal mindset, therefore, are more likely to be influenced by the COI disclosure than the long-term investors with a high-level construal mindset. Since the COI disclosure aims to alert investors to the potential bias in the analyst report, the disclosure, when attended to, should reduce short-term investors’ perception of the credibility of the analyst and the research report, which in turn decreases their investment willingness. Hence, we expect the presence of a COI disclosure to have a greater impact on lowering investors’ investment intention in the recommended stock when the investment horizon is short than when it is long. The predicted moderating effect of investment horizon is graphically presented in Panel A of Figure 1. Formally, we hypothesize that:

- H1:** (Moderation) The presence of a COI disclosure in an analyst report has a larger negative effect on investors’ willingness to invest in the recommended stock when the investment horizon is shorter.

While we rely on the “construal fit” effect and predict that the COI disclosure is more likely to influence short-term investors than long-term investors, one might argue that long-term investors could be affected by the COI disclosure more because the long holding period leads them to perceive themselves as bearing a high risk if analysts act on the COI. Short-term investors, in contrast, may perceive the risk to be low because they can get in and out before the COI materializes. This argument provides tension for our prediction.

Psychological Mechanisms: Perceived Trustworthiness and Expertness

H1 rests on the premise that the COI disclosure influences investors’ investment intention by reducing the perceived credibility of the analyst and the research report. Perceived source credibility is vital in determining communication effectiveness and it consists of two distinct yet related components: perceived trustworthiness and expertness (Hovland and Weiss 1951; Hovland et al. 1953; Maddux and Rogers 1980).⁹ Numerous studies on communication effectiveness, including those applying CLT, demonstrate perceived expertness and trustworthiness as underlying mechanisms that mediate how communications affect decision making (e.g., Kelly et al. 2012; Steinhart, Carmon, and Trope 2013; Reyt, Wiesenfeld, and Trope 2016).

COI disclosures have been documented to reduce decision makers’ perception of source trustworthiness and expertness. For example, Taha and Petrocelli (2014) find that investors view an analyst as less trustworthy if they are informed that the analyst personally holds the recommended stock. Cooper and Neuhaus (2000) show that, in the context of legal persuasion, jurors tend to discount the expertise of experts testifying in court when the experts are highly paid

⁹ Perceived expertness refers to the extent to which the information source is perceived to consist of valid assertions; perceived trustworthiness refers to the extent to which the communicator is believed to communicate the assertions that are considered most valid. Although the two psychological mechanisms are conceptually different, they are closely related and often occur simultaneously. As a result, prior studies normally test the two mechanisms together rather than separately (Hovland et al. 1953).

by the defendants and thus have a COI.

We have argued that investment horizon moderates the impact of the COI disclosure on investment willingness by activating investors' different construal-level mindsets that affect the attention to COI disclosure, and thus the salience of COI disclosure in investors' evaluation of source credibility. This moderating effect is expected to be mediated by perceived source trustworthiness and expertness that underlie individuals' assessment of source credibility. Figure 2 shows the overall conceptual model. Specifically, COI disclosure is expected to have a greater negative impact on the perceived trustworthiness and expertness of the analyst when investment horizon is short than when it is long. Documenting supporting evidence of these two psychological mechanisms, and finding evidence consistent with H1, would foster confidence in the CLT-based explanation of the moderation of investment horizon. In line with our arguments, we hypothesize that:

H2a: (Mediated moderation) The presence of a COI disclosure has a greater negative impact on investors' perception of the analyst's trustworthiness when the investment horizon is shorter, which mediates the moderating effect of investment horizon on the influence of disclosing COI on investors' investment decisions.

H2b: (Mediated moderation) The presence of a COI disclosure has a greater negative impact on investors' perception of the analyst's expertness when the investment horizon is shorter, which mediates the moderating effect of investment horizon on the influence of disclosing COI on investors' investment decisions.

III. METHOD

Procedures and Case Materials

We conducted a 2×2 between-subjects experiment in which we manipulated the COI disclosure in the analyst report (absent vs. present) and the investment horizon (short-term vs. long-term).¹⁰ Participants were asked to assume the role of an investor seeking either a short-term

¹⁰ This research project was approved by the Business and Economics Human Ethics Advisory Group at the University of Melbourne.

or long-term investment opportunity with an endowment of \$10,000. In the experiment, participants were first presented with background information of a hypothetical company named TecPipe, including a brief introduction to the company and its key accounting information (e.g., assets, debt, equity, sales, cost of goods sold, and net income) over the past three years. Similar to Kelly et al. (2012), the past accounting information was deliberately designed in a way that the company's future prospect appears uncertain.¹¹

Participants were then presented with an analyst report about TecPipe issued by JMR Capital Market Research, a hypothetical full-service brokerage firm. The analyst rated TecPipe's shares as "Strong Buy" with the COI disclosure either present or absent. After viewing the analyst report, participants were asked to indicate their willingness to invest in the stock as well as their perception of the trustworthiness and expertness of the analyst and the report issued. Finally, participants provided information related to their basic demographics, accounting and financial knowledge, and investment experience.

Participants

We recruited participants from MTurk.¹² Two prescreening questions were designed to

¹¹ The past accounting information shows an improving financial position (e.g., more assets and lower financial leverage) accompanied by a worsening financial performance (e.g., lower profits), which should make the company's financial outlook uncertain. We ran an additional test to confirm whether participants indeed perceived the company's future prospect as uncertain. Sixty-four Mturkers were recruited and shown the company profile and accounting information used in the main experiment. They were asked to answer two questions. The first question asked the participants to indicate whether the financial position and performance of TecPipe was deteriorating or improving on a 9-point scale (1 = definitely deteriorating, 9 = definitely improving). The second question asked the participants to rate the extent to which, on a 9-point scale (1 = strongly disagree, 9 = strongly agree), they agreed with the statement that TecPipe's future prospects appear uncertain based on its past accounting information. Responses to the first question show that participants were unsure about the company's financial position and performance as the mean is not statistically different from the midpoint of 5 (mean = 5.156 vs. 5; $t = 0.662$; $p = 0.510$). Responses to the second question indicate that the extent to which participants agreed with the statement about TecPipe's uncertain future prospects is significantly greater than the midpoint (mean = 6.063 vs. 5; $t = 3.364$; $p < 0.001$). Taken together, results from this additional experiment confirm that the materials and accounting information used in our main experiment make TecPipe's future prospect uncertain.

¹² As an online labor market, MTurk has become a popular source for recruiting participants for experimental research in recent years (e.g., Rennekamp 2012; Koonce et al. 2015). Farrell et al. (2017) provide evidence supporting the use of MTurk in experimental accounting research.

exclude non-investors: “Do you have experience in investing in stock or debt markets?” and “Do you plan on investing in stock markets in the future?” Participants who answered negatively to both questions were not permitted to continue the experiment. We received 551 participants who passed the screening questions. We excluded 16 responses that had duplicate IP address and 3 participants provided false demographic information. We also excluded 26 responses who passed the prescreening and provided usable responses but were not located in the U.S. or self-identified as non-native English speakers. This results in a final sample of 506 participants.

To further confirm the validity of using MTurkers in our setting, we analyzed the background information of the 506 participants. The average (median) age is 37 (33) years old, and they have an average (median) of 15.25 (12) years of full-time work experience. On average, participants have completed 2.20 accounting and 2.17 finance courses, and 73 percent of them held a bachelor’s degree or higher. Regarding their investment experience, 85 percent of the participants had invested in stock or debt markets and 70 percent had consulted analysts’ stock recommendations for evaluating investment potential. Taken together, those participants share similar investment experience and knowledge in accounting and finance to Mturkers recruited by Rennekamp (2012) and to first-year MBA students in Elliott, Hodge, Kennedy, and Pronk (2007), suggesting that participants in our study are representative of nonprofessional investors.

Independent Variables

To manipulate the COI disclosure, participants in the COI-present (*DISCLOSURE*= 1) condition were shown the following statement:

“JMR Capital Market Research does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report and investors should consider this

report as only a single factor in making their investment decision.”

This wording was adapted from real-world analyst reports and is consistent with the requirement in the Global Research Analyst Settlement. Participants in the COI-absent (*DISCLOSURE* = 0) condition were not shown the above disclosure.

To manipulate the investment horizon, participants in the short-term investment (ST) condition (*HORIZON* = 0) were instructed at the beginning of the experiment to assume that they were considering a short-term investment and that they expected to hold the stock for *no more than one week*. Participants in the long-term investment (LT) condition (*HORIZON* = 1) were asked to assume that they were considering a long-term investment and that they expected to hold the stock for *no less than one year*.

Measure of Primary Dependent Variable

Our primary dependent variable is investors' willingness to invest in the recommended stock which was measured by three questions similar to Elliott et al. (2017). The first two questions asked participants to rate (1) the attractiveness of TecPipe's stock (1 = not attractive at all, 9 = very attractive) and (2) the likelihood that they will invest in TecPipe's stock (1 = very unlikely, 9 = very likely). The third question asked participants to indicate the amount, up to \$10,000, that they would like to invest in TecPipe's stock. The Cronbach's α for the three items (standardized) was 0.887, confirming the internal consistency. We performed a principal component analysis (PCA) of those three items and took the first principal component as the measure of investors' willingness to invest (*INVESTMENT*).¹³ Panel A of Table 1 provides detailed descriptions of these questions.

¹³ We use PCA to combine the three items rather than taking the average because the units of measurement differ across the three items. The Eigenvalue of the first component from PCA is 2.455.

Measures of Psychological Mechanisms

Consistent with prior literature (e.g., Hovland et al. 1953), source credibility was captured by its two dimensions: perceived trustworthiness and expertness. Three questions adapted from prior studies (e.g., Fuller, Serva, and Benamati 2007; Elliott, Hodge, and Sedor 2012) measured perceived trustworthiness: (1) “In your opinion, how trustworthy is the analyst report?” (1 = not trustworthy at all, 9 = very trustworthy), (2) “In your opinion, how reliable is the analyst report?” (1 = not reliable at all, 9 = very reliable), and (3) “Do you trust the Strong Buy recommendation in the analyst report about TecPipe?” (1 = do not trust it at all, 9 = trust it very much). The three questions (Cronbach’s $\alpha = 0.963$) were averaged to measure perceived trustworthiness (*TRUSTWORTHINESS*).

Following prior literature (Loh and Stulz 2011; Boivie, Graffin, and Gentry 2016), three questions measured perceived expertness: (1) “Please assess the expertise of the financial analyst who prepared the report about TecPipe” (1 = very low expertise, 9 = very high expertise), (2) “In your opinion, how informative is the analyst report?” (1 = not informative at all, 9 = very informative), and (3) “In your opinion, how persuasive is the analyst report?” (1 = not persuasive at all, 9 = very persuasive). The three items (Cronbach’s $\alpha = 0.861$) were averaged to measure perceived expertness (*EXPERTNESS*).

IV. PRETEST EXPERIMENTS

We conducted two pretests to: (1) validate the time-horizon manipulation (i.e., whether holding stocks for less than one week or more than one year is indeed considered a short-term or long-term investment, respectively) and (2) confirm whether the consideration of short-term versus long-term investment horizon activates a low-level versus high-level construal mindset.

Pretest 1: Verifying Time-Horizon Manipulation

Eighty-two MTurkers were recruited and randomly assigned into the ST ($n = 40$) and LT ($n = 42$) conditions. Consistent with the main experiment, we informed the participants that, “You should assume the role of an investor who has \$10,000 to invest and you are searching for opportunities to make a short-term (long-term) investment, which you plan to hold for less than one week (more than one year).” Following Zauberma, Kim, Malkoc, and Bettman (2009), the participants were asked to indicate how they felt about the investment horizon on three 9-point scales (1 = very short, 9 = very long; 1 = very instant, 9 = very distant; 1 = very near, 9 = very far). The three scales (Cronbach’s $\alpha = 0.960$) were averaged to measure the participants’ subjective temporal perception. Results indicate that participants in the LT condition perceive a significantly longer investment horizon than those in the ST condition (LT mean = 4.452 vs. ST mean = 2.600; $t = -4.450$; $p < 0.001$),¹⁴ suggesting the validation of the investment horizon manipulation.

Pretest 2: Verifying Construal Levels

We rely on Vallacher and Wegner’s (1989) Behavior Identification Form (BIF) questionnaire to assess whether instructing participants to make a ST (LT) investment triggers a low-level (high-level) construal mindset. The BIF questionnaire has been widely used to evaluate mental construal levels (Burgoon, Henderson, and Markman 2013). To facilitate comparison with the BIF scores documented in prior studies, we employ the BIF questionnaire adapted from Liberman and Trope (1998), containing 19 common-life activities that are described in two distinct ways, representing either a high-level or low-level construal feature.¹⁵ For instance, the activity

¹⁴ All p-values in this study are two-tailed or two-tailed equivalents.

¹⁵ The original BIF questionnaire (Vallacher and Wegner 1989) contains 25 questions. The questionnaire used in Liberman and Trope (1998) exclude the following six activities: "joining the army," "picking an apple," "chopping down a tree," "voting," "climbing a tree," and "growing a garden." Our interpretation remained unchanged when including responses to these activities in the analysis.

“making a list” is described as either “getting organized” (a high-level description) or “writing things down” (a low-level description). Participants were asked to choose the one that best reflects their view. Selections of the high-level (low-level) descriptions reflect a high-level (low-level) construal mindset.

Eighty MTurkers were recruited and randomly assigned into the ST ($n = 39$) or LT ($n = 41$) conditions. We used the materials described previously. Participants were asked to assume the role of an investor who is searching for opportunities to make a short-term (long-term) investment and expects to hold the investment for less than one week (more than one year). We then asked the participants to answer the BIF questionnaire, instructing them to keep in mind that the investment horizon was short-term or long-term. Following Liberman and Trope (1998), each high-level and low-level construal response was scored as 1 and 0, and the 19 scores were summed to measure each participant’s construal-level mindset, with a greater value indicating a higher-level construal mindset.

Results show that the construal-level score in the LT condition is significantly higher than that in the ST condition (LT mean = 12.244 vs. ST mean = 9.974; $t = 1.966$; $p = 0.053$), indicating that participants in the LT condition hold a higher-level construal mindset than participants in the ST condition. The construal-level scores in the LT and ST conditions are similar to those reported in Liberman and Trope’s (1998) distant future (13.44) and near future (10.19) conditions. Thus, Pretest 2 confirms that the short (long) investment horizon activates a low-level (high-level) construal mindset.

V. RESULTS

Attention Checks

One concern with recruiting participants using crowdsourcing websites for experimental studies is data quality (Peer, Vosgerau, and Acquisti 2014), which we tried to mitigate with attention check questions. Following Peer, Brandimarte, Samat, and Acquisti (2017), we asked participants to indicate on a 9-point scale (1 = strongly disagree, 9 = strongly agree) the extent to which they agreed or disagreed with: (1) “I have never used the Internet myself” and (2) “I currently don’t pay attention to the questions I am being asked in the survey” and only the choice of “strongly disagree” was considered as passing the attention checks.

To avoid the attention checks being so obvious that even inattentive participants would notice, we intentionally surrounded attention check questions with four dummy questions.¹⁶ Furthermore, to avoid disrupting the survey flow and to mitigate the possibility that attentive participants could take offense at the attention checks and react by providing outright wrong answers (Peer et al. 2014), we presented the attention check questions after collecting responses on the main variables. In total, 71 out of 506 responses failed the attention checks and were dropped from the analyses, leaving 435 responses in the sample.

Manipulation Checks

To ensure that participants attended to our manipulation of the investment horizon and the COI disclosure in the analyst report, we asked participants to identify whether a disclosure of COI

¹⁶ More specifically, on the screen showing the attention check questions, we also listed the following questions: (1) “To what extent are you concerned that the Strong Buy stock recommendation about TecPipe is optimistically biased?”, (2) “To what extent are you worried about your investment in TecPipe if you follow the Strong Buy stock recommendation?”, (3) “In your opinion, how honest is the analyst report about TecPipe?”, and (4) “In your opinion, how honest is the analyst who prepared the analyst report about TecPipe?” These four dummy questions were similar to those questions that participants would have seen on previous screens. We asked the first attention check question after showing the second dummy question, and the second attention check question after showing the fourth dummy question.

was presented in the analyst report and whether they were instructed to make a short-term or a long-term investment. Of the 435 participants who passed the attention checks, 70 participants failed either one or both manipulation checks and were dropped. This results in 365 responses for our hypotheses testing.¹⁷

Descriptive Statistics

Descriptive statistics in Table 1 Panel B show that the presence of the COI disclosure decreases *INVESTMENT*, *TRUSTWORTHINESS*, and *EXPERTNESS* in the ST conditions. In comparison, while *INVESTMENT* also decreases from the COI-absent condition to the COI-present condition when the investment horizon is long, the magnitude of the decrease is very small. *TRUSTWORTHINESS* and *EXPERTNESS* do not change much across COI-present and COI-absent conditions when the investment horizon is long. Overall, the patterns appearing in the descriptive statistics are consistent with our predictions.

Test of H1

H1 predicts that investment horizon moderates the effect of COI disclosure on investors' willingness to invest in the recommended stock. Table 2 Panel A summarizes the ANOVA results on *INVESTMENT*. Results show a significant *DISCLOSURE* \times *HORIZON* interaction ($F_{1,361} = 5.723$; $p = 0.017$), consistent with our prediction in H1. As shown in the descriptive statistics in Table 1 Panel B, in the ST conditions, the mean of *INVESTMENT* is -0.742 with the presence of a COI disclosure and 0.378 when the COI disclosure is absent. Table 2 Panel B reports the simple effects and shows that the difference is statistically significant ($F_{1,179} = 22.806$; $p < 0.001$), suggesting that the presence of a COI disclosure significantly decreases investors' willingness to

¹⁷ Our results remain similar if we retain the responses of participants who did not pass the manipulation checks. Our inferences also remain unchanged if we use all 506 responses in the analyses. Further details are given when we discuss results of hypothesis testing.

invest when their investment horizon is short. In comparison, in the LT conditions, the mean of *INVESTMENT* is -0.087 with the presence of a COI disclosure and 0.268 when the COI disclosure is absent. The difference is not statistically significant ($F_{1,182} = 2.653$; $p = 0.105$), indicating that disclosing COI in the analyst report does not significantly alter investors' willingness to invest when their investment horizon is long.¹⁸ The significant interaction effect is also depicted in Panel B of Figure 1. Overall, the results presented in Table 2 support the moderating effect of investment horizon on the influence of the COI disclosure on the investors' investment intention.¹⁹

Test of H2

H2a and H2b predict that investment horizon moderates the effectiveness of COI disclosures by affecting investors' perception of trustworthiness and expertness (Hovland et al. 1953). Table 3 reports the results of the mediated moderation analysis following Hayes (2013).²⁰ Consistent with our expectations, results in Table 3 Panel A show that the coefficient on the *DISCLOSURE* \times *HORIZON* interaction is significantly different from zero (coefficient = 0.873; 95% confidence interval = [0.032, 1.713]), indicating that the effect of *DISCLOSURE* on

¹⁸ Since we do not have a directional prediction on the simple effect of *DISCLOSURE* on *INVESTMENT*, we rely on the two-tailed equivalent p-value to determine the statistical significance. We note that if we employ the one-tailed equivalent p-value, the effect of *DISCLOSURE* on *INVESTMENT* becomes marginally significant when the investment horizon is long. However, the statistical significance of the simple effect does not affect our main inference with respect to the moderating effect of investment horizon. To corroborate our ANOVA findings, we further calculate and compare partial eta-squared across the ST and LT conditions. The partial eta-squared is 0.113 given short investment horizon and 0.014 given long investment horizon, suggesting that the magnitude of the effect of *DISCLOSURE* on *INVESTMENT* is much larger when the investment horizon is short than when the investment horizon is long.

¹⁹ There might be a concern that our results are driven by long-term investors paying less attention to the analyst report. To test this possibility, we recruited 80 MTurkers and randomly assigned them into short-term versus long-term horizon conditions and showed them the materials (without the COI disclosure) that were used in the main experiment. After they answered the questions related to willingness to invest, we asked them to indicate (1) the stock recommendation they saw ("Strong Buy", "Hold", or "Underperform"), (2) the stock exchange on which TecPipe is listed ("New York Stock Exchange", "London Stock Exchange", or "Hong Kong Stock Exchange"), and (3) the analyst's expectation of TecPipe's earnings growth ("Strong", "Flat", or "Weak"). Correct responses to each question average 93 percent for participants in the long-term condition and 96 percent for participants in the short-term condition. The correct rates are similar between long-term and short-term conditions ($\chi^2 = 0.828$; $p = 0.363$). Therefore, our finding is unlikely to be driven by long-term investors paying less attention to the information than short-term investors.

²⁰ More specifically, we use Model 8 in Hayes (2013) with bootstrapping of 5,000 iterations.

TRUSTWORTHINESS varies with *HORIZON*. Similarly, in Table 3 Panel B, the coefficient on the *DISCLOSURE* \times *HORIZON* interaction is significantly different from zero (coefficient = 0.854; 95% confidence interval = [0.115, 1.593]), suggesting that the effect of *DISCLOSURE* on *EXPERTNESS* also varies with *HORIZON*. In Table 3 Panel C, the coefficient on the *DISCLOSURE* \times *HORIZON* interaction is not significant since 0 is included in the 95% confidence interval, suggesting that after controlling for *TRUSTWORTHINESS* and *EXPERTNESS*, the *DISCLOSURE* \times *HORIZON* interaction has no statistically significant direct effect on *INVESTMENT*. More importantly, as shown in Table 3 Panel D, the indirect effects of the *DISCLOSURE* \times *HORIZON* interaction on *INVESTMENT* through *TRUSTWORTHINESS* and *EXPERTNESS* are 0.385 and 0.137, respectively.²¹ Both indirect effects are statistically significant, as the 95% bias-corrected bootstrapped confidence intervals do not include 0.²²

Overall, results presented in Table 3 suggest that investors' perceptions of trustworthiness and expertness mediate the interaction effect of investment horizon and COI disclosure on investors' willingness to invest in the recommended stock. For short-term investments, the presence of a COI disclosure significantly reduces investors' perception of source trustworthiness and expertness, which in turn decreases their willingness to invest in the recommended stock. For long-term investments, the presence of a COI disclosure does not significantly affect perceived

²¹ The indirect effect of the *DISCLOSURE* \times *HORIZON* interaction as mediated by *TRUSTWORTHINESS* is calculated as the coefficient (0.873) on the *DISCLOSURE* \times *HORIZON* interaction in Panel A multiplied by the coefficient (0.441) on *TRUSTWORTHINESS* in Panel C ($0.873 \times 0.441 = 0.385$). Similarly, the indirect effect of the *DISCLOSURE* \times *HORIZON* interaction as mediated by *EXPERTNESS* is calculated as the coefficient (0.854) on the *DISCLOSURE* \times *HORIZON* interaction in Panel B multiplied by the coefficient (0.160) on *EXPERTNESS* in Panel C ($0.854 \times 0.160 = 0.137$).

²² Our inferences remain unchanged if we use the sample that includes participants who failed the manipulation checks ($n = 435$). The indirect effects of the *DISCLOSURE* \times *HORIZON* interaction on *INVESTMENT* as mediated by *TRUSTWORTHINESS* is 0.348 and by *EXPERTNESS* is 0.155, both significant at $p < 0.05$. Our inferences remain unchanged if we include participants who failed manipulation checks and attention checks ($n = 482$). The indirect effects of the *DISCLOSURE* \times *HORIZON* interaction on *INVESTMENT* as mediated by *TRUSTWORTHINESS* is 0.293 ($p < 0.10$) and by *EXPERTNESS* is 0.131 ($p < 0.05$).

trustworthiness and expertness, and thus, does not alter investors' willingness to invest.

Additional Analyses

Participants' Investment Experience

Prior studies show that investors' competence influences their investing behaviors (Graham, Harvey, and Huang 2009). Therefore, nonprofessional investors' general experience in investing in equity and/or debt markets, as well as their familiarity with analyst research might also influence the moderating effect of investment horizon on the effectiveness of COI disclosures. Ceteris paribus, investors with relatively extensive investment experience and familiarity with the analyst research are likely to understand the COI better, which helps them to form a reasonable assessment about how the COI will affect the analysts' forecasting behaviors. While this expectation is plausible, prior research in psychology also finds that experience does not necessarily influence individuals' responses to the COI disclosures (Cain et al. 2005). As a result, it is not clear, ex-ante, how investment experience would influence our results.

To shed light on the issue, we asked participants to rate how frequently they invest in equity and debt markets (1 = never, 9 = with high frequency). Ratings above 5 (44 percent; median split) are coded as high in investment experience ($EXPERIENCE = 1$) and those equal to or below 5 are coded as low in investment experience ($EXPERIENCE = 0$). The three-way ANOVA ($DISCLOSURE \times HORIZON \times EXPERIENCE$) reveals a significant $DISCLOSURE \times HORIZON$ interaction effect ($F_{1,357} = 4.610$; $p = 0.033$). However, neither the main effect of experience ($F_{1,357} = 0.595$; $p = 0.441$) nor the three-way interaction ($F_{1,357} = 0.496$; $p = 0.482$) are statistically significant. This suggests that general experience in making investments in capital markets does not influence the moderating effect of investment horizon on the relationship between the COI disclosure and investors' investing behaviors.

To test the potential influence of investors' familiarity with analyst research, we asked participants to indicate how many times they had evaluated a company's investment potential by consulting analysts' stock recommendations (1 = first time, 2 = 1-5 times, 3 = 6+ times). We coded those who answered "3" as being familiar in using analyst equity research (*FAMILIARITY* = 1). The three-way ANOVA (*DISCLOSURE* × *HORIZON* × *FAMILIARITY*) shows a significant two-way interaction for *DISCLOSURE* × *HORIZON* ($F_{1,357} = 4.155$; $p = 0.042$) and an insignificant three-way interaction *DISCLOSURE* × *HORIZON* × *FAMILIARITY* ($F_{1,357} = 0.124$; $p = 0.724$). Hence, having prior experience in consulting analysts' stock recommendations does not alter the moderating effect of investment horizon on the effectiveness of COI disclosures.

Analysis of Alternative Psychological Mechanisms

Prior literature suggests that investors' investment decisions could be influenced by two other psychological mechanisms: confidence and optimism (Barber and Odean 1999; Puri and Robinson 2007; Ciccone 2011; Aspara 2013). Confidence and optimism can also be affected by construal levels (Tsai and McGill 2011; Weinstein, 1980) and negative information (e.g., cautionary notices; Griffin and Tversky 1992; Koonce, Leitter, and White 2018) which are related to investment horizon and COI disclosure in our research setting. Therefore, we performed an additional analysis to probe the possibility that confidence and optimism are two alternative psychological mechanisms underlying the moderating effect of investment horizon on the relationship between the COI disclosure and investment decisions.

Unlike perceived trustworthiness and expertness which measure investors' perception of the analyst and the research report, confidence and optimism pertain to the investors' feelings about their investments. Participants were asked two questions about how confident and optimistic they were about their investments on a 9-point scale. Table 1 Panel C reports the descriptive statistics of *CONFIDENCE* and *OPTIMISM* by each condition. We conduct analogous

bootstrapping analyses to test the potential mediating effects of confidence and optimism. Results (untabulated) rule out confidence and optimism as alternative psychological mechanisms underlying our main findings. In particular, regression results suggest an insignificant influence of the *DISCLOSURE* \times *HORIZON* interaction on *CONFIDENCE* (coefficient = -0.432; $p = 0.311$). However, in the regression of *INVESTMENT*, the coefficient on the *DISCLOSURE* \times *HORIZON* interaction remains significant (coefficient = 0.914; $p = 0.002$) after including *CONFIDENCE*. The indirect effect of the *DISCLOSURE* \times *HORIZON* interaction on *INVESTMENT* through *CONFIDENCE* is not statistically different from 0 (95% confidence interval = [-0.449, 0.140]). A similar pattern is observed for *OPTIMISM*. The coefficient on the *DISCLOSURE* \times *HORIZON* interaction is insignificant (coefficient = 0.265; $p = 0.540$) in the regression of *OPTIMISM* but statistically significant (coefficient = 0.644; $p = 0.011$) in the regression of *INVESTMENT* after including *OPTIMISM*. The indirect effect of the *DISCLOSURE* \times *HORIZON* interaction on *INVESTMENT* through *OPTIMISM* is not statistically significant (95% confidence interval = [-0.259, 0.526]). Taken together, confidence and optimism are unlikely to be alternative psychological processes that drive our main findings.

VI. CONCLUDING COMMENTS

Educating investors and protecting them from financial analysts' COI has been a formidable challenge for regulators of capital markets (Richards 2002; SEC 2010). The mandatory COI disclosure promulgated by a series of regulatory reforms around 2002 (i.e., NASD Rule 2711, NYSE Rule 472 and the Global Settlement) is widely considered to be a critical step in this direction (Kelly et al. 2012). However, evidence is limited on whether such disclosures effectively alert individual investors to the potential optimistic bias in analysts' stock recommendations and hence influence the investors' behaviors.

The current study finds that the effect of COI disclosure on investors' investment decisions depends on the investors' intended investment horizon. Specifically, the COI disclosure reduces investors' willingness to invest in a recommended stock when the investors are making short-term investments but does not alter willingness to invest when investors are making long-term investments. Our findings further suggest that the investors' perception of source trustworthiness and expertness are the underlying psychological mechanisms that mediate the moderating role of investment horizon.

Our results hold implications for studies investigating investors' reactions to disclosures, a central topic in accounting research. The moderating effect of investment horizon on the effectiveness of COI disclosures, as documented in our study, is important because investors cannot avoid considering investment horizon when making investment decisions in capital markets. Studies incorporating investment horizon into investors' decision making should contribute to a better understanding of the economic consequences of disclosures.

A recent working paper by White (2017) parallels our work. He studies fair value estimates and hypothesizes that the recorded estimate is the higher-level central feature while the Level 2 or Level 3 footnote uncertainty disclosure is the lower-level peripheral feature. Consistent with CLT, he finds that investors with a short-term, but not a long-term, investment horizon respond more negatively to increased uncertainty in Level 3 compared to Level 2 disclosures. While White (2017) examines an accounting measurement issue, we focus on third-party investment advice and the credibility of information providers. These two studies complement each other and collectively demonstrate that investment horizon is an important factor that affects investors' information processing, judgment and decision making.

There are two potential limitations in our study. First, we only focus on favorable stock

recommendation, as it is the most common type of recommendation. It would be insightful for future research to study boundary conditions of COI disclosures in the scenario of unfavorable recommendations. Second, our instrument presented the COI disclosure on the first page of an analyst report, which appears to be relatively forthcoming. Therefore, our findings may not extend to scenarios in which the COI disclosures are presented at the end of reports in a small font, as some investment banks do. We also leave examination of this possibility to future research.

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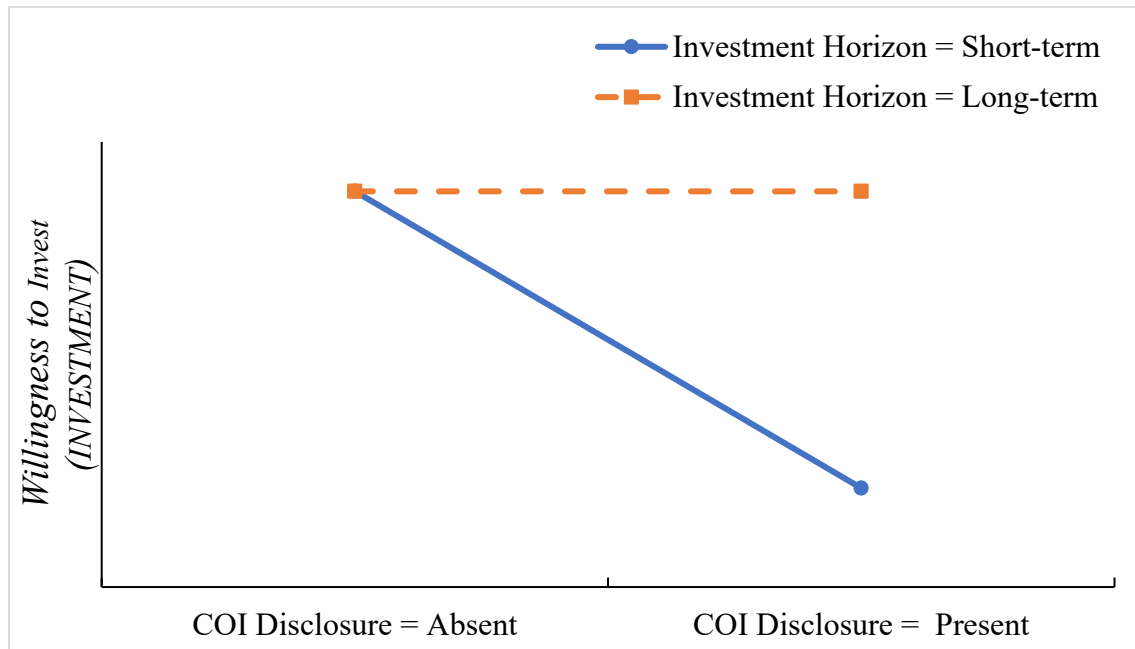
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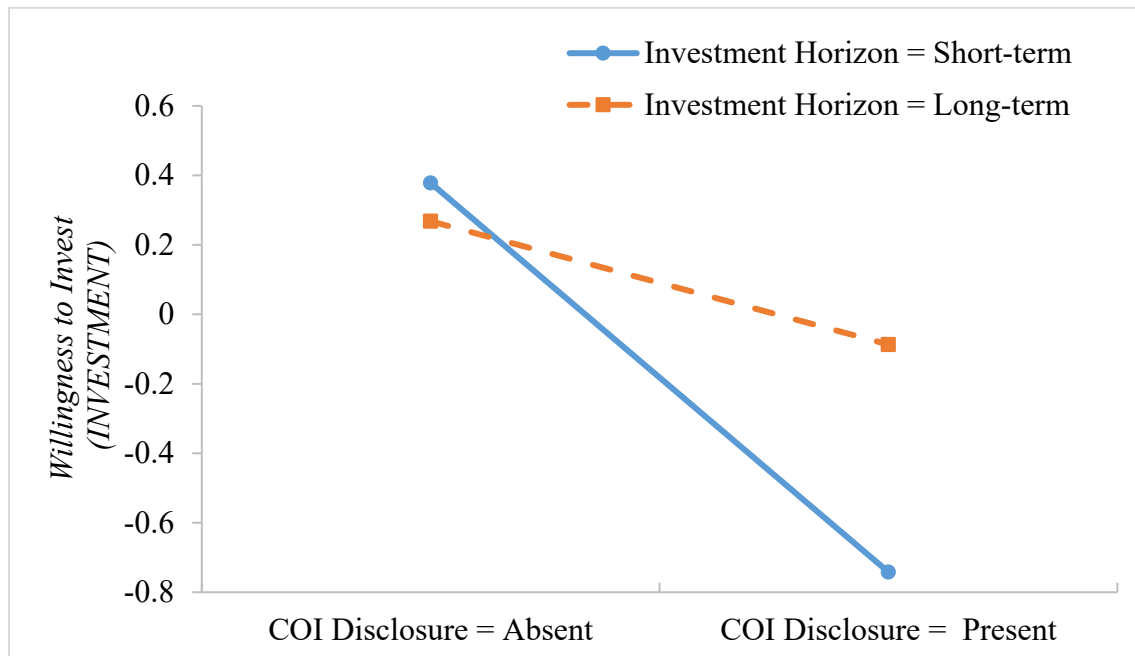
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Figure 1
Moderating Effect of Investment Horizon on the Relationship between Disclosing Conflicts of Interest and Willingness to Invest

Panel A: Hypothesized Moderating Effect of Investment Horizon

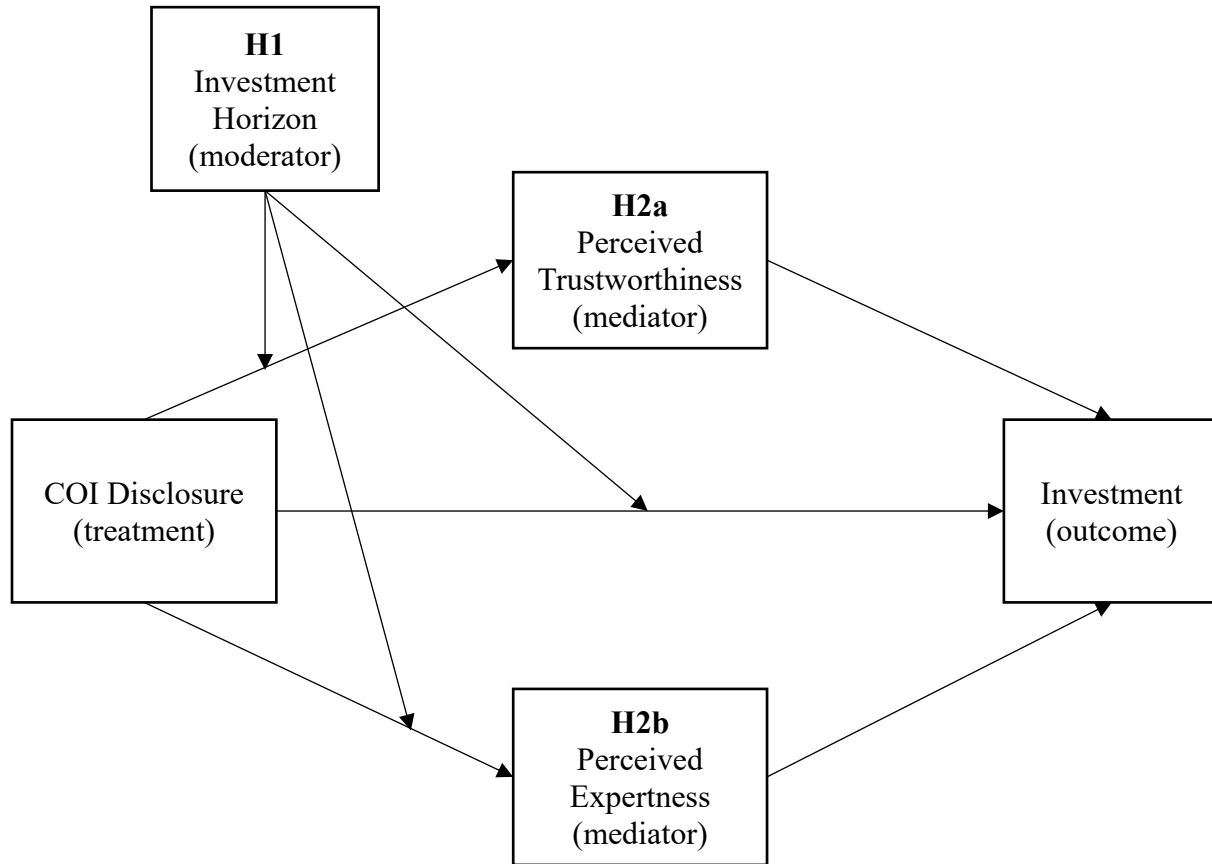


Panel B: Observed Moderating Effect of Investment Horizon



Note: Panel A graphically depicts the hypothesized moderating effect of investment horizon on the relationship between disclosing conflicts of interests and willingness to invest. Panel B presents a plot of the results testing H1 regarding the moderating effect of investment horizon. The x-axis indicates whether the COI disclosure is absent or present, and the y-axis indicates investors' willingness to invest. The two lines represent short-term and long-term investment horizon conditions, respectively. See note in Table 1 for variable definitions.

Figure 2
Conceptual Model for Hypotheses Development



Note: This figure presents the conceptual framework for hypotheses development. H1 predicts a moderating effect of Investment Horizon on the impact that COI Disclosure has on Investment. H2a and H2b predict that Perceived Trustworthiness and Perceived Expertness mediate the moderation effect of Investment Horizon on the relationship between COI Disclosure and Investment.

Table 1
Descriptive Statistics

Panel A: Questions Used to Measure *INVESTMENT*, *TRUSTWORTHINESS*, and *EXPERTNESS*

| | |
|------------------------|--|
| <i>INVESTMENT</i> | |
| Q1 | In your opinion, how attractive is TecPipe's stock as an investment? (1 = not attractive at all, 9 = very attractive) |
| Q2 | In your opinion, how likely are you to invest in TecPipe's stock? (1 = very unlikely, 9 = very likely) |
| Q3 | Of the \$10,000 that you have for investment purposes, please indicate the amount that you would like to invest in TecPipe's stock. |
| <i>TRUSTWORTHINESS</i> | |
| Q4 | In your opinion, how trustworthy is the analyst report about TecPipe? (1 = not trustworthy at all, 9 = very trustworthy) |
| Q5 | In your opinion, how reliable is the analyst report about TecPipe? (1 = not reliable at all, 9 = very reliable) |
| Q6 | Do you trust the Strong Buy recommendation in the analyst report about TecPipe? (1 = do not trust it at all, 9 = trust it very much) |
| <i>EXPERTNESS</i> | |
| Q7 | Please assess the expertise of the financial analyst who prepared the analyst report about TecPipe. (1 = very low expertise, 9 = very high expertise) |
| Q8 | In your opinion, how informative is the analyst report about TecPipe? (1 = not informative at all, 9 = very informative) |
| Q9 | In your opinion, how persuasive is the analyst report about TecPipe? (1 = not persuasive at all, 9 = very persuasive) |

Panel B: Descriptive Statistics for Variables in Main Analyses

| Experiment Condition (<i>DISCLOSURE</i> × <i>HORIZON</i>) | | | | |
|---|-------------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| | COI-Absent Short Term n = 100 | COI-Present Short Term n = 81 | COI-Absent Long Term n = 108 | COI-Present Long Term n = 76 |
| Q1 | 6.240 [1.955] | 4.753 [2.142] | 6.204 [1.858] | 5.645 [1.916] |
| Q2 | 5.920 [2.259] | 4.333 [2.280] | 5.907 [2.181] | 5.342 [2.284] |
| Q3 | 3792.360 [2653.550] | 2518.185 [2365.067] | 3345.157 [2383.698] | 3136.224 [2214.368] |
| <i>INVESTMENT</i> | 0.378 [1.542] | -0.742 [1.604] | 0.268 [1.443] | -0.087 [1.471] |
| Q4 | 5.910 [1.891] | 4.185 [2.174] | 5.917 [1.939] | 5.053 [2.122] |
| Q5 | 5.920 [1.942] | 4.222 [2.214] | 5.843 [1.987] | 5.026 [2.097] |
| Q6 | 6.000 [2.118] | 4.247 [2.411] | 5.759 [2.208] | 4.882 [2.233] |
| <i>TRUSTWORTHINESS</i> | 5.943 [1.902] | 4.218 [2.210] | 5.840 [1.945] | 4.987 [2.067] |
| Q7 | 6.360 [1.726] | 5.753 [1.729] | 6.370 [1.700] | 6.158 [1.609] |
| Q8 | 5.990 [1.977] | 4.914 [2.169] | 5.889 [2.115] | 5.684 [1.947] |
| Q9 | 6.000 [2.170] | 4.691 [2.396] | 5.657 [2.280] | 5.645 [2.249] |
| <i>EXPERTNESS</i> | 6.117 [1.838] | 5.119 [1.758] | 5.972 [1.808] | 5.829 [1.668] |

Panel C: Descriptive Statistics for Variables in Additional Analyses

| | Experiment Condition (<i>DISCLOSURE</i> × <i>HORIZON</i>) | | | |
|--------------------|---|----------------------|----------------------|---------------------|
| | COI-Absent | COI-Present | COI-Absent | COI-Present |
| | Short Term n = 100 | Short Term n = 81 | Long Term n = 108 | Long Term n = 76 |
| <i>EXPERIENCE</i> | 0.390 [0.490] | 0.444 [0.500] | 0.472 [0.502] | 0.474 [0.503] |
| <i>FAMILIARITY</i> | 0.300 [0.461] | 0.346 [0.479] | 0.333 [0.474] | 0.329 [0.473] |
| <i>CONFIDENCE</i> | 6.100 [2.003] | 5.802 [2.255] | 6.269 [1.796] | 5.539 [2.036] |
| <i>OPTIMISM</i> | 6.470 [1.946] | 5.716 [2.320] | 6.620 [1.903] | 6.132 [2.055] |

Note: Panel A of this table presents the questions used to measure willingness to invest, perceived trustworthiness, and perceived expertness. Panel B of this table tabulates the descriptive statistics of the responses to the questions and the measures. Panel C of this table reports the descriptive statistics of the variables used in the additional analyses. In Panel B and Panel C, numbers reported are mean values, and standard deviations are presented in brackets. The cell size is smaller in the Long-Term COI-present condition due to a relatively higher failure rate of the manipulation check of COI disclosure. Detailed variable definitions are as follows.

DISCLOSURE = presence or absence of the COI disclosure. This variable is coded 1 for experiment conditions where the COI disclosure is presented, and 0 for experiment conditions where the COI disclosure is absent.

HORIZON = investment horizon. This variable is coded 1 for experiment conditions where the investment horizon is long, and 0 for experiment conditions where the investment horizon is short.

INVESTMENT = investors' willingness to invest. We perform a principal component analysis of the responses to Q1, Q2, and Q3, and take the first principal component as the measure of investors' willingness to invest.

TRUSTWORTHINESS = perceived trustworthiness. We take the average of the responses to Q4, Q5, and Q6 as the measure of perceived trustworthiness.

EXPERTNESS = perceived expertness. We take the average of the responses to Q7, Q8, and Q9 as the measure of perceived expertness.

EXPERIENCE = investors' investment experience. We asked participants to rate on a 9-point scale how frequently they invest in equity and debt markets. We code ratings above 5 as high experience (*EXPERIENCE* = 1) and the rest as low experience (*EXPERIENCE* = 0).

FAMILIARITY = investors' familiarity with analyst research. We asked participants to indicate how many times they had evaluated a company's investment potential by consulting analysts' stock recommendations (1 = first time, 2 = 1-5 times, 3 = 6+ times). We code participants who answered "3" as being familiar with analyst equity research (*FAMILIARITY* = 1) and the rest as unfamiliar with analyst equity research (*FAMILIARITY* = 0).

CONFIDENCE = investors' confidence in their investments. We asked participants to indicate on a 9-point scale how confident they were about their investments and we use their responses to measure this variable.

OPTIMISM = investors' optimism about their investments. We asked participants to indicate on a 9-point scale how optimistic they were about their investments and we use their responses to measure this variable.

Table 2
Moderating Effect of Investment Horizon

Panel A: ANOVA Model of *INVESTMENT*

| Source of Variation | SS | df | MS | F-statistic | p-value |
|---|---------|-----|--------|-------------|---------|
| <i>DISCLOSURE</i> | 48.631 | 1 | 48.631 | 21.244 | <0.001 |
| <i>HORIZON</i> | 6.628 | 1 | 6.628 | 2.895 | 0.090 |
| <i>DISCLOSURE</i> × <i>HORIZON</i> (H1) | 13.101 | 1 | 13.101 | 5.723 | 0.017 |
| <i>Error</i> | 826.364 | 361 | 2.289 | | |

Panel B: Simple Effects of COI Disclosure on *INVESTMENT*

| Source of Variation | SS | df | MS | F-statistic | p-value |
|--|--------|----|--------|-------------|---------|
| Effect of <i>DISCLOSURE</i> given short investment horizon | 56.197 | 1 | 56.197 | 22.806 | <0.001 |
| Effect of <i>DISCLOSURE</i> given long investment horizon | 5.616 | 1 | 5.616 | 2.653 | 0.105 |

Note: This table presents the ANOVA results for testing the moderating effect of investment horizon on the effect of the COI disclosure on investors' willingness to invest in the recommended stock (H1). See note in Table 1 for variable definitions.

Table 3
Mediated Moderating Effects of *TRUSTWORTHINESS* and *EXPERTNESS*

Panel A: Regression of *TRUSTWORTHINESS*

| | Coef. | S.E. | t-stat | p-value | 95% Confidence Interval |
|---|--------|-------|--------|---------|-------------------------|
| Constant | 5.943 | 0.202 | 29.412 | <0.001 | [5.546, 6.341] |
| <i>DISCLOSURE</i> | -1.725 | 0.302 | -5.711 | <0.001 | [-2.319, -1.131] |
| <i>HORIZON</i> | -0.104 | 0.280 | -0.370 | 0.711 | [-0.655, 0.448] |
| <i>DISCLOSURE</i> × <i>HORIZON</i> | 0.873 | 0.428 | 2.041 | 0.042 | [0.032, 1.713] |
| R-squared = 0.106, MSE = 4.083, F-stat = 14.265, df1 = 3, df2 = 361, p-value <0.001 | | | | | |

Panel B: Regression of *EXPERTNESS*

| | Coef. | S.E. | t-stat | p-value | 95% Confidence Interval |
|---|--------|-------|--------|---------|-------------------------|
| Constant | 6.117 | 0.178 | 34.419 | <0.001 | [5.767, 6.466] |
| <i>DISCLOSURE</i> | -0.997 | 0.266 | -3.754 | <0.001 | [-1.520, -0.475] |
| <i>HORIZON</i> | -0.144 | 0.247 | -0.586 | 0.558 | [-0.629, 0.341] |
| <i>DISCLOSURE</i> × <i>HORIZON</i> | 0.854 | 0.376 | 2.272 | 0.024 | [0.115, 1.593] |
| R-squared = 0.043, MSE = 3.158, F-stat = 5.362, df1 = 3, df2 = 361, p-value = 0.001 | | | | | |

Panel C: Regression of *INVESTMENT*

| | Coef. | S.E. | t-stat | p-value | 95% Confidence Interval |
|--|--------|-------|---------|---------|-------------------------|
| Constant | -3.223 | 0.212 | -15.199 | <0.001 | [-3.640, -2.806] |
| <i>TRUSTWORTHINESS</i> | 0.441 | 0.041 | 10.818 | <0.001 | [0.361, 0.522] |
| <i>EXPERTNESS</i> | 0.160 | 0.046 | 3.447 | 0.001 | [0.069, 0.251] |
| <i>DISCLOSURE</i> | -0.200 | 0.159 | -1.258 | 0.209 | [-0.512, 0.113] |
| <i>HORIZON</i> | -0.042 | 0.141 | -0.295 | 0.768 | [-0.319, 0.236] |
| <i>DISCLOSURE</i> × <i>HORIZON</i> | 0.244 | 0.217 | 1.127 | 0.261 | [-0.182, 0.670] |
| R-squared = 0.585, MSE = 1.033, F-stat = 101.161, df1 = 5, df2 = 359, p-value <0.001 | | | | | |

Panel D: Indirect Effect of Highest Order Product (*DISCLOSURE* × *HORIZON*)

| Mediator | Effect | S.E. (bootstrapped) | 95% Confidence Interval (bootstrapped) |
|------------------------|--------|------------------------|---|
| <i>TRUSTWORTHINESS</i> | 0.385 | 0.192 | [0.036, 0.797] |
| <i>EXPERTNESS</i> | 0.137 | 0.079 | [0.026, 0.347] |

Note: This table presents the regression results for testing the mediating effect of perceived trustworthiness and expertness on the moderating effect of investment horizon on the effectiveness of COI disclosure in affecting investment willingness (H2a and H2b). The regressions are performed using Model 8 in Hayes (2013) with bootstrapping of 5,000 iterations. See note in Table 1 for variable definitions.