**How Do Accounting Estimate Bias and Method Similarity Influence Investors'
Reliability Judgment and Investment Decisions?**

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ABSTRACT

In a multi-firm setting, we examine how accounting estimate bias and accounting method similarity jointly influence investors' reliability and investment judgments. Applying psychology research on the similarity effect, we predict and find that the similarity of accounting method amplifies the effect of accounting estimate bias on investors' reliability judgment. Specifically, while investors are able to detect the negative impact of a favorably-biased (versus unfavorably-biased) accounting estimate on financial reporting reliability when firms use the *same* accounting method, investors lose such ability when firms use *different* accounting methods. This finding suggests that using *different* accounting methods among peer firms hinders investors' ability to make appropriate reliability judgment. We also find that favorable (versus unfavorable) accounting estimate bias has a positive direct effect on investment, and a negative indirect effect on investment via perceived reliability. Our study highlights the importance of cross-firm reporting features, such as accounting method similarity, in shaping investors' reliability and investment judgments.

**Key Words:** Accounting Estimates; Bias; Method Similarity; Reliability; Comparability; Fair Value Accounting

**Data Availability:** Contact the authors.

# I. INTRODUCTION

Reliability of financial reporting (hereafter, reliability) is a fundamental qualitative characteristic of financial reporting (FASB 1980, 2010) that influences investors' investment decisions (Song et al. 2010; Riedl and Serafeim 2011; Kadous et al. 2012; Chung et al. 2017; Elliott et al. 2020). Research shows that investors are concerned about the reliability of companies' financial reporting that relies heavily on accounting estimates (Song et al. 2010; Riedl and Serafeim 2011; Chung et al. 2017). It is important to study whether investors can properly incorporate the biases in accounting estimates in their reliability judgment because failing to do so can result in security mispricing (Richardson et al. 2005). Prior experimental research has documented that individual investors react to accounting estimate disclosures when they evaluate a *stand-alone* firm (Koonce et al. 2005; Eilifsen et al. 2020).[1] However, investors' judgments in a single-firm setting could be different from their judgments in a multi-firm setting, where peer firms provide additional benchmarks for investors to assess the focal firm. In this study, we examine how such cross-firm comparisons alter investors' judgments. Specifically, we examine how biases in accounting estimates influence investors' reliability judgment, and importantly, how this effect is moderated by the similarity in accounting methods across firms.

Considering investors' judgments in a multi-firm setting is important as individual investors increasingly rely on cross-firm comparisons via investing apps and online brokerages to make investment decisions (Osipovich 2020).[2] Many of such investing apps and online brokerages provide cross-firm comparisons of financial information (see Appendix A for an

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[1] Eilifsen et al. (2020) finds that investors react more favorably to accounting estimate disclosures when the quantitative sensitivity analysis indicates greater precision of the accounting estimates, and that this effect is significant only when the auditor's materiality threshold is also disclosed. In addition, Koonce, Lipe, and McAnally (2005) show that investors are better able to identify a firm's underlying risk exposure when accounting estimate disclosures show both upside and downside risks compared to showing the downside risk only.

[2] According to the Wall Street Journal article (Osipovich 2020), trading activities from individual investors via investing apps and online brokerages accounted for around 20% of the total trading volume for the year 2020. The boom of individual investors' trading activities is likely caused by the brokerage industry's shift to free stock trades, as well as by the stay-at-home situation due to the coronavirus pandemic.

example), made possible by the growing availability of the eXtensible Business Reporting Language (XBRL) data (Toppan Merrill 2019). When making such comparisons, investors are likely to make the reliability judgment by comparing the focal firm's accounting estimates with a benchmark, which often comes from a peer firm (De Franco et al. 2015; Du and Shen 2018; Young and Zeng 2015; Bourveau et al. 2020). Prior research shows that investors use peer firm information to value targeted firms (Young and Zeng 2015; Bourveau et al. 2020).

A comparison across peer firms can be especially helpful when investors access how biases in accounting estimates impact the reliability of a firm's financial reporting. Accounting estimates usually involve unobservable inputs that are unverifiable and highly subjective to management's discretion (PwC 2019). Thus, it is difficult for investors to assess the bias in accounting estimates, and hence, the firm's reporting reliability, without comparing it to a benchmark. A benchmark or a reference point helps individuals to better comprehend quantitative information (Kahneman and Tversky 1979; Kida and Smith 1995; Thaler 1999). We posit that with a proper benchmark from peer firms, investors are able to judge a firm's financial information to be more reliable when it uses an unfavorably-biased estimate (i.e., an estimate that results in *less* favorable financial performance) than a favorably-biased estimate (i.e., an estimate that results in *more* favorable financial performance). This is because using an unfavorably-biased estimate goes against managers' incentives for misreporting, and incentive-inconsistent messages are generally considered to be more credible (Watts 2003; Kelley 1987; Williams 1996).

However, a comparison with peer firms may not always help investors with their decisions. Cross-firm reporting features, such as the similarity of firms' accounting methods, influences the outcome of peer firm comparisons. According to psychology research on the similarity effect, when individuals compare objects, similarity along one dimension enhances perceived differences on other dimensions (Tversky and Russo 1969; Mellers 1982; Mellers

and Biagini 1994; Pleskac 2012). Applying this theory to our study, we predict that the negative effect of using a favorably-biased (versus unfavorably-biased) accounting estimate on investors' reliability judgment will be stronger when the focal firm and its peer use the same than different accounting methods. In other words, using different accounting methods can make it difficult for investors to assess the relative level of bias in the focal firm's accounting estimates, which hinders their ability to judge the focal firm's reporting reliability accordingly.

We employ an experimental method to test our prediction. In the main experiment, participants assume the role of a potential investor and evaluate a focal firm and its peer. Participants make investment decisions and assess the reliability of the financial reporting of the focal firm. We manipulate accounting estimate bias (favorable versus unfavorable) and method similarity (same versus different) in a fair value reporting setting. In the favorable (unfavorable) bias condition, the focal firm decreases (increases) the discount rate from the previous year, which favorably (unfavorably) biases its financial performance. In the same (different) method condition, the focal firm and its peer use the same (different) accounting methods to calculate the fair value of their assets.

Results support our predictions. We find a significant interaction between bias and method similarity. Specifically, when firms use the same method, investors perceive the focal firm's financial reporting to be significantly more reliable when it uses an unfavorably-biased than favorably-biased accounting estimate; when firms use different methods, however, the effect of bias on investors' reliability judgment is no longer significant. We also find that favorable (versus unfavorable) accounting estimate bias has a positive direct effect on investment, and a negative indirect effect on investment via perceived reliability.

In the additional analysis, we examine how method similarity and accounting estimate bias jointly influence investors' ability to compare the two firms' financial performance ("ability to compare"). Although accounting method similarity greatly influences investors'

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ability to compare financial performance across firms (FASB 1980, 2010), this effect is likely to be weaker if investors perceive the focal firm's financial reporting to be unreliable via using a favorably-biased accounting estimate. This is because investors may feel uncomfortable comparing two firms when one of them has low reporting quality, even if they use the same accounting method. Our results are consistent with this expectation.

We conduct a series of supplementary experiments to further support our theory and to rule out alternative explanations. An assumption in our theory is that investors use peer firms' accounting estimates as a reference point to judge the *relative* level of bias in accounting estimates. Supplementary Experiment 1 tests this assumption by removing the between-firm contrast in accounting estimate bias present in the main experiment; that is, both the focal firm and its peer choose an accounting estimate that is biased in the same direction and to the same extent (i.e., both favorably biased or both unfavorably biased). If our theory holds, we would observe no effect of bias because without the between-firm contrast, investors may simply attribute a firm's choice of accounting estimate to environmental factors (e.g., changes of market/industry conditions) rather than to firm-specific factors (e.g., strategic reporting choices). Consistent with our prediction, bias no longer influences investors' reliability judgment or investment decisions when such contrast is removed.

We conduct Supplementary Experiment 2 to rule out an alternative explanation that investors may use method similarity as a substitute for their reliability judgment—an attribute substitution heuristic in psychology research (Kahneman and Frederick 2002). If this explanation holds, we would expect that using the same (versus different) accounting method increases perceived reliability even in the absence of any potential biases. Results show that when both the focal firm and its peer use neutral accounting estimates (i.e., no bias), same versus different accounting method does not influence investors' reliability judgment nor investment decisions. This result rules out attribute substitution as an alternative explanation.

To distinguish our theory from the norm theory (Gilbert et al. 1995; Koonce et al. 2010; Koonce et al. 2015) and the expectation violation theory (EVT) (Burgoon and Burgoon 2001; Clor-Proell 2009), we conduct Supplementary Experiment 3 to test whether our theory still holds in the presence of industry norm and/or investor expectations. Setting all cells in the same method condition, we manipulate whether the focal firm uses a favorably- or unfavorably-biased accounting estimate (favorable vs. unfavorable), and whether participants are informed that most other firms in the industry make the same choices as the peer firm does (norm present vs. absent). We find a significant main effect of bias and an insignificant interaction between bias and norm presence, suggesting that our theory holds whether industry norm/expectation is present or absent.

Finally, we conduct Supplementary Experiment 4 to test the situation where investors evaluate the focal firm alone, without a comparison with any peer firms. Results show that investors do not perceive a favorably-biased accounting estimate to harm reporting reliability; on the contrary, investors invest more in the firm when the accounting estimate is favorably than unfavorably biased. This result shows that a peer comparison is important for investors to properly assess the biases in accounting estimates and to make the reliability judgment accordingly.

Our paper has practical implications to regulators and standard-setters. First, in their efforts to promote reliability of financial reporting, regulators and standard setters often focus on a firm's stand-alone disclosures of accounting estimates (SEC 2003, 2011, 2019; FASB 2018). However, our study shows that investors' reliability judgment is influenced not only by a firm's stand-alone disclosure of an accounting estimate, but also by the similarity of accounting methods across firms. Our study highlights the importance of considering such cross-firm reporting features in setting accounting regulation and standards. Second, our study reveals how the variations of accounting methods across firms can harm investors' ability to

make a proper reliability judgment, leading to potential security mispricing. Our finding provides further support to the FASB's standard updates that aim at enhancing financial reporting comparability (e.g., FASB 2013; FASB 2014). Third, our additional analysis shows that investors' ability to compare firms' financial performance depends not only on accounting method similarity but also on biases in accounting estimates. This finding highlights the importance of considering financial reporting quality in promoting comparability.

Our paper has theoretical contributions. First, we extend prior research on investors' reliability judgment (Kadous et al. 2012; Eilifsen et al. 2020) from a single-firm setting to a multi-firm setting. Our study shows that investors' reliability judgment is influenced not only by legitimate factors from a stand-alone firm (e.g., favorability of the bias in an accounting estimate) but also by cross-firm reporting features such as accounting method similarity. Our results show that cross-firm comparisons can help investors to properly assess bias and reliability when firms use the *same* accounting method; however, cross-firm comparisons can also hinder investors' reliability judgment when firms use *different* accounting methods.

Second, our study answers the call for research to examine financial reporting comparability on a more granular level (Hopkins 2019). The earnings-return based proxies for comparability that are widely used in archival research (e.g., De Franco et al. 2011; Barth et al. 2012) can be noisy proxies because they are also influenced by other reporting attributes such as relevance, faithful representation, timeliness, and so forth (Hopkins 2019). Employing an experimental approach, we examine how investors' judgments and interpretation of financial information are influenced by a specific reporting feature that contributes to comparability— accounting method similarity among peer firms. Our finding shows that comparability influences investors' judgments via providing a clear contrast between peer firms.

Third, our study sheds lights on a potential explanation for a finding in prior research. Archival studies find that adopting a uniform set of accounting standards (e.g., IFRS) increases

cross-border investments (DeFond et al. 2011; Yu and Wahid 2014; Francis et al. 2016). Since the adoption of a uniform set of accounting standards enhances both similarity of accounting methods and reporting quality (Brochet et al. 2013; Cascino and Gassen 2015), it is unclear from prior research whether the positive effect of IFRS adoption on cross-border investments is caused by the increase of accounting method similarity or by the increase of reliability, or by both. Our study disentangles these two factors by separately manipulating them, and provide evidence that both factors matter.

We discuss our theory and develop hypotheses in the following section. Section III describes our main experiment. Section IV reports the experimental results and supplementary experiments. Section V concludes the paper.

## II. THEORY AND HYPOTHESES

### Accounting Estimates and the Reliability of Financial Reporting

Reliability is one of the two fundamental qualitative characteristics of financial information that affect its decision usefulness (FASB 1980, 2010).[3] Reliable financial information needs to be free from material error and bias (FASB 1980). Prior research has examined factors that influence investors' perceptions of reliability. Kadous et al. (2012) show that the competence of the measurement source (e.g., whether the measurement is provided by a more or less competent consultant) and fair value model (e.g., Level 2 versus Level 3) influence investors' judgment of reliability. Recently, Eilifsen et al. (2020) find that investors judge the reliability of a reported estimate to be higher when a quantitative sensitivity analysis indicates greater than lower precision of the accounting estimates. They find that this effect is significant only when the auditor's materiality threshold is also disclosed; this effect disappears without the presence of auditor's materiality threshold. We add to this line of research by

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[3] To avoid confusions about the term "reliability" while retaining its intended meaning, the FASB (2010) replaces "reliability" with the term "faithful representation," which describes whether a firm's financial reporting faithfully represents its underlying economic phenomenon. We use the term "reliability" in this paper to be consistent with prior literature.

examining investors' judgment of reliability in a *multi-firm* setting, where investors' reliability judgment can be influenced by reporting practices of both the focal firm and its peer.

Examining how biases in accounting estimates influence perceived reliability is important because research shows that low reliability leads to lower earnings persistence, and investors do not fully anticipate the lower earnings persistence, resulting in significant security mispricing (Richardson et al. 2005). We examine the impact of accounting estimate bias on perceived reliability in a fair value setting, where a small change in fair value estimates can result in huge impact on asset value and income. Prior research finds that companies often deliberately use biased fair value estimates to manipulate their financial reporting (Christensen et al. 2012). Due to the complexity and high subjectivity in fair value estimates, investors have been concerned about the negative consequence of an extensive use of fair value estimates on financial reporting reliability (Chung, Lee, and Mitra 2016). This is evidenced by research showing that the market discounts the stocks of companies holding a high proportion of fair-valued assets (Song et al. 2010; Riedl and Serafeim 2011). This discount is likely due to investors' concerns about the reliability of fair value estimates as the discount diminishes in companies that make a reliability disclosure (Chung et al. 2017).

However, it is not easy for investors to detect the biases in fair value estimates and assess reporting reliability accordingly because fair value estimates usually involve unobservable inputs that are highly subjective to management's discretion (PwC 2019). Besides, accounting estimates are often influenced by both firm-specific factors (e.g., risks unique to the firm, managers' opportunistic reporting behaviors, etc.) and economy-wide factors (Lev et al. 2010). [4] Therefore, it can be difficult for investors to evaluate bias and reliability on a single-firm basis. We posit that investors will use peer firms' accounting

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[4] Due to these firm-specific and economy-wide factors, a mere change in discount rate is not necessarily a signal of bias. In fact, our supplementary experiment shows that when both firms change discount rates in the same direction and to the same extent, it is not obvious to investors that the discount rates are biased.

estimates as a reference point to judge the *relative* level of bias in accounting estimates, as psychology research suggests that individuals tend to make judgments and decisions with respect to certain reference points (Tversky and Kahneman 1981; Gregory, Lichtenstein, and MacGregor 1993; Boles and Messick 1995; Sullivan and Kida 1995; Blount, Thomas-Hunt, and Neale 1996). Investors likely use peer firms' accounting estimates as the reference point because peer firms are often used as an important benchmark in performance assessment (Cao et al. 2018; Du and Shen 2018; Gao and Zhang 2019) and stock valuation (De Franco et al. 2015; Easton et al. 2018). We discuss below how investors compare the focal firm's accounting estimate to that of a peer firm.

**Similarity Effect**

Psychology research finds that when individuals compare objects, the similarity along one dimension enhances perceived differences on other dimensions (Tversky and Russo 1969; Mellers 1982; Mellers and Biagini 1994). For example, when asked to compare a pair of geometric figures that differ in area or shape, or both, individuals are better able to tell the differences in area when the figures have the same shape (e.g., both are circles), compared to when the figures have different shapes (e.g., one is a circle and the other is a triangle) (Tversky and Russo 1969). Mellers (1982) shows that this similarity effect is not limited to psychophysics. She finds that salary differences lead to stronger perceived unfairness when the two individuals under comparison have similar than dissimilar merit ratings. Mellers and Biagini (1994) propose a contrast-weighting theory to explain the similarity effect; that is, individuals place less weight on attributes with similar levels than on attributes with dissimilar levels (Mellers and Biagini 1994). A later study supports this theory by showing that in a probability judgment task, similarity of the hypotheses on one dimension increases the weight that individuals allocate to differences on the other dimensions (Pleskac 2012).

The similarity effect also extends to social comparison judgments. Research shows that social comparisons tend to occur among people who are similar to each other (Tesser 1988; Gilbert et al. 1995; Pickett 2001). Aarts and Dijksterhuis (2002) find that the similarity between the target individual and the standard to be compared with determines whether the comparison yields a contrast effect (i.e., the target is rated away from the standard) or an assimilation effect (i.e., the target is rated toward the standard). Specifically, Aarts and Dijksterhuis (2002) find that a contrast effect occurs when the target and the standard are perceived to be similar; an assimilation effects occurs when the target and the standard are perceived to be dissimilar. In summary, the social comparison research lends support to our argument that similarity enhances the contrast between the target and its standard to be compared with.

**Joint Effect of Accounting Estimate Bias and Accounting Method Similarity on Reliability Judgment**

The FASB describes a neutral reporting (i.e., without bias) as a depiction that is not manipulated to "increase the probability that financial information will be received favorably or unfavorably by users" (FASB 2010, QC14). A firm can choose an accounting estimate that either favorably (e.g., a lower discount rate) or unfavorably (e.g., a higher discount rate) biases its financial performance. Although both types of biases deviate from neutrality (FASB 1980), the directional nature of the bias may have asymmetrical impacts on perceived reliability. Investors likely perceive financial information with an unfavorably-biased estimate to be more reliable because such a bias goes against managers' general motivation of overstating financial performance for either compensation or reputation purposes (Watts 2003). Prior research in both psychology (Kelley 1987) and accounting (Williams 1996) finds that individuals perceive a message to be more credible when the message is inconsistent with the source's incentives. On the contrary, financial information with a favorably-biased estimate can be perceived to be less reliable because management can use the favorably-biased estimate to boost financial performance (Christensen et al. 2012).

We define accounting method as the manner in which accounting information is produced to report an economic phenomenon. [5] Differences in accounting methods can arise either from discrepancies between different sets of accounting standards (Bae et al. 2008; Tan et al. 2011; Yu and Wahid 2014) or from variations in firms' reporting practices applying the same set of accounting standards (FASB 2008, 2013, 2014). Although prior research has shown that a peer firm's information disclosure influences investors' reactions to the focal firm (e.g., Baginski 1987; Han et al. 1989; Pyo and Lustgarten 1990; Kim et al. 2008), it is unclear whether, controlling for information content, the mere similarity in accounting methods still influences investors' judgments of the focal firm.

In our setting, we posit that the similarity in accounting method determines how similar two firms' financial reporting are in general as an accounting method governs how accounting information is produced. Research shows that firms' financial reporting becomes more comparable when they adopt the same set of accounting standards (e.g., De Franco, Kothari, and Verdi 2011; Barth, Landsman, Lang, and Williams 2012; Yip and Young 2012). Following psychology research (Tversky and Russo 1969; Mellers 1982; Mellers and Biagini 1994; Pleskac 2012), we predict that the perceived differences in accounting estimates between firms is greater when the firms use similar rather than dissimilar accounting methods.

When firms use the same accounting method, it is easier for investors to attribute the difference in accounting estimates to management's discretion and subjectivity, rather than to the accounting method itself (as accounting methods are the same). As a result, the difference in accounting estimates will have a stronger effect on investors' reliability judgment when firms use the same accounting method. On the contrary, when firms use different accounting

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[5] The current FASB conceptual framework is not clear regarding the objectives or conceptual definitions of accounting methods, making it difficult for users to assess the strengths or weaknesses of using different accounting methods (Baker 2013; Barth 2014). The FASB recently initiated a project to clarify the concepts related to accounting measurement (FASB 2020), including discussions of how using different accounting methods affects both the initial and subsequent measurement stages (FASB 2019).

methods, it will be less clear to investors whether the differences in accounting estimates come from management's discretion and subjectivity or from the inherent differences between different methods. Hence, the difference in accounting estimates will have a weaker effect on investors' reliability judgment when firms use different accounting methods. We formally state our predictions in H1. [6]

> **H1:** Investors will perceive the focal firm' financial reporting to be more reliable when it uses an unfavorably-biased than favorably-biased accounting estimate; this effect will be stronger when the focal firm and its peer use the same than different accounting methods.

**Investment Decisions**

Prior research finds that investors' assessment of reliability heavily influences their valuation of the firm (Kadous et al. 2012; Elliott et al. 2020). Studies show that the reliability concern of fair value estimates makes investors to discount stock prices (Song et al. 2010; Riedl and Serafeim 2011; Chung et al. 2017). Therefore, we predict that investors will invest more in the focal firm when the firm's financial reporting is perceived to be more reliable. Given our earlier prediction in H1 of an interaction effect between bias and method similarity on perceived reliability, we predict a moderated mediation where perceived reliability mediates the joint effect of bias and method similarity on investment. We state this prediction in H2a.

> **H2a:** Perceived reliability mediates the joint effect of method similarity and bias on investors' investment decisions.

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[6] Prior accounting studies employ the two-firm design in their experiments, but their research purposes are different from ours. For example, Hodge, Kennedy, Maines (2004) examine how the searchable presentation format facilitates investors' acquisition and integration of financial information. They use the two-firm design to create an optimal investment choice (i.e., if investors fully acquire and process firms' financial information, they should choose one firm over the other), rather than to examine how across-firm comparisons influence investor judgments and decisions. Similarly, Elliott et al. (2020) also use the two-firm design to create an optimal investment decision. Maletta and Zhang (2012) use the two-firm design to examine how investor reactions to one firm's earnings preannouncement are affected by the preannouncement of a peer firm. While Maletta and Zhang (2012) examine how investors react to firms' strategic reporting (i.e., the percentage of the total earnings news disclosed in the preannouncement), our study examines a different context where investors assess firms' choices of accounting estimates and methods.

However, financial reporting reliability is not the only consideration when investors make investment decisions. Investors also consider non-accounting factors such as business risks, which can be captured by accounting estimates (Sharpe 1964; Lintner 1965; Fama and French 1993, 1996). For example, although using an unfavorably-biased discount rate signals a greater level of reliability, which has a positive effect on investment decision, it may also signal a greater level of business risk, which has a negative effect on investment decision. Thus, we expect accounting estimates to influence investors' investment decisions through two separate paths. In the first path, accounting estimates influence investment decisions via perceived reliability (indirect path). In the second path, accounting estimates directly influence investment decisions as the favorableness of accounting estimates also indicates the level of risks associated with the firm (direct path). We hypothesize this prediction in H2b.

**H2b:** Favorable (versus unfavorable) accounting estimate bias has a positive direct effect on investment, and a negative indirect effect on investment via perceived reliability.

## III. METHOD

**Participants**

We recruited participants from Amazon Mechanical Turk (MTurk). Prior research shows that MTurk participants demonstrate greater financial literacy compared to the general U.S. population and are willing to exert effort to do online tasks (Farrell et al. 2017). To make sure the MTurk participants are a reasonable proxy for non-professional investors, we follow Krische's (2019) recommendation to screen MTurk participants based on investment experience and financial knowledge.[7] Two hundred and ten participants completed the study. On average, participants are 33.7 years old; 59.5% are male. Participants have average work

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[7] Specifically, we require participants to meet all three requirements to participate in this study: (1) they are native English speakers, (2) they have taken at least one accounting course, and (3) they have bought or sold a company's common stock or debt securities.

experience of 13.2 years. They have taken an average of 2.7 accounting courses, 1.6 finance courses, and 2.2 economic courses. Most participants have investment experience (95.7%).

**Procedure**

Participants start with a training session before reading the case material. The training session introduces two fair value methods—rental capitalization and discounted cash flow. Both methods generate Level 3 fair values that involved significant subjective inputs (e.g., estimates used to project the future cash flows and the discount rates). [8] The training session explains that the two methods can generate the same or different fair values, depending on the volatility of future cash flows/rental incomes, and that both methods are similarly reliable. The training session also explicitly states that using a lower (higher) discount rate can result in a higher (lower) fair value. To make sure that participants correctly understand the information provided in the training session, they need to pass a quiz before proceeding with the study (Bentley 2021).

After completing the training session, participants read general instruction and background information about two firms, Firm A and its peer (Firm B). Participants are asked to evaluate these two firms as potential investments. The firms operate in the same industry and both own buildings for capital appreciation. These buildings are classified as "investment properties" under IFRS (IAS 40) and are measured at fair values. [9] Changes in the fair values

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[8] If a firm uses a discounted cash flow method, the term used is "discount rate." If a firm uses a rental capitalization method, the term used is "capitalization rate." For the purpose of simplicity, we use "discount rate" to refer to both terms in the rest of the paper.

[9] We choose an IFRS setting, which presumably is less familiar to participants in the U.S., to minimize the effect of participants' expectation of and familiarity with a particular accounting measurement on our dependent variables. We specifically choose the investment property setting for two reasons. First, variations exist in the fair value measurements of investment property. For example, some firms use the rental capitalization approach, and other firms use the discounted cash flow approach. Both valuation models belong to the same level (i.e., Level 3) in the fair value hierarchy, which allows us to examine the effect of method similarity while minimizing any other differences between different accounting methods. Second, the valuation of investment properties frequently involves highly subjective inputs, highlighting the issue of using biased estimates in fair value calculations (Marshall et al. 2012). It is also of practical interest to examine an IFRS setting as financial reporting using IFRS plays an important role in the investment decisions of U.S. investors. According to the SEC (2017), U.S. investors have invested substantially in foreign companies that apply IFRS in filings with the SEC; U.S. investors also routinely invest in companies based outside the U.S. (e.g., through U.S. mutual funds that hold debt and equity securities issued by foreign companies), many of which use IFRS as their reporting standards.

of the investment properties are reported in the current period's income statement. Hence, the fair value changes affect both firms' financial performance.

Participants read a side-by-side presentation of both firms' financial summaries. The firms have the same operating profit. What distinguishes them is the item "gains in fair value of investment properties." Firm A has a higher gain than its peer ($14 million versus $12 million). This difference helps Firm A outperform its peer by $2 million in net income and by 3 cents in earnings per share. Next, participants read side-by-side notes on each firm's fair value changes of investment properties, where we manipulate our independent variables. Depending on experimental condition, the two firms use either the same or different fair value methods; Firm A uses either an unfavorably-biased or a favorably-biased discount rate in its fair value calculation, relative to the discount rate used by the peer firm. After reading the case material, participants make investment decisions and the reliability judgment. Finally, participants answer a series of debriefing and demographic questions.

**Independent Variables**

We employ a 2 × 2 between-subjects design with method similarity (same versus different) and bias (favorable versus unfavorable) as the independent variables. In the same method condition, both firms use the same fair value method (i.e., rental capitalization) for their investment properties. In the different method condition, the two firms use different methods (i.e., rental capitalization versus discounted cash flow). The methods in the different method condition are counterbalanced between the two firms to control for any potential differences between the two methods.

We use changes in fair value estimates (e.g., discount rates) to operationalize bias. In the favorable condition, Firm A uses a discount rate that favorably biases its financial performance relative to its peer (e.g., Firm A *decreases* their discount rate by 0.7% from the previous year while the peer firm's discount rate remains unchanged). In the unfavorable

condition, Firm A uses a discount rate that unfavorably biases its financial performance relative to its peer (e.g., Firm A *increases* their discount rate by 0.7% from the previous year while the peer firm's discount rate remains unchanged).[10, 11] We keep the current year's discount rate at 6.7% across all conditions for both firms; only the discount rates used in the previous year vary with conditions.[12] In all conditions, we tell participants that the overall economic and market conditions are similar over the two years. Therefore, changes in the discount rates are more likely be attributed to firm-specific factors than to economic and market factors.

**Dependent Variables**

Participants are asked to allocate $10,000 between Firm A and its peer. We measure participants' investment decision by the amount in thousands participants invest in Firm A. On a separate page, we measure perceived reliability of Firm A's financial reporting by asking participants to indicate the extent to which they think Firm A's information about the fair value change in investment properties is reliable (-7 = extremely not reliable; 0 = moderately reliable; 7 = extremely reliable;).

## IV. RESULTS

**Manipulation Checks**

To check our manipulation of bias, we ask participants to indicate the extent to which each firm biased its fair value change of investment properties on a 15-point scale (-7 =

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[10] We counterbalance the firm that changes the discount rate between the focal and peer firms. Specifically, half of the participants read the case where Firm A is the firm that changes discount rate, and the other half of the participants read the case where the peer firm is the changing firm whereas Firm A does not change discount rate. That is, Firm A uses a relatively favorable discount rate when the peer firm increases the discount rate; Firm A uses a relatively unfavorable discount rate when the peer firm decreases the discount rate. Since our results do not differ between the two cases ($F_{202} = 0.119$, $p = 0.730$), we combine both cases in our subsequent analyses.

[11] All p-values are two-tailed unless otherwise stated.

[12] Our manipulation check results show that participants interpret this manipulation as intended; that is, participants use the previous year's discount rate as the baseline and judge a decrease in discount rate to be a favorable rather than unfavorable bias ($p < 0.001$, one-tailed). We also conduct an out-of-sample study where we keep the previous year's rate constant at 6.7% for both firms and vary the current year's rates to manipulate favorability of bias (favorable vs. unfavorable). We set both cells in the same method condition. We collect ninety responses from MTurk. As expected, results show that perceived reliability is lower in the favorable condition than that in the unfavorable condition (means: 2.930 versus 3.936; $F_{1, 88} = 3.313$, $p = 0.036$, one-tailed), suggesting that our finding in the main experiment is robust to this alternative design (i.e., keeping previous year's rate constant).

downward biased; 0 = no bias; 7 = upward biased). We provide a note to clarify that using a higher (lower) discount rate leads to lower (higher) net income. This note is to make sure participants have the same understanding of the "downward/upward biased" labels on the scale. We use the rating for Firm A's bias minus that for the peer firm to create a measure of relative bias in Firm A's fair value estimate, as our manipulation of bias is on a relative basis. Results show that participants in the favorable condition perceive Firm A (relative to its peer) to upwards bias its fair value reporting to a larger extent compared to participants in the unfavorable condition (means: 1.617 vs. -0.431; $p < 0.001$, one-tailed). This effect does not vary with method similarity ($p = 0.146$).[13] Our manipulation of bias is successful.

To check the manipulation of method similarity, we ask participants whether the two firms use the same or different method(s) in calculating the fair values of investment properties. Seventy-one percent (150 out of 210) of participants answer this question correctly. [14] A Chi-square test shows that significantly more people select "the same method" in the same method condition than those in the different method condition ($\chi^2 = 20.269$, $p < 0.001$). We include all participants in our subsequent analyses.[15]

**Tests of Hypotheses**

H1 predicts an interaction between bias and method similarity on perceived reliability. We conduct an analysis of variance (ANOVA) with bias and method similarity as the independent variables and perceived reliability as the dependent variable. Panel A (Panel B) of Table 1 reports descriptive (inferential) statistics. Figure 1, Panel A illustrates the results. Results show a significant interaction between bias and method similarity ($F_{1, 206} = 8.557$, $p = 0.002$, one-tailed equivalent), with the mean pattern consistent with our prediction. The simple effects reported in Table 1, Panel C show that, when firms use the same method, perceived

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[13] This result holds regardless of whether the focal firm or the peer firm changes the discount rate ($p = 0.439$).
[14] The pass rate does not vary between the same and different measurement conditions ($\chi^2 = 0.071$, $p = 0.790$) or between the favorable and unfavorable conditions ($\chi^2 = 0.115$, $p = 0.735$).
[15] Results are qualitatively similar if we exclude those who fail this manipulation check question.

reliability is significantly higher in the unfavorable condition than that in the favorable condition (means: 3.481 vs. 1.885; $F_{1, 206} = 8.988$, p = 0.002, one-tailed equivalent). When firms use different methods, however, perceived reliability is not significantly different between the unfavorable and favorable conditions (means: 2.294 vs. 2.891; $F_{1, 206} = 1.279$, p = 0.259).[16] These results show that while investors are able to judge reliability based on the relative bias in accounting estimates when firms use the same accounting method, they are not able to do so when firms use different accounting methods. H1 is supported. [17]

(Insert Table 1 and Figure 1 about here)

H2a predicts that perceived reliability mediates the joint effect of method similarity and bias on investors' investment decisions. Figure 2, Panel A presents this mediation model, where bias (0 = unfavorable, 1 = favorable) is the independent variable, perceived reliability is the mediator, investment in the focal firm is the dependent variable, and method similarity is the moderator. We use Hayes (2017) PROCESS macro in SPSS to test this moderated mediation model. We conduct 10,000 bootstrapped samples with a 95% confidence level. In Figure 2, Panel B reports the path coefficients and Panel C reports the direct and indirect effects, along with the index of moderated mediation. Consistent with our prediction, the moderated mediation is significant (index of moderated mediation = 0.325, 95% confidence interval between 0.047 and 0.735). We also test the indirect effect of bias on investment through perceived reliability at each level of method similarity. As shown in Figure 2, Panel C, this indirect effect is significantly negative when firms use the *same* method (coefficient = -0.236, 95% confidence interval between -0.521 and -0.038), but is insignificant when firms use

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[16] In fact, perceived reliability in the favorable condition (2.891) is directionally higher than that in the unfavorable condition (2.294), suggesting that investors could even prefer the focal firm to use a more favorably-biased accounting estimate when it is not directly comparable with the peer firm.

[17] The simple effects of method similarity are also consistent with our theory. As shown in Table 1, Panel C, when the focal firm uses an *unfavorably*-biased accounting estimate, same (versus different) method significantly leads to *higher* perceived reliability (means: 3.481 vs. 2.294; $F_{1, 206} = 4.919$, p = 0.014, one-tailed equivalent). When the focal firm uses a *favorable*-biased accounting estimate, same (versus different) method leads to *lower* perceived reliability (means: 1.885 vs. 2.891, $F_{1, 206} = 3.673$, p = 0.029, one-tailed equivalent).

*different* methods (coefficient = 0.088, 95% confidence interval between -0.071 and 0.306), suggesting that perceived reliability mediates the effect of bias on investment when firms use the *same* method, but not when firms use *different* methods. These results support H2a.

(Insert Figure 2 about here)

H2b predicts that favorable (versus unfavorable) accounting estimate bias has a positive direct effect on investment, and a negative indirect effect on investment via perceived reliability. To test H2b, we analyze the path coefficients of the moderated mediation model as shown in Figure 2, Panel B. Results show that the interaction between bias and method similarity significantly influences perceived reliability (Link 1: coefficient = 2.193, p = 0.002, one-tailed), consistent with the prediction of H1. Perceived reliability significantly increases investment (Link 2: coefficient = 0.148, p = 0.003, one-tailed), consistent with the finding in Kadous et al. (2012). Lastly, a favorable (versus unfavorable) bias has a significantly positive direct effect on investment (Link 3: coefficient = 0.639, p = 0.016, one-tailed), consistent with our prediction that a favorable bias indicates lower business risks and thus attracts investment. Recall that we find a significantly negative indirect effect of bias on investment via perceived reliability when firms use the same method (coefficient = -0.236, 95% confidence interval between -0.521 and -0.038). Taken together, these results support H2b.

Next, we conduct an ANOVA with investment as the dependent variable, and bias and method similarity as the independent variables. Table 2, Panel A reports descriptive statistics and Table 2, Panel B reports the ANOVA results. Figure 1, Panel B illustrates the results. Results show a significant interaction between bias and method similarity on investment ($F_{1, 206} = 3.292$, p = 0.036, one-tailed equivalent). Although not predicted, we find a significant main effect of bias ($F_{1, 206} = 3.699$, p = 0.056) such that investment is higher when bias is favorable than unfavorable (means: 5.978 vs. 5.411). This result suggests that overall, a favorable (versus unfavorable) bias increases investment, although the direct and indirect

effects of bias on investment are in opposite directions. The main effect of method similarity is marginally significant ($F_{1, 206} = 2.710$, p = 0.101) such that investment is higher when the method is the *same* than *different* (means: 5.936 vs. 5.468). As reported in Table 2, Panel C, the simple effects show that favorable (versus unfavorable) bias increases investment in the *different* method condition (means: 6.002 vs. 4.892; $F_{1, 206} = 7.046$, p = 0.005, one-tailed); this effect is insignificant in the *same* method condition (means: 5.952 vs. 5.920; $F_{1, 206} = 0.006$, p = 0.939). This pattern integrates our results for H2a and H2b. In the *different* method condition, the impact of favorable bias on investment via reliability (i.e., the "indirect effect") is insignificant as shown in the moderated mediation, leaving only the significantly positive direct effect; as a result, we observe that favorable (versus unfavorable) bias increases investment. In the *same* method condition, favorable bias has both a significantly *negative indirect* effect via reliability and a significantly *positive direct* effect. With these two effects offsetting each other, we observe no significant overall effect of favorable (versus unfavorable) bias on investment.

(Insert Table 2 about here)

**Additional Analysis**

***Ability to Compare Firms' Financial Performance***

We also examine how method similarity and bias jointly influence investors' ability to compare the financial performance between the focal firm and its peer. We instruct participants that if they can make any one of the following three conclusions, they are able to compare these two firms: (1) Firm A has better financial performance than its peer; (2) the peer firm has better financial performance than Firm A; or (3) Firm A and its peer have very similar financial performance. If participants are (not) able to make any one of these three conclusions, they are (not) able to compare these two firms. Note that participants are not asked to select among the three options; these options are merely guidelines to asses "being able to compare." Following this instruction, participants indicate the extent to which they are able to compare the two firms'

financial performance on a 15-point scale (-7 = completely unable to compare; 0 = moderately able to compare; 7 = completely able to compare).

According to the FASB (1980, 2010), similar inputs and procedures are important determinants of comparability, and permitting alternative accounting methods for similar economic transaction diminishes comparability. Psychology research also suggests that similarity between the target and its standard facilitates the comparison process (Tesser 1988; Gilbert et al. 1995; Pickett 2001). Hence, we predict that same (versus different) accounting method will improve investors' ability to compare firms' financial performance. However, this effect is likely moderated by biases in accounting estimates. A favorably-biased estimate indicates lower reliability (Song et al. 2010; Riedl and Serafeim 2011). When firms make unreliable financial reporting, even if they use the same accounting method, investors may still doubt their reporting quality and feel uncomfortable comparing their financial performance based on what they report. Therefore, we predict that the effect of method similarity on investors' ability to compare firms' financial performance will be greater in the unfavorable condition than in the favorable condition.

To test this prediction, we conduct an ANOVA with investors' ability to compare firms' performance as the dependent variable and the manipulated variables as the independent variables. Panel A (Panel B) of Table 3 reports descriptive (inferential) statistics. We find a significant interaction between bias and method similarity ($F_{1, 206} = 5.340$, $p = 0.011$, one-tailed equivalent). No main effects are significant ($F_{1, 206} < 1.419$, $p > 0.234$). As reported in Table 3, Panel C, the simple effects show that same (versus different) method increases investors' ability to compare firms' performance in the unfavorable condition (means: 3.750 vs. 2.372; $F_{1, 206} = 6.019$, $p = 0.008$, one-tailed equivalent); this effect is insignificant in the favorable condition (same vs. different means: 2.923 vs. 3.363; $F_{1, 206} = 0.639$, $p = 0.425$). These results are consistent with our prediction that bias moderates the effect of method similarity on

investors' ability to compare firms' financial performance. These results also suggest that investors assess attributes of financial reporting with a hierarchy, wherein same (versus different) accounting method improves investors' ability to compare firms' financial performance only when a reasonable level of reliability is achieved (via using an unfavorably-biased accounting estimate in our case).

Note that the mechanism for investors' ability to compare firms' financial performance is different from our theory for reliability judgment because the first-order effect on each dependent variable (ability to compare vs. perceived reliability) comes from different independent variables (method similarity vs. accounting estimate bias). When the dependent variable is investors' ability to compare firms' financial performance, method similarity is the most important independent variable as it directly determines how easy or difficult to compare the firms; accounting estimate bias moderates this effect by providing a boundary condition where the comparison becomes less informative when a firm's reporting is less reliable with a favorably-biased estimate. When the dependent variable is perceived reliability, however, accounting estimate bias becomes the most important independent variable as bias itself is a component of reliability; method similarity moderates this effect by exaggerating (using the same method) or weakening (using different methods) the perceived differences in accounting estimates between firms.[18]

(Insert Table 3 about here)

**Supplementary Experiments**

*Supplementary Experiment 1*

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[18] Since a better differentiation between the two firms can make investors feel more confident in their choices, we also ask participants how confident they are with their investment decision on a 15-poin scale (-7 = extremely unconfident; 0 = moderately confident; 7 = extremely confident). We run an ANOVA with confidence as the dependent variable and the two manipulated variables as the independent variables. Untabulated results show a significant main effect of method similarity ($F_1$, 206 = 7.589, p = 0.003, one-tailed equivalent) such that same (versus different) method increases confidence (means: 3.308 vs. 2.377), consistent with our prediction. We do not find a significant main effect of bias ($F_1$, 206 = 1.010, p = 0.316) or an interaction between bias and method similarity ($F_1$, 206 = 1.248, p = 0.256), suggesting that the direction of the bias does not moderate the effect of method similarity on investors' confidence on their investment decisions.

In our main experiment, the focal firm and its peer make different changes in accounting estimates, which creates a contrast between the focal firm's accounting estimate and its reference point (i.e., the peer firm's accounting estimate). When such contrast disappears, however, investors may not be able to identify the bias and assess the reliability of the focal firm's financial reporting. We conduct Supplementary Experiment 1 to test this prediction. This experiment has a $2 \times 2$ between-subjects design with bias (favorable versus unfavorable) and method similarity (same versus different) as the independent variables. Both Firm A and its peer increase (decrease) discount rates by the same amount in the unfavorable (favorable) condition, while the current year's discount rates are kept the same across all conditions for both firms. We manipulate method similarity in the same way as in the main experiment. Two hundred participants from MTurk completed the study. Results show no significant main effects nor interaction between method similarity and bias on either perceived reliability ($F_{1, 196} < 0.880$, $p > 0.348$) or investment ($F_{1, 196} < 1.993$, $p > 0.159$).

The results from this supplementary experiment, when viewed in conjunction with results in the main experiment, suggest the following inferences. First, it suggests that investors need a reference point to judge the relative degree of bias in firms' accounting estimates and draw inferences on reliability. Second, the null results of method similarity at both levels of bias suggest that investors regard accounting estimate bias, rather than method similarity, as the main determinants of reliability—when investors cannot judge the relative level of bias in estimates, method similarity no longer affects investors' reliability judgment.

*Supplementary Experiment 2*

Accounting research finds that investors tend to use a more accessible attribute as the basis to judge a less accessible attribute (Kadous et al. 2012), consistent with the "attribute substitution" heuristic in psychology (Kahneman and Frederick 2002). It is possible that investors use "same accounting method" as a substitute for "greater reliability" because both

method similarity and reliability can potentially enhance the decision usefulness of financial information (FASB 2010). If this substitution occurs, we would expect that in the absence of any potential biases, same (versus different) accounting method leads to higher perceived reliability. On the other hand, our theory suggests that method similarity exaggerates the effect of bias when biases exist in the first place; when there are no biases to exaggerate, we would not expect to observe the effect of method similarity on perceived reliability. We conduct Supplementary Experiment 2 to test this alternative explanation.

This experiment employs a $1 \times 2$ between-subjects design. We manipulate method similarity (same versus different) the same way as in the main experiment. We use a no-bias setting (neither Firm A nor its peer changes discount rate from the previous year) to isolate the effect of method similarity from the effect of bias. Ninety-five participants from MTurk completed the study. We do not find significant results on either perceived reliability ($F_{1, 93} = 0.968$, p = 0.328) or investment ($F_{1, 93} = 0.040$, p = 0.842). This result rules out "attribute substitution" as an alternative explanation of our results.

***Supplementary Experiment 3***

One may wonder whether the presence of a peer firm has the same effect as the presence of an industry norm or investors' other expectations. Our theory is different from the norm theory (Sunstein 1996; Koonce et al. 2010; Koonce et al. 2015) and the expectation violation theory (EVT) (Burgoon and Burgoon 2001; Clor-Proell 2009) in three important aspects. First, we examine a setting where investors do *not* have clear norms or expectations about firms' reporting practices. Second, neither norm theory nor EVT predicts how one reporting feature (e.g., accounting method) influences investors' reactions to *another* reporting feature (e.g., the choice of discount rates). Third, the norm theory predicts *positive* reactions toward norm conformity, and EVT predicts *weak* reactions when firm behaviors are consistent with prior expectations. In contrast, our theory predicts both *positive* and *negative* reactions when firms

use the same accounting methods—using the same accounting method not only makes unfavorably-biased accounting estimates appear *more* reliable, it also makes favorably-biased accounting estimates appear *less* reliable. An interesting question though is what would happen if both the peer firm and industry norm/expectation are present. We test this situation in Supplementary Experiment 3.

This experiment employs a 2 (favorable versus unfavorable) × 2 (norm absent versus present) between-subjects design. We borrow the favorable and unfavorable cells in the same method condition from the main experiment, forming the "norm absent" condition. In the "norm present" condition, we add an industry norm by informing participants that most other firms in this industry make the same changes as the peer firm does.[19] One hundred and ninety-seven MTurk participants completed the study. We run an ANOVA with favorability and norm presence as the independent variables and perceived reliability as the dependent variable. Since Supplementary Experiment 3 is set in the same method condition, our theory predicts that investors will distinguish between the favorable and unfavorable biases, regardless of norm presence. Consistent with this prediction, we find a significant main effect of bias (unfavorable versus favorable means: 3.546 versus 2.530; $F_{1, 193} = 7.063$, $p = 0.009$) and an insignificant interaction between bias and norm presence ($F_{1, 193} = 1.140$, $p = 0.287$). These results suggest that our theory holds regardless of the presence of industry norm. We also find that the main effect of norm is insignificant (presence versus absence means: 2.733 versus 3.344; $F_{1, 193} = 2.364$, $p = 0.126$), suggesting that the norm effect does not hold across the full sample. A possible reason that we do not observe a significant effect of norm/expectation is that this study has a salient two-firm comparison, whereas prior research on norm theory/EVT examines only

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[19] Prior studies use this approach to manipulate both industry norm (Koonce et al. 2015) and investor expectation (Clor-Proell 2009).

one firm with the presence of an industry norm/expectation. It is possible that the norm/expectation effect would be stronger without the two-firm comparison.

*Supplementary Experiment 4*

Our last supplementary experiment is to test the situation where investors evaluate a stand-alone firm. We adapt the experimental material from the main experiment by keeping information only from the focal firm. This experiment has a $1 \times 2$ between-subjects design. As in the main experiment, we manipulate favorability by increasing (unfavorable) or decreasing (favorable) the firm's discount rate. One hundred participants from MTurk completed this study. Results show that although investors can correctly assess that the change of discount rate in the favorable condition is more likely to upwards bias the firm's financial performance than the change in the unfavorable condition (means: 2.370 versus 0.500; $F_{1, 98} = 9.689$, p = 0.002), their perceptions of reporting reliability do not differ between the favorable and unfavorable conditions (means: 3.130 versus 2.833; $F_{1, 98} = 0.320$, p = 0.573). Moreover, investment in the firm is higher when bias is favorable than that unfavorable (means: \$7,141 versus \$4,935; $F_{1, 98} = 11.246$, p = 0.001), consistent with the notion that a favorable discount rate indicates lower business risk, which leads to higher investment when its negative impact on reliability no longer bothers investors. Results from Supplementary Experiment 4 suggest that investors have difficulty assessing the impact of accounting estimate bias on reporting reliability without a comparison with peer firms.

## V. CONCLUSION

In a multi-firm setting, we examine how accounting estimate bias and accounting method similarity jointly influence investors' reliability judgment and investment decisions. Applying psychology research on the similarity effect, we find that the similarity of accounting method amplifies the effect of accounting estimate bias on investors' reliability judgment. Specifically, while investors are able to detect the negative impact of a favorably-biased (versus

unfavorably-biased) accounting estimate on financial reporting reliability when firms use the *same* accounting method, investors lose such ability when firms use *different* accounting methods. This finding suggests that using different accounting methods hinders investors' ability to make appropriate reliability judgment, and firms may use different accounting methods to obfuscate biases in its financial reporting. [20]

We also find that accounting estimate bias influences investors' investment judgments via two separate paths. On the one hand, a favorably-biased (versus unfavorably-biased) accounting estimate reduces investment as investors perceive lower reliability (i.e., the indirect path). On the other hand, a favorably-biased accounting estimate also increases investment as investors perceive a favorable estimate to indicate lower business risks (i.e., the direct path). This finding extends prior research on how perceived reliability influences investors' investment decisions (Kadous et al. 2012; Elliott et al. 2020).

Turning to investors' ability to compare the two firms' financial performance, we find that same (versus different) accounting method improves such ability, but only when the focal firm uses an unfavorably-biased estimate; same (versus different) accounting method no longer influences investors' ability to compare the two firms' financial performance when the focal uses a favorably-biased estimate. This finding highlights the importance of considering financial reporting quality in promoting comparability.

Our paper has implications to regulators and standard-setters. First, our study shows that investors' reliability judgment is influenced not only by a firm's stand-alone accounting estimate reporting, but also by the similarity of accounting methods across firms. Thus, it is important to consider accounting method similarity in promoting reliability of financial reporting, on top of requirements of expanding a firm's stand-alone disclosures of accounting

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[20] There are also costs associated with using different accounting methods. According to our results, using different accounting methods makes it hard for investors to compare firms' financial performance. Prior research finds that low comparability can hurt firm valuations (Young and Zeng 2015; Bourveau et al. 2020) and reduce investors' investments (DeFond et al. 2011; Yu and Wahid 2014).

estimates (SEC 2003, 2011, 2019; FASB 2018). Second, our finding that variations of accounting methods can harm investors' ability to make a proper reliability judgment supports the FASB's standard updates that aim at enhancing financial reporting comparability (e.g., FASB 2013; FASB 2014).

Our paper contributes to accounting literature in three aspects. First, we add to research on investors' reliability judgment. While Kadous et al. (2012) and Eilifsen et al. (2020) examine how reporting features of a stand-alone firm influence perceived reliability, we show that cross-firm reporting features such as accounting method similarity also influences investors' reliability judgment. Our results show that cross-firm comparisons can either help or hinder investors' assessment of reliability, depending on whether peer firms use the same or different accounting methods. Second, our study answers the call for research to examine financial reporting comparability on a more granular level (Hopkins 2019). Using a specific reporting feature (i.e., accounting method similarity) as a proxy for comparability, we show that comparability affects investors' judgments by influencing the contrast in a peer comparison. Lastly, our study contributes to research on how the adoption of IFRS increases cross-border investments (DeFond et al. 2011; Yu and Wahid 2014; Francis et al. 2016) by showing that both the increase of method similarity and the improvement in reporting reliability contribute to the increased investment following the adoption of IFRS.

A limitation should be noted when interpreting our results. We measure investors' ability to compare firms' financial performance by asking participants to indicate the extent to which they are able to judge the two firms' relative performance. Following the FASB (2012), we define "being able to compare" as being able to identify and understand *similarities* in and *differences* among items. Thus, if investors perceive the two firms to have similar financial performance, they are still able to make such comparison per our experimental instruction.

Future research can further examine this issue and investigate whether investors judge "being similar" and "being different" in different ways.

**Appendix A**

The following graph illustrates a side-by-side comparison of firms' financial data on an investing app made by ALTOVA, a software and development company, to facilitate investors' stock picking and investment decisions.



(Source: https://www.altova.com/blog/compare-financial-data-2-us-public-companies)
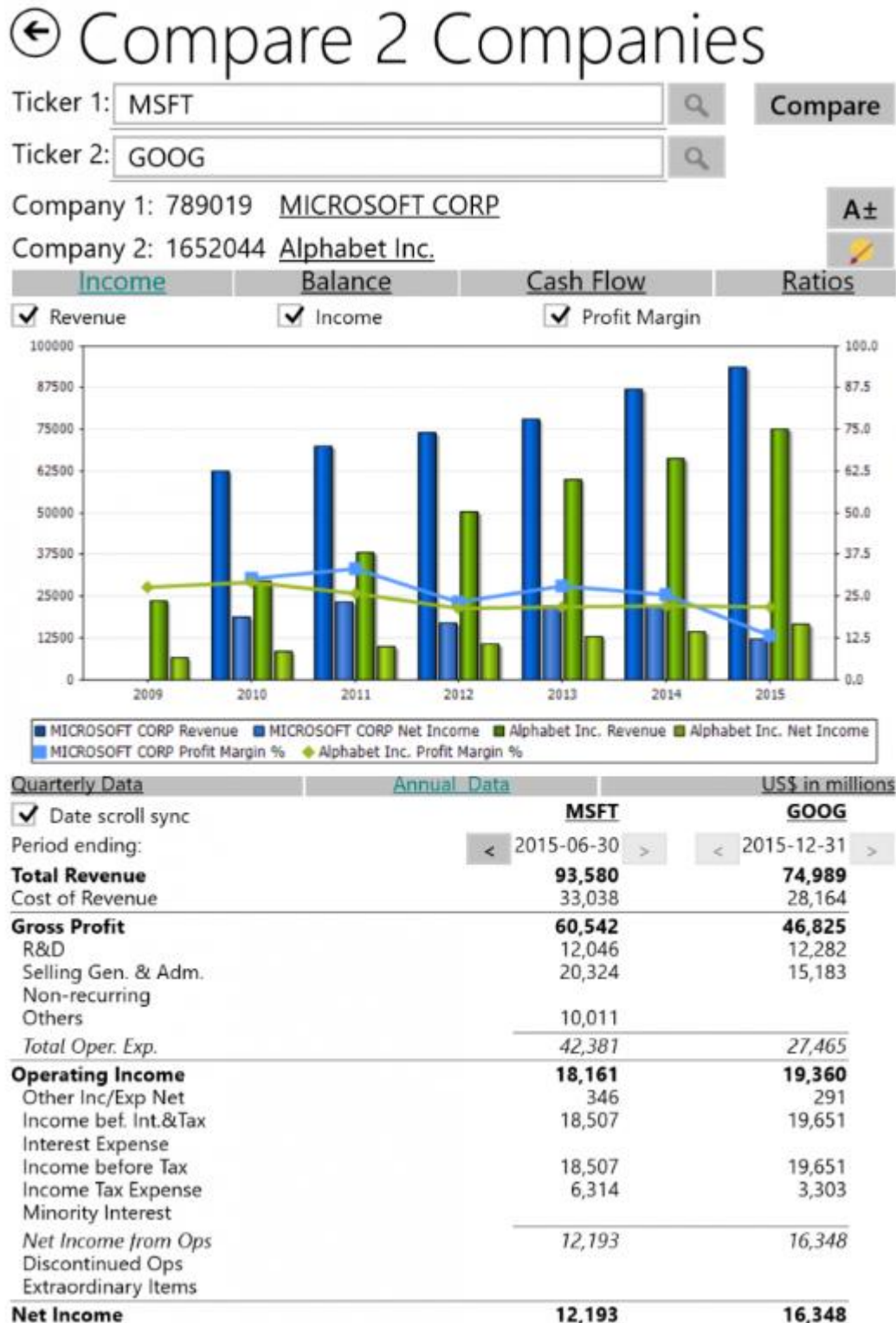
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# FIGURE 1
## Experimental Results

Panel A: Results on Perceived Reliability
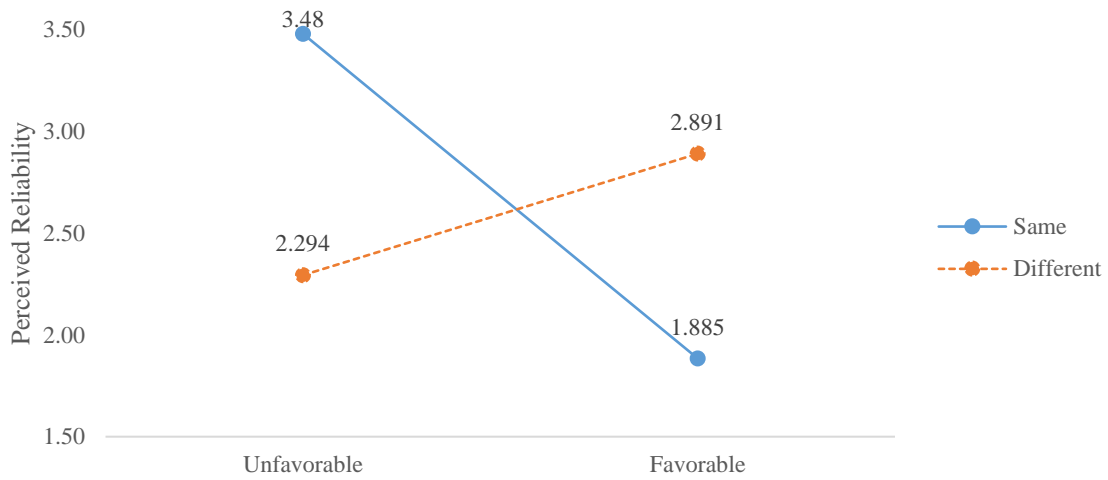


Panel B: Results on Investment in the Focal Firm
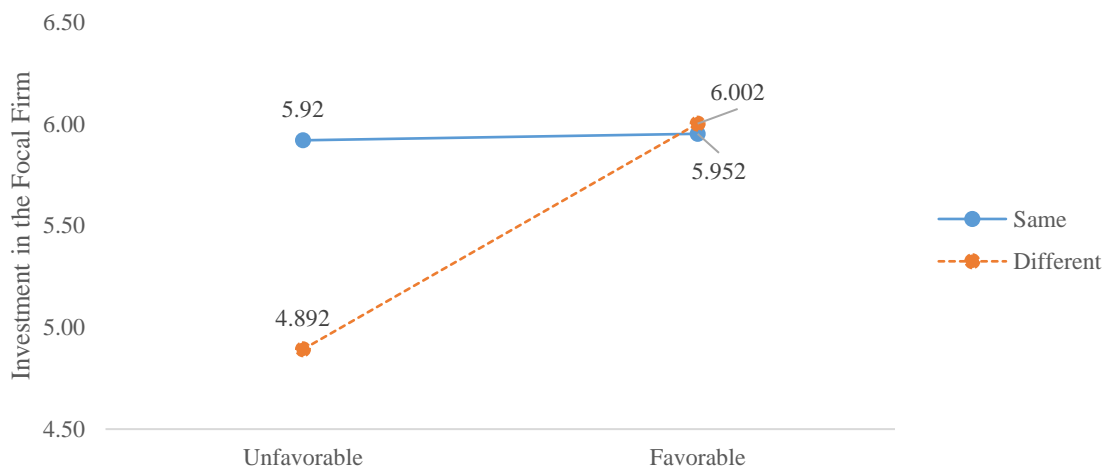


This figure presents the experimental results on perceived reliability (Panel A) and investment in the focal firm (Panel B). Perceived reliability is measured by asking participants to assess the reliability of the focal firm's fair value reporting (-7 = extremely not reliable; 0 = moderately reliable; 7 = extremely reliable). Invest in the focal firm is measured by the amount in thousands that investors choose to invest in the focal firm. Independent variables are method similarity (same versus different) and bias (unfavorable versus favorable).

# FIGURE 2
## Mediation Analysis

**Panel A: Moderated Mediation Model**
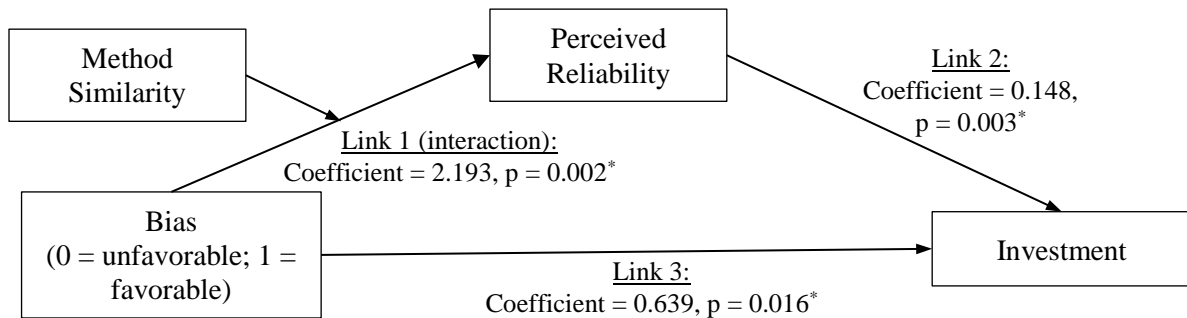


**Panel B: Path Estimates and Coefficients**

|  | Coefficient | *t* | *p* | LLCI | ULCI |
|---|---|---|---|---|---|
| *DV: Perceived Reliability* | | | | | |
| Constant | 3.481 | 9.246 | 0.000 | 2.739 | 4.223 |
| Bias | -1.596 | -2.998 | 0.003 | -2.646 | -0.546 |
| Method Similarity | -1.187 | -2.218 | 0.028 | -2.241 | -0.132 |
| Method Similarity × Bias (link 1) | 2.193 | 2.925 | 0.002* | 0.715 | 3.671 |
| *DV: Investment* | | | | | |
| Constant | 4.982 | 19.037 | 0.000 | 4.466 | 5.498 |
| Perceived Reliability (link 2) | 0.148 | 2.758 | 0.003* | 0.042 | 0.254 |
| Bias (link 3) | 0.639 | 2.160 | 0.016* | 0.056 | 1.223 |

**Panel C: Direct and Indirect Effects of Bias on Investment**

|  | Effect | LLCI | ULCI |
|---|---|---|---|
| Direct effect: Bias → Investment | 0.639 | 0.056 | 1.223 |
| Indirect effect: Bias → Perceived Reliability → Investment | | | |
| Same method | -0.236 | -0.521 | -0.038 |
| Different methods | 0.088 | -0.071 | 0.306 |
| Index of moderated mediation | 0.325 | 0.047 | 0.735 |

This figure presents the mediation model predicted in H2a and H2b, where perceived reliability mediates the joint effect of bias and method similarity on investment. We use Model 7 of Hayes (2017) PROCESS macro to estimate the path coefficients and the indirect effects via 10,000 bootstrapped samples with a 95% confidence level. Panel A illustrates the moderated mediation model. Panel B reports path coefficients. Panel C reports the direct and indirect effects of bias on investment, along with the index of moderated mediation.

* One-tailed equivalent given directional predictions.

# TABLE 1
## Results on Perceived Reliability

**Panel A:  Mean (Standard Deviation) n = Sample Size**

|  | Same | Different | Total |
|---|---|---|---|
| Unfavorable | 3.481 (2.445) n = 52 | 2.294 (2.795) n = 51 | 2.893 (2.679) n = 103 |
| Favorable | 1.885 (2.777) n = 52 | 2.891 (2.820) n = 55 | 2.402 (2.831) n = 107 |
| Total | 2.683 (2.724) n = 104 | 2.604 (2.810) n = 106 | 2.643 (2.762) n = 210 |

**Panel B: ANOVA Results**

| Source | df | MS | F | p-value |
|---|---|---|---|---|
| Bias | 1 | 13.098 | 1.777 | 0.184 |
| Method Similarity | 1 | 0.427 | 0.058 | 0.810 |
| Bias × Method Similarity | 1 | 63.068 | 8.557 | 0.002* |
| Error | 206 | 7.370 |  |  |

**Panel C: Simple Effects**

| Source | df | F | p-value |
|---|---|---|---|
| Same: unfavorable – favorable | 1, 206 | 8.988 | 0.002* |
| Different: unfavorable – favorable | 1, 206 | 1.279 | 0.259 |
| Unfavorable: same – different | 1, 206 | 4.919 | 0.014* |
| Favorable: same – different | 1, 206 | 3.673 | 0.029* |

This table presents results on perceived reliability. Participants indicate their judgment of the reliability of the focal firm's financial reporting on a 15-point scale (-7 = extremely not reliable; 0 = moderately reliable; 7 = extremely reliable). Independent variables are method similarity and bias. Panel A reports the descriptive statistics. Panel B reports the ANOVA results. Panel C reports the simple effects.

* One-tailed equivalent given directional predictions.

## TABLE 2
## Results on Investment in the Focal Firm

### Panel A: Mean (Standard Deviation) n = Sample Size

|  | Same | Different | Total |
|---|---|---|---|
| Unfavorable | 5.920 (2.134) n = 52 | 4.892 (2.038) n = 51 | 5.411 (2.140) n = 103 |
| Favorable | 5.952 (2.333) n = 52 | 6.002 (2.087) n = 55 | 5.978 (2.200) n = 107 |
| Total | 5.936 (2.225) n = 104 | 5.468 (2.128) n = 106 | 5.700 (2.184) n = 210 |

### Panel B: ANOVA Results

| Source | $df$ | MS | $F$ | $p$-value |
|---|---|---|---|---|
| Bias | 1 | 17.103 | 3.699 | 0.056 |
| Method Similarity | 1 | 12.532 | 2.710 | 0.101 |
| Bias × Method Similarity | 1 | 15.221 | 3.292 | 0.036[*] |
| Error | 206 | 4.624 |  |  |

### Panel C: Simple Effects

| Source | $df$ | $F$ | $p$-value |
|---|---|---|---|
| Same: unfavorable – favorable | 1, 206 | 0.006 | 0.939 |
| Different: unfavorable – favorable | 1, 206 | 7.046 | 0.005[*] |
| Unfavorable: same – different | 1, 206 | 5.878 | 0.016 |
| Favorable: same – different | 1, 206 | 0.014 | 0.905 |

This table presents results on investment in the focal firm, which is measured by the amount in thousands that investors choose to invest in the focal firm. Independent variables are method similarity and bias. Panel A reports the descriptive statistics. Panel B reports the ANOVA results. Panel C reports the simple effects.

[*] One-tailed equivalent given directional predictions.

## TABLE 3

## Results on Investors' Ability to Compare Firms' Performance

### Panel A:  Mean (Standard Deviation) n = Sample Size

|  | Same | Different | Total |
|---|---|---|---|
| Unfavorable | 3.750 (2.729) n = 52 | 2.372 (3.092) n = 51 | 3.068 (2.981) n = 103 |
| Favorable | 2.923 (2.648) n = 52 | 3.363 (2.908) n = 55 | 3.150 (2.781) n = 107 |
| Total | 3.337 (2.708) n = 104 | 2.887 (3.025) n = 106 | 3.110 (2.874) n = 210 |

### Panel B: ANOVA Results

| Source | $df$ | MS | $F$ | $p$-value |
|---|---|---|---|---|
| Bias | 1 | 0.353 | 0.044 | 0.835 |
| Method Similarity | 1 | 11.512 | 1.418 | 0.235 |
| Bias $\times$ Method Similarity | 1 | 43.346 | 5.340 | 0.011[*] |
| Error | 206 | 8.117 | | |

### Panel C: Simple Effects

| Source | $df$ | $F$ | $p$-value |
|---|---|---|---|
| Unfavorable: same – different | 1, 206 | 6.019 | 0.008[*] |
| Favorable: same – different | 1, 206 | 0.639 | 0.425 |
| Same: unfavorable – favorable | 1, 206 | 2.190 | 0.140 |
| Different: unfavorable – favorable | 1, 206 | 3.202 | 0.075 |

This table presents results on investors' ability to compare firms' performance. Participants are instructed that they are able to compare the two firms if they can judge their relative financial performance. Participants indicate the extent to which they are able to compare the two firms' financial performance on a 15-point scale (-7 = completely unable to compare; 0 = moderately able to compare; 7 = completely able to compare). Independent variables are method similarity and bias. Panel A reports the descriptive statistics. Panel B reports the ANOVA results. Panel C reports the simple effects.

[*] One-tailed equivalent given directional predictions.