

Return Measures as a Link between Financial Statements

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Abstract: A growing literature in accounting suggests that investors “fixate” on reported earnings. Holding reported earnings per share constant, I find experimental evidence that reporting a return measure (e.g., return on assets) on the face of the income statement leads nonprofessional investors to differentiate between companies with high and low accounting rates of return when considering the attractiveness of a company as an investment. Further, I find that these attractiveness judgments are mediated by investors’ judgments of managerial efficiency and effectiveness in earning a return on its economic resources. In additional tests, I do not find evidence that reporting a return measure on the face of the income statement influences nonprofessional investors’ perception of balance sheet relevance, or affects acquisition of balance sheet information.

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I. INTRODUCTION

A growing accounting literature documents that market participants often focus on the income statement—in particular, bottom-line earnings—to the exclusion of other financial statement information. This phenomenon is documented in experimental studies (e.g., Maines and McDaniel 2000), surveys (e.g., Graham et al. 2005; Dichev et al. 2013), and archival research (e.g., Bushee 1998). In response to this phenomenon—often called earnings fixation—accounting researchers are studying how financial information can be organized and presented to facilitate a better understanding of the economic performance of a firm (e.g., Hewitt 2009; Elliott et al. 2011; Bloomfield et al. 2010).

I build on this literature by studying *whether, how, and why* presenting a return measure (e.g., return on assets) on the face of the income statement may reduce this fixation by affecting nonprofessional investors' assessment of the link between the income statement and balance sheet. I employ theory from psychology and accounting to posit that such return measures, when reported on the face of the income statement, provide a concrete link between financial statements that both facilitates users' integration of information from multiple financial statements, and primes a fundamentally different conceptualization of the firm under analysis.

I focus on nonprofessional investors for two reasons. First, nonprofessional investors are an important investor class (Bogle 2005), and the number of individual investors is growing globally (Grout et al. 2009). Second, prior research in accounting documents that nonprofessional investors often employ ill-defined valuation models, and usually read financial information in the order it is presented. In contrast, professional investors use well-defined valuation models (e.g., Penman 2011), and skip around the financial statements, directly searching for information to support those models (Anderson 1988; Bouwman 1984; Hunton and McEwen 1997).

I make two predictions about how reporting a return measure on the face of the income statement affects nonprofessional investors' information processing. My first prediction relates to the mental representation that nonprofessional investors use when considering a firm as an investment. A mental representation is the conceptualization used when people think about a problem. Mental representations affect human reasoning and understanding, thereby affecting information acquisition and weighting (Markman and Gentner 2001; Kadous and Sedor 2004). I posit that nonprofessional investors can have at least two mental representations of a potential investment. First, prior research on earnings fixation indicates that investors most often have an income-statement-centric mental representation of potential investments. I posit that investors can also have an additional, return-on-resources-employed mental representation when evaluating potential investments, but it must first be primed (on average). My first hypothesis is that reporting a return measure on the face of the income statement primes this return-on-resources-employed mental representation in nonprofessional investors.

Second, measures such as return on assets provide a concrete link between the income statement and balance sheet. This concrete link, combined with the prominence accorded to information on the income statement, leads to my second hypothesis that placing a return measure on the face of the income statement: (1) influences investors' perception of balance sheet relevance to their investment decisions, and (2) affects users' acquisition of balance sheet information.

I use an experiment to test these predictions. Because reporting return measures in the basic financial statements is not currently practiced, an experiment provides a powerful *ex ante* approach to test my hypotheses, while also controlling for other factors that could influence investors' judgments and decisions (Beresford and Johnson 1995; McDaniel and Hand 1996).

In the experiment, participants view an abbreviated annual report of a hypothetical company and then provide their judgments about the attractiveness of the firm as a potential investment. I manipulate whether a return measure is reported on the face of the income statement (*face, no face*). The annual report also includes a multi-year summary of selected financial data, similar to that found in most annual reports. Importantly, this multi-year summary includes a return measure for *all* conditions, ensuring that my results obtain from reporting a return measure *on the face of the income statement*. I also manipulate the level of the return measure as *low* or *high*. While net income and earnings per share are the same in all conditions, I manipulate balance sheet amounts (i.e., the resources employed in the business) to be relatively high in the *low return* conditions and relatively low in the *high return* conditions.

Results support my first prediction. Specifically, I find evidence that nonprofessional investors make a greater differentiation between two companies with identical earnings, but different accounting rates of return, when a return measure is reported on the face of the income statement than when it is not reported on the face of the income statement. Further, I provide evidence regarding why reporting a return measure on the face of the income statement affects nonprofessional investors' judgments of the attractiveness of a company as a potential investment. Using mediation analysis, I find that nonprofessional investors' judgments of company attractiveness are mediated by their perceptions of managerial efficiency and effectiveness in earning a return on its economic resources.

Experimental results do not support the prediction that reporting a return measure on the face of the income statement influences nonprofessional investors' perception of balance sheet relevance or affects acquisition of balance sheet information. However, in an unpredicted result, I find that nonprofessional investors have statistically significantly *worse* recall of earnings per

share when a return measure is reported on the face of the balance sheet than when a return measure is not reported on the face of the balance sheet—a result consistent with reduced earnings fixation.

This study makes several contributions to the literature. First, I answer the call of accounting standard setters and researchers who stress the need for *ex ante*, policy-relevant research on accounting statement presentation formats (e.g., Beresford and Johnson 1995; McDaniel and Hand 1996); my study contributes to a growing literature on the effects of earnings presentation on investor judgments and decisions (Libby and Emett 2013). Second, I extend the fairly new accounting literature on the role of mental representations from managerial accounting (Kadous and Sedor 2004) to financial accounting.

In the next section I discuss the background for the paper. Section three develops my hypotheses, section four describes my experimental design, section five presents my results, and section six concludes.

II. BACKGROUND

This section begins by discussing why nonprofessional investors interest accounting researchers, standard setters, and financial statement preparers. Second, I discuss the link between financial statements, and, in the case of nonprofessional investors, how the assumed mental integration or link between financial statements may be unwarranted. Third, I discuss how return measures provide a concrete link between financial statements.

Nonprofessional Investors

How nonprofessional investors interpret financial statements is of interest to accounting standard setters, financial statement preparers, and accounting researchers because nonprofessional investors constitute a large proportion of stockholders. A survey by the

Investment Company Institute (ICI) and Securities Industry and Financial Markets Association (SIFMA) (2008) finds that about 45 percent of American households invest in equities; in addition, nonprofessional investors own about 34 percent of all stock market shares outstanding (Bogle 2005).¹ Further, the number of investors is growing worldwide: An estimated 317 million people invest in equities and mutual funds globally (Grout et al. 2009). Finally, the Securities and Exchange Commission (SEC) clearly has the interests of nonprofessional investors in mind when setting standards—for example, Regulation Fair Disclosure (SEC 2000) requires firms to disclose information to *all* investors.²

In addition, the judgment and decision making of nonprofessional investors interests accounting researchers and standard setters because prior research indicates that nonprofessional investors differ from professional investors (and normative decision models) in how they analyze financial information. For instance, process-tracing research in financial statement analysis finds that inexperienced financial statement users employ a passive, sequential information acquisition and integration strategy; that is, they read information in the order it is presented without skipping around (Hunton and McEwen 1997; Maines and McDaniel 2000). In contrast, expert financial statement users employ well-defined valuation models (e.g., Penman 2011), use directed search strategies (i.e., they skip around the financial statements) and mental checklists, and test specific hypotheses to support such valuation models (Bouwman 1984; Anderson 1988). These differences are problematic because the use of a passive, sequential search strategy is

¹ Note that 34 percent individual ownership is a decline from historical rates as more shares are now held by institutional investors than in the past (Bogle 2005). Nevertheless, nonprofessional investors continue to constitute an important investor class.

² See also (<http://www.sec.gov/about/whatwedo.shtml>): “As more and more first-time investors turn to the markets to help secure their futures, pay for homes, and send children to college, our investor protection mission is more compelling than ever” and “The laws and rules that govern the securities industry in the United States derive from a simple and straightforward concept: all investors, whether large institutions or private individuals, should have access to certain basic facts about an investment prior to buying it, and so long as they hold it.”

associated with less accurate financial analysis than is the use of directed search strategies (Hunton and McEwen 1997).

Overall, the lack of well-defined valuation models and the use of a sequential acquisition and evaluation strategy makes nonprofessional investors susceptible to the general information processing principle of “concreteness”—the idea that decision makers use information in the form in which it is explicitly displayed, and that any information that must be inferred or transformed from the display is not acquired or integrated (Slovic 1972; Payne et al. 1993, 48). In particular, Payne et al. (1993) contend that people attend to concretely displayed information in an effort to reduce cognitive strain. Thus, the *physical* structure of the financial statements is critical to improving the quality of nonprofessional investors’ decision making (Luft 2010). In the next section I discuss recent efforts by accounting standard setters and researchers to address how the physical structure of financial statements affects users’ interpretation of financial reports.

Linking the Financial Statements

One principle of financial accounting is that the financial statements are intended to be considered as a whole. Statement of Financial Accounting Concepts No. 8 (FASB 2010b, hereafter “SFAC No. 8”)³ states “[financial statement users] need information about the resources of an entity...and how efficiently and effectively the entity’s management and governing board have discharged their responsibilities to use the entity’s resources” (FASB 2010b, para. OB4), and “Information about the return the entity has produced provides an indication of how well management has discharged its responsibilities to make efficient and effective use of the reporting entity’s resources” (FASB 2010b, para. OB16). Implicit in these statements is the assumption that financial statement users are able to integrate the income

³ SFAC No. 8 replaces SFAC Nos. 1 and 2.

statement (which details an entity's performance) with the balance sheet (which details an entity's financial resources). However, this assumption may be unwarranted.

Despite regulators' and standards setters' desire that the financial statements be considered as a cohesive whole, a growing body of research in accounting finds that many investors fixate on a single accounting number—earnings reported on the income statement. Researchers find earnings fixation in experimental studies (e.g., Elliott et al. 2011), surveys (e.g., Graham et al. 2005; Dichev et al. 2013), and archival studies (e.g., Bushee 1998). These empirical findings are supported by Anderson's (1988) process-tracing observation that nonprofessional investors focus extensively on the income statement while often ignoring the balance sheet.⁴ On the whole, if nonprofessional investors fixate on earnings, they will not integrate the linkages between financial statements unless such linkages are concretely displayed.

In response to this and other concerns, standard setters express an interest in modifying the basic financial statements so that investors can better understand the relations between financial statements. Specifically, the Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) produced the *Staff Draft of an Exposure Draft on Financial Statement Presentation* (FASB 2010a, hereafter "Staff Draft") with the objective of improving financial statement usefulness. A key principle of the Staff Draft is that the financial statements should provide a "cohesive financial picture" of an entity, meaning that "the relationship between items across financial statements is clear and that an entity's financial statements complement each other as much as possible" (FASB 2010a, 10).

In response to this call, and to prior findings of earnings fixation in general, accounting researchers are conducting *ex ante*, policy-relevant experimental research that examines how to

⁴ A survey by Brown (1997) finds that *professional* sell-side analysts do find the balance sheet important, albeit markedly less so than the income statement or statement of cash flows.

reduce earnings fixation. I discuss two experimental studies as examples. First, Hewitt (2009) finds that when accruals and cash flows are differentially persistent, both professional and nonprofessional financial statement users make improved earnings forecasts when: (1) the users forecast accruals and cash flows separately, and (2) the presentation format of the income statement is altered to present the disaggregated accruals and cash flows components of earnings. That is, Hewitt (2009) finds that a combination of changes in information display and forecast procedure improves investors' earnings forecasts.

Second, Elliott et al. (2011) find that changing the format of management's earnings forecasts to include disaggregated forecasts of all line items of the earnings statement (rather than just a forecast of bottom-line earnings) reduces nonprofessional investors' earnings fixation; specifically, they find that nonprofessional investors: (1) better attend to favorable/unfavorable trends in income statement line items, and (2) judge bottom-line earnings as relatively less important when management's earnings forecasts contain disaggregated line-item forecasts rather than an aggregated bottom-line forecast. That is, Elliott et al. (2011) find that providing additional disaggregated line-item earnings information reduces fixation on bottom-line earnings.

These two earnings disaggregation studies provide one approach to reducing earnings fixation; in the current study, I take another approach—specifically, I study whether, how, and why reporting a return measure (discussed below) on the face of the income statement provides a link between the income statement and balance sheet, enhancing the use of financial information beyond earnings alone. That is, I examine how the mere *display* of information already available to investors affects earnings fixation.

Return Measures

Return measures such as return on assets (ROA) and return on equity (ROE) are common in business analysis. For example, managers at the DuPont Corporation began using return on capital invested to assess the profitability of company projects in 1903 (Chandler 1977, 445-446; cited in Waymire and Basu 2007, 70). Currently, companies do not normally report return measures in the basic financial statements, but some companies report ratios such as ROE as part of a multi-year summary in the annual report; however, such reporting is not required, varies in presentation (often—but not always—placed near the end of the annual report), and may not be audited or conform to Generally Accepted Accounting Principles (GAAP).

Such measures are “perhaps the most useful analytical tools for assessing profitability and risk” (Brown 1998).⁵ They are also important because—consistent with the spirit of SFAC No. 8—they relate earnings (from the income statement) to the resources (from the balance sheet) required to generate those earnings; that is, return measures provide an concrete link between two basic financial statements. As a consequence, return measures constitute the basis of at least some normative valuation models (e.g., Penman 2011). In recognition of return measures’ importance, analyst research reports disseminated by companies such as *Morningstar*, *Standard & Poor’s* and *Value Line* all calculate and report one or more of the above ratios. In the next section, I use theory from psychology and accounting to develop hypotheses that reporting a return measure on the face of the income statement provides a salient, concrete link between financial statements that can affect the information processing of nonprofessional investors.

⁵ Anecdotally, return measures were a key leading indicator of the failure of Enron (McLean and Elkind 2003, 320 - 325). While many investors fixated on Enron’s earnings, short sellers such as Jim Chanos cited Enron’s low return on capital as a key factor in deciding to bet against the company. In addition, some analysts were concerned with Enron’s inability to produce a balance sheet and cash flow statement with its quarterly earnings releases.

III. HYPOTHESES

Based on a conceptual model of judgment by Einhorn and Hogarth (1981; Hogarth 1987, 206), Maines and McDaniel (2000) develop a theoretical framework for the study of financial statement users' interpretation of financial statements. The framework posits that financial statement users' judgments are a function of information acquisition (whether information is read and stored in memory), information evaluation (an assessment of the information's characteristics such as trends, volatility, etc.), and information weighting (the importance placed on the information when making judgments). I build on Maines and McDaniel's framework; but, as in Hodge et al. (2004) and Elliott et al. (2007), I combine evaluation and weighting into a single construct called "integration." Using the above framework, the rest of this section develops the ideas that reporting return measures on the face of the income statement: (1) primes financial statement users to employ a return-on-resources-employed mental representation of the firm when considering the company as an investment; and, (2) affects users' perceptions of balance sheet relevance and affects users' acquisition of balance sheet information.

The Effect of Return Measures on Mental Representations

First, I examine the effect of reporting return measures on the face of the income statement on investors' mental representations. Mental representations are the conceptualization that people apply to a problem; that is, they provide the cognitive structure that underlies decision makers' reasoning and understanding (Markman and Gentner 2001; Kadous and Sedor 2004). I describe an example from management accounting research to illustrate how mental representations affect judgment and decision making. Kadous and Sedor (2004) find that the ability of third party consultants to recognize and recommend the discontinuation of poorly performing projects is affected by the purpose assigned to them *before* analyzing the project.

Consultants assigned the specific purpose of making a project continuation recommendation are more likely to recall critical threats to the project (and thus are more likely to recommend project discontinuation) than are consultants who are assigned no specific purpose. Kadous and Sedor argue that the specific purpose assigned to the consultants primed a mental representation that allowed the consultants to retrieve the critical threats from memory (i.e., information about these threats were acquired and placed in memory).

In applying the concept of mental representations to the current study, I assume that the majority of nonprofessional investors have a single purpose when analyzing a company's financial statements—deciding whether to invest in the company's stock. However, I posit that investors have at least two possible mental representations available to use when analyzing a company's financial reports. First, prior research on earnings fixation indicates that many investors have an income-statement-centric mental representation of potential investments, and that this is the primary mental representation most used by nonprofessional investors.

In contrast, I posit that investors possess at least one additional, return-on-resources-employed mental representation when considering investments, but this second mental representation must first be primed (on average). I predict that reporting a return measure on the face of the income statement primes this second mental representation; specifically, I predict that—consistent with the spirit of SFAC No. 8—return measures prime users to consider earnings in relation to the resources required to generate those earnings.

In the extreme, if investors completely fixate on earnings, they will consider two companies with identical income to be equally attractive potential investments, regardless of the resources used to generate those earnings. If, on the other hand, investors use the second, return-on-resources-employed mental representation, they will differentiate between two firms with

identical earnings if the firms use different levels of economic resources. In particular, investors will consider one firm to be a more (less) attractive potential investment if the company uses a relatively low (high) amount of economic resources. Further, I predict that when investors use the return-on-resources-employed mental representation, their judgments of the company as an investment are driven by the efficiency and effectiveness with which management uses its economic resources. Finally, I predict that nonprofessional investors generally use the first mental representation (i.e., the income-statement-centric representation) unless the second mental representation (i.e., the return-on-resources-employed representation) is primed, and that explicitly reporting a return measure on the face of the income statement can prime this latter mental representation. This discussion leads to my first set of hypotheses, stated in alternative form.

H1a: Nonprofessional investors make a greater differentiation between two companies with identical earnings, but different accounting rates of return, when a return measure is reported on the face of the income statement than when it is not reported on the face of the income statement

H1b: The relation in H1a is mediated by nonprofessional investors' judgment of management's efficiency in using its economic resources and effectiveness in earning a return on its resources.

Perception of Balance Sheet Relevance and Information Acquisition

Information acquisition means that decision makers read and are able to recall an item of information (Maines and McDaniel 2000). Psychology theory and prior research in accounting provide conflicting predictions regarding whether nonprofessional investors will acquire a given item of financial statement information. First, as discussed above, prior accounting research indicates that novice investors read financial information sequentially (without skipping around) and in the format it is originally presented; consequently, nonprofessional investors should

acquire all information presented. On the other hand, psychology theory predicts that investors may not acquire (or process adequately to place in memory) some information even if it is read. In particular, people have limited working (short-term) memory (Miller 1994), and working memory is especially constrained when performing unfamiliar tasks (Simon 1990). Thus, if nonprofessional investors fixate on earnings, they may not have the working memory capacity to acquire balance sheet information. In accordance with these two competing theories, experimental research on nonprofessional investors' decision making (e.g., Maines and McDaniel 2000; Hodge et al. 2004; Elliott et al. 2007) reports mixed results for the effects of financial statement presentation on information acquisition. I posit that displaying a return measure on the face of the income statement could influence nonprofessional investors' perception of balance sheet relevance and acquisition of balance sheet information in one of two contrasting ways.

First, if investors fixate on earnings, information reported in close proximity to reported earnings gains salience. For example, in a discussion of Hirst and Hopkins (1998), Lipe (1998) posits an "income statement effect" whereby financial statement users process information more when it is placed on the income statement—an idea that is supported by more recent research on financial statement presentation formats (Maines and McDaniel 2000) and earnings fixation (e.g., Graham et al. 2005; Elliott et al. 2011). If this is the case, I predict that reporting return measures in close proximity to earnings provides a concrete, salient link between the income statement and balance sheet. Such a link could: (1) lead investors to perceive the balance sheet as more relevant to their investment judgment; and, (2) direct users' attention to the balance sheet, resulting in increased acquisition of balance sheet information.

Second, and in contrast, it is possible that reporting a return measure on the face of the income statement *facilitates* investors' preexisting valuation models. In particular, if investors employ a return-on-resources valuation model, then reporting return measures on the face of the income may obviate the need to view the balance sheet. If this is the case, investors would perceive the balance sheet (but not aggregate balance sheet information) as *less* relevant and would be *less* likely to read and acquire specific balance sheet information when a return measure is presented on the face of the income statement than when a return measure is not reported on the face of the income statement.

Because of these two competing predictions, I state my second set of hypotheses in null form:

- H2a:** Nonprofessional investors do not perceive the balance sheet as more relevant when a return measure is reported on the face of the income statement than when a return measure is not reported on the face of the income statement.
- H2b:** Nonprofessional investors do not better acquire balance sheet information when a return measure is reported on the face of the income statement than when a return measure is not reported on the face of the income statement.

IV. EXPERIMENTAL METHOD

Participants

Participants are 81 volunteers recruited from Amazon Mechanical Turk, an online service that is becoming a popular source of participants for accounting studies (see, e.g., Rennekamp (2012) and Koonce et al. (2013) for examples) in addition to many other disciplines (for an overview, see Mason and Suri (2012) and Goodman et al. (2013)). Five participants are removed from the analysis because they provided incorrect responses to attention and manipulation check questions, and five participants are removed because they reported never

investing directly in stocks *and* never taking an accounting course (discussed in more detail below). Therefore, my final sample for analysis is 71 participants. Participants reported taking an average of 2.0 accounting courses and 1.5 finance courses, as well as an having an average of 12.4 years of total work experience. Overall, 85 percent of participants report having directly invested in the common stock of a company and 82 percent of participants report that they have used a company's financial statements to evaluate its performance.

In testing my hypotheses it is important to consider whether the experimental participants constitute an appropriate sample from which to make valid inferences. Elliott et al. (2007) emphasize the importance of matching a particular sample of participants to an appropriate experimental task and research question. In general, Elliott et al. (2007) suggest that experimental participants who have completed core MBA courses and are enrolled or have taken a financial statement analysis course are suitable proxies for nonprofessional investors in tasks of low integrative complexity, and are also likely suitable participants for tasks of high integrative complexity.⁶ On the other hand, Elliott et al. (2007) caution that MBA students enrolled in a first-year core accounting course perform well at acquiring information, but not at integrating relatively complex information. However, as described in the hypothesis development section (above), I posit that reporting a return measure on the face of the income statement facilitates financial statement integration. Therefore, participants with a relatively low amount of accounting training are appropriate for this study. Nevertheless, psychology researchers emphasize that, in most cases, decision makers (in general) and experimental participants (in particular) must first possess a decision strategy if they are to use it in a particular task (Larrick 2007; Camerer and Hogarth 1999).

⁶ Integrative complexity refers to two factors: (1) the number of distinct characteristics of the information set and (2) the need to develop connections between these characteristics in order to make a judgment or decision (Elliott et al. 2007).

Therefore, I restrict my experimental sample to two subsamples. First, I include a subsample of participants who reported directly investing in the stock of a company (n=58); these participants are, in fact, nonprofessional investors. Second, because I predict that displaying a return measure on the face of the income statement primes—and facilitates—a return-on-resources-employed mental representation, it is not appropriate to include participants who do not already possess such a mental representation. Because return measures are typically taught in an introductory accounting course (Libby et al. 2010), I also include a second subsample of participants who reported taking at least one accounting course (n=51). The union of these two subsamples—that is, the subsample of participants who reported investing directly in stocks *or* taking at least one accounting course (n=71)—is the sample used in my analyses.⁷

[Insert Table 1]

Research Design, Procedure, and Experimental Manipulations

To investigate my hypotheses, I use a 2×2 between-subjects factorial design with random assignment. Participants took the role of an investor who is considering investing in the common stock of a hypothetical company (Alpha Corporation). Participants began the experiment by reading a brief description of Alpha Corporation’s business and responding to a question asking how attractive they found the company’s industry on a 101-point scale (0—Not at all attractive, 100—Very attractive); as discussed in the results section, this measure, when used as a covariate to control for differing interests and preferences that participants brought to the task, facilitates more powerful statistical tests.⁸ Next, participants viewed the company’s abbreviated annual report, which contains five screens: (1) income statement, (2) balance sheet,

⁷ Statistical inferences are unchanged when including all participants.

⁸ The specific description is Alpha Corporation’s industry is: “Alpha Corporation specializes in the design, engineering, and manufacture of high-tech equipment for the agricultural industry. Our products include precision Global Positioning System (GPS) products, automated steering systems, and information management systems to improve the operating efficiency of our customers.”

(3) statement of cash flows, (4) partial footnotes, and (5) a 5-year summary table of selected information, including a return measure for *all* conditions.

First, I manipulate the reporting of a return measure on the face of the income statement (*FACE*). I operationalize the return measure with return on average assets (ROA) because it is the most general and easily understandable return measure.⁹ Half of the participants received annual reports where ROA was reported on the face of the income statement, immediately below earnings per share (*face* condition; see Exhibit 1 for an example income statement with ROA explicitly reported). The remaining participants received annual reports where ROA was not reported explicitly on the face of the income statement (*no face* condition).

I also manipulate the level of ROA (*RETURN*). To create the two *RETURN* conditions (i.e., high and low), I manipulate balance sheet items so that in the *low RETURN* conditions the firm employed a greater dollar amount of land (aggregated into property, plant and equipment) than in the *high RETURN* conditions. For *high RETURN* the return on average assets is about 25%; for *low RETURN* the return on average assets is less than 1%. The company's net income, earnings per share, name, industry, and description are exactly the same in all conditions; in addition, as discussed below, I include ROA within a 5-year summary table for *all* conditions. Within each pair of *high/low RETURN* conditions, the sole difference is whether or not ROA is reported on the face of the income statement.

The annual report has three important design considerations. First, I omit some standard items such as most footnotes and the statement of stockholders' equity because these items are not the focus of my study; these omissions are an attempt to attract more participants by reducing

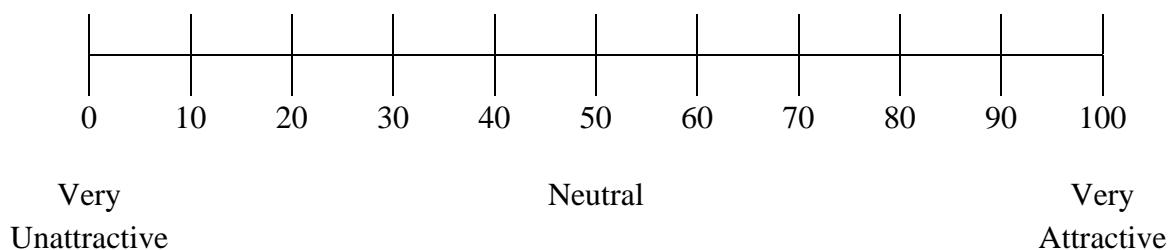
⁹ In this study I calculate ROA as net income divided by average total assets. In a review of 77 current business textbooks, Jewell and Mankin (2011) document eleven different methods to calculate "ROA." The two most common calculations were net income divided by total assets and net income divided by average total assets. I expect my results to generalize to other definitions of ROA, and to other return measures such as ROE.

the necessary time commitment. Second, all experimental conditions exhibit a consistent upward trend in both earnings and ROA because prior research indicates that investors are more likely to attend to performance information when the information exhibits a consistent trend (Koonce and Lipe 2010). Third, similar to many real-world annual reports, I include a 5-year summary of statistical data (see Exhibit 1 for an example from the experimental materials) that includes ROA for *all* experimental conditions. This design ensures my results are a function of reporting ROA *on the face of the income statement*, and also gives realism to the experiment because companies frequently present ratios in the annual report (although usually far from the basic financial statements), and investors also have access to these ratios from outside sources such as financial websites and *Value Line* reports.

Dependent Measures

After reading the annual report, participants responded to a dependent measure questionnaire. Because several dependent measures involve the recall of balance sheet information, participants were not allowed to return to the annual report after they started the dependent measure questionnaire. The first question, my dependent measure for testing H1a, follows:

How attractive do you view Alpha Corporation's stock as an investment? Please indicate your response on the scale below.



I also collected participants' responses to the following: (1) *how relevant was the balance sheet to your judgment about the company as a potential investment?*¹⁰ (0—Totally Irrelevant, 100—Very Relevant; dependent measure for testing H2a); (2) *how efficient has Alpha Corporation's management been in using its economic resources?* (0—Very Inefficient, 100—Very Efficient); (3) *how effective has Alpha Corporation's management been in earning a return on its resources?*¹¹ (0—Very Ineffective, 100—Very Effective; efficiency and effectiveness judgments are used for tests related to H1b).

In addition to participants' judgments, I also asked several recall questions to test H2b. Specifically, using slider-type responses, I asked participants to recall total assets, then a number of additional recall questions.¹² After completing the dependent measures questionnaire, participants completed a demographic and manipulation check questionnaire.

V. RESULTS

Manipulation and Randomization Checks

To assess whether participants perceived my manipulation, I asked participants to answer a question asking whether return on average assets was reported on the face of the income statement (0—Certainly no, 50—Uncertain, 100—Certainly yes); using a continuous scale allows participants to indicate degrees of uncertainty. The mean response in the *face* condition (mean=78.6) is statistically significantly greater than the mean response in the *no face* condition

¹⁰ On an exploratory basis (and as distractor questions) I also asked participants' judgments of the relevance of the income statement, the statement of cash flows, the footnotes, and the 5-year summary. There are no statistically significant differences between conditions for these questions.

¹¹ Questions 2 and 3 are based on the language in SFAC No. 8, para. OB16.

¹² During instrument development, I initially intended to ask recall responses in a fill-in-the-blank format. Instrument testing indicated that responses to fill-in-the-blank numerical recall questions would be too noisy to make meaningful inferences.

(mean=46.7), indicating the manipulation was successful (t -Value=5.48, $p < 0.0001$).¹³ A test of the equality of variances indicates that the variance in the *no face* condition is statistically larger than the *face* condition ($p = 0.01$). A robust t -test of mean differences confirms the statistically significant result ($p < 0.0001$).

I also perform randomization checks. There were no statistically significant differences between the groups for number of finance courses completed, whether the participants have ever directly invested in the common stock of a company, total work experience, gender, or age. Despite random assignment, the experimental conditions are not balanced by number of accounting courses completed, total finance and accounting work experience, or whether the participants have ever used financial statements to analyze the performance of a company. Nevertheless, none of these three variables is a significant covariate when included in the analyses. Further investigation reveals that the mean number of accounting courses and the mean total years of finance and accounting work experience is statistically significantly higher in the *no face* condition than in the *face* condition; in addition, the percentage of participants who reported ever using a company's financial statements to analyze its performance is statistically significantly higher in the *no face* condition than in the *face* condition. Taken together, these imbalances should work *against* my predictions, because greater knowledge and experience in using financial information should lead to enhanced integration of financial information (Elliott et al. 2007).

Testing H1a and H1b—Priming Mental Representations

Hypotheses 1a and 1b predict that reporting return measures on the face of the income statement primes nonprofessional investors to employ a return-on-resources-employed mental

¹³ The mean response in the *no face* condition is closer to the midpoint (indicating uncertainty) than the correct end of the scale (indicating “Certainly no”). Because no return measure was reported on the income statement in the *no face* condition, it was likely more difficult to perceive my manipulation.

representation rather than a bottom-line earnings mental representation. First, I test whether reporting ROA on the face of the income statement affects investors' judgments of the attractiveness of the company's stock as an investment (H1a). Then, I test whether reporting ROA on the face of the income statement affects investors' judgments of management's efficiency in using its economic resources and effectiveness in earning a return on its resources, and whether these two judgments mediate the relation between reporting ROA and investment attractiveness (H1b).

I use ANCOVA to test H1a. As discussed earlier, I asked for participants' ex ante beliefs about how attractive they viewed the company's industry; because participants made this judgment before the experimental manipulations, it is unrelated to the experimental manipulations.¹⁴ Further, because participants' judgments of industry attractiveness are related to their subsequent judgments about the company as a potential investment, but not related to the experimental manipulations, including these judgments as a covariate increases statistical power (Kinney 1986). Descriptive statistics and the hypothesis test are tabulated in Table 2. The statistically-significant *FACE* × *RETURN* interaction supports the hypothesis that nonprofessional investors make a greater differentiation between two companies with identical earnings, but different accounting rates of return when a return measure is reported on the face of the income statement than when it is not reported on the face of the income statement (F-ratio=5.49, p=0.022).

[Insert Table 2]

To test H1b, I first asked participants to judge how efficient management has been in using its economic resources and how effective management has been in earning a return on its resources. A Cronbach's alpha of 0.92 provides support that these "efficiency" and

¹⁴ Statistically, the homogeneity of slopes assumption is not violated.

“effectiveness” measures, at least when applied to my experimental materials, measure the same underlying construct. Therefore, I average these two scores to produce a variable named *EFFICIENT_EFFECTIVE*, and I use this overall measure in my test of H1b.

Table 3 tabulates results of an ANOVA model with *EFFICIENT_EFFECTIVE* as the dependent measure and *FACE* and *RETURN* (and an interaction term) as independent measures.¹⁵ Results indicate that the experimental manipulations did influence participants’ judgments of managerial efficiency and effectiveness (Model $F = 4.25$, $p = 0.008$). Specifically, the statistically-significant *FACE* \times *RETURN* interaction supports the hypothesis that nonprofessional investors make a greater differentiation between two companies with identical earnings, but different accounting rates of return when a return measure is reported on the face of the income statement than when it is not reported on the face of the income statement ($p = 0.002$). Therefore, *EFFICIENT_EFFECTIVE* is a potential mediator of investors’ judgments of investment attractiveness.

[Insert Table 3]

I conduct mediation analysis to test H1b (Baron and Kenny 1986). Figure 1 presents the hypothesized relations between my manipulated experimental conditions (*FACE*, *RETURN*), the hypothesized mediator (*EFFICIENT_EFFECTIVE*), and investors’ judgment of the attractiveness of the company as a potential investment (*ATTRACTIVENESS*). Investment attractiveness is mediated if: (1) manipulated variables (*FACE*, *RETURN*) are associated with the measured mediator (*EFFICIENT_EFFECTIVE*) [Path A], (2) the measured mediator (*EFFICIENT_EFFECTIVE*) is associated with the dependent variable (*ATTRACTIVENESS*) [Path B], and (3) after controlling for the mediator (*EFFICIENT_EFFECTIVE*), the previously

¹⁵ Industry attractiveness is not included as a covariate in this analysis because it is not statistically (or conceptually) related to the dependent measure.

significant relation between the manipulated variables (*FACE* and *RETURN*) [Path C] is no longer statistically significant [Path C'] (Baron and Kenny 1986).

As described above, the results tabulated in Table 3 support Path A of the mediation analysis. Table 4 indicates that the measured mediator (*EFFICIENT_EFFECTIVE*) is significantly associated with *ATTRACTIVENESS* ($p < 0.001$) [Path B]. My previous test of H1a (see Table 2) provided support for Path C; further, Table 4 indicates that when including my hypothesized mediator in the model, the *FACE* \times *RETURN* interaction is no longer statistically significant ($p = 0.579$) [Path C'].¹⁶ Overall, mediation analysis provides evidence that reporting ROA on the face of the income statement affects investors' judgments about the efficiency and effectiveness with which company management uses its resources, which, in turn, is related to investors' attractiveness judgments. This result suggests that reporting ROA on the face of the income statement has the potential to prime nonprofessional investors to use a return-on-resources-employed mental representation when analyzing a company as a potential investment.

[Insert Figure 1 and Table 4]

Testing H2a—Perception of Balance Sheet Relevance

Hypothesis 2a predicts that affects nonprofessional investors' perception of balance sheet relevance. To test H2a, I ask participants how relevant the balance sheet was to their judgment of the company as a potential investment. I conduct an analysis of variance (ANOVA) on these responses to test H2a; results do not support this hypothesis. Table 5, Panel A indicates that the mean relevance judgments for the balance sheet are 78.08 and 74.26 for the *face* and *no face* conditions, respectively. Table 5, Panel B indicates the effect of *FACE* is not statistically significant ($p=0.398$). Further, I recorded the total time (in seconds) that participants spent

¹⁶ In an unpredicted result, the main effect of *FACE* is statistically significant in Table 4 but not in Table 2, Panel B. This is because *EFFICIENT_EFFECTIVE* is highly related to the dependent measure, and therefore reduces the mean square error used in calculating the F-ratio.

viewing the balance sheet, but there were no statistically reliable differences between groups for total time spent viewing the balance sheet (untabulated).

[Insert Table 5]

Testing H2b—Balance Sheet Information Acquisition

Hypothesis 2b predicts that investors better acquire balance sheet information when a return measure is explicitly reported on the face of the income statement than when a return measure is not reported on the face of the income statement. I test H2b by asking participants a number of recall questions related to balance sheet information. Overall, results do not support H2b. Results tabulated in Table 6 do not indicate significant differences in recall of financial statement information (as measured by participants' mean absolute error of recall), except that recall of earnings per share is statistically better under the *no face* condition than the *face* condition ($p=0.05$). While this result is not predicted, it may obtain because reporting a return measure on the face of the income statement reduces investors' fixation on reported earnings per share.

[Insert Table 6]

VI. DISCUSSION

Although return measures are common in business analysis, to date no accounting research examines whether and how the inclusion of such measures in the basic financial statements affects the judgment and decision making of investors. Using an experiment, I find that reporting a return measure (e.g., return on assets) on the face of the income statement leads nonprofessional investors to differentiate between companies with high and low accounting rates of return when considering the attractiveness of a company as an investment. Further, I find that these attractiveness judgments are mediated by investors' judgments of management's

efficiency and effectiveness in earning a return on its economic resources. In additional tests, I do not find evidence that reporting a return measure on the face of the income statement leads nonprofessional investors to view the balance sheet as more relevant, or leads to better acquisition of balance sheet information.

This study makes several contributions to the literature. First, I answer the call of accounting standard setters and researchers who stress the need for *ex ante*, policy-relevant research on accounting statement presentation formats (e.g., Beresford and Johnson 1995; McDaniel and Hand 1996); my study contributes to a growing literature on the effects of earnings presentation on investor judgments and decisions (Libby and Emett 2013). Second, I extend the fairly new accounting literature on the role of mental representations from managerial accounting (Kadous and Sedor 2004) to financial accounting.

This study is subject to several limitations. First, it is possible that my experimental participants are not good proxies for nonprofessional investors. While Elliott et al. (2007) find that MBA students are suitable proxies for nonprofessional investors (especially for tasks of low integrative complexity), there is scant direct evidence that participants recruited from Amazon Mechanical Turk are also good proxies for nonprofessional investors. A second limitation is that, as discussed in Libby and Emett (2013), the experimental method used in my study addresses *individual* judgment and decision making, but cannot address capital market price creation or market efficiency.

Several avenues exist to extend the findings of this study. For example, I could examine investors' judgments when earnings and ROA exhibit different trends (e.g., when earnings increases over time but ROA decreases over time, which could make the return measure even more salient). Also, I could study how return measures could be incorporated into newly-

proposed financial statement formats. Specifically, standard setters are considering using statement of cash flows-type classifications (i.e., for operating, investing, and financing accounts) for both the income statement and balance sheet. Therefore, I could study how including return measures on, for example, operating assets (versus return on total assets) affects investors' use of a classified balance sheet, or whether the new consistent categories (across statements) reduces the need for priming of the mental representation.

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EXHIBIT 1: Example Income Statement and Five-year Summary

Panel A: Example Income Statement with Return on Assets Explicitly Displayed

Alpha Corporation

Income Statements

<i>(In thousands, except per share data)</i>	<i>Year ended December 31,</i>		
	2013	2012	2011
Net sales	\$ 25,917	\$ 24,550	\$ 23,261
Cost of sales	18,512	17,536	16,615
Gross profit	7,405	7,014	6,646
Selling, general and administrative expense	2,292	2,239	2,188
Operating income	5,112	4,775	4,458
Income tax expense	1,789	1,671	1,560
Net income	\$ 3,323	\$ 3,104	\$ 2,898
Earnings per share	\$ 3.02	\$ 2.82	\$ 2.63
Return on average assets	25.29%	24.20%	23.21%

Panel B: Example Five-year Summary

Alpha Corporation

Five-year Summary of Selected Data

<i>(In thousands, except per share data)</i>	2013	2012	2011	2010	2009
Operating Results					
Net sales	\$ 25,917	\$ 24,550	\$ 23,261	\$ 22,045	\$ 20,898
Gross profit	7,405	7,014	6,646	6,299	5,971
Accounts receivable (net)	5,112	4,775	4,458	4,161	3,882
Net income	3,323	3,104	2,898	2,705	2,523
Return on average assets	25.29%	24.20%	23.21%	22.27%	21.96%
Per-Share Data					
Earnings per share	3.02	2.82	2.63	2.46	2.29
Dividends per share	2.24	2.00	1.79	1.65	1.51
Cash Flows					
Cash provided by operating activities	3,994	3,451	2,953	2,494	2,374
Cash used for investing activities	(447)	(413)	(387)	(375)	(350)
Cash used for financing activities	(3,059)	(2,804)	(2,571)	(2,412)	(2,265)
Balance Sheet					
Total cash	884	395	161	166	459
Total assets	13,290	12,993	12,662	12,304	11,983
Total stockholders' equity	12,442	12,178	11,878	11,550	11,258

TABLE 1: Participant Demographics

Panel A: Participants' Investing Experience (n=71)

	Participant Response			Total
	Yes	No	No Response/Uncertain/Prefer Not to Say	
1. Ever directly invested in common stocks.	60	11	0	71
2. Plan to invest in common stocks in the future.	38	3	30	71
3. Ever used a company's financial statements to evaluate its performance.	58	12	1	71

Panel B: Participant Background

	Courses Taken		Years' Work Experience		Age
	Accounting	Finance	Accounting/Finance	Overall	
Minimum	0.0	0.0	0.0	1.0	18.0
Mean	2.0	1.5	2.1	12.4	32.6
Standard Deviation	2.5	1.5	4.7	9.5	10.6
Median	1.0	1.0	0.0	10.0	30.0
Maximum	12.0	6.0	22.0	44.0	70.0
Number of "No Responses"	5	7	6	2	0

Panel C: Participant Gender

	Female	Male	No Response	Total
Gender	23	47	1	71

TABLE 2 (H1a): Descriptive Statistics and Hypothesis Test**The Effect of Reporting Return Measures on the Face of the Income Statement on the Attractiveness of the Company as a Potential Investment****Panel A: Adjusted Mean (Standard Error) [number of participants]^a**

Condition	<i>Low Return</i>	<i>High Return</i>	Row Mean
<i>No Face</i>	73.39 (5.06) [16]	67.25 (4.63) [19]	70.32 (3.37) [35]
<i>Face</i>	54.03 (4.63) [19]	70.38 (4.90) [17]	62.21 (3.37) [36]
Column Mean	63.71 (3.43) [35]	68.81 (3.37) [36]	

Panel B: Overall ANCOVA^b

<i>Source of Variance</i>	<i>df</i>	SS	MS	<i>F</i>	<i>p</i>
Model	4	8722.39	2180.60	5.36	0.001
<i>FACE</i>	1	1154.15	1154.15	2.84	0.097
<i>RETURN</i>	1	458.05	458.05	1.13	0.293
<i>FACE × RETURN</i>	1	2232.97	2232.97	5.49	0.022
<i>Industry Attractiveness (Covariate)</i>	1	4351.71	4351.71	10.69	0.002
Error	66	26856.91	406.92		

^a Participants responded a question asking how attractive they viewed the company as a potential investment (0 - Not at all Attractive, 100 - Very Attractive).

^b Participants' industry attractiveness judgments are included as a covariate to increase statistical power.

TABLE 3: Descriptive Statistics and Hypothesis Test**The Effect of Reporting Return Measures on the Face of the Income Statement on the Investors' Perception of Managerial Efficiency and Effectiveness****Panel A: Mean (Standard Deviation) [number of participants]^a**

Condition	<i>Low Return</i>	<i>High Return</i>	Row Mean
<i>No Face</i>	75.84 (12.89) [16]	66.34 (22.07) [19]	70.69 (18.82) [35]
<i>Face</i>	59.45 (25.41) [19]	80.62 (12.54) [17]	69.44 (22.78) [36]
Column Mean	66.94 (21.99) [35]	73.08 (19.36) [36]	70.06 (20.78) [71]

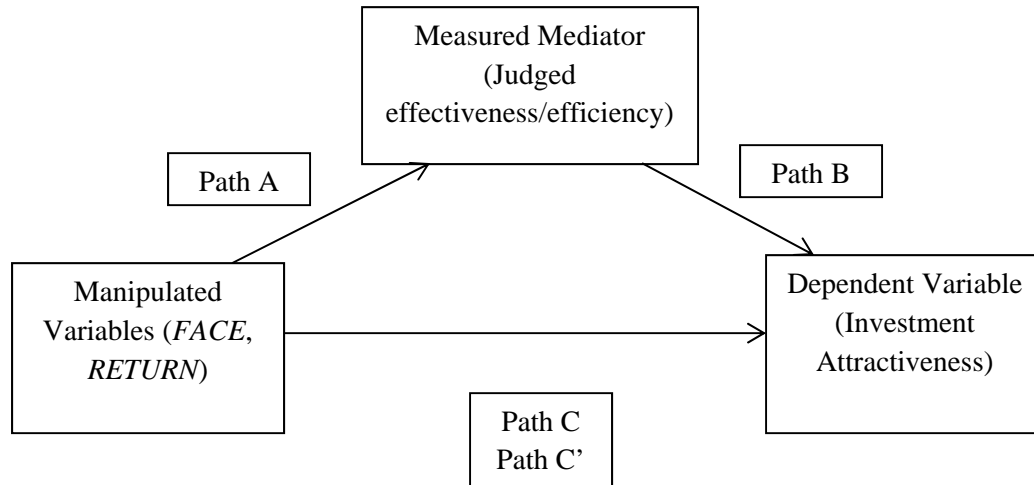
Panel B: Overall ANOVA

<i>Source of Variance</i>	<i>df</i>	SS	MS	<i>F</i>	<i>p</i>
Model	3	4832.68	1610.89	4.25	0.008
<i>FACE</i>	1	27.34	27.34	0.07	0.789
<i>RETURN</i>	1	653.43	653.43	1.72	0.194
<i>FACE</i> × <i>RETURN</i>	1	4151.91	4151.91	10.95	0.002
Error	67	25400.10	379.11		

^a Participants responded to two questions regarding management's efficiency and effectiveness in employing its economic resources on a 101-point scale (0 corresponds to very inefficient/ineffective, 100 corresponds to very efficient/effective). The dependent measure in this analysis is the average response for these two questions.

FIGURE 1 (H1b)

The Effect of Reporting a Return Measure on the Face of the Income Statement on Investors' Mental Representation ^a



^a I test whether investors' judgments of the attractiveness of a potential investment is mediated by their judgments of (1) how efficient management has been in using its economic resources and (2) how effective management has been in earning a return on its resources. Investment attractiveness is mediated if: (1) manipulated variables (*FACE* and *RETURN*) are associated with the measured mediator (*EFFICIENT_EFFECTIVE*) [Path A], (2) the measured mediator (*EFFICIENT_EFFECTIVE*) is associated with the dependent variable (*ATTRACTIVENESS*) [Path B], and (3) after controlling for the mediator (*EFFICIENT_EFFECTIVE*), the previously significant relation between the manipulated variables (*FACE* and *RETURN*) [Path C] is no longer significant [Path C'] (Baron and Kenny 1986).

TABLE 4 (H1b): Descriptive Statistics and Hypothesis Test

Analysis of the Relations between Level of ROA (*RETURN*), Reporting of ROA on the Face of the Income Statement (*FACE*), Investors' Judgments of the Attractiveness of the Company as a Potential Investment, and Investors' Judgments of Management's Efficiency in Using its Economic Resources and Effectiveness in Earning a Return on its Resources.

Overall ANCOVA^{a, b, c}

<i>Source of Variance</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Model	5	26698.08	5339.62	39.08	<.0001
<i>FACE</i>	1	1037.10	1037.10	7.59	0.008
<i>RETURN</i>	1	1.28	1.28	0.01	0.923
<i>FACE</i> × <i>RETURN</i>	1	42.44	42.44	0.31	0.579
<i>EFFICIENT_EFFECTIVE</i> (<i>Mediator</i>)	1	17975.69	17975.69	131.56	<.0001
<i>Industry Attractiveness</i> (<i>Covariate</i>)	1	1695.11	1695.11	12.41	0.001
Error	65	8881.22	136.63		

^a Participants responded a question asking how attractive they viewed the company as a potential investment (0 - Not at all Attractive, 100 - Very Attractive).

^b Participants responded to two questions regarding management's efficiency and effectiveness in employing its economic resources on a 101-point scale (0 corresponds to very inefficient/ineffective, 100 corresponds to very efficient/effective). The dependent measure in this analysis is the average response for these two questions.

^c Participants' industry attractiveness judgments are included as a control.

TABLE 5 (H2a): Descriptive Statistics and Hypothesis Test

The Effect of Reporting Return Measures on the Face of the Income Statement on the Perception of Balance Sheet Relevance

Panel A: Mean (Standard Deviation) [number of participants]^a

Condition	<i>Low Return</i>	<i>High Return</i>	Row Mean
<i>No Face</i>	78.38 (16.56) [16]	70.79 (17.60) [19]	74.26 (17.31) [35]
<i>Face</i>	79.00 (17.34) [19]	77.06 (16.41) [17]	78.08 (16.69) [36]
Column Mean	78.71 (16.74) [35]	73.75 (17.10) [36]	76.2 (16.99) [71]

Panel B: Overall ANOVA

<i>Source of Variance</i>	<i>df</i>	SS	MS	<i>F</i>	<i>p</i>
Model	3	793.39	264.46	0.91	0.439
<i>FACE</i>	1	209.77	209.77	0.72	0.398
<i>RETURN</i>	1	400.54	400.54	1.38	0.244
<i>FACE × RETURN</i>	1	140.60	140.60	0.49	0.488
Error	67	19401.85	289.58		

^a Participants responded to the following question. “How relevant was the balance sheet to your judgment about the company as a potential investment?” (0 – Totally Irrelevant, 50 – Neutral, 100 – Very Relevant).

TABLE 6 (H2b): Descriptive Statistics and Hypothesis Tests

The Effect of Reporting Return Measures on the Face of the Income Statement on Financial Information Recall^{a, b}

	Mean Absolute Error		<i>t</i> -Value	<i>p</i> ^c
	<i>Face</i>	<i>No Face</i>		
Balance Sheet Recall				
1. Total Assets (in Dollars)				
<i>Low Return (\$442.3 million)</i>	202.1	114.5	1.57	0.13
<i>High Return (\$13.2 million)</i>	104.1	118.5	-0.27	0.79
2. Goodwill Reported (0 - No*, 100 - Yes)	40.40	30.70	1.48	0.14
3. Debt Reported (0 - No*, 100 - Yes)	44.31	48.69	-0.52	0.61
4. Debt or Equity Greater (0 - Debt, 100 - Equity*)	29.30	29.40	0.01	0.99
Other Recall				
5. Earnings per Share (in Dollars, \$3.02)	0.66	0.35	2.04	0.05
6. Level of ROA (in percentage)				
<i>Low Return (0.75%)</i>	5.90	9.37	-1.47	0.15
<i>High Return (25.3%)</i>	9.59	7.74	0.61	0.55

^a Participants attempted to recall information from the financial statements. For question 1 and question 6, the correct response depended on the level of return on assets, and so the mean absolute errors are disaggregated by *RETURN*.

^b Correct responses are in parentheses and marked with an asterisk, if appropriate. Questions 1, 5, and 6 asked for specific dollar amounts or percentages. Questions 2, 3, and 4 were yes/no questions; asking for responses on a 101-point scale allowed participants to indicate uncertainty.

^c Two-tailed