
ARTICLES

Overly Optimistic? Investor Sophistication and the Role of Affective Reactions to Financial Information in Investors' Stock Price Judgments

Lisa M. Victoravich
University of Denver

This study investigates the difference in unsophisticated and sophisticated investors' affective reactions to a firm's positive earnings announcement. The study also investigates the variation in the stock price judgments of these two groups as a result of a differential reliance on the affective reaction. It contributes to the literature by providing a further understanding of the differential interpretation and reaction to financial data by investors with varying levels of knowledge and experience. In the experiment, participants were asked to review background financial information about a company, evaluate the company's earnings announcement and make stock price judgments. Results indicate that unsophisticated investors interpret a positive earnings announcement as more favorable than do sophisticated investors. The affective reaction to the earnings announcement was more influential on the stock price judgments of unsophisticated investors when compared to the stock price judgments made by sophisticated investors. This differential effect leads unsophisticated investors to make stock price judgments that exceed stock price judgments made by sophisticated investors. From a back to basics standpoint, these results suggest that investment-related knowledge and experience play a significant role in how individual investors react to and rely on basic financial information, which may be of interest to standard setters and regulators.

Keywords: Affective reaction, Earnings, Sophisticated and unsophisticated investors

Since the early 1990s, there has been a dramatic increase in individual investor participation in equity markets. According to a 1997 poll, approximately 84 million adults own stock, which is twice the amount owned in the 1980s (Foust [1997]). The ability of investors to easily trade equity holdings and reduce transaction costs by trading on the Internet has further fueled the growth of individuals investing in equity markets. In 1999, approximately 6.3 million investors traded online. The Internet also provides an abundance of information to investors, as approximately 20 million utilize the Internet to obtain investment news, quotes, and ideas (Hansell [1999]). Even though individual investors are accessing valuable in-

formation, they appear to make poor investment decisions. For example, Odean [1999] found that the return on securities sold by individual investors exceeds the return on those bought by more than 5%. This finding is known as the disposition effect such that investors "sell winners and hold on to losers." In addition, after considering transaction costs and the fact that individual investors tilt their common stock investments toward small value stocks with high market risk, individual investors underperform the market by 3.7% annually (Barber and Odean [2000]). As suggested by Odean [1999], even though investors are acquiring useful information, their annual returns and investment behavior indicates that they are somehow misinterpreting this information.

Several studies have attempted to better understand the information processing abilities and characteristics of financial report users by comparing unsophisticated decision makers to more sophisticated decision makers (see Bouwman [1984], Bouwman, Frishkoff, and Frishkoff [1987], Anderson [1988],

Experimental data available from the authors upon request.

Address correspondence to Lisa M. Victoravich, Assistant Professor, School of Accountancy, Daniels College of Business, University of Denver, 2101 S. University Blvd., Denver, CO 80208-8932. E-mail: lvictora@du.edu

Hunton and McEwen [1997]). These studies have been successful in identifying approaches taken by different levels of individuals in an investment setting. Various approaches might include more sophisticated investors' tendencies to perform a direct search for information rather than sequentially scan information as it is presented. As well, more sophisticated investors use search strategies that disconfirm versus confirm a particular hypothesis. Although it is clear that information acquisition strategies are a function of knowledge and experience, there has been a lack of research on how individuals react to and process financial information.

Recent accounting research has found that variation in information presentation can affect individual investors' interpretation of financial information (Hopkins, Houston, and Peters [2000], Maines and McDaniel [2000], Hirst and Hopkins [1998]). In fact, certain features of information presentation can influence how individuals classify information and thus affect their perceptions of its importance for judgments. In relation to how individuals interpret financial information, several studies (Bouwman [1982], Kida and Smith [1995], Kida, Smith, and Maletta [1998], Frederickson and Miller [2004]) have found that individuals experience affective reactions when interpreting financial data. An affective reaction refers to an individual's evaluative response to information that results in either a positive or negative valence in memory (Kida and Smith [1995]). Although these studies have shown that individuals experience affective reactions, it is not clear how affective reactions and reliance on these reactions vary with the level of investment experience. This lack of clarity pertains to variation in the positive (favorable) or negative (unfavorable) perception associated with quantitative information by individual investors.

Of primary interest to my study is the amount of favorableness associated with optimistic financial data, particularly earnings. An overly positive interpretation may lead investors to overvalue a firm's stock, which may result in poor investment decisions. In addition, as suggested by Frederickson and Miller [2004, p. 670], "given the quantitative nature of most accounting information, future accounting research should consider the implications of qualitative transformations of quantitative information." Thus, I propose the following research question: Do unsophisticated investors assess earnings more favorably than sophisticated investors, which in turn causes stock price judgments made by unsophisticated investors to be greater or more optimistic than those made by sophisticated investors?

In answering this research question, I conducted an experiment that directly compares the decision making of sophisticated and unsophisticated investors in an experimental design that does not manipulate information content between subjects.¹ The absence of information manipulation between subjects is considered a benefit of my study's research design because it allows for a direct and unambiguous comparison of how information is evaluated by sophisticated and unsophisticated investors. Since Frederickson and Miller

[2004] focused on manipulating the presence of pro-forma information between subjects, they did not directly and unambiguously compare the information evaluation of sophisticated and unsophisticated investors.

Two levels of individual investors—sophisticated and unsophisticated—participated in an experiment designed to examine the reaction to a positive earnings announcement and the influence of this reaction on subsequent investment judgments. Sophistication refers to an individual's stock market investment experience and knowledge acquired through this experience and other practices (e.g., business work experience, completion of finance and accounting courses, certifications etc.).

As part of the experimental task, I gave participants a firm's background information and a fiscal year-end earnings announcement. I then asked them to make an assessment of the overall favorableness of the earnings announcement on a 9-point Likert-type scale with endpoints labeled "very weak" and "very strong" in order to capture their affective reaction. Finally, I asked participants to estimate the closing price of the stock on the date of the earnings announcement. By comparing the assessments and stock price judgments of each type of investor, I can determine if unsophisticated investors interpret favorable financial data as more positive than sophisticated investors, and whether this more positive interpretation causes unsophisticated investors to make higher stock price judgments than sophisticated investors.

My study contributes to the literature in several ways. First, I plan to initiate an understanding regarding how different types of investors react to and subsequently rely on this reaction when processing positive financial information. Second, my study circumvents manipulation of information presentation (e.g., different accounting methods) to get a more basic understanding of individual investors' information processing behavior. In other words, in the absence of information presentation manipulation, there is likely to be variation in how individual investors react to and process basic financial information.

The remainder of this article is organized as follows. In the subsequent sections, I develop the theory and hypotheses. I also describe the experimental method and present the results. Finally, in the last section, I provide a discussion of the study's conclusions, related future research, and limitations.

FINANCIAL DISCLOSURES

Frederickson and Miller [2004] investigated the impact of financial disclosures on individual investors. Their study was motivated by the controversy that pro-forma earnings disclosures confuse or mislead unsophisticated investors. To investigate this controversy, Frederickson and Miller [2004] examined the effect of pro-forma earnings disclosures on sophisticated and unsophisticated investors' stock price judgments. Further, they attempted to understand how

investors cognitively process pro-forma earnings information, that is, how investors acquire, evaluate, and weight the pro-forma earnings information in conjunction with generally accepted accounting principles (GAAP) earnings. As expected, Frederickson and Miller [2004] found that unsophisticated investors made higher stock price judgments in the presence of pro-forma earnings than sophisticated investors.

In a follow-up study, Elliott [2006] found that by presenting unsophisticated investors with a press release that includes more positive pro-forma earnings prior to GAAP earnings, unsophisticated investors judged the firm's earnings performance and future earnings per share (EPS) estimates to be higher than when presented with a press release containing solely GAAP earnings or GAAP earnings followed by pro-forma earnings. To the contrary, sophisticated investors' judgments were not affected by the presence of pro-forma earnings nor the order in which the information was presented. This difference in judgments made by unsophisticated investors was mitigated by presenting them with a simultaneous reconciliation of GAAP and pro-forma earnings.

Frederickson and Miller [2004] attributed their results to unintentional reliance on pro-forma information by unsophisticated investors when making stock price judgments. In explaining her results, Elliott [2006] concluded that unsophisticated investors are affected by the presence and order of pro-forma earnings. An additional factor that is likely to explain the results in each study is the perceived favorableness of the information provided in each condition. Hence, results may at least partially be driven by the differential reaction of each type of investor to positive financial information rather than the mere presence of favorable pro-forma information. In other words, absent any type of manipulation between subjects, due to their experience and knowledge base, unsophisticated investors are likely to react differently than sophisticated investors when presented with positive financial information.

To investigate the differential reaction to positive financial information by unsophisticated and sophisticated investors, I propose an analysis that isolates the differential effects of financial information on sophisticated and unsophisticated investors. For instance, when a firm issues a positive earnings announcement, there is likely to be variation across investor type with respect to the favorableness associated with the announcement. Sophisticated investors may interpret a favorable announcement in conjunction with other financial statement cues, while unsophisticated investors place more reliance on the earnings announcement due to their inability to interpret financial statement cues. Assuming that the favorableness assessment of the announcement is an explanatory variable in a stock price judgment, this variation in assessments should lead to differences in stock price judgments by sophisticated and unsophisticated investors.

SOPHISTICATED VERSUS UNSOPHISTICATED INVESTORS

Despite the absence of a formal decision-making model among sophisticated and unsophisticated investors, accounting research has identified differences in the judgment and decision-making processes between the two groups. Drawing on expertise literature from other domains, I argue that investment practice and a broad knowledge base are key characteristics that distinguish sophisticated investors from unsophisticated investors. The decision behavior of professionals in other domains has been examined extensively suggesting individuals with experience and knowledge in a particular area have problem solving approaches, information assessments, and a general knowledge application that are fundamentally different than less sophisticated subjects (Ericsson and Charness [1994], Anderson [1988], Johnson [1983]). Individuals with experience in professional domains including medicine and auditing have exhibited a vast, well-organized knowledge base with respect to their particular domain (Bedard and Chi [1993]). This knowledge base is developed through formal education and years of practice in the domain. For instance, the time period from entering medical school to becoming a highly specialized physician is approximately 10 years (Patel, Arocha, and Kaufman [1994]). Sophisticated physicians obtain their extensive knowledge of medicine through medical school, residency training, and day-to-day practice.

Investors with years of trading experience are likely to have developed a mindset and the valuation tools necessary to make informed decisions in the equity market. To the contrary, less sophisticated investors lack a complete understanding of the underlying relationship among financial statement items, causing them to use poorly defined valuation models (Frederickson and Miller [2004], Maines and McDaniel [2000], SRI International [1987]). For instance, Frederickson and Miller [2004] found that 50% of less sophisticated investors used a heuristic valuation model based on adjusting prior-period stock prices. Further, more than 90% of the study's sophisticated investors used either an earnings-multiple or cash flow-based valuation model, while only 6% used a heuristic-based valuation model.

Similar to other professional domains, formal designations or education such as a business-related degree, certifications, and employment in a finance related field are key attributes that distinguish sophisticated investors from unsophisticated investors. From a theoretical perspective, these key attributes will affect the decision-making of investors. This process can be illustrated by the investment decision-making process model in Elliot, Hodge, Kennedy, and Pronk [2007]. The model proposes that individual investors adhere to a decision-making process consisting of the following seven steps: define the objective of the analysis, define relevant information, acquire information, evaluate and combine information with prior knowledge, use knowledge to make

judgments, make a decision based on judgments, and carry out the decision. With respect to the current study, the particular objective of the analysis is to review financial information about a particular firm and estimate the value of the firm's stock.

The information evaluation stage and the decision-making stage are of primary importance to this study and are parallel to Einhorn and Hogarth's [1981] two-step framework of information processing. This framework consists of information evaluation followed by a judgment. Information acquisition refers to individuals' selection of a particular piece of information and storage of the information in long-term memory. The evaluation stage encompasses the evaluating, weighting, and combining of the stored information which is used in making a judgment and/or decision. Each stage of information processing is contingent upon the characteristics of the individual, the task, and the context (Payne, Bettman, and Johnson [1993]).

When individual investors have an interest in purchasing the common stock of a particular company, they acquire relevant information. Despite the infinite amount of information available, investors mostly acquire information from annual reports and/or quarterly reports (this includes management discussion and analysis as well as financial statements), newspaper and journals, past stock price activity, and analyst reports (SRI International [1987]). Upon acquiring and storing company relevant information in long-term memory, individuals will evaluate, weight, and combine the information when making investment judgments and/or decisions.

Using the above discussion as a foundation, I argue that individuals with more investing experience as well as general finance and accounting knowledge, referred to as sophisticated investors, interpret and react to positive financial statement information differently than unsophisticated investors. Assuming that each investor type relies on an individual interpretation and reaction to positive financial information, there is likely to be variation in terms of subsequent judgments and/or decisions.

AFFECTIVE REACTIONS

A large portion of the information included in the three major financial statements is quantitative in nature. Research suggests that this quantitative information is frequently acquired, evaluated, and relied on by individual investors (SRI International [1987], Bouwman et al. [1987], Anderson [1988]). Attention and memory play a major role in the acquisition and analysis of this quantitative information (Birnberg and Shields [1984]). While attending to information, individuals of varying levels of experience have been shown to translate and encode quantitative information (e.g., earnings disclosures) into qualitative or evaluative assessments (Bouwman [1982], Kida and Smith [1995], Kida et al. [1998], Frederickson and Miller [2004]). The psychology literature refers to

these qualitative or evaluative assessments as affective reactions. Kida and Smith [1995, p. 588] define an affective reaction as "evaluative reactions such that the data are represented as a positive or negative valence in memory structure." Thus, individuals experience an emotional reaction to information; this reaction is encoded in a positive or negative manner and is likely to affect judgments and/or decisions. These affective reactions of quantitative information have been shown to be an explanatory factor for individuals' judgments and/or decisions (Kida and Smith [1995], Frederickson and Miller [2004]).

Of interest to my study are investors' affective reactions to a firm's annual earnings announcement. Consistent with prior studies (Kida and Smith [1995], Frederickson and Miller [2004]), individuals' affective reactions are operationalized by asking them to record their assessment of a particular piece of information on a Likert-type scale. My study focused on a firm's earnings announcement, since this particular piece of information is value relevant to sophisticated and unsophisticated investors (SRI International [1987], Anderson [1988], Nagy and Obenberger [1994], Block [1999]). Kida and Smith [1995] posit that regardless of an individual's particular experience or knowledge level in a particular domain, affective reactions are expected to play a role in judgments and/or decisions. Therefore, I expect that affective reactions to quantitative information, particularly a firm's earnings announcement, will influence the judgments of both unsophisticated and sophisticated investors. Based on this argument, I expect that affective reactions of a firm's annual earnings announcement will play a role in the stock price judgments of both unsophisticated and sophisticated investors.

H1: Affective reactions to an earnings announcement will be a positive and significant factor in the stock price judgments of both *unsophisticated* and *sophisticated* investors.

In assessing the qualitative nature of a firm's earnings announcement, it is likely that unsophisticated investors will associate more favorableness with earnings increases because they will not be able to identify relationships among the financial information. To the contrary, when interpreting earnings information, sophisticated investors are likely to rely on their prior investment knowledge and evaluate the positive aspect of quantitative data, in integration with other cues, which might include cash flows, a debt-to-equity ratio, or special one-time charges such as restructuring. Lusk [1973] investigated whether the form of the annual report influenced individuals' investment selections. Lusk [1973] compared the decision-making behavior of professional financial analysts with that of graduate business students and concluded that due to their task specific experience, analysts were better able to abstract identifiable relationships from complex financial data than were students. Similarly, Bouwman [1984] found in a financial decision-making task, more

sophisticated investors focused on potential contradictions to identify systematic relationships among data. In the same study, unsophisticated investors tended to focus on surface features, thereby failing to identify relationships among the data and integrate cues.

In addition, sophisticated individuals typically have well-developed schemata and scripts (Choo [1989], Christ [1993], Frederick [1991], Frederick, Heiman-Hoffman, and Libby [1994], Kida and Smith [1995]); consequently, more sophisticated individuals are likely to make different comparisons and affective reactions than unsophisticated individuals. A sophisticated decision maker may be more likely to arrive at affective responses by comparing numerical values to internal norms, while a novice, who does not have the benefit of a well-developed schemata, may be more likely to arrive at affective responses by drawing relationships and comparisons among the data available in the judgment task (Kida and Smith [1995]).

Drawing on the previous findings, I propose that when exposed to a positive earnings announcement, unsophisticated investors will fail to integrate various cues included in the financial statements. As a result, when asked to assess a firm's earnings announcement, they will primarily focus on the earnings announcement itself. This will lead to assessments of earnings made by unsophisticated investors to be significantly greater than sophisticated investors. Figure 1 shows the hypothesized relationship between investor type and an earnings assessment (affective reaction) to a positive earnings announcement.

H2: Affective reactions to a positive earnings announcement made by *unsophisticated* investors will be *more positive* than that made by *sophisticated* investors, given that unsophisticated investors focus on the earnings announcement while failing to integrate other consistent financial statement cues.

Kida, Smith, and Maletta [1998] and Rose [2001] demonstrated that during investment decision-making tasks, individuals encode multiple representations of numerical financial data: the numbers themselves, affective reactions of the numbers, and affective reactions of peripheral cues. Subsequent decisions made were heavily influenced by initial affective reactions of the financial data. Frederickson and Miller [2004] also showed that affective reactions of an earnings announcement were a significant explanatory factor in stock price judgments of unsophisticated investors. Although Frederickson and Miller [2004] did not specifically investigate whether affective reactions were an explanatory factor in sophisticated investors' stock price judgments, it is logical to argue that they would play a role. According to a survey by Block [1999], financial analysts consider GAAP earnings to be an important valuation tool. SRI International [1987] conducted telephone surveys on 400 professional investors in which 82.4% of the respondents rated earnings as the most important factor when analyzing a company or making an investment decision. Thus, more sophisticated investors rely on GAAP earnings; however, due to their task-specific experience and knowledge base, these investors will also consider related cues in conjunction with earnings. The superior knowledge structure exhibited by more experienced and knowledgeable individuals is likely to lead to better quality judgments and decisions (Libby and Frederick [1990], Bonner [1990]).

Drawing on these findings, I propose that affective reactions to a positive earnings announcement will have more explanatory power in the stock price judgments of unsophisticated investors than the stock price judgments of sophisticated investors.

H3: Affective reactions to a firm's earnings announcement will be a *larger* explanatory factor in the stock price

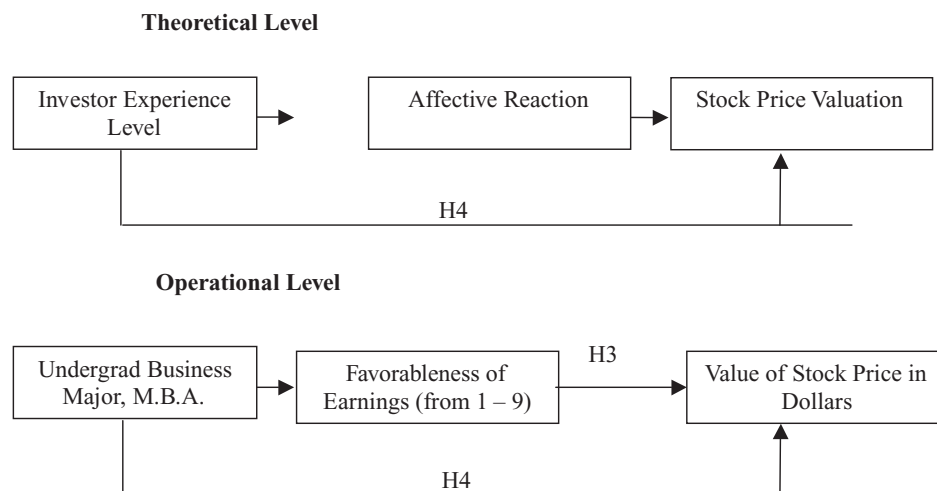


FIGURE 1 Relationship among hypotheses.

judgments of *unsophisticated* investors than *sophisticated* investors.

I expect the stock price judgments of unsophisticated investors to be significantly greater than the stock price judgments of sophisticated investors when exposed to a positive earnings announcement for two reasons. First, according to Hypothesis 2, I predicted that the magnitude of affective reactions will be larger for unsophisticated investors than sophisticated investors, *ceteris paribus*. Second, according to Hypothesis 3, I expect participants' affective reactions to be a more significant factor in the stock price judgments of unsophisticated investors than sophisticated investors, *ceteris paribus*. By integrating the predictions of Hypothesis 2 and Hypothesis 3, specifically the greater magnitude of unsophisticated investors' affective reactions, in conjunction with the expectation that affective reactions are a greater explanatory factor in their stock price judgments, I expect the stock price judgments made by unsophisticated investors to be more optimistic than those made by sophisticated investors. The relationship between these hypotheses is depicted in Figure 1.

H4: Stock price judgments made by *unsophisticated* investors will be *greater* than that made by *sophisticated* investors.

METHOD

Design, Task, and Participants

In testing my hypotheses, I employ a 1×2 (participant type) experimental design. Participants were given a case about a hypothetical company called Matrix Drug, Inc. (MDI), which is based on the actual NYSE company Schering-Plough. The case included background material and the fiscal year 2000 earnings announcement.² The earnings announcement was patterned after the company's actual earnings announcement and stated that current year earnings increased 15% compared with the prior year. Pro-forma earnings were not included in the earnings announcement because it is likely that the two groups of participants used in my study would react to and interpret them differently. Due to their unfamiliarity, unsophisticated investors are likely to view them as an extra piece of information and place more reliance on them than sophisticated investors. Therefore, by not including them, I expect to capture a "cleaner" reaction to the earnings announcement.

Following the earnings announcement was company background material that contained general information about MDI, GAAP comparative financial statements for the fiscal years 1997–1999, and monthly high and low stock prices for these fiscal years. The financial statements included the income statement, balance sheet, statement of changes in shareholders' equity, statement of cash flows, and financial statement notes.

Schering Plough (renamed MDI) was chosen as a result of the upward trend in annual earnings from 1985–2000. This enabled me to expose participants to a positive earnings announcement, which was selected for two reasons. First, it allowed for a more powerful test of my hypotheses. Second, a positive earnings announcement would be of most concern to regulators in terms of individual investors' reactions. In other words, investors are likely to react more to a positive earnings announcement than a neutral announcement, which in turn allows for a more powerful test when investigating differential reactions of each investor type.

The upward trend in Schering Plough's earnings would not be sustained in the future as indicated by the company's fiscal year 2001 earnings. In reaction to the drop in earnings and the overall performance of the firm, the stock price declined drastically. By the end of fiscal year 2004, the stock price declined approximately 54% since fiscal year-end 2000. All of the numerical information presented to participants was directly extracted from the company's actual financial statements. However, some of the background information (e.g., names of prescription drugs) was adapted to conceal the company's true identity. I chose to conceal the company's identity to avoid the possibility that participants' responses were influenced by their preconceived notions about the actual company.

When performing the experimental task, participants were asked to assume the role of an investor given \$10,000 to purchase the common stock of the company Matrix Drug Incorporated. They were also asked to assume that they own a well-diversified portfolio and investing in this company would not hinder their diversification or, in other words, the Beta of their portfolio. After reviewing the case materials, participants were asked to assess the favorableness of the company's earnings announcement on a 9-point Likert-type scale with endpoints labeled "very weak" and "very strong." This assessment was made as a means to operationalize participants' affective reactions to the announcement. They were then asked to estimate the closing price of the stock on the date of the firm's earnings announcement. Lastly, they were requested to answer follow-up questions about their responses.

The study's participants consisted of individuals with varying levels of investment experience and finance-accounting-based knowledge. I labeled my two participant groups unsophisticated and sophisticated as opposed to inexperienced and experienced for numerous reasons. Although the two groups varied in both years of investment experience as well as number of trades per year, I believed other factors contributed to the distinction between the groups. These factors exhibited by the sophisticated group included knowledge derived from general business work experience, attainment of at least one undergraduate degree (primarily in business), and completion of several masters' level business courses including but not limited to finance and accounting courses.

The first group, sophisticated investors, consisted of 41 M.B.A. students from a large state university. M.B.A. students were used due to their investment knowledge which is derived from actual investment experience, as well as exposure to several accounting and finance courses. The M.B.A. students used in my study had an average of 2 years of investing experience (ranging from 0–10 years), reported trading 7 times a year, and had completed an average of 5 accounting and finance courses. Fifteen percent of the M.B.A. students reported prior professional investment work experience and 46% prior nonprofessional investment experience. Not only did the M.B.A. students used in my study have prior investment experience and related coursework, but graduate business students tend to work with and have an understanding of the financial statements and the role of auditing. They also actively obtain financial information from sources such as the Internet and made their own investment decisions (Hodge, Kennedy, and Maines [2004]). Elliot et al. [2005] found that M.B.A. students exhibit general knowledge about financial statements and footnotes due to their classroom experiences.

The second group, unsophisticated investors, consisted of undergraduate nonaccounting business students from the same university enrolled in an introductory business course. Undergraduate students were chosen due to their low levels of investment experience and exposure to few accounting and finance courses. In fact, the undergraduate business students used in my study reported average investment experience of 0.72 years (ranging from 0–5 years), reported trading twice a year, and completed approximately 2 accounting and finance courses. Only 2% of the unsophisticated participant group reported prior professional investment work experience.

RESULTS

Affective Reactions of Earnings

Descriptive statistics about participants' affective reactions of MDI's earnings are reported in Table 2. According to Hypothesis 1, the affective reactions of a firm's earnings announcement will be a significant factor in the stock price judgments of both unsophisticated and sophisticated investors. Regression Equation 1 was used in testing Hypothesis 1.³

$$SPJ_i = \beta_0 + \beta_{1i}(TYPE_i) + \beta_{2i}(ASSESS_i) + \beta_{3i}(TYPE * ASSESS_i) + \varepsilon_i \quad (1)$$

where:

SPJ_i = Closing stock Price of MDI's common stock on date of earnings announcement made by participant i .

$TYPE_i$ = Investor type (set = 0 if sophisticated, set = 1 if unsophisticated).

$ASSESS_i$ = Assessment (1–9) of favorableness of earnings announcement made by participant i .

TABLE 1
Stock Price Judgment Regression (H1 & H3).

	Expectation	Coefficient Estimates (<i>t</i> -statistics)	p-value
Panel A			
Intercept (β_0)	+	36.00 (11.85)	0.00*
TYPE (β_1)	+	7.84 (2.07)	0.02*
ASSESS (β_2)	+	2.75 (6.22)	0.00*
TYPE* ASSESS (β_3)	+	1.34 (2.37)	0.01*
R-Square	41.3%		
Adjusted R-square	39.2%		
Panel B			
F Test: Sum of TYPE (β_2) + TYPE* ASSESS (β_3) = 0			
Source	DF	Mean Square	F-statistic p-value
Denominator	1	252.60	15.97 0.00*
Numerator	86	15.82	

*Indicates significance at $p < 0.05$ (one-tailed test).

ε_i = Random error term for stock price judgment made by participant i .

In testing the part of the hypothesis that relates to unsophisticated investors, I tested the null that the sum of the coefficients on the affective reaction (ASSESS) variable and the interaction (TYPE * ASSESS) variable were equal to zero. The results of this test (shown in Table 1, Panel B) allow for rejection of the null hypothesis that the sum of the two coefficients are equal to zero ($F = 15.97$, $p < 0.00$, one-tailed). This suggests that participants' affective reactions of an earnings announcement are a significant explanatory factor in the stock price judgments of unsophisticated investors. In testing whether the affective reaction was an explanatory factor in the stock price judgments of sophisticated investors, I examined the coefficient on the affective reaction variable (ASSESS), which was statistically significant and in the predicted direction ($t = 6.22$, $p < 0.00$, one-tailed) as shown in Table 1, Panel A. Drawing on the above tests, I am able to conclude that the affective reaction was an explanatory factor in the stock price judgments of both unsophisticated and sophisticated investors, which is consistent with the prediction made by Hypothesis 1.

Hypothesis 2 predicts that unsophisticated investors will react to and assess a firm's positive earnings announcement as more favorable when compared to sophisticated investors. To test Hypothesis 2, I examined participants' assessment of the overall favorableness of MDI's earnings announcement made on a 9-point Likert-type scale. Results (shown in Table 2) indicate that unsophisticated investors perceived

TABLE 2
Descriptive Statistics and Statistical Tests (H2).

	<i>Investor Type</i>		<i>t-tests</i>	
	Sophisticated	Unsophisticated	t-statistic	p-value
Earnings Announcement Assessments				
Mean	6.17	6.76	1.74	0.04*
Median	6.50	7.00		
Standard Deviation	1.78	1.30		
n	41	49		

*Indicates significance at $p < 0.05$ (one-tailed).

MDI's earnings announcement to be significantly more favorable (6.76 versus 6.17; $t = 1.74$; $p < 0.05$, one-tailed) than sophisticated investors, thereby supporting Hypothesis 2.

Stock Price Judgments

Hypothesis 3 states that when making a stock price judgment, unsophisticated investors' affective reactions of an earnings announcement will be a greater explanatory factor when compared to sophisticated investors. To test Hypothesis 3, I examined regression Equation 1, which was also used in testing Hypothesis 1. This regression tests for differences in the usage of the earnings announcement information across the two groups of investor type. The coefficient on TYPE is positive and significant ($t = 2.07$, $p < 0.05$, one-tailed) as shown in Table 1, Panel A. This suggests that investor type (TYPE) has a significant effect on stock price judgments net of the effect of affective reactions (ASSESS). In particular, this can be interpreted that changing from a sophisticated investor to an unsophisticated investor increases the mean stock price judgment. Although this is not a formal test of Hypothesis 3, this observation is consistent with theory underlying the particular hypothesis.

To specifically test Hypothesis 3, I examined the coefficient on the interaction between investor type (TYPE) and perceived favorableness of the earnings announcement (ASSESS). As predicted, the coefficient was positive and significant ($t = 2.37$, $p < 0.05$, one-tailed), thereby supporting Hypothesis 3. This suggests that the influence of an affective reaction on the stock price judgments of unsophisticated investors is greater than the influence on sophisticated investors.

Hypotheses 4 predicts that unsophisticated investors' stock price judgments will be significantly greater than sophisticated investors' stock price judgments given a positive earnings announcement. This difference is at least partly due to the greater amount of explanatory power of the earnings announcement in the stock price judgments of unsophisticated investors versus sophisticated investors. As shown in Table 3, the results indicate that the stock price judgments

TABLE 3
Descriptive Statistics and Statistical Tests (H4).

	<i>Investor Type</i>		<i>t-tests</i>	
	Sophisticated	Unsophisticated	t-statistic	p-value
Stock Price Judgments				
Mean	\$52.52	\$54.55	1.89	0.03*
Median	\$52.04	\$54.54		
Deviation				
Standard	5.31	4.78		
n	41	49		

*Indicates significance at $p < 0.05$ (one-tailed)

of unsophisticated investors are significantly greater than the stock price judgments of sophisticated investors (\$54.55 versus \$52.52; $t = 1.89$; $p < 0.05$, one-tailed). These results support Hypothesis 4.

DISCUSSION AND CONCLUSIONS

The overall purpose of my study was to determine whether unsophisticated investors assess earnings announcements more favorably than sophisticated investors, which in turn causes unsophisticated investors to generate more optimistic stock price judgments than sophisticated investors. I examined this issue by investigating the differences in the stock price judgments of sophisticated and unsophisticated investors in the presence of a favorable annual earnings announcement.

My study's results suggest that an affective reaction of a firm's earnings announcement is an explanatory factor in the stock price judgments of unsophisticated and sophisticated investor types. Results also indicate that unsophisticated investors assess a firm's positive earnings announcement to be more favorable than sophisticated investors. The stock price judgments of unsophisticated investors are significantly greater than those made by sophisticated investors. This difference in stock price judgments is due at least in part to the greater role of the earnings announcement assessments in stock price judgments made by unsophisticated investors.

The results of my study have several implications. In general, my study adds to the literature on the relationship among experience, knowledge, and investment judgment and decision making. It investigates differences in the judgments of these two groups in the absence of a specific presentation format and accounting method variation. In turn, this allows for a more direct examination of the basic differences among sophisticated and unsophisticated investors that lead to variation in processing financial data. The results of this study suggest that in the absence of manipulating presentation format or accounting method, there is likely to be variation in

the interpretation of financial data by investors with different levels of knowledge and experience. Specifically, the amount of favorableness associated with a positive earnings announcement and the amount of reliance placed on earnings varies with the amount of investor knowledge and experience.

This study is subject to several limitations. First, participants were only given a limited amount of information to ensure they were able to complete the task in a reasonable amount of time. Although the information contained a large portion of the information considered relevant by investors (SRI International [1987]), it was still a subset of the entirety of the information available to investors.

Second, the study used undergraduate business students and M.B.A. students as surrogates for unsophisticated and sophisticated investors, respectively. Although the financial knowledge base and amount of investment experience of undergraduate students is less than that held by M.B.A. students which is consistent with the theoretical underpinning of unsophisticated and sophisticated investors, these participants may not be the best proxies for the two groups of interest. Since several of the study's participants have limited investment experience they may not exhibit the beliefs or investment methodology of actual investors. However, in light of the heterogeneity among individual investors, employment of any one group for sophisticated or unsophisticated investors is likely to lack some amount of generalizability.

Another limitation of the study provides an opportunity for future research. In particular, the study only investigated the information processing and reliance of a favorable earnings announcement. Thus, the theory may not generalize to different tasks or accounting information. Additional experiments could address whether or not different types of investors interpret and rely on negative earnings announcements in the same manner as positive earnings announcements. Furthermore, it would be interesting to investigate the interpretation and reliance on neutral earnings announcements that just meet a particular benchmark such as prior year earnings or analysts' forecasts.

NOTES

1. Participants were presented with an actual company's positive earnings announcement. Although I only chose to examine the reaction to a positive earnings announcement, I expect my theory would hold given a negative earnings announcement.
2. To capture a company that experienced a long-term decline in value following a long period of earnings growth, I used the company's 2000 earnings announcement and labeled it as 2006 in the case materials. All other years were changed accordingly.
3. Outliers were identified using procedures described in Montgomery, Peek, and Vining [2001]. This entailed examining a plot of the Studentized residuals and pre-

dicted y values. One outlier was deleted for stock-value judgments. Deletion of this outlier did not affect statistical significance of hypothesized results.

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