

**Pro Forma Earnings Disclosures: Do Analysts and Nonprofessional
Investors React Differently?**

James R. Frederickson
Assistant Professor of Accounting
Department of Accounting
School of Business and Management
Hong Kong University of Science and Technology
Clear Water Bay, Kowloon
Hong Kong

Jeffrey S. Miller
Assistant Professor of Accounting
Department of Accountancy
Mendoza College of Business
University of Notre Dame
Notre Dame, IN 46556

September 2002

We thank David Ricchiute, Lisa Sedor, Margaret Shackell-Dowell, Dilip Soman, and Sandra Vera-Munoz for their comments. We gratefully acknowledge Frank Reilly and Rachel Karnafel for helping us to access financial analysts. Finally, we thank the financial analysts and MBA students who participated in this study.

ABSTRACT

The increase in the number of firms disclosing pro forma earnings in their earnings announcements in addition to disclosing earnings calculated according to generally accepted accounting principles (GAAP) has prompted regulators, Congress, and the financial press to voice concerns about pro forma earnings. A major concern is that pro forma earnings disclosures affect less sophisticated and more sophisticated investors differently, which could result in wealth transfers from the former to the latter. This paper presents an experiment that examines the effect of pro forma earnings disclosures on the judgments of nonprofessional (i.e., less sophisticated) investors and analysts (i.e., more sophisticated investors). Consistent with empirical evidence, the pro forma earnings in our experiment exceeded GAAP earnings. The results indicate that nonprofessional investors who see an earnings announcement that contains both pro forma and GAAP disclosures assess a higher stock price than do nonprofessionals who see an earnings announcement that contains only GAAP disclosures, whereas analysts' stock price judgments are not affected. Follow-up analyses suggest that the differential effect of the pro forma disclosure is due to analysts and nonprofessional investors using different valuation models and information processing. Analysts used well-defined valuation models, based on either earnings multiples or cash flows, while the nonprofessional investors generally used simpler, heuristic-based valuation models. The pro forma disclosure also caused nonprofessionals to perceive the earnings announcement as more favorable, which in turn caused them to assess a higher stock price. This effect appears to be due to unintentional cognitive effects, rather than nonprofessionals relying on the pro forma earnings information because they perceived it to be informative.

Key Words: *Analysts, nonprofessional investors, pro forma earnings*

Data Availability: *Contact the authors*

I. INTRODUCTION

Since 1987 there has been a dramatic increase in the number of companies disclosing pro forma earnings in their earnings announcements (Alpert 2001) in addition to earnings calculated using generally accepted accounting principles (GAAP). Pro forma earnings deviate from GAAP earnings by excluding items, typically expenses, required under GAAP. Companies currently have considerable latitude in calculating pro form earnings because there is no authoritative guidance on the items that companies can reasonably exclude. The result is large variation in the way companies calculate pro forma earnings (Alpert 2000; Robison 2001; Weil 2001b), even across companies in the same industry.

In response to the increase and variation in pro forma earnings disclosures, regulators, Congress, and the financial press have expressed concerns that such disclosures confuse or even mislead investors (see, e.g., MacDonald 1999; Alpert 2000; Burns 2001b; Dreman 2001; Henry 2001; Weil 2001a, 2001b; SEC 2001). There is particular concern that pro forma disclosures confuse less sophisticated, nonprofessional investors (Burns 2001b; Robison 2001; Weil 2001b), and some believe that pro forma disclosures can even confuse sophisticated investors (MacDonald 1999; Weil 2001b). In contrast, corporate managers argue that they disclose pro forma earnings because Wall Street demands earnings information about core operations (Alpert 2001; Weil 2001c), and they assert that investors are free to ignore pro forma disclosures (Weil 2001b). Further, analysts claim that they are sophisticated enough to rationally use both pro forma and GAAP earnings (Alpert 2000).

The concerns about pro forma disclosures have motivated several studies that examine the effect of pro forma earnings disclosures on stock prices (e.g., Bhattacharya et al. 2002; Johnson and Schwartz 2002; Lougee and Marquardt 2002). However, if the stock market is not efficient, as recent research suggests (Bernard and Thomas 1989, 1990; Hand 1990; Bloomfield 1996; Bloomfield and Libby 1996; Sloan 1996; Frankel and Lee 1998; Bloomfield et al. 1999), and

given that analysts and nonprofessional investors approach investment judgments and decisions differently (Maines and McDaniel 2000), these archival studies do not address a major concern about pro forma disclosures. Specifically, these studies do not address whether less sophisticated and more sophisticated investors react differently to pro forma disclosures, which, because of market inefficiencies, could result in wealth transfers from less sophisticated to more sophisticated traders (Bloomfield et al. 1999).

This paper provides evidence on this issue by presenting the results of an experiment that examines the effect of pro forma earnings disclosures on the judgments of nonprofessional (i.e., less sophisticated) investors and analysts (i.e., more sophisticated investors). Consistent with prior research, we used MBA students as proxies for nonprofessional investors (Hirst et al. 1995, 1999; Maines and McDaniel 2000). The earnings announcement in our experiment contained only GAAP disclosures for some participants (GAAP condition) and both pro forma and GAAP disclosures for the remaining participants (pro forma condition). Consistent with empirical evidence (Johnson and Schwartz 2002; Lougee and Marquardt 2002), the pro forma earnings in our experiment exceeded GAAP earnings. Importantly, the earnings announcement in the GAAP condition was sufficiently detailed to allow participants, if they so desired, to calculate the pro forma earnings number used in the pro forma condition. This feature ensured that information availability was constant across conditions, implying that any difference in judgments across conditions is due solely to the pro forma disclosure per se.

Our results indicate that analysts' stock price judgments are not affected by pro forma earnings disclosures while MBAs' are. Responses to our debriefing questions help explain the differential effect of pro forma disclosures. Analysts assessed stock prices using well-defined valuation models, based on either cash flows or earnings multiples. Analysts who used cash-flow valuation models focused on cash flows, which are independent of how earnings are defined. Analysts who used earnings-multiple valuation models calculated the same valuation-relevant

earnings, regardless of whether they were in the GAAP or pro forma condition. In contrast to the analysts, MBAs generally used simpler, heuristic-based valuation models. Follow-up analysis indicates that a significant explanatory variable of MBAs' stock price judgments is their perception of the favorableness of the earnings announcement, which differs significantly across the GAAP and pro forma conditions. MBAs in the pro forma condition perceived the earnings announcement to be significantly more favorable than MBAs in the GAAP condition. Thus, the pro forma disclosure caused MBAs to perceive the earnings announcement as more favorable, which in turn caused them to assess a higher stock price. Responses to other debriefing questions suggest that the effect of the pro forma disclosure on MBAs' stock price judgments was unintentional. That is, MBAs did not perceive the pro forma disclosure to be informative, nor did they perceive that the disclosure affected their stock price judgments.

Our study contributes to both practice and research. With respect to practice, our results provide evidence that concerns about pro forma earnings disclosures are valid. Market inefficiencies create opportunities for wealth transfers from less informed to more informed traders (Bloomfield et al. 1999). Although documenting specific wealth transfers is beyond the scope of our study, our finding of a differential effect of the pro forma disclosure on MBAs' and analysts' stock price judgments indicates that pro forma disclosures could result in wealth transfers from less sophisticated to more sophisticated investors. Our results, therefore, should be of interest to regulators. Additionally, the results for analysts (particularly those who use earnings-multiple valuation models) are consistent with analysts' claims that they are savvy enough not to be misled by pro forma disclosures (Alpert 2000).

With respect to research, the role of favorableness assessments on MBAs' stock price judgments provides additional evidence that individuals translate quantitative information, such as earnings information, into qualitative or evaluative assessments (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998) and that those assessments then are a significant explanatory factor

of the individuals' judgments and/or decisions (Kida and Smith 1995; Kida et al. 1998). Given the quantitative nature of most accounting information, future accounting research must consider the implications of qualitative transformations of quantitative information. Our study also contributes to our understanding of the role of task-specific knowledge and presentation format in equity investment judgments. Previous studies have examined the effect of presentation format on equity investment judgments (e.g., Hopkins 1996; Hopkins and Hirst 1998; Maines and McDaniel 2000). However, these studies (1) used only analysts or only nonprofessionals as subjects and (2) used different contexts, making it difficult to determine the reason for the studies' different results. We explicitly contrast analysts and nonprofessional investors within the same study, providing evidence on how one form of presentation format – pro forma earnings disclosures – affects these two user groups differently.

The remainder of the paper is structured as follows. Section 2 discusses pro forma earnings disclosures and reviews relevant research. We develop our hypotheses in Section 3 and describe the experiment in Section 4. The results are presented in Section 5, followed by a discussion of the results in Section 6.

II. BACKGROUND

Pro forma Earnings

Under GAAP, pro forma disclosures refer to mandated supplemental disclosures where a company restates previously reported financial statement amounts to reflect what the company would have reported had a particular event occurred earlier or been accounted for differently (Weil 2001b). For example, under Regulation S-X, the Securities and Exchange Commission (SEC) requires companies to provide pro forma information for mergers, spin-offs, and proposed security offers. Similarly, under SFAS 123, "Accounting for Stock-Based Compensation," companies that use the intrinsic method to value stock options must disclose in their footnotes pro forma earnings based on the fair value method.

Some companies, however, began constructing their own earnings measures in a belief that GAAP earnings failed to adequately measure their performance (Weil 2001b). The practice of including these company-constructed pro forma earnings in earnings announcements, in addition to GAAP earnings, became popular during the bull market of the late 1990s, particularly among technology companies (MacDonald 1999; Alpert 2000; Henry 2001; Weil 2001c). Our focus in the current paper is on these company-constructed pro forma earnings disclosures.

The FASB currently has no authority over earnings announcements, and the SEC's authority is limited (Alpert 2001; Weil 2001c). Consequently, companies have considerable latitude in deciding what GAAP items to exclude when calculating pro forma earnings for announcement. The result is a large variation in the items companies exclude from pro forma earnings (Alpert 2000; Robison 2001; Weil 2001b), even across companies in the same industry. For example, in recent pro forma disclosures, Cisco *excluded* \$2.25 billion of inventory charges while Nortel Networks Corp. *included* \$650,000 of inventory charges (Robison 2001).

Excluded items typically are expenses; so pro forma earnings generally are greater (i.e., more favorable) than GAAP earnings (Burns 2001a; Weil 2001b).¹ Lougee and Marquardt (2002) report that pro forma earnings exceed GAAP earnings for 88% of their sample of pro forma disclosure firms. In addition, the difference between pro forma earnings and GAAP earnings can be dramatic. For example, in July 2001 JDS Uniphase Corp. reported a \$50.6 billion GAAP net loss, but a \$67.4 million pro forma profit (Weil 2001b). For S&P 500 companies, GAAP earnings in a recent quarter were approximately 60% lower than pro forma earnings and the GAAP-based P/E ratio recently was approximately 37 versus a pro forma-based P/E of approximately 22 (Weil 2001b). For their sample of pro forma firms, Lougee and Marquardt (2002) find that pro forma earnings are, on average, triple GAAP earnings.

¹ Commonly excluded items include amortization of goodwill, amortization of other intangibles, merger and acquisition costs, restructuring charges, and stock-based compensation charges (Johnson and Schwartz 2002; Lougee and Marquardt 2002).

Proponents of pro forma earnings argue that pro forma disclosures help investors understand a company's continuing business by excluding items that are unusual or unimportant (Weil 2001b). They also argue that companies who announce pro forma earnings are doing so in response to demand from Wall Street for earnings information about core operations (Alpert 2001; Weil 2001c) and that investors are free to ignore pro forma disclosures (Weil 2001b). Wall Street analysts assert that they are "sufficiently savvy to make rational use of both pro forma and actual numbers" (Alpert 2000).

In contrast, critics of pro forma earnings are concerned that pro forma disclosures mislead investors, make it difficult to compare performance across companies, and ultimately affect the integrity of the stock market (Henry 2001). Lynn Turner, former chief accountant of the SEC, stated that some companies seem to use pro form earnings "to distract investors from the actual results" 2001, 102). The SEC even has issued press releases to caution investors about pro forma earnings (SEC 2001). A representative of Standard & Poor's stated that pro forma earnings have caused earnings announcements to become "harder to understand . . . and less useful" (Liesman and Weil 2001, C1). A *Business Week* editorial states, "Companies report 'pro forma' earnings that are deceptive, unwarranted, and downright dangerous to the financial system" (*Business Week*, 2001, 146). In recent congressional hearings, members of Congress expressed concern that pro forma earnings may confuse less sophisticated investors (Burns 2001b; Robison 2001). There even are concerns that pro forma earnings may confuse sophisticated investors (MacDonald 1999; Weil 2001b).

Research on Pro Forma Earnings

Concerns about pro forma earnings have motivated several archival studies that examine the association between pro forma earnings and stock prices to determine whether pro forma

earnings provide incremental information beyond GAAP earnings.² The results from these studies are mixed. Based on a sample of 433 firms who announced pro forma earnings during the three-months ending August 2000, Johnson and Schwartz (2002) find that pro forma earnings are not incrementally informative. Lougee and Marquardt (2002) examined 479 pro forma earnings announcements from 1997 - 1999. They find that while pro forma earnings are not incrementally informative overall, pro forma earnings are associated with stock prices for two types of firms. The first are firms with positive pro forma earnings but negative GAAP earnings, and the second are firms that explicitly reconcile pro forma earnings to GAAP earnings. Bhattacharya et al. (2002) examined 1,149 pro forma earnings announcements from 1998 - 2000. They report that pro forma earnings are more informative than GAAP earnings. Bhattacharya et al. also examined the effect of pro forma earnings on revisions in analysts' earnings forecasts, concluding that analysts are able to 'see through' potentially manipulative pro forma adjustments.

These archival studies provide useful insights into the effect of pro forma earnings disclosures on the marginal investor. If the stock market is efficient, investors are price protected (Beaver 1973, 1981; Foster 1986; Watts and Zimmerman 1986), implying that the market effects of pro forma disclosures documented in the archival studies apply to all market participants, regardless of their level of sophistication. Recent research, however, suggests that information inefficiencies may exist in the stock market (Bernard and Thomas 1989, 1990; Hand 1990; Bloomfield 1996; Bloomfield and Libby 1996; Sloan 1996; Frankel and Lee 1998; Bloomfield et al. 1999). Nonprofessional (i.e., less sophisticated) investors and analysts (i.e., more sophisticated investors) approach investment judgments and decisions differently (Maines and

² Several studies examine "Street earnings" (see, e.g., Abarbanell and Lehavy 2000; Bagnoli, et al. 2001; Brown and Sivakumar 2001; Bradshaw and Sloan 2002; Doyle et al. 2002). Inferring the informativeness of pro forma earnings from studies using Street earnings is problematic for at least two reasons. First, pro forma earnings and Street earnings are not the same for all companies (Johnson and Schwartz 2002). Pro forma earnings is an earnings number that a company defines and voluntarily discloses in its earnings announcement, whereas Street earnings is an earnings number that analyst tracking services, such as First Call or I/B/E/S, construct and report. Second, the companies that analyst tracking services follow generally are not representative of the companies that disclose pro forma earnings (Bhattacharya et al. 2002). Accordingly, we review only studies that use companies that disclose pro forma earnings.

McDaniel 2000), suggesting that pro forma disclosures potentially could affect less sophisticated and more sophisticated investors differently. Market inefficiency implies that differential reactions to pro forma disclosures can cause wealth transfers from less sophisticated to more sophisticated traders (Bloomfield et al. 1999). Accordingly, consistent with the concerns voiced by regulators and Congress (Robison 2001; SEC 2001), an important issue is whether nonprofessional (i.e., less sophisticated) investors and analysts (i.e., more sophisticated investors) react differently to pro forma earnings disclosures.

III. HYPOTHESIS DEVELOPMENT

Research in accounting and psychology posits that judgments and decisions occur through multi-stage information processing (Simon 1977; Hogarth 1987; Hunton and McEwen 1997; Maines and McDaniel 2000; Jacoby et al. 2001). The first stage is information acquisition, which refers to individuals being exposed to a particular bit of information and that information then being included in their long-term memory. The second stage is information evaluation, which encompasses the evaluation, weighting, and combining of information that ultimately results in a judgment.³ Thus, an accounting disclosure, such as a pro forma earnings disclosure, potentially can affect investors' judgments by affecting (1) the information that investors acquire from the disclosure and/or (2) how they evaluate the acquired information. Further, various factors, such as investor sophistication, may moderate the effect of accounting disclosures on investors' information acquisition and/or information evaluation.

Pro Forma Earnings Disclosures and Information Acquisition

Although research indicates that analysts and nonprofessionals use different information search strategies (Bouwman 1984; Hunton and McEwen 1997), we expect that both will acquire

³ Different researchers have posited different frameworks for information processing. For example, Maines and McDaniel (2000) discuss three stages of information processing (information acquisition, evaluation, and weighting), whereas Jacoby et al. (2001) discuss four stages (information acquisition, interpretation, evaluation, and integration). Because it is beyond

pro forma information contained in earnings announcements. First consider nonprofessional investors. Research suggests that nonprofessional investors “have few preconceived ideas of the importance of and relations among various financial statement items” (Maines and McDaniel 2000, 185), implying that nonprofessional investors generally lack investment expertise. This lack of expertise means that nonprofessional investors have ill-defined valuation models (SRI International 1987; Maines and McDaniel 2000), which in turn causes them to use sequential information search strategies when reading accounting disclosures (Bouwman 1982; Hunton and McEwen 1997; Maines and McDaniel 2000). A sequential information search involves attending to information in the order it is presented. We, therefore, expect that when given an earnings announcement, nonprofessionals will read through the entire announcement and thus acquire any pro forma earnings information contained in the announcement.

Now consider analysts. Analysts generally are quite knowledgeable about the importance of and relations among financial statement items. They have well-defined valuation models, which in turn allows them to use directed information search strategies to acquire the inputs necessary for their valuation models (Bouwman et al. 1987; Hunton and McEwen 1997; Maines and McDaniel 2000; Jacoby et al. 2001). With a directed information search, analysts are likely to read only that information that they perceive ex ante to be relevant for their valuation models (Maines and McDaniel 2000). Research demonstrates that earnings information is important to analysts (Bouwman et al. 1987; SRI International 1987; McEwen and Hunton 1999). Further, corporate managers claim that one reason they provide pro forma earnings is because analysts want the information (Alpert 2001; Weil 2001c). We, therefore, expect that when given an

the scope of this paper to reconcile the various frameworks, we have combined all stages of information processing subsequent to information acquisition into one stage and labeled it information evaluation.

earnings announcement, analysts will devote at least a portion of their search to finding earnings information, causing them to acquire the pro forma information.⁴

The prominence of pro forma earnings information in earnings announcements (MacDonald 1999; Weil 2001c; Plitch 2002) also increases the likelihood that both nonprofessional investors and analysts will read, and thus acquire, the information. Companies that disclose pro forma earnings typically do so in both the headline and the first few paragraphs of the announcement (Alpert 2000; Dignan 2001; Weil 2001c; Johnson and Schwartz 2002), making it difficult to avoid reading at least a portion of the pro forma information. Further, because companies use a variety of terms for pro forma earnings (MacDonald 1999; Robison 2000; Weil 2001b) and because some companies make it difficult to distinguish pro forma earnings from GAAP earnings (Weil 2001b, 2001d), it generally is necessary to read the entire earnings narrative, which typically includes both pro forma earnings and GAAP earnings.

Pro Forma Disclosures and Information Evaluation

The discussion above suggests that both nonprofessional investors and analysts will acquire pro forma earnings information contained in earnings announcements. Given acquisition of pro forma earnings information, there are at least two general ways that this information could affect investors' information evaluation. The first is that investors rely on the pro forma information because they perceive, whether correctly or incorrectly, the information to be informative. Differences in their task-specific knowledge suggest that nonprofessional investors are more apt to rely on pro forma disclosures than are analysts. Due to their lack of investment

⁴ Research documenting that analysts use directed information search strategies generally have used tasks involving financial statements. Financial statements are highly structured, making it easier for analysts to identify relevant and irrelevant sections of the financial statements. For example, each financial statement and footnote is clearly labeled, and GAAP disclosure requirements makes it relatively easy to predict the type of information that will be disclosed in each financial statement and footnote. With earnings announcements, however, there is considerable variation across companies in the type, order, and format of information presented. The implication is that it may be difficult to identify ex ante what relevant information will be included in earnings announcements and exactly where the relevant information will be located. Consequently, even when using a directed information search, analysts may have to read a substantial portion of an earnings announcement to find the desired information. This increases the likelihood of analysts acquiring pro forma information.

expertise, nonprofessionals look for cues to help them determine the relative importance of information (Maines and McDaniel 2000). With respect to pro forma disclosures, one possible cue is the mere presence of the disclosure. That is, nonprofessional investors may perceive that management would not have provided the supplemental pro forma information unless it was meaningful. A second cue is the prominence given pro forma earnings in earnings announcements (MacDonald 1999; Weil 2001c; Plitch 2002). Maines and McDaniel (2000) find that nonprofessional investors infer the importance of financial information based on the way the information is presented. One aspect of presentation is the prominence that particular information is given; nonprofessional investors are likely to perceive prominent information as being more important than less prominent information.

In contrast, analysts' knowledge about the persistence and cash-flow implications of various earnings components suggests that analysts generally are unlikely to perceive that pro forma disclosures contain incremental information about the nature of specific earnings components.⁵ Further, because analysts rely primarily on their task-specific knowledge when determining the relative importance of various financial items (Jacoby et al. 2001), the prominence given to pro forma earnings in earnings announcements is unlikely to affect analysts' perceptions about the informativeness of pro forma information.

The second way pro forma information could affect investors' information evaluation is through unintentional cognitive effects. Research on judgment and decision making shows that the mere presence of information, regardless of its relevance to the judgment or decision at hand, can have unintentional effects on human information processing (see, e.g., Tversky and Kahneman 1974; Nisbett et al. 1981). For example, numerous studies in a variety of settings have demonstrated that individuals' make different judgments when their information set

⁵ There are some situations where analysts may perceive pro forma disclosures to be informative. These include earnings announcements where (1) the GAAP earnings disclosure lacks sufficient detail for analysts to ascertain the presence and/or

includes both diagnostic and nondiagnostic information than when it includes just the diagnostic information (e.g., Nisbett et al. 1981; Hackenbrack 1992; Glover 1997; Hoffman and Patton 1997). Numerous studies also have demonstrated that individuals' judgments often reflect an anchoring effect (e.g., Tversky and Kahneman 1974), even when they know the anchor was determined randomly and have been told that the anchor has nothing to do with the requested judgment (Taffler 2002). Thus, even if investors do not perceive pro forma information to be informative, the information still could have unintentional cognitive effects on their judgments.⁶

Some have asserted, however, that many of the documented instances of unintentional cognitive effects are because the individuals lacked task-specific expertise (Fischhoff 1982; Edwards 1983; Smith and Kida 1991; Maines 1995). Based on a review of judgment and decision making research involving auditors, Smith and Kida (1991) conclude that task-specific expertise often mitigates, and can eliminate, unintentional cognitive effects. For example, experienced auditors in Joyce and Biddle (1981) exhibited an anchoring effect when making general knowledge judgments, but not when making common audit judgments (Smith and Kida 1991). Thus, due to their superior task-specific knowledge, we expect analysts to be less susceptible to any unintentional cognitive effects from pro forma earnings disclosures.

Hypothesis

We are interested in the effect of pro forma earnings disclosures on investors' stock price judgments because these judgments determine whether investors perceive a stock to be over- or under-valued, which presumably is an important factor in decisions to buy, sell, or hold the stock. Further, stock price judgments map into the dependent variables used in archival studies on pro forma earnings (e.g., Bhattacharya et al. 2002; Johnson and Schwartz 2002; Lougee and

magnitude of material, nonrecurring or non-cash earnings components and (2) the pro forma disclosure highlights a nonrecurring or non-cash earnings component with which analysts are unfamiliar.

⁶ Our primary objective in this study is to provide evidence about the effect of pro forma disclosures on analysts' and nonprofessional investors' judgments. A secondary objective is to provide evidence about whether any observed effects of pro forma disclosures are consistent with investors perceiving such disclosures to be informative or with unintentional

Marquardt 2002). The discussion above suggests that although both nonprofessional investors and analysts will acquire pro forma earnings information contained in earnings announcements, they will evaluate the information differently. Specifically, nonprofessional investors are more likely to (1) rely on the pro forma information and/or (2) be susceptible to unintentional cognitive effects from pro forma disclosures. The implication is that pro forma earnings disclosures will have a differential effect on the stock price judgments of analysts and nonprofessional investors, as stated in the following hypothesis.

H1: For companies whose pro forma earnings exceed their GAAP earnings, the disclosure of pro forma earnings will cause a greater increase in the stock price judgments of nonprofessional investors than of analysts.

III. METHOD

Task, Design, and Participants

We conducted an experiment to test our hypothesis. Participants were given a case about a hypothetical company called Advanced Imaging Technology Inc. (hereafter, AIT), which was based loosely on a technology-oriented medical supply company that trades on the New York Stock Exchange. The case included background information and AIT's fiscal year 2001 annual and fourth-quarter earnings announcement. Participants then were asked to make several investment-related judgments and answer a series of follow-up questions about their judgments and the earnings announcement.

The experiment used a 2 x 2 between-subjects design. The first variable is type of investor (nonprofessional versus analyst), and the second was type of earnings announcement (GAAP versus pro forma).

cognitive effects. It is beyond the scope of this paper to test specific theories that may cause unintentional cognitive effects. Accordingly, we do not provide a detailed discussion of specific theories that may underlie unintentional cognitive effects.

Consistent with prior financial behavioral studies, we used MBA students as proxies for nonprofessional investors (e.g., Hirst, Koonce and Simko 1995; Hirst, Koonce and Miller 1999; Maines and McDaniel 2000). A total of 46 MBA students and 34 analysts completed the experimental materials. The MBAs were from a *US World and News Report* top 35 MBA program, and the analysts were recruited from the alumni of the same university.⁷

Earnings Announcement

The earnings announcement was patterned after actual earnings announcements and contained three primary sections. The first was the headline, which stated the percentage increase in annual earnings over the prior year. The percentage increase was based on GAAP earnings in the GAAP condition versus pro forma earnings in the pro forma condition. The increases were 0.8% and 8.8%, respectively.

The second section was a narrative that stated current and comparative amounts for revenue, annual earnings, and quarterly earnings. GAAP and pro forma revenues were the same, so the same revenue amount was reported in the two announcement conditions. GAAP earnings were reported for the annual and quarterly earnings in the GAAP condition, whereas both pro forma earnings and GAAP earnings were reported for these two items in the pro forma condition. Consistent with empirical evidence (Johnson and Schwartz 2002; Lougee and Marquardt 2002), pro forma earnings exceeded GAAP earnings; pro forma EPS and GAAP EPS were \$1.68 and \$1.24, respectively. Further, consistent with terminology used by some companies who disclose pro forma earnings, we labeled GAAP earnings as “reported earnings” and pro forma earnings as “operating earnings.”⁸ The narrative in the pro forma condition also

⁷ We made a \$1,000 donation to a local charity supported by the MBA student association in return for student participation in the research project.

⁸ The term “operating income” has a strict definition under GAAP, whereas “operating earnings” has no particular meaning under GAAP (Weil 2001b). According to Weil (2001b), “operating earnings” is the most commonly used term for pro forma earnings. Other terms include “as if earnings,” “economic earnings,” “core earnings,” “cash earnings,” and “ongoing earnings” (Weil 2001b).

included a statement about the items excluded from GAAP to obtain pro forma earnings. This statement only listed the excluded items; it did not state the dollar amount of each item.

The third section of the announcement contained comparative financial statements. This section contained GAAP income statements, GAAP balance sheets, and GAAP statements of cash flow in both announcement conditions. This section in the pro forma condition also contained pro forma comparative income statements, presented before the three GAAP comparative financial statements.

Pro forma earnings excluded four items that were included as expenses in GAAP earnings. We had two objectives in selecting the four items. First, for realism, each of the items had to have been excluded by at least one company who discloses pro forma earnings. Second, to provide a fair test of our hypothesis, we wanted a mix of recurring and nonrecurring items and a mix of cash and non-cash items. The four items were:

- *Goodwill amortization.* Goodwill amortization is a non-cash expense, and it is one of the items that companies most often exclude from pro forma earnings (Bhattacharya et al. 2002; Johnson and Schwartz 2002; Lougee and Marquardt 2002).
- *Litigation settlement.* AIT's background financial statements indicated no litigation settlements in the prior five years, suggesting that the current litigation settlement was a nonrecurring item. The settlement was for cash.
- *Payroll taxes on exercised employee stock options.* These taxes are a cash operating expense, and AIT's background financial statements indicated that these taxes were recurring and fairly constant.
- *Excess bad debt expense.* Excess bad debt expense is a non-cash, operating expense directly tied to revenue already recognized. AIT's background financial statements indicated that this expense is a recurring item.

A key feature of the earnings announcements is that the GAAP information was sufficiently detailed to allow participants, if they so desired, to calculate the pro forma earnings number reported in the pro forma condition.⁹ Thus, any difference in judgments across announcement conditions can be attributed solely to the pro forma disclosure per se and not to different information availability across conditions.

Procedure

The case was administered to the MBA students in small groups. For the analysts, we first sent an introductory letter seeking their consent to participate in the study and then sent the case via overnight mail to those who agreed to participate. For both participant groups, the materials were divided into two envelopes. The cover letter stated that participants were to complete the first envelope before opening the second.

The first envelope contained background material about the company, an announcement of the company's fiscal year 2001 annual and fourth quarter earnings, and several investment-related judgments for the participants to complete. The background material included general information about AIT, GAAP annual financial statements for fiscal years 1996 through 2000, and the annual high and low stock price for fiscal years 1996 through 2001.¹⁰ Participants were free to use the background material and earnings announcement while answering the questions in the first envelope.

After reviewing the background information and earnings announcement, participants were asked to assess the fair value of AIT's stock, provide a written explanation of the basis for their judgment, and assess their confidence in their stock price judgment. We also asked participants

⁹ The dollar amounts for the litigation settlement and payroll taxes on employee stock options were reported separately on the face of the GAAP income statements. The dollar amounts for goodwill amortization and excess bad debt expense were not reported separately on the face of the GAAP income statements. These amounts were, however, reported separately as adjusting items in the operating activities section of the GAAP statements of cash flows.

¹⁰ We did not provide participants with P/E ratios because the denominator of this ratio depends on how one defines earnings, which essentially is being manipulated across the earnings announcement conditions. Participants could use the high and low stock prices provided to calculate their own P/E ratios, using whatever definition of earnings they deemed appropriate.

to make several secondary investment judgments that could potentially help explain their stock price judgments. Specifically, participants assessed (1) the fiscal 2001 earnings most useful for evaluating AIT's performance and investment potential, (2) the riskiness of an equity investment in AIT, (3) AIT's future earnings growth, and (4) the credibility of AIT's management.¹¹ Decision making research indicates that as part of information processing, individuals often convert quantitative information into qualitative or evaluative assessments (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998). To capture this dimension of information processing, we also asked participants to assess the overall favorableness of AIT's earnings announcement. After answering this question, participants were instructed to put the materials, including the background materials and earnings announcement, back into the envelope and seal it before opening the second envelope.

The second envelope contained additional debriefing questions, divided into three parts. The first part contained case specific questions designed to obtain information from participants in both conditions about their perceptions of the usefulness and clarity of AIT's earnings announcement, as well as their understanding of the announcement. This section also included a manipulation check question (discussed below). Participants in the pro forma condition had additional case-specific questions designed to (1) determine whether they had acquired the pro forma information and (2) obtain information about their perceptions of the actual pro forma disclosure in AIT's earnings announcement. The second set of questions contained broad survey-type questions designed to collect information about participants' perceptions of pro forma earnings disclosures in general. The third set of questions collected demographic information.

IV. RESULTS

¹¹ Although the effect of pro forma earnings on analysts' earnings predictions is an important issue (see Bhattacharya et al. 2002), we did not ask for these predictions to avoid drawing attention to the distinction between GAAP and pro forma earnings. That is, we did not want to create a demand effect by asking specifically for a projection of GAAP earnings or for

Manipulation Check and Participant Demographics

In the debriefing questions, participants were asked to indicate whether AIT's earnings announcement contained GAAP earnings only, pro forma earnings only, or both. Eighty-eight percent of the analysts and 89% of the MBAs answered this question correctly. These results indicate that the earnings announcement manipulation was successful.¹²

The analysts had a mean work experience of four years, with a range of one to ten years. Sixty-seven percent worked primarily as buy-side analysts and 33% as sell-side analysts. For the MBAs, 79% had previously invested in either common stock or equity mutual funds. Additionally, the MBAs had taken an average of 3.6 accounting courses and 3.7 finance courses. The high number of accounting and finance courses suggests a relatively high level of knowledge about financial statement items and issues. Because our hypothesis is predicated on knowledge differences between nonprofessional investors and analysts, the extent of the MBAs' accounting and finance coursework biases against finding support for our hypothesis.

Test of Hypothesis

Our hypothesis states that pro forma disclosures will cause a greater increase in the stock price judgments of nonprofessional investors than of analysts. Panel A of Table 1 reports descriptive statistics for stock price judgments. For MBAs, the mean stock price judgment of \$28.31 in the pro forma condition is almost 12% higher than the mean stock price judgment of \$25.36 in the GAAP condition. For analysts, the mean stock price judgment of \$25.80 in the pro forma condition is less than 1% higher than the mean stock price judgment of \$25.59 in the GAAP condition.

[Insert Table 1 here.]

a projection of pro forma earnings. Without explicitly making such a distinction, it would have been impossible to determine whether participants were predicting GAAP earnings or pro form earnings.

We tested the hypothesis using two different sets of planned comparisons. In the first set we tested the significance of the increase in the stock price judgments separately for MBAs and analysts (see Panel A of Table 1). The difference in MBAs' judgments is significant ($t = 1.62$; $p < 0.05$), whereas the difference in analysts' judgments is not ($t = 0.10$; $p < 0.46$).¹³ The second test directly tested the predicted interaction using the following contrast coding (Buckless and Ravenscroft 1990): 3 for the MBA/pro forma cell and -1 for each of the remaining cells (see Panel B of Table 1). This contrast is significant ($t = 1.75$; $p < 0.04$).¹⁴ Taken together, these results indicate that the pro forma disclosure affected MBAs' stock price judgments, but not analysts' judgments, and thus support our hypothesis.

Our finding that the pro forma disclosure affected MBAs' stock price judgments suggests that they acquired the pro forma information and that the information affected their information evaluation. The absence of an effect for the analysts indicates that either they did not acquire the pro forma information or they acquired the information but it did not affect their information evaluation. Below we first examine the acquisition of the pro forma information for both MBAs and analysts and then examine separately for MBAs and analysts the effect of the pro forma information on their information evaluation.

Pro Forma Disclosure and Information Acquisition

We expected that both MBAs and analysts in the pro forma condition would acquire the pro forma earnings information contained in the earnings announcement. Determining whether participants in the pro forma condition acquired the pro forma earnings information requires a

¹² The results reported below are qualitatively similar if the participants who answered the manipulation check question incorrectly are excluded from the analysis.

¹³ We report one-tailed (two-tailed) p-values for tests where we have a directional (non-directional) expectation.

¹⁴ The contrast weights we used for the interaction tests whether the pro forma disclosure increased MBAs' stock price judgments while not affecting analysts' judgments. Although the latter is consistent with our apriori expectation that analysts are unlikely to rely on pro forma information or be susceptible to unintentional cognitive effects from pro forma disclosures, it is impossible to completely rule out such effects apriori. If our expectations are incorrect, the contrast weights we used for the interaction provide a less powerful test of the predicted interaction (Buckless and Ravenscroft 1990). We, therefore, conducted a second contrast that tests whether the pro forma disclosure increased the stock price judgments of both MBAs and analysts, but increased the former's by a greater degree. The weights for this contrast were 1.5 for the

joint test of information acquisition and information retrieval. Participants may have acquired the information but stored it in a manner that makes it difficult for participants to retrieve the information in the way we have asked. Specifically, individuals translate quantitative information, such as earnings, into qualitative or evaluative assessments (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998), and it is easier for individuals to subsequently retrieve the qualitative assessment than it is the underlying quantitative information (Kida and Smith 1995; Kida et al. 1998).

Of the participants in the pro forma condition, 94% of the analysts (15 out of 16) and 95% of the MBAs (21 out of 22) correctly recognized that their earnings announcement contained pro forma earnings. Further, 88% of the analysts (14 out of 16) and 82% of the MBAs (18 out of 22) correctly recalled that pro forma earnings exceeded GAAP earnings. We also asked participants in the pro forma condition to recall pro forma EPS. Sixty-three percent of the analysts (10 out of 16) but only 27% of the MBAs (6 out of 22) correctly recalled that pro forma EPS was \$1.68. Taken as a whole, these results suggest that both the analysts and MBAs acquired the pro forma earnings information. However, these results also are consistent with the participants, in particular the MBAs, storing the quantitative pro forma earnings information as qualitative or evaluative assessments.

Pro Forma Disclosure and MBAs' Information Evaluation

To gain insight into how the pro forma disclosure affected MBAs' stock price judgments, we performed a two-stage analysis. As discussed earlier, the debriefing materials asked participants to make several secondary investment judgments, which are judgments of factors potentially important in explaining stock price, and thus stock price judgments. In the first stage of our two-stage analysis, we tested whether MBAs' secondary investment judgments varied

MBA/pro forma cell, 0.5 for the analyst/pro forma cell, and -1 for each of the GAAP cells. This contrast is marginally significant ($t = 1.54$; $p < 0.06$).

across announcement conditions. In the second stage, we regressed MBAs' stock price judgments on their secondary investment judgments.

Panel A of Table 2 reports MBAs' secondary investment judgments by earnings announcement condition. MBAs in the pro forma condition perceived AIT's earnings announcement to be significantly more favorable than did MBAs in the GAAP condition (4.75 versus 3.44; $t = 2.19$; $p < 0.02$). MBAs in the pro forma condition also assessed marginally significantly higher value relevant fiscal year 2001 earnings (\$1.30 versus \$1.25; $t = 1.48$; $p < 0.07$). MBAs' judgments of AIT's future earnings growth, the riskiness of an equity investment in AIT, and the credibility of AIT's management did not differ across announcement conditions (smallest $p > 0.44$).

[Insert Table 2 here.]

Panel B of Table 2 reports the results from regressing MBAs' stock price judgments on their secondary investment judgments. MBAs' stock price judgments are positively related to their assessments of the favorableness of AIT's earnings announcement ($t = 1.82$; $p < 0.04$) and the credibility of AIT's management ($t = 2.08$; $p < 0.03$). Their stock price judgments are not related to their judgments of value relevant earnings, AIT's riskiness, or AIT's future earnings growth (smallest $p > 0.18$).

Taken as a whole, the results in Table 2 suggest two items. The first is that the pro forma earnings disclosure affected MBAs' assessments of the favorableness of AIT's earnings announcement, which in turn affected their stock price judgments. Thus, the pro forma disclosure affected MBAs stock price judgments at least partially through their perceptions of the earnings announcement's favorableness.¹⁵ This result is consistent with research

¹⁵ We performed tests of mediation as outlined by Baron and Kenny (1986). The results from these tests are consistent with MBAs' favorableness assessments mediating the effect of the pro forma disclosure on their stock price judgments.

documenting that individuals translate quantitative information, such as earnings information, into qualitative or evaluative assessments (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998) and that the qualitative assessments then are a significant factor in explaining judgments and decisions (Kida and Smith 1995; Kida et al. 1998).

To gain a better understanding of the link between MBAs' favorableness perceptions and their stock price judgments, we examined MBAs written explanations of their stock price judgments and classified the explanations based on the type of valuation model used. These classifications are summarized in Panel A of Table 3. Of the 22 (24) MBAs in the pro forma (GAAP) condition, 12 (11) used a heuristic valuation approach based on adjusting prior-period stock prices, eight (eight) used an earnings-multiple valuation model, zero (one) used a cash-flow valuation model, and two (four) used some other quantitative approach (e.g., a balance sheet valuation model). Thus, 50% of the MBAs used a heuristic valuation model and 35% used an earnings-multiple valuation model.

[Insert Table 3 here.]

We conducted our two-stage analysis separately for the subset of MBAs who used a heuristic valuation approach and the subset who used an earnings-multiple valuation model. Although drawing inferences from such small samples is problematic, the results from these analyses are interesting. The results for each subset are consistent with the overall results. For the MBAs who used a heuristic valuation approach, those in the pro forma condition perceived AIT's earnings announcement to be significantly more favorable ($t = 2.93$; $p < 0.01$) and the regression results indicate that their stock price judgments are positively related to their favorableness judgments ($t = 1.97$; $p < 0.04$). These results suggest that for nonprofessionals who use heuristic valuation models, pro forma disclosures affect the heuristic adjustment process through their favorableness judgments. For the MBAs who used an earnings-multiple valuation

model, their stock price judgments also are positively related to their favorableness judgments ($t = 2.66, p < 0.02$). MBAs in the pro forma condition perceived AIT's earnings announcement to be marginally more favorable ($t = 1.31, p < 0.10$), and there is no significant difference in earnings judgments across announcement conditions ($t = 0.86, p < 0.21$). These results suggest that for nonprofessionals who use earnings-multiple valuation models, pro forma disclosures affect the multiple applied to earnings through their favorableness judgments, but do not affect their earnings judgments.

The second item that the results in Table 2 suggest is a paradox regarding MBAs' earnings judgments. The pro forma disclosure has a significant effect on MBAs' stock price judgments and a marginally significant effect on their earnings judgments, yet their stock price judgments and earnings judgments are not related, even for MBAs who used an earnings-multiple valuation model. The distribution of earnings judgments, however, provides an explanation for this apparent paradox. Thirty-seven of the 46 MBAs, or 80%, assessed earnings equal to GAAP earnings, creating very little variation in their earnings judgments and thus little chance to explain the variation in stock price judgments. A test of proportions (Agresti and Finlay 1986) indicates that the percentage of MBAs who assessed earnings equal to GAAP earnings does not differ across the earnings announcement conditions ($z = 6.87; p < 0.01$). Nineteen of the 24 MBAs, or 79%, in the GAAP condition and 18 of the 22, or 82%, in the pro forma condition assessed earnings equal to GAAP earnings. Only three MBAs adjusted GAAP earnings by more than \$0.06. These three MBAs all were in the pro forma condition and all three assessed earnings equal to the \$1.68 pro forma earnings disclosed in the earnings announcement. Thus, the earnings difference across conditions is driven by these three MBAs; pro forma earnings do not affect the earnings judgments of most MBAs.¹⁶ The lack of variation in MBAs' earnings

¹⁶ Interestingly, the pro forma disclosure significantly reduced MBAs' confidence in their earnings judgments. Based on responses from a 10-point scale ranging from 0, "Not confident at all," to 10, "Completely confident," the mean confidence judgment is 4.12 for MBAs in the pro forma condition versus 5.97 for those in the GAAP condition ($t = 2.67; p < 0.01$).

judgments explains why these judgments do not explain the variation in their stock price judgments.

A still yet unanswered question is whether the observed effect of the pro forma disclosure on MBAs' stock price judgments reflects MBAs relying on the disclosure because they perceive it to be informative, unintentional cognitive effects, or a combination of the two. To address this issue, we modified a method used by Libby and Tan (2000) and Tan et al. (2002) and suggested by Kahneman and Tversky (1996). Specifically, we asked participants in the pro forma condition to assess whether their stock price judgments would have been different had AIT's earnings announcement included only GAAP earnings. Participants made their judgments on a ten-point scale, ranging from 0, "much higher," to 5, "the same," to 10, "much lower." The mean response for MBAs was 5.15, which is not significantly different from a response of "the same" ($t = 0.95$, $p < 0.35$). Thus, MBAs did not perceive that they relied upon the pro forma disclosure when forming their stock price judgments, consistent with unintentional cognitive effects causing the observed pro forma effect.

MBAs' perceptions about the informativeness of the pro forma earnings disclosure provide additional evidence that the observed effect is due to unintentional cognitive effects. MBAs in the pro forma condition did not perceive the earnings announcement to be any more useful for determining AIT's true financial performance than did MBAs in the GAAP condition ($t = 0.69$; $p < 0.49$). More importantly, MBAs in the pro forma condition believed that GAAP earnings were significantly more useful than pro forma earnings for evaluating AIT's financial performance and investment potential ($t = 2.27$; $p < 0.04$). Participants also were asked in the context of a generic pro forma earnings announcement for a hypothetical company to assess the relative usefulness of the first earnings number the company disclosed in its announcement versus the second earnings number it disclosed. Not only did MBAs in the pro forma condition, who had seen pro forma earnings disclosed before GAAP earnings in AIT's earnings announcement,

perceive the first earnings number to be significantly less useful than MBAs in the GAAP condition ($t = 2.11$, $p < 0.04$), they also perceived the first earnings number to be significantly less useful in absolute terms. Specifically, MBAs in the pro forma condition perceived that the first earnings number a company discloses in its earnings announcement is significantly less useful than the second earnings number it discloses ($t = 2.39$, $p < 0.03$). Taken as a whole, these results suggest that not only did MBAs perceive pro forma earnings to be uninformative, they perceived pro forma earnings to be less informative than GAAP earnings.

In summary, the pro forma disclosure caused MBAs to assess a significantly higher stock price for AIT. The follow-up analysis is consistent with MBAs reading the earnings announcement and then translating the quantitative information contained in the announcement into a qualitative or evaluative assessment, which in turn affects their judgment (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998). The pro forma disclosure caused a more favorable qualitative assessment, which in turn caused MBAs in the pro forma condition to assess higher stock prices. The analysis also suggests that this process occurred via unintentional cognitive effects.

Pro Forma Disclosure and Analysts' Information Evaluation

To gain insight into why the pro forma disclosure did not affect analysts' stock price judgments, we conducted a two-stage analysis of their secondary investment judgments, similar to the analysis we conducted for the MBAs. Panel A of Table 4 reports analysts' secondary investment judgments by earnings announcement condition. Compared to the analysts in the GAAP condition, analysts' in the pro forma condition assessed significantly higher earnings (\$1.36 versus \$1.28; $t = 1.97$; $p < 0.03$) and perceived AIT's earnings announcement to be marginally significantly more favorable (4.72 versus 3.65; $t = 1.49$; $p < 0.07$). There is no significant difference in analysts' judgments of AIT's future earnings growth, riskiness of an equity investment in AIT, or management credibility (smallest $p > 0.20$).

[Insert Table 4 here.]

Panel B of Table 4 reports the results from regressing analysts' stock price judgments on their secondary investment judgments. Because three analysts did not answer one of the secondary investment questions, the regression is based on 31 analysts. The only variable related to analysts' stock price judgments is their management credibility judgment ($t = 2.77$; $p < 0.02$). Analysts' judgments of AIT's 2001 value-relevant earnings, the riskiness of an equity investment in AIT, AIT's future earnings growth, and the favorableness of AIT's earnings announcement are not significantly associated with their stock price judgments (smallest $p > 0.11$). Thus, the results in Table 4 indicate that although the pro forma disclosure affected some secondary investment judgments (e.g., analysts' stock price judgments), these judgments are not related to analysts' stock price judgments.

This result indicates a paradox similar to the MBAs' earnings paradox: the pro forma disclosure significantly increased analysts' earnings judgments yet their earnings judgments and stock price judgments are not related. To explain this apparent paradox, first consider the valuation models that analysts used. Panel B of Table 3 summarizes the classification of analysts' valuation models based on their written explanations of their stock price judgments. Of the 16 (18) analysts in the pro forma (GAAP) condition, eight (seven) used an earnings-multiple valuation model, eight (eight) used a cash-flow valuation model, zero (two) used a heuristic valuation approach based on adjusting prior stock prices, and zero (one) used some other quantitative approach. Thus, approximately 44% of the analysts used an earnings-multiple valuation model, approximately 47% used a cash-flow valuation model, and approximately 6% used a heuristic valuation model. The last percentage contrasts sharply with the MBAs, of which 50% used a heuristic valuation model.

Additional analysis indicates that for the 15 analysts who used an earnings-multiple valuation model, ten adjusted income for the same items, and these ten analysts were split evenly between the GAAP and pro forma conditions. There is no significant difference across the GAAP and pro forma conditions in the earnings judgments of these 15 analysts ($t = 0.29$, $p < 0.78$). Given the lack of variation in their earnings judgments, it is not surprising that the regression indicates that their earnings judgments do not explain the variation in their stock price judgments ($t = 0.14$, $p < 0.45$).

In contrast, there is a marginally significant difference across the GAAP and pro forma conditions in the earnings judgments of the 16 analysts who used a cash-flow valuation model (\$1.30 versus \$1.46; $t = 1.88$, $p < 0.07$). However, regression results indicate that their stock price judgments are not associated with their earnings judgments ($t = 0.09$, $p < 0.46$). The latter result is reasonable because, by definition, stock price judgments based on cash-flow valuation models should be independent of how earnings are defined. The finding of a marginally significant earnings difference across announcement conditions, however, is surprising. An examination of the distribution of earnings judgments reveals that this earnings effect is driven by three analysts in the pro forma condition whose earnings judgments equaled the \$1.68 pro forma earnings number that the company provided.

In summary, the pro forma disclosure did not affect analysts' stock price judgments because of their knowledge and well-defined valuation models. Analysts who used earnings-multiple valuation models focused on value relevant earnings and the pro forma disclosure did not affect their judgments of value relevant earnings. Analysts who used cash-flow valuation models focused on cash flows, which are independent of how earnings are defined. Thus, regardless of the valuation model used, analysts saw through the pro forma disclosure and focused on the information relevant for their valuation model.

VI. DISCUSSION

In response to concerns voiced by regulators, Congress, and the financial press (MacDonald 1999; Alpert 2000; Burns 2001b; Henry 2001; Weil 2001a, 2001b; SEC 2001), several studies have examined the association between pro forma earnings and stock prices (e.g., Bhattacharya et al. 2002; Johnson and Schwartz 2002; Lougee and Marquardt 2002). Our paper extends these studies by presenting an experiment designed to provide evidence about whether nonprofessional (i.e., less sophisticated) investors and analysts (i.e., more sophisticated investors) react differently to pro forma earnings disclosures. In the experiment, participants made several investment-related judgments based on a case that included an earnings announcement for a hypothetical company. The earnings announcement contained only GAAP disclosures for some participants (GAAP condition) and both pro forma and GAAP disclosures for the remaining participants (pro forma condition). Consistent with empirical evidence (Johnson and Schwartz 2002; Lougee and Marquardt 2002), pro forma earnings exceeded GAAP earnings.

Our results show that analysts' stock price judgments did not differ across the two conditions, whereas MBAs, who proxied for nonprofessional investors (Hirst et al. 1995, 1999; Maines and McDaniel 2000), in the pro forma condition assessed significantly higher stock prices than did MBAs in the GAAP condition. Follow-up analyses provide insight into the differential effect of the pro forma disclosure. Analysts assessed stock prices using well-defined valuation models, based on either earnings multiples or cash flows, while MBAs generally used simpler, heuristic-based valuation models. For analysts who used earnings-multiple valuation models, the pro forma disclosure did not affect their judgments about the company's valuation-relevant earnings. That is, analysts adjusted for the same items regardless of whether they were in the GAAP or pro forma condition. Cash flows are independent of how earnings are defined, explaining why the pro forma earnings disclosure did not affect the stock price judgments of analysts who used cash-flow valuation models. For MBAs, those in the pro forma condition

perceived the earnings announcement to be significantly more favorable than MBAs in the GAAP condition, and there is a significant positive association between MBAs' favorableness assessments and their stock price judgments. Thus, the pro forma disclosure caused MBAs to perceive the earnings announcement as more favorable, which in turn caused them to assess a higher stock price. Follow-up analyses suggest that this effect is due to unintentional cognitive effects, rather than MBAs relying on the pro forma earnings information because they perceived it to be informative.

Our findings have several implications for practice and research. First, our results suggest that concerns about the effects of pro forma disclosures are valid. Market inefficiencies create opportunities for wealth transfers from less informed to more informed traders (Bloomfield et al. 1999). Our finding that nonprofessional investors assessed higher stock prices in response to the pro forma disclosure while analysts did not indicates that pro forma disclosures could result in wealth transfers from less sophisticated to more sophisticated investors. Our results, therefore, have implications for regulators.

Second, our finding that the pro forma disclosure affected MBAs' stock price judgments through their favorableness assessments has implications for future judgment and decision making research in accounting. This finding provides additional evidence that individuals translate quantitative information into qualitative or evaluative assessments (Bouwman 1983; Kida and Smith 1995; Kida et al. 1998) and that those assessments then are a significant explanatory factor of the individuals' judgments and/or decisions (Kida and Smith 1995; Kida et al. 1998). Given that most accounting information is quantitative, future accounting research must consider the ramifications of qualitative transformations of quantitative information. Further, research is needed to understand the conditions under which individuals will or will not convert quantitative information into qualitative or evaluative assessments. Our results suggest that at least in our judgment context, expertise may mitigate the effect of such transformations on

the ultimate judgment or decision. That is, analysts' stock price judgments were not affected by their favorableness assessments, most likely because they used well-developed valuation models that use quantitative inputs.

Finally, our differential results for analysts and MBAs highlight the need for future research to consider different classes of investors. Although there have been attempts to contrast the information processing of analysts and nonprofessional investors (e.g., Maines and McDaniel 2000), these attempts have been based on studies that (1) used only analysts or only nonprofessionals as subjects and (2) used different contexts. To the best of our knowledge, our study is the first to explicitly contrast analysts and nonprofessional investors in the same study.

Our experiment is subject to several limitations. For example, our experimental materials contained only a subset of the information that investors typically would have available when making investment judgments. Further, although MBAs are less sophisticated than analysts about financial statement items and issues, MBAs are more knowledgeable and sophisticated than many nonprofessional investors. The implication is that our results most likely understate the differential effect of pro forma earnings disclosures on analysts and nonprofessional investors.

Other limitations of our study provide interesting opportunities for future research. For example, our results may not generalize to all types of pro forma earnings disclosures. We only examined a situation where pro forma earnings exceeded GAAP earnings. Future research could address situations where pro forma earnings were less than GAAP earnings. We also purposely created a pro forma earnings disclosure that had low transparency. For example, we used a term for pro forma earnings that is very similar to the term defined under GAAP for a company's on-going, central operations, we did not include the dollar amount of each excluded item in the narrative section of the announcement, and we did not reconcile pro forma earnings to GAAP earnings. Future research could examine the effect of pro forma earnings transparency on

investors' judgments. Given Lougee and Marquardt's (2002) finding that pro forma disclosures have incremental value relevance over GAAP earnings for companies that explicitly reconcile their pro forma earnings to GAAP earnings, such reconciliations are a particularly interesting aspect of transparency.

Finally, we did not design our study to tease out the incremental effect of each item that was excluded to calculate pro forma earnings. Future research could examine whether the nature of the excluded items affects investors' judgments. For example, do investors react differently to companies that are conservative versus aggressive in the nature of items they exclude? Similarly, do investors react differently when companies exclude expense items than when they exclude revenue items?

Table 1
Stock Price Judgments and Associated Statistical Tests

Panel A: Descriptive Statistics and Separate Planned Comparisons				
Investor Type	Announcement Condition		Planned Comparisons	
	GAAP	Pro Forma	t-statistic	p-value
MBAs				
Mean	\$25.36	\$28.31	1.62	0.05
Standard deviation	6.01	6.47		
N	24	22		
Analysts				
Mean	\$25.59	\$25.80	0.10	0.46
Standard deviation	5.33	6.89		
N	18	16		
Panel B: Planned Contrast for Predicted Interaction				
	Cell Weights		t-statistic	p-value
Pro forma/MBA	3		1.75	0.04
Pro forma/Analyst	-1			
GAAP/MBA	-1			
GAAP/Analyst	-1			

Table 2
MBA's Secondary Investment Judgments and
Regression of Stock Price Judgments on Secondary Investment Judgments

Panel A: Mean (Standard Deviation) of MBAs' Secondary Investment Judgments					
Judgment	Expectation	Announcement Condition		t-statistic	p-value
		GAAP	Pro Forma		
EARNINGS	GAAP < Pro forma	\$1.25 (0.02)	\$1.30 (0.15)	1.53	0.06
RISK	?	4.94 (1.61)	4.92 (1.65)	-0.50	0.96
EARNGROWTH	GAAP < Pro forma	5.81 (1.59)	5.88 (1.56)	0.14	0.44
CREDIBILITY	?	5.70 (1.47)	5.58 (1.60)	-0.26	0.80
FAVORABLENESS	GAAP < Pro forma	5.25 (2.16)	6.56 (1.53)	2.17	0.02

Panel B: Regression of Stock Price Judgments on Secondary Investment Judgments					
PRICE = $\beta_0 + \beta_1$ EARNINGS + β_2 RISK + β_3 EARNGROWTH + β_4 CREDIBILITY + β_5 FAVORABLENESS					
Variable	Expectation	Coefficient	t-statistic	p-value	
Intercept	?	19.04	1.68	0.10	
EARNINGS	+	0.68	0.08	0.47	
RISK	-	-0.05	-0.09	0.47	
EARNGROWTH	+	0.60	0.93	0.18	
CREDIBILITY	+	1.28	2.08	0.02	
FAVORABLENESS	+	0.88	-1.82	0.03	
N	46				
Adjusted R-Square	0.24				

EARNINGS	Response to: "The fiscal 2001 earnings per share (EPS) number that I believe is most useful for evaluating the financial performance and investment potential of Advanced Imaging Technologies Inc. is _____."
RISK	Response to: "In the context of a well-diversified portfolio, I believe that an investment in Advanced Imaging Technologies, Inc. is a _____ investment." (scale is from 0, "very low risk," to 10, "very high risk.")
EARNGROWTH	Response to: "I believe Advanced Imaging Technologies, Inc.'s future earnings growth is ." (scale is from 0, "very poor," to 10, "very good.")
CREDIBILITY	Response to: "I believe Advanced Imaging Technologies, Inc.'s management is ." (scale is from 0, "not at all credible," to 10, "very credible.")
FAVORABLENESS	Response to: "Advanced Imaging Technologies, Inc.'s earnings announcement is ." (scale is from 0, "unfavorable," to 10, "favorable.")

Table 3
Classification of Valuation Models

Panel A: Classification of MBAs' Valuation Models			
Valuation Model	Announcement Condition		
	GAAP	Pro Forma	Overall
Cash Flow	1	0	1
Earnings Multiple	8	8	16
Heuristic Adjustment to Past Stock Prices	11	12	23
Other	<u>4</u>	<u>2</u>	<u>6</u>
Total	<u>24</u>	<u>22</u>	<u>46</u>

Panel B: Classification of Analysts' Valuation Models			
Valuation Model	Announcement Condition		
	GAAP	Pro Forma	Overall
Cash Flow	8	8	16
Earnings Multiple	7	8	15
Heuristic Adjustment to Past Stock Prices	2	0	2
Other	<u>1</u>	<u>0</u>	<u>1</u>
Total	<u>18</u>	<u>16</u>	<u>34</u>

Table 4
Analysts' Secondary Investment Judgments and
Regression of Stock Price Judgments on Secondary Investment Judgments

Panel A: Mean (Standard Deviation) of Analysts' Secondary Investment Judgments					
Judgment	Expectation	Announcement Condition		t-statistic	p-value
		GAAP	Pro Forma		
EARNINGS	GAAP ≤ Pro forma	1.28 (0.08)	1.36 (0.17)	1.97	0.03
RISK	?	5.06 (1.60)	4.91 (2.18)	-0.25	0.80
EARNGROWTH	GAAP ≤ Pro forma	4.74 (1.77)	5.22 (1.56)	0.86	0.20
CREDIBILITY	?	4.91 (1.77)	4.93 (1.44)	0.05	0.96
FAVORABLENESS	GAAP ≤ Pro forma	3.65 (2.23)	4.72 (2.34)	1.49	0.07

Panel B: Regression of Stock Price Judgments on Secondary Investment Judgments					
PRICE = $\beta_0 + \beta_1$ EARNINGS + β_2 RISK + β_3 EARNGROWTH + β_4 CREDIBILITY + β_5 FAVORABLENESS					
Variable	Expectation	Coefficient	t-statistic	p-value	
Intercept	?	23.28	1.84	0.08	
EARNINGS	+	-0.70	-0.10	0.92	
RISK	-	0.02	0.05	0.96	
EARNGROWTH	+	0.02	0.03	0.49	
CREDIBILITY	+	1.53	2.27	0.02	
FAVORABLENESS	+	0.68	1.25	0.11	
N	31				
Adjusted R-Square	0.20				

See Table 2 for definition of variables.

REFERENCES

- Abarbanell, J. and R. Lehavy. 2000. Biased forecasts or biased earnings? The role of earnings management in explaining apparent optimism and inefficiency in analysts' earnings forecasts. Working paper. University of California-Berkley.
- Agresti, A. and B. Finlay. 1986. *Statistical Methods for the Social Sciences*. 2nd Edition. San Francisco, CA: Macmillan.
- Alpert, B. 2001. Maybe pro-forma earnings aren't so bad after all. *Barron's* (August 6): 30.
- Alpert, B. 2000. The numbers game: Reporting of pro forma earnings is rising and so is the debate about it. *Barron's* (September 11): 22 - 24.
- Bagnoli, M. R. Eskew, and S. G. Watts. 2001. Earnings surprises when firms choose what matters. Working Paper, Purdue University.
- Baron, R. M. and D. A. Kenny. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51: 1,173 - 1,182.
- Bhattacharya, N., E. L. Black, T. E. Christensen, and C. R. Larson. 2002. Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings. Working Paper, University of Utah.
- Beaver, W. 1973. What should be the FASB's objectives? *Journal of Accountancy* 136: (August): 66 - 71.
- Beaver, W. 1981. *Financial Reporting: An Accounting Revolution*. Englewood Cliffs, NJ: Prentice Hall.
- Bernard, V. and J. Thomas 1990. Evidence that stock prices do not fully reflect the implications of current earnings for future earnings. *Journal of Accounting and Economics* 13 (March): 305 - 340.
- Bernard, V. and J. Thomas. 1989. Post-earnings-announcement drift: Delayed price response to risk premium? *Journal of Accounting Research* 27 (Supplement): 1 - 36.
- Bloomfield, R. R. 1996. The interdependence of reporting discretion and information efficiency in laboratory markets. *The Accounting Review* 71 (October): 493 - 511.
- Bloomfield, R. R. and R. Libby. 1996. Market reactions to differentially available information in the laboratory. *Journal of Accounting Research* 34 (Autumn): 183 - 207.
- Bloomfield, R. R. Libby, and M. W. Nelson. 1999. Confidence and the welfare of less-informed investors. *Accounting, Organizations and Society* 24 (November): 623 - 647.
- Bouwman, M. 1984. Expert vs novice decision making in accounting: A summary. *Accounting, Organizations and Society* 9 (No. 3/4): 325 - 327.

- Bouwman, M. 1983. Human diagnostic reasoning by computer: An illustration from financial analysis. *Management Science* 29 (June): 653 - 672.
- Bouwman, M. 1982. The use of accounting information: expert vs. novice behavior. In *Decision Making: An Interdisciplinary Inquiry*, edited by G. Ungson and D. Braunstein: 134-167. Boston, MA: Kent.
- Bouwman, M., P. Frishkoff, and P. Frishkoff. 1987. How do financial analysts make decisions? A process model of the investment screening decisions. *Accounting, Organizations and Society* 12 (No. 1): 1-30.
- Bradshaw, M., M. and R. G. Sloan. 2002. GAAP versus the street: An empirical assessment of two alternative definitions of earnings. *Journal of Accounting Research* 40 (March): 41 - 66.
- Brown, L. D. and K. Sivakumar. 2001. Comparing the quality of three earnings measures. Working paper, Georgia State University.
- Buckless, R. A. and S. P. Ravenscroft. 1990. Contrast coding: A refinement of ANOVA in behavioral analysis. *The Accounting Review* 65 (October): 933 - 945.
- Burns, J. 2001a. SEC official reveals probe into 'pro forma' earnings cases. *Dow Jones Business News* (June 18).
- Burns, J. 2001b. Lawmakers take closer look at pro forma results. *Dow Jones Newswires* (July 31).
- Business Week. 2001. Time to cut the accounting shenanigans. *Business Week* (May 14): 146.
- Dignan, L. 2001. Imperfect pro forma, or how to skew the truth without lying. *CNET Investor On-line* (April 27).
- Doyle, J. T., R. J. Lundholm and M. T. Soliman. 2002. The predictive value of expenses excluded from 'pro forma' earnings. Working paper, University of Michigan.
- Dreman, D. 2001. Fantasy earnings. *Forbes* (October 1): 134.
- Edwards, W. 1983. Human cognitive capabilities, representativeness, and ground rules for research. In *Advances in Psychology: Analyzing and Aiding Decision Processes*, edited by P. C. Humphreys, O. Svenson, and A. Vari: 507 - 513.
- Fischhoff, B. 1982. Debiasing. In *Judgment Under Uncertainty: Heuristics and Biases*, edited by D. Kahneman, P. Slovic, and A. Tversky: 422 - 444. New York: Cambridge University Press.
- Foster, G. 1986. *Financial Statement Analysis*, 2nd edition. Englewood Cliffs, NJ: Prentice-Hall.
- Frankel, R and C. M. C Lee. 1998. Accounting valuation, market expectation and cross sectional returns. *Journal of Accounting and Economics* 25 (June): 283 - 319.

- Glover, S. M. 1997. The influence of time pressure and accountability on auditor's processing of nondiagnostic information. *Journal of Accounting Research* 35 (Autumn): 213 - 226.
- Hackenbrack, R. E. 1992. Implications of seemingly irrelevant evidence in audit judgments. *Journal of Accounting Research* (Spring): 126 - 136.
- Hand, J. R. 1990. A test of the extended functional fixation hypothesis. *The Accounting Review* 65 (October): 740 - 763.
- Henry D. 2001. The numbers game. *Business Week* (May 14): 100 - 110.
- Hirst, D. E. and P. E. Hopkins. 1998. Comprehensive income and reporting and analysts' valuation judgments. *Journal of Accounting Research* 36 (Supplement): 47 - 75.
- Hirst, D. E., L. Koonce, and J. S. Miller. 1999. The joint effect of management's forecast accuracy and the form of its financial forecasts on investor judgment. *Journal of Accounting Research* 37 (Supplement): 101-123.
- Hirst, D. E., L. Koonce, and P. J. Simko. 1995. Investor reactions to financial analysts' research reports. *Journal of Accounting Research* 33 (Autumn): 335-351.
- Hoffman, V. B. and J. M. Patton. 1997. Accountability, the dilution effect, and conservatism in auditor's fraud judgments. *Journal of Accounting Research* 35 (Autumn): 227 - 237.
- Hogarth, R. 1987. *Judgment and Choice*. Chicester, England: John Wiley & Sons.
- Hopkins, P. E. 1996. The effect of financial statement classification of hybrid financial instruments on financial analysts' stock price judgments. *Journal of Accounting Research* 34 (Supplement): 33 - 50.
- Hunton, J. E. and R. A. McEwen. 1997. An assessment of the relation between analysts' earnings forecast accuracy, motivational incentives, and cognitive information search strategy. *The Accounting Review* 72 (October): 497-516.
- Jacoby, J. M. Morrin, G. Johar, Z. Gurhan, A. Kuss, and D. Mazursky. 2001. Training novice investors to become more expert: The role of information accessing strategy. *The Journal of Psychology and Financial Markets* 2: 69 - 79.
- Johnson, W. B. and W. C. Schwartz. 2002. Are investors misled by 'pro forma' earnings? Working paper, University of Iowa.
- Joyce, E. and G. Biddle. 1981. Anchoring and adjustment in probabilistic inference in auditing. *Journal of Accounting Research* 19 (Spring): 120 - 145.
- Kahneman, D. and A. Tversky. 1996. On the reality of cognitive illusions. *Psychological Review* 103 (July): 582 - 591.
- Kida, T. and J. F. Smith. 1995. The encoding and retrieval of numerical data for decision making in accounting contexts: Model development. *Accounting, Organizations and Society* 20 (No. 7/8): 585 - 610.

- Kida, T., J. F. Smith, and M. Maletta. 1998. The effects of encoded memory traces for numerical data on accounting decision making. *Accounting, Organizations and Society* 23 (No. 5/6): 451 - 466.
- Libby, R. and H. Tan. 1999. Analysts' reactions to warnings of negative earnings surprises. *Journal of Accounting Research* 37 (Autumn): 415 - 436.
- Liesman, S. and J. Weil. 2001. S&P to wade into pro forma earnings mess. *The Wall Street Journal* (November 7): C1.
- Lougee, B. A. and C. A. Marquardt. 2002. Earnings quality and strategic disclosure: An empirical examination of 'pro forma' earnings. Working paper, New York University.
- MacDonald, E. 1999. More varied profit reports by firms confuse investors. *The Wall Street Journal* (August 24): C1.
- Maines, L. A. 1995. Judgment and decision-making research in financial accounting. In *Judgment and Decision-Making Research in Accounting and Auditing*, edited by R. H. Ashton and A. H. Ashton, New York: Cambridge University Press: 76 - 101.
- Maines, L. A. and L. S. McDaniel. 2000. Effects of comprehensive-income characteristics on nonprofessional investors' judgments: The role of financial-statement presentation format. *The Accounting Review* 75 (April): 179 - 207.
- McEwen, R. A. and J. E. Hunton. 1999. Is analyst forecast accuracy associated with accounting information use? *Accounting Horizons* 132 (March): 1 - 16.
- Nisbett, R. E., H. Zukier, and R. E. Lemley. 1981. The dilution effect: Nondiagnostic information weakens the implications of diagnostic information. *Cognitive Psychology* 13 (April): 248 - 277.
- Plitch, P. 2002. Firms in many sectors give earnings a pro forma makeover, survey finds. *The Wall Street Journal* (January 22): C1.
- Robison, P. 2001 How much do companies really earn? *Bloomberg.com* (August 3).
- SRI International. 1987. *Investor Information Needs and the Annual Report*. Morristown, NJ: Financial Executives research Foundation.
- Securities and Exchange Commission (SEC). 2001. Cautionary advice regarding the use of "pro forma" financial information in earnings releases. Release Nos. 33-8039, 34-45124, FR-59. (December 4).
- Simon, H. 1977. *The New Science of Management Decision*. Englewood Cliffs, NJ: Prentice Hall.
- Sloan, R. G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71 (July): 289 - 316.

- Smith, J. F. and T. Kida. 1991. Heuristics and biases: Expertise and task realism in auditing. *Psychological Bulletin* 109 (May): 472 - 489.
- Taffler, R. E. 2002. What can we learn from behavioral finance? (Part 1). *Credit Control* 23 (Issue 2): 14 - 16.
- Tan, H., R. Libby, and J. E. Hunton. 2000. Analysts' reactions to earnings preannouncement strategies. *Journal of Accounting Research* 40 (Autumn): 223 - 246.
- Tversky, A. and D. Kahneman. 1974. Judgment under uncertainty: Heuristics and biases. *Science* 185 : 1124 - 1131.
- Watts, R. and J. Zimmerman. 1986. *Positive Accounting Theory*. Englewood Cliffs, NJ: Prentice Hall.
- Weil, J. 2001a. SEC warns against improper use of 'pro forma' financial results. *The Wall Street Journal* (December 5): A2.
- Weil, J. 2001b. Companies pollute earnings reports, leaving P/E ratios hard to calculate. *The Wall Street Journal* (August 21): A1
- Weil, J. 2001c. Hazy earnings releases stir call for standards. *The Wall Street Journal* (March 23): C1.
- Weil, J. 2001d. 'EPS' means different things in different reports. *The Wall Street Journal* (October 16): C2.