

Effects of Comprehensive-Income Characteristics on Nonprofessional Investors' Judgments:  
The Role of Financial-Statement Presentation Format

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## Effects of Comprehensive-Income Characteristics on Nonprofessional Investors' Judgments: The Role of Financial-Statement Presentation Format

Statement of Financial Accounting Standards (SFAS) No. 130 requires companies to report comprehensive income in a primary financial statement, but allows its presentation in either a statement of comprehensive income or a statement of stockholders' equity (Financial Accounting Standards Board (FASB) 1997). In an experiment, we examine whether and how alternative presentation formats affect nonprofessional investors' processing of comprehensive-income information, specifically, information disclosing the volatility of unrealized gains on available-for-sale marketable securities. The results show that nonprofessional investors' judgments of corporate and management performance reflect the volatility of comprehensive income only when it is presented in a statement of comprehensive income. We provide evidence consistent with our psychology-based framework that these findings occur because format affects how nonprofessional investors weight comprehensive-income information and not whether they acquire this information or how they evaluate it.

**Key Words:** Comprehensive income, Nonprofessional investors, Presentation format, Volatility.

**Data Availability:** Contact the authors.

## I. INTRODUCTION

This paper reports results of an experiment that examines effects on nonprofessional investors' performance judgments of the FASB's decision to allow presentation of comprehensive income in either a statement of comprehensive income or a statement of stockholders' equity (FASB 1997, para. 65). Comprehensive income includes net income and other transactions with non-owners that affect stockholders' equity but are excluded from net income. Some of these other comprehensive-income items are related to core business activities and are relevant for making judgments of firm performance and valuation; for example, unrealized gains and losses on investment portfolios held by financial institutions, such as insurance companies.<sup>1</sup>

The FASB's decision to allow alternative financial-statement formats in SFAS No. 130 represents a compromise between its initial exposure draft position and the viewpoint of corporate management. The FASB originally proposed that companies report comprehensive income in a performance statement, such as a statement of comprehensive income, reflecting the belief that other comprehensive-income items can be as relevant as net income in measuring firm performance (FASB 1997, 10). Board members further indicated that presentation of comprehensive income in a performance statement would enhance its visibility, thereby increasing investors' use of this information (FASB 1997, 10). Corporate managers argued against such presentation, disagreeing with the implication that *all* comprehensive-income items are performance related (FASB 1997, para. 60). Consequently, managers proposed that comprehensive income would be more appropriately presented in the statement of stockholders' equity. The FASB responded to this opposition by allowing companies to present comprehensive income in either statement, but indicated plans to revisit the format issue in the future (FASB 1997, para. 74).

This study provides evidence on one key issue in the format debate: whether nonprofessional investors' use of comprehensive-income information depends on the financial statement in which it is reported. Specifically, we examine whether the two allowable SFAS No. 130 statements differentially affect the degree to which nonprofessional investors incorporate comprehensive-income information that is related to core business activities in their judgments of corporate and management performance. We

focus on nonprofessional investors because standard setters have expressed an explicit interest in understanding how financial-reporting standards affect this investor group (Levitt 1997, 4). Additionally, corporate managers specifically stated in comment letters to the FASB that nonprofessional investors, due to their limited understanding of financial information, would be more influenced by the presentation format of comprehensive income than would be professional analysts.

We develop a psychology-based framework that evaluates how presentation format affects nonprofessional investors' information acquisition, evaluation, and weighting processes. Based on prior research in accounting and psychology, we predict that format will affect only how nonprofessional investors *weight* comprehensive income, and we identify five differences between format presentations that help predict which format will produce the greatest weighting of this information.

Ninety-five evening M.B.A. students participated in an experiment to test these predictions. Participants analyzed an insurance company's financial statements which presented unrealized gains on investments in either a SFAS No. 130 statement of comprehensive income format or one of two statements of stockholders' equity formats: the first based on SFAS No. 130 and the second based on the prior standard (SFAS No. 115, *Accounting for Certain Investments in Debt and Equity Securities* (FASB 1993)). Additionally, for each financial-statement format, there were two versions of the comprehensive-income information in which unrealized gains reflected either high or low volatility. The resulting 3 (format) x 2 (volatility) between-subjects design facilitates an evaluation of whether investors' judgments differ between the SFAS No. 130 and SFAS No. 115 presentations, as well as between the two SFAS No. 130 formats.

Our results show that participants read (i.e., acquire) unrealized-gain information and appropriately evaluate the volatility of unrealized gains in all three formats, with no significant differences between formats in acquisition or evaluation. In contrast to these results for acquisition and evaluation, we generally find that participants place significant *weight* on their volatility assessments when unrealized gains appear in SFAS No. 130's statement of comprehensive income, but not when they appear in either the SFAS No.130 or the SFAS No. 115 statements of stockholders' equity.

Correspondingly, these individuals typically judge corporate and management performance for the low volatility version of the company to be better than that for the high volatility version only when unrealized gains appear in the statement of comprehensive income.

Overall, our results suggest that nonprofessional investors rely on the financial statements to provide signals about the nature and importance of comprehensive-income information. These findings indicate that only one of the allowable SFAS No. 130 formats, the statement of comprehensive income, provides additional benefits beyond those of SFAS No. 115 for nonprofessional investors' incorporation of comprehensive-income information in their performance judgments. Thus, this study suggests that the FASB's decision to allow companies a choice between financial-statement formats will not necessarily achieve the exposure draft's original objectives of enhanced visibility and increased use of comprehensive-income information for a significant group of financial-statement users.

Our results complement those of Hirst and Hopkins (1998). They show that professional investors (analysts) often fail to acquire unrealized gain and loss information for the marketable securities of an electronics manufacturing firm when this information is presented in a statement of stockholders' equity, but that analysts do acquire and use this information when it is presented in a statement of comprehensive income. While these findings demonstrate that format affects analysts' judgments, the underlying mechanism (acquisition) differs from that found in our study (weighting). This difference may be due to the fact that unrealized gains and losses typically are of low frequency and small magnitude for manufacturing firms, but are of high frequency and large magnitude for financial-services firms (Dhaliwal et al. 1999). As a consequence, professional investors may tend not to acquire this information when valuing a manufacturing firm like that used by Hirst and Hopkins, but may acquire and evaluate this information when valuing a financial-services firm, consistent with the results of prior archival research (Petroni and Wahlen 1995). This is only one conjecture about the differences between our results and those of Hirst and Hopkins; testing this explanation would require systematically examining professional and nonprofessional investors' judgments in both manufacturing and financial-

services contexts. We further discuss this and other directions for future research in the discussion and conclusions section.

Section 2 of the paper discusses background information on the reporting of comprehensive income. Section 3 presents our framework and develops hypotheses. The experimental method is described in Section 4 and results appear in Section 5. Section 6 concludes the paper by discussing our findings along with results of other studies within the context of our framework.

## **II. REPORTING COMPREHENSIVE INCOME**

Comprehensive income is net income plus other comprehensive-income items, such as unrealized gains and losses (UGL) on investments, net losses related to an additional pension liability, and foreign currency translation adjustments (FASB 1997). For many companies, including those in financial services, UGL are the most important and volatile component of comprehensive income (Barth et al. 1995). Prior to SFAS No. 130, companies recognized other comprehensive-income items as a component of stockholders' equity, with the specific reporting for these items governed by individual accounting standards (for example, SFAS No. 115 on marketable securities). Smith and Reither (1996) report that some companies obscured other comprehensive-income items by combining them with each other or with other stockholders' equity categories, such as paid-in-capital. In response to these reporting practices, analysts called for greater visibility and disaggregation of these items to facilitate financial analysis (Association for Investment Management and Research (AIMR) 1993, 63).

In June 1996, the FASB issued an exposure draft entitled *Reporting Comprehensive Income* that proposed companies present comprehensive income in a performance statement, under the premise that this statement would increase the visibility of other comprehensive-income items and give equal prominence to net income and total comprehensive income (FASB 1996, para. 50 and 63). Comment letters reflected opposition to the exposure draft, alleging that it would provide neither new information for professional investors nor useful information for nonprofessional investors.<sup>2</sup> Preparers indicated that analysts could already extract information on the components of comprehensive income from pre-SFAS

No. 130 financial statements and footnotes if they considered this information relevant for assessing corporate performance. They also argued that nonprofessional investors would be confused about when it is appropriate to use total comprehensive income or net income in assessing firm performance (FASB 1997, para. 60).

Financial-services companies expressed a particular concern that reporting UGL in a performance statement would influence nonprofessional investors' reactions to UGL volatility. Many companies maintained that UGL are not relevant for evaluating corporate performance, and that nonprofessional investors would view UGL as performance-related if presented in a statement of comprehensive income (c.f., comment letters from Grafton State Bank and America's Community Bankers). Even preparers who conceded that UGL are related to *corporate* performance argued that they are an inappropriate measure of *management* performance. They based this argument on the fact that factors beyond managers' control, such as interest rate fluctuations, affect UGL volatility (c.f., comment letters from First Tennessee National Bank and Independent Bankers Association of America).<sup>3</sup>

In 1997, the FASB issued SFAS No. 130 requiring companies to report comprehensive income in a primary financial statement, but allowing its presentation in either a performance or nonperformance statement (FASB 1997, para. 14). Specifically, under SFAS No. 130 firms can choose either a statement of comprehensive income (denoted 130IS, with IS signifying an income statement format) or a statement of stockholders' equity (denoted 130EQ). Regardless of which statement a company chooses, it must classify comprehensive-income items by their nature and show gross changes in these items. The appendix of the paper provides examples, taken from our experimental materials, of the two SFAS No. 130 statements as well as an example of the net-change statement of stockholders' equity (denoted 115EQ) required previously under SFAS No. 115 (FASB 1993).

### **III. IMPLICATIONS OF PRESENTATION FORMAT FOR NONPROFESSIONAL INVESTORS' JUDGMENTS**

In this section, we present a framework for evaluating how the format for presenting comprehensive income affects investors' judgments of corporate and management performance. The

framework proposes that presentation format influences investors' information processing and resulting judgments by affecting the acquisition, evaluation, and/or weighting of comprehensive-income information (Hogarth 1987). As indicated in figure 1, the framework models performance assessment judgments (PAJ) as a weighted linear combination of cues,  $PAJ = \hat{a} + \sum \hat{a}_j E(I_j) + \hat{a}$  (Dawes 1974). Cues  $E(I_j)$  are an individual's evaluation of specific financial-statement information ( $I_j$ ) and are outputs of the information acquisition and evaluation processes. In the context of this study, information "acquisition" refers to an investor reading a specific financial statement item (i.e., UGL information) and storing the item in memory sufficiently well to recall where it appeared in the financial statements. Information "evaluation" involves an investor assessing characteristics of the data, such as UGL volatility. The weight an investor places on the evaluated information characteristic ( $\hat{a}_j$ ) reflects, in part, his perceived importance of that characteristic for judging corporate and management performance. Figure 1 shows that information weighting depends on information acquisition and evaluation.

(Insert figure 1 here)

### **Acquisition and Evaluation of UGL Information**

Our framework indicates that different financial-statement formats can influence whether investors read comprehensive-income information. Hirst and Hopkins (1998) provide evidence on professional investors. They demonstrate that analysts detect earnings management related to investments in an electronics company only when UGL are presented in a statement of comprehensive income. In their study, half of the analysts receiving the statement of stockholders' equity did not even recall seeing the term "comprehensive income," suggesting that they did not acquire the UGL information.<sup>4</sup> Thus, presentation format appears to affect these analysts' judgments partly because of a failure to acquire information.

Research indicates that analysts and nonprofessional investors acquire financial information differently, suggesting that Hirst and Hopkins' results may not generalize to nonprofessional investors. Analysts develop valuation models and acquire information relevant for these models using a directed search strategy. This approach leads them to skip back and forth among information in the financial



statements (Bouwman et al. 1987; Hutton and McEwen 1997). As such, analysts are unlikely to read particular financial statements or specific information within those statements if it is not relevant to their models. In Hirst and Hopkins' experiment, analysts may have ignored the statement of stockholders' equity because they view this statement as relatively unimportant for valuation (Brown 1997), in contrast to the importance placed on performance statements (SRI International 1987, 54). Additionally, these analysts may not have searched for UGL information because, as noted by Hirst and Hopkins (1998, 59) and documented by Dhaliwal et al. (1999), UGL are likely to be smaller and therefore less important for the valuation of manufacturing firms than financial-services firms.<sup>5</sup>

In comparison to analysts, nonprofessional investors generally have ill-defined valuation models, fail to identify specific data needed for financial analysis, and assimilate information in a relatively unstructured manner (SRI International 1987, 26, 29, 54). Process-tracing research shows that nonprofessional investors (and less-experienced analysts) read the financial statements in the order presented, suggesting they have few preconceived ideas of the importance of and/or relations among various financial statement items (Bouwman 1982; Hutton and McEwen 1997). Given this sequential information processing, nonprofessional investors are likely to read UGL information regardless of its location. Having read the UGL information, they will also perceive visible characteristics, such as the volatility of UGL. Thus, we predict that nonprofessional investors will both acquire UGL information and correctly evaluate its volatility, regardless of format.<sup>6</sup> That is, whether UGL information is presented in a statement of comprehensive income (130IS), or in the SFAS No. 130 (130EQ) or SFAS No. 115 (115EQ) statements of stockholders' equity, we expect no differences in nonprofessional investors' information acquisition (H1) or evaluation (H2).

- |                   |  |
|-------------------|--|
| H1 (Acquisition): | Nonprofessional investors will acquire information on UGL in all three financial-statement formats for presenting comprehensive income.                          |
| H2 (Evaluation):  | Nonprofessional investors will correctly evaluate UGL volatility (high versus low) in all three financial-statement formats for presenting comprehensive income. |

## **Weighting of UGL Volatility in Performance Assessment Judgments**

While we expect nonprofessional investors to acquire and evaluate UGL information similarly in all three formats, we predict that presentation format will differentially affect the weighting they place on the information. Consequently, any differences in these investors' performance judgments will arise from differences in their information weighting. These differences in weighting are attributed to nonprofessional investors' limited understanding of financial analysis (SRI International 1987, 29), which leads them to infer the importance of comprehensive income from the way it is presented.

Although the debate over SFAS No. 130 involved only the performance versus nonperformance aspect of financial-statement formats, we propose that there are several dimensions of these formats that can influence nonprofessional investors' information weighting. We use research in accounting and cognitive psychology to identify five relevant dimensions of comprehensive-income formats, which we then classify into two categories (performance signals and cognitive costs).<sup>7</sup> For each dimension, we determine whether the format will positively or negatively affect the weights that investors place on UGL information when judging corporate and management performance. The dimensions and their implications for information weighting appear in table 1.

(Insert table 1 here)

### ***Dimensions Related to Performance Signals***

Prior research demonstrates that certain features of information presentation can influence how individuals classify information (e.g., UGL information), and thereby affect their perceptions of its importance for judgments. For example, Hopkins (1996) documents that placement of a financial instrument in the liability versus stockholders' equity section of the balance sheet affects the impact of the financial instrument on analysts' stock values. Similarly, Kozminsky (1977) demonstrates that labels influence how individuals classify information. Finally, Lipe and Salterio (1999) provide evidence that direct links between information items help decision-makers mentally "chunk" these items, increasing the weight placed on the items in forming judgments. Consequently, we examine three format dimensions: *placement* of comprehensive-income items specifically in a performance statement, *labeling* of these

items with the term comprehensive “income,” and *linkage* between net income and other comprehensive-income items. These three dimensions compose the “performance signals” category, because all dimensions relate to whether comprehensive-income items are or are not identified as related to performance.

The first performance-signal dimension, placement, refers to whether comprehensive income appears in a performance or nonperformance statement. Presentation in a performance statement, such as a statement of comprehensive income (130IS), suggests that these items represent a measure of firm performance, i.e., how well the firm has performed economically for its shareholders (FASB 1999, para. 1.1). In contrast, presentation in a statement of stockholders’ equity (115EQ and 130EQ) implies that these items are not performance-related since the statement focuses on equity funding and profit distribution, rather than profit creation (FASB 1999, para. 1.4). Thus, for the placement dimension, the 130IS format will have a positive effect on nonprofessional investors’ weighting of UGL volatility, while the 115EQ and 130EQ formats will have negative effects.

The second performance-signal dimension, labeling, refers to whether or not comprehensive-income items such as UGL are explicitly labeled as comprehensive income. Because an “income” label traditionally denotes a performance measure (Stickney and Weil 1997, 106), associating UGL with that label will have a positive effect on weighting. This is the case for both the 130EQ and 130IS formats. In contrast, the 115EQ format does not label UGL as “income” and thus will have a negative effect on weighting.<sup>8</sup>

The third performance-signal dimension, linkage, focuses on the relations among financial-statement items. Specifically, linkage indicates the presence or absence of a direct association between net income and other comprehensive-income items such as UGL. SFAS No. 130 directly links these two items in a couple of ways. First, it requires the items to be shown together as components of the comprehensive-income category. Second, it requires net income plus other comprehensive-income items to be summed and their total presented. Under SFAS No. 115, however, net income and UGL represent different categories in the statement of stockholders’ equity and are not linked by a total. Thus, the 130IS

and 130EQ formats will positively affect the weighting for UGL volatility while the 115EQ format will negatively affect investors' weighting.

### ***Dimensions Related to Cognitive Costs***

Cognitive psychology research suggests that formats influence information weighting by imposing differential cognitive costs on decision-makers (Russo 1977). For example, Nisbett et al. (1981) document that presenting nondiagnostic data in an information display along with diagnostic information dilutes the weight placed on diagnostic information, due to increased costs of processing the irrelevant information. Similar results occur in auditing contexts (Hackenbrack 1992; Hoffman and Patton 1997; Shelton 1999). Fischhoff et al. (1978) further show that decision makers place less weight on aggregated data than they place on the same information that is disaggregated. Thus, our cognitive-costs category includes two format dimensions related to these processing costs: the *isolation* of comprehensive-income information from other information and the degree of *aggregation* of comprehensive-income items.

Isolation refers to whether or not comprehensive income is the sole type of information presented in the financial statement. Comprehensive income presented in a statement of stockholders' equity (as in both the 115EQ and 130EQ formats) appears along with common stock, additional-paid-in-capital, treasury stock, and retained earnings. An investor must expend additional cognitive costs to simultaneously process all of these items. In contrast, comprehensive income is the only information presented in the statement of comprehensive income (130IS). As a result, investors do not incur the cognitive costs of simultaneously processing additional information. The lower cognitive costs in the 130IS format will have a positive effect on the weighting of UGL volatility, while greater cognitive costs in both 115EQ and 130EQ will be associated with negative effects on weighting.

Finally, the three formats differ on the second cognitive-costs dimension, aggregation. Both of the SFAS No. 130 formats (130EQ and 130IS) present investors with the gross changes in comprehensive income on the face of the statement, thereby disaggregating this information. In contrast, the SFAS No. 115 format (115EQ) provides only net changes in comprehensive-income items. While information to

calculate gross changes is available in 115EQ, it appears in other financial statements and footnotes and requires additional cognitive costs to disaggregate. Thus, we expect that the 130EQ and 130IS formats impose lower cognitive costs and positively affect the weighting of UGL volatility, while the 115EQ format is associated with greater cognitive costs and negatively affects weighting.

Table 1 summarizes our evaluation of the effects of these five dimensions on the weighting of UGL volatility for each of the three financial-statement formats. All five dimensions positively affect investors' weighting of UGL information when it is presented in the 130IS format and negatively affect the weighting of UGL when presented in the 115EQ format. Investors' judgments of corporate and management performance should therefore reflect greater weighting of UGL volatility when presented in a SFAS No. 130 statement of comprehensive income than when UGL appear in the SFAS No. 115 statement of stockholders' equity. The effects of the statement of stockholders' equity presentation under SFAS No. 130 (130EQ) are inconclusive given that three dimensions indicate positive and two dimensions indicate negative effects on weighting. Since the overall effect of the 130EQ format depends on the relative importance of each dimension, which is likely to be context-specific, we cannot make predictions as to whether weighting for the 130EQ format will be more similar to that for the 115EQ format or that for the 130IS format. We can, however, predict that the 115EQ and 130IS formats should provide boundary conditions for the 130EQ format, with the weighting in the 130EQ format greater than or equal to that in the 115EQ format and less than or equal to that in the 130IS format. H3 summarizes these predictions.

H3 (Weighting):	Nonprofessional investors will place greater weight on UGL volatility when it is presented in the 130IS format than in the 115EQ format. Nonprofessional investors' weight on UGL volatility in the 130EQ format will fall between the weights for the 130IS and the 115EQ formats. The differential weighting between the formats will in turn result in similar differences in investors' performance judgments between high and low UGL volatility.
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We examine nonprofessional investors' weighting of UGL volatility and their resulting judgments for three different performance measures: management's effectiveness at managing operations,

stock risk, and stock value. To predict the effects of UGL volatility on these performance measures, we draw on research that examines the effects of net income volatility on stock valuation.

Archival research has shown that net income volatility is associated with higher betas (Beaver et al. 1970) and ex-ante risk premia (Gebhardt et al. 1999). Studies using experimental and survey methods have also documented that investors' risk judgments increase with the variability of earnings (Farrelly and Reichenstein 1984; Farrelly et al. 1985; Lipe 1998b). Consistent with Ryan (1997), we argue that the volatility of other comprehensive income items will also affect investors' risk perceptions.<sup>9</sup> Specifically, investors' perceptions of the riskiness of a firm's investment policy will increase with UGL volatility.<sup>10</sup> Because investing is a core activity for insurance companies, we expect the risk associated with investments to affect investors' overall assessments of the risk of the company's stock. Given that managers in financial-services companies are responsible for managing risks of investment portfolios, we also expect that investors' perceived UGL volatility will negatively affect their judgments of management's operating effectiveness.

Finally, we examine investors' judgments of per-share stock values because stock value represents a summary statistic of the company's overall performance. Studies investigating analysts' judgments (including Hirst and Hopkins) typically report this measure, so it provides a comparative measure of performance between nonprofessional investors and analysts. However, nonprofessional investors rarely value stocks so they may have difficulty estimating stock value (SRI International 1987, 26). To the extent that nonprofessional investors can assess stock values, we expect stock values to decline with perceived UGL volatility.<sup>11</sup>

#### **IV. EXPERIMENTAL METHOD**

Ninety-five individuals enrolled in an evening M.B.A. program participated in our experiment and received \$10 as compensation for their time. On average, participants had personal investment experience of 5.77 years (ranging from zero to 25 years) and 5.93 years of business experience.<sup>12</sup> None of the participants had professional investment experience. Participants received materials related to one of

two versions of an insurance company that reported either high or low UGL volatility over a three-year time period. The financial statements presented UGL information in one of three formats: 115EQ, 130EQ, or 130IS. We randomly assigned participants to one of the six between-subject experimental conditions created by factorially crossing the two levels of UGL and the three format presentations.

The study materials consisted of four components: general instructions, background information on the property-and-casualty-insurance industry and the fictional insurance company, three years of financial statements and footnotes for the company, and two question sets. Common-size statements for three companies in the insurance industry (Allstate, Chubb, and Nationwide) and statistics in Petroni and Wahlen (1995) served as the foundation for the company's financial statements.

Both versions of the company reported large and stable realized gains (and cash flows) on the sale of securities over the three years presented. For 19x1, 19x2, and 19x3, all income statement numbers were identical across the two versions: realized gains on the sale of securities were \$101.2, \$106.4, and \$109.8 million and net income was \$50.0, \$50.9, and \$51.8 million, respectively.

On the balance sheet, only investments and stockholders' equity differed due to the volatility of UGL reported across the three years. For the low volatility version of the company, UGL arising in 19x1, 19x2, and 19x3 were \$112.2, \$104.5, and \$107.2 million, respectively. In comparison, UGL arising in 19x1, 19x2, and 19x3 for the high volatility version were \$234.9, \$10.6, and \$78.4 million. The variance of these UGL over the three-year period was 15.26 and 13,233.26 for the low and high volatility versions, respectively. The sum of unrealized gains for the three years was \$323.9 million, with the balance of UGL at the beginning of the three-year period (i.e., net UGL arising in prior periods) equal to \$15.3 million for both volatility conditions. We set this initial pool of unrealized gains at a low level so that the effect of UGL arising during the three years would not be overwhelmed by pre-existing gains.

Since UGL differed yearly between the two volatility conditions, total comprehensive income also differed. For 19x1, 19x2, and 19x3, comprehensive income in the low volatility version was \$58.8, \$49.6, and \$50.1 million and high volatility comprehensive income was \$155.2, \$(24.0), and \$27.3 million for the three years, respectively.

Participants could use information in the financial statements to calculate the average annual return on the company's investment portfolio. In the low volatility version, the rate of return was approximately 8 percent per year. The rates of return in the high volatility version were approximately 18 percent, 1 percent, and 6 percent for 19x1, 19x2, and 19x3, respectively. The experimental materials provided a benchmark for evaluating these returns by indicating that the return on the S&P 500 had ranged from 5 to 14 percent for the relevant time period, with a mean of approximately 8 percent. Finally, the materials also provided an average and inter-quartile range for price-earnings ratios in the property- and casualty-insurance industry for participants to use as a benchmark in making their stock-value judgments.

Participants responded to two separate sets of questions. In the first question set, they made several performance judgments. Management's effectiveness at managing operations was judged on a 14-point scale, with 1 indicating "not effective" and 14 indicating "very effective." The risk of investing in the company's stock was judged on a 14-point scale, with 1 indicating "low risk" and 14 indicating "high risk." Participants also provided a per-share dollar value for the stock.<sup>13</sup>

The second set of questions related specifically to UGL. Participants completed this question set without referring to any of the study materials or responses to the first set of questions. In these last questions, participants assessed the volatility of unrealized gains, indicated where UGL information was located in the financial statements, and responded to demographic questions about their business and investment experiences.

## **V. RESULTS**

### **Acquisition and Evaluation of UGL Information (H1 and H2)**

H1 predicts that nonprofessional investors will read UGL information regardless of its presentation format. To test H1, we examine responses to the question in which participants recalled where UGL information appeared in the financial statements of the study materials. Of the 95 participants, seven answered incorrectly for their particular format condition. These seven participants,



five in low and two in high volatility version, received UGL information in the 130EQ statement of stockholders' equity, but answered that UGL appeared in footnote disclosures only.<sup>14</sup> Results of a categorical ANOVA indicate no significant effects on acquisition of format ( $\eta^2=2.92$   $p=0.2323$ ), volatility ( $\eta^2=0.09$ ,  $p=0.7663$ ), or the format-by-volatility interaction ( $\eta^2=0.74$ ,  $p=0.6898$ ). This result indicates that format did not significantly affect whether participants read UGL information, as predicted by H1.

H2 predicts that because nonprofessional investors read UGL information in all formats, investors receiving high UGL volatility will perceive UGL to be more volatile than those receiving low UGL volatility. To test H2, we examine participants' perceptions of the volatility of UGL (denoted PVOL).

Table 2 reports descriptive statistics for UGL volatility assessments by format and volatility conditions (panel A) and the results from two sets of contrasts for testing H2 (panel B). As indicated by the means in panel A, participants receiving the high volatility version evaluated UGL as more volatile than those receiving the low volatility version in all formats. The first set of contrasts in panel B tests whether UGL volatility assessments differ significantly between the two volatility conditions. This difference is at least marginally significant for each of the three formats ( $t=2.25$ ,  $p=0.0686$  for 115EQ,  $t=2.09$ ,  $p=0.0757$  for 130EQ, and  $t=8.64$ ,  $p=0.0021$  for 130IS). The second set of contrasts tests whether differences in participants' volatility assessments between high and low UGL volatility varied between formats. The pairwise comparisons show no differences among formats ( $t=-0.00$ ,  $p=0.9578$  for 130EQ versus 115EQ,  $t=1.07$ ,  $p=0.2868$  for 130IS versus 115EQ, and  $t=1.13$ ,  $p=0.2609$  for 130IS versus 130EQ).<sup>15</sup> Supporting H2, these findings indicate that participants correctly evaluated UGL volatility in all presentation formats.<sup>16</sup>

(Insert table 2 here)

### **Weighting of Perceived Volatility for Performance Judgments (H3)**

H3 predicts that format will affect participants' judgments of corporate and management performance due to differences in the weightings of UGL volatility. Specifically, H3 predicts that the weights on UGL (and their effects on related performance judgments) will be greatest in 130IS, smallest in 115EQ, and between the weights of 115EQ and 130IS for 130EQ.

Tables 3-5 report descriptive statistics and tests of H3 for three judgments: one related to management performance and two related to corporate performance. Panel A in each table presents descriptive statistics: the means and standard deviations for each judgment by format and volatility and the differences in mean judgments between high and low volatility, by format. Panel A also reports results of contrasts that test for differences between pairs of formats in the degree to which participants' judgments distinguish between high versus low UGL volatility. A strength of this analysis is that it relies only on manipulated independent variables, but a weakness is that effects of format other than weighting could influence participants' judgments. Therefore, panels B in tables 3-5 present tests to directly examine the differential weighting of UGL volatility in performance judgments by regressing participants' performance judgments on their perceived UGL volatility assessments (PVOL).

First, to examine the weighting of PVOL for each judgment, we perform the following regression separately for each format.<sup>17</sup>

$$PAJ_{ik} = \hat{a}_0 + \hat{a}_{1k} (PVOL_i) + \hat{a}_k \quad (1)$$

where:

$$\begin{aligned} PAJ_{ik} &= \text{performance assessment judgment } k \text{ (e.g., management effectiveness) made by participant } i \\ PVOL_i &= \text{participant } i \text{'s perceived volatility assessment} \\ \hat{a}_k &= \text{random error term for assessment } k \text{ made by participant } i \end{aligned}$$

Results of these regressions appear in the top halves of panels B in tables 3-5.

Second, to test for differences in the coefficients on PVOL among the three formats, we perform a regression for each judgment that pools observations for all formats, using indicator (dummy) variables to allow both the intercept and the coefficient on PVOL to vary by format.

$$PAJ_{ik} = \hat{a}_{0k} + \hat{a}_{1k} D_1 + \hat{a}_{2k} D_2 + \hat{a}_{3k} (PVOL_i) + \hat{a}_{4k} (D_1 * PVOL_i) + \hat{a}_{5k} (D_2 * PVOL_i) + \zeta_{ik} \quad (2)$$

where:

$$\begin{aligned} PAJ_{ik}, PVOL_i & \text{ as defined in equation (1)} \\ D_1 &= 0 \text{ if format is 115EQ or 130IS, 1 if format is 130EQ} \\ D_2 &= 0 \text{ if format is 115EQ or 130EQ, 1 if format is 130IS} \\ \zeta_{ik} &= \text{random error terms for assessment } k \text{ made by participant } i \end{aligned}$$

This pooled regression tests for differences in the coefficients on PVOL between 115EQ and the other two formats, 130EQ and 130IS. The 115EQ format is the baseline condition for estimating the

coefficient on PVOL ( $\hat{\alpha}_{3k}$ ), with indicator variables D1 and D2 representing 130EQ and 130IS, respectively. Thus,  $\hat{\alpha}_{4k}$  measures the difference for the coefficients on PVOL between the 130EQ and 115EQ formats and  $\hat{\alpha}_{5k}$  measures the difference between the 130IS and 115EQ formats. The difference in the coefficients on PVOL between the 130IS and 130EQ formats is represented by  $\hat{\alpha}_{5k}-\hat{\alpha}_{4k}$ . We test the pairwise differences among formats using the t-statistics related to the associated indicator-variable coefficients ( $\hat{\alpha}_{4k}$  and  $\hat{\alpha}_{5k}$ ) and difference in coefficients ( $\hat{\alpha}_{5k}-\hat{\alpha}_{4k}$ ). These results appear in the bottom halves of panels B in tables 3-5.

Table 3 presents results for the judgments related to management's effectiveness at overseeing operations (MGTEFFECT), which should be negatively related to UGL volatility. Panel A indicates that participants' judgments appropriately distinguish between high and low UGL volatility only in the 130IS format. Contrast tests for differences in the degree to which judgments of management effectiveness reflected UGL volatility indicate a significant difference between 130IS and 115EQ ( $t=-2.07$ ,  $p=0.0207$ ). However, we cannot reject that either the two statements of stockholder equity formats or the two SFAS No. 130 formats had similar effects on participants' judgments ( $t=-1.14$ ,  $p=0.1294$  and  $t=-0.97$ ,  $p=0.1680$ , respectively).

(Insert table 3 here)

Regression results in panel B for participants' weighting of perceived volatility are largely consistent with results in panel A. The coefficient on perceived UGL volatility is significantly negative in 130IS ( $\hat{\alpha}_1=-0.27$ ,  $t=-2.21$ ), but not in either of the statements of stockholders' equity. The tests for differences in coefficients among formats indicate that the weight on PVOL is significantly more negative for 130IS than for 115EQ ( $t=-2.03$ ,  $p=0.0226$ ) and 130EQ ( $t=-1.64$ ,  $p=0.0519$ ). The PVOL weightings for the two statement of stockholders' equity formats are statistically indistinguishable ( $t=-0.25$ ,  $p=0.4003$ ).

The results in table 3 indicate that only 130IS prompts nonprofessional investors to reflect UGL volatility in judging management effectiveness. Additionally, as predicted by H3, the effects of 130EQ lie between those of 130IS and 115EQ. The results further suggest that the effects of 130EQ are

indistinguishable from those of 115EQ, but the pooled regression provides some evidence that the 130IS format leads to greater weighting of UGL volatility relative to the 130EQ format.

Table 4 presents results for participants' judgments of stock risk, which should increase in UGL volatility. The results parallel those for management effectiveness reported in table 3. Panels A and B of table 4, respectively, indicate that participants distinguish between low and high UGL volatility, and significantly weight volatility, only when UGL are presented in the 130IS format. The pairwise format comparisons in panel A show that the difference in risk judgments between high and low UGL volatility is greater for 130IS than 115EQ ( $t=1.55$ ,  $p=0.0630$ ), as predicted. Similarly, panel B shows that participants place greater weight on perceived volatility in 130IS than 115EQ ( $t=2.14$ ,  $p=0.0173$ ). The results also indicate that while the regression coefficients do not significantly differ between 130IS and 130EQ ( $t=0.84$ ,  $p=0.2011$ ), participants' risk judgments in 130IS better distinguish between high and low UGL volatility relative to those in 130EQ ( $t=1.48$ ,  $p=0.0716$ ).

(Insert table 4 here)

Finally, table 5 presents results for participants' stock-value judgments, which should be negatively related to UGL volatility. Results for this judgment generally do not support H3. First, the differences in mean stock values between high and low volatility in panel A are insignificant for each format, perhaps reflecting variability in value judgments arising from participants' inexperience in making such judgments. As discussed previously, nonprofessional investors typically do not estimate specific values for stocks (SRI International 1987, 26), so participants may have had difficulty making these judgments in the experiment.

Panel B shows that the coefficient on perceived UGL volatility is significantly negative for 115EQ ( $\hat{\alpha}_1=-1.23$ ,  $t=-2.66$ ) and marginally negative for 130IS ( $\hat{\alpha}_1=-0.47$ ,  $t=-1.42$ ), but is not significantly different from zero for 130EQ. Tests of differences in coefficients among formats show that none are significant in the predicted direction. These results are somewhat puzzling given the findings for management effectiveness and stock risk, again indicating that nonprofessional investors had difficulty with this judgment or that other unidentified factors affected participants' stock values.

(Insert table 5 here)

### ***Supplemental Experiment for Performance Assessment Judgments***

In our primary experiment, we used a three-year UGL series corresponding to the time period typically provided in an annual report. Given our volatility manipulation, using three years of data made it impossible to avoid having a pattern in the series. In particular, our UGL series had a mixed pattern (high, low, medium for 19x1, 19x2, and 19x3, respectively), with an overall downward trend that was most noticeable in the high volatility series. Therefore, we performed a supplemental experiment to examine the possibility that participants reacted to trend versus volatility or that trend and volatility interacted. In this experiment, holding constant high UGL volatility, we manipulated trend at two levels. The first UGL pattern was the one used in the primary experiment (\$234.9, \$10.6, and \$78.4 million for 19x1, 19x2, and 19x3, respectively). The second pattern of \$90.8, \$2.1, \$231.0 for these three years had the same total UGL and approximately the same variance as the first, but an upward trend.<sup>18</sup> Twenty-six M.B.A. students participated in the experiment. They assessed UGL volatility and judged management's effectiveness and stock risk for one of the two trend conditions (stock valuations were not elicited).

Results of this supplemental experiment indicate that the trend of UGL did not influence how volatility affected participants' judgments, i.e., there were no interactive effects of trend and volatility. Participants' average UGL volatility assessments and the coefficients related to the mapping of these assessments into their two performance judgments (corresponding to the  $\hat{\alpha}_1$  regression coefficients on PVOL in tables 3 and 4) did not differ between the two trends. These results suggest that trend did not influence the effects of volatility on participants' performance judgments in our primary experiment.

Although trend did not interact with volatility in our supplemental experiment, we found a direct effect of trend on one of participants' two judgments, stock risk. Participants judged stock risk to be greater for the downward- versus upward-trend series. These findings suggest that trend may have contributed to the large difference between high and low volatility for risk in the 130IS format (panel A of table 4). Trend could not be the sole determinant of the difference, however, because participants did place significant weight on UGL volatility to arrive at their risk judgments (panel B of table 4).

Additionally, we found no effect of trend on participants' judgments of management effectiveness in the supplemental experiment, suggesting that trend does not have the systematic effects indicated for volatility in our primary experiment.

## **VI. DISCUSSION AND CONCLUSIONS**

The results of our experiment show that the financial-statement format for presenting comprehensive income did not significantly affect nonprofessional investors' acquisition and evaluation of that information, but generally did significantly influence their information weighting and resulting performance judgments. Our results suggest that SFAS No. 130 will affect nonprofessional investors' use of comprehensive-income items only if companies issue a separate statement of comprehensive income, rather than use the alternative statement of stockholders' equity format also currently permitted. Given that individual investors presently represent 45 percent of stock ownership (Browning et al. 1999) and have increasing participation in the market (Ip 1998), our findings suggest that the FASB's decision to allow alternative SFAS No. 130 formats will affect a significant group of investors.

Although we cannot reach definitive conclusions about which of the five format dimensions contributed to our findings, comparisons of the results for 130EQ to those of 115EQ and 130IS suggest that the placement in a performance statement and/or the isolation of comprehensive-income information are the primary contributors. Effects of the 130EQ format generally are more similar to those of 115EQ than 130IS and, as indicated in table 1, placement and isolation are the only two dimensions for which this is the predicted pattern. These results are consistent with arguments made by the FASB and corporate managers that placement in a performance versus nonperformance statement provides signals about the importance of comprehensive-income information.

Investigating the effects of format using an experimental research method is important given that most companies appear to be selecting the statement of stockholders' equity to present SFAS No. 130 information.<sup>19</sup> If the vast majority of firms elect the statement of stockholders' equity, there may not be sufficient variation in archival data to test differences between formats. Also, archival data may be

confounded by self-selection problems because companies choosing the statement of comprehensive income may be those more effective at managing investments. Additionally, it is difficult to disentangle the individual effects of format for analysts and nonprofessional investors using aggregate measures such as market prices. As indicated by McDaniel and Hand (1996), experiments can examine accounting alternatives not commonly used in practice, as well as isolate effects of variables on different groups of financial-statement users.

Our results, in combination with Hirst and Hopkins (1998), suggest that presenting comprehensive-income items in a performance statement improves both nonprofessional and professional investors' judgments. From these two studies, we identify two specific factors that are likely to mediate the effects of format on investors' acquisition, evaluation, and weighting processes: type of investor (professional or nonprofessional) and type of business activity (core or non-core). Crossing these two variables forms a 2 x 2 matrix of mediating variables.

For professional investors such as analysts, the effects of format on performance judgments may depend on whether comprehensive-income information is related to core or non-core business activities. We expect that format will have little or no effect on analysts' acquisition of information related to core activities since this information is critical to the accuracy of their forecasts and stock recommendations.<sup>20</sup> That is, analysts will search for information related to core activities regardless of where it is located, consistent with Lipe's (1998a) arguments for the use of UGL by bank analysts. In contrast, as demonstrated in Hirst and Hopkins, format can affect professional investors' acquisition of information related to non-core activities. Because non-core activities are less important to a company's valuation, they may not be included in analysts' valuation models and thus would be acquired only through accidental discovery in the search for more relevant information. If analysts fail to acquire the information, they cannot include it in their performance or valuation judgments.

On the other hand, we expect the effects of format on nonprofessional investors' judgments will not differ between core and non-core activities, since these investors do not clearly distinguish between financial information for these two activities (SRI International 1987, 26, 29). Thus, nonprofessional

investors are likely to acquire and evaluate characteristics of information for both core and non-core activities regardless of format.<sup>21</sup> However, as found in our experiment, nonprofessional investors will tend to rely on the financial statements to signal the importance of information, suggesting that the weight they attach to both core and non-core information will depend on presentation format. The signaling effects of financial-statement format are likely to be mitigated only by nonprofessional investors acquiring training in financial analysis.

Our results and those of Hirst and Hopkins (1998) are not directly comparable since both investor and business-activity types differ between the two studies. Future research could reconcile the two studies by examining the effects of format on: (1) nonprofessional investors' use of comprehensive-income information related to non-core activities, and/or (2) analysts' use of comprehensive-income information related to core activities. For the first, we predict results similar to those found in the current study, i.e., nonprofessional investors' judgments will be influenced by information related to non-core activities only when presented in a statement of comprehensive income. Results might reveal potential negative effects of using a performance statement, that is, the overweighting of non-core activity information. Such a result, in comparison to results of our study, illustrates a trade-off faced by the FASB. In effect, the FASB has to balance the misallocation of resources created by nonprofessional investors' underweighting of core-activity information presented in a statement of stockholders' equity against the overweighting of non-core-activity information presented in a statement of comprehensive income. However, given that non-core activities typically occur less frequently than core activities and are smaller in magnitude, our findings related to the underweighting of value-relevant comprehensive-income information likely represent a more serious cost.

A second experiment could address the effects of format on professional investors' use of comprehensive-income information related to core activities. However, archival research has already documented that UGL are associated with stock prices and returns for insurance companies (Petroni and Wahlen 1995; Dhaliwal et al. 1999). We can reconcile the differences between these archival findings and those of Hirst and Hopkins since managing investments is a core activity for insurance companies,



but is a non-core activity for electronics firms. Thus, Hirst and Hopkins' results may illustrate a situation where experts' valuation models, which generally provide accurate judgments, can be dysfunctional (Frensch and Sternberg 1989; Rosman et al. 1994; Bonner et al. 1996). Additionally, recent experimental research suggests the effects of different presentations may be reduced or eliminated as analysts become more familiar with the new formats (Maines et al. 1999).

Finally, one additional avenue for future research is to examine more thoroughly the effects of format dimensions (see table 1) on individuals' acquisition, evaluation, and weighting. Rather than focusing on specific formats proposed by policy makers, these studies could manipulate aspects of the underlying format dimensions. This approach would enhance the applicability of our framework to format issues other than those related to comprehensive income.

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**APPENDIX**  
**EXAMPLES OF COMPREHENSIVE INCOME PRESENTATION FORMATS**

(Note: Examples are for the high volatility condition.)

**1. Statement of Changes in Stockholders' Equity – SFAS No. 115 format**

**DSM CORPORATION**  
**STATEMENT OF CHANGES IN STOCKHOLDERS' EQUITY**  
**For the Years Ended December 31, 19x3, 19x2, and 19x1**

<b><u>(in millions)</u></b>	<b><u>19x3</u></b>	<b><u>19x2</u></b>	<b><u>19x1</u></b>
<b>Common Stock</b>	<b>\$ <u>15.9</u></b>	<b>\$ <u>15.9</u></b>	<b>\$ <u>15.9</u></b>
<b>Additional Paid in Capital</b>	<b><u>322.3</u></b>	<b><u>322.3</u></b>	<b><u>322.3</u></b>
<b>Retained Earnings</b>			
Beginning balance	172.2	137.2	103.1
Net income	51.8	50.9	50.0
Dividends	<u>(15.9)</u>	<u>(15.9)</u>	<u>(15.9)</u>
Ending balance	<u>208.1</u>	<u>172.2</u>	<u>137.2</u>
<b>Unrealized Holding Gains on Investments</b>			
Beginning balance	43.0	118.2	13.1
Change during the year	<u>(24.9)</u>	<u>(75.2)</u>	<u>105.1</u>
Ending balance	<u>18.1</u>	<u>43.0</u>	<u>118.2</u>
<b>Foreign Currency Translation Gains</b>			
Beginning balance	2.6	2.3	2.2
Change during the year	<u>0.4</u>	<u>0.3</u>	<u>0.1</u>
Ending balance	<u>3.0</u>	<u>2.6</u>	<u>2.3</u>
<b>Total Stockholders' Equity</b>	<b><u>\$ 567.4</u></b>	<b><u>\$ 556.0</u></b>	<b><u>\$ 595.9</u></b>



## 2. Statement of Changes in Stockholders' Equity – SFAS No. 130 format

### DSM CORPORATION STATEMENT OF CHANGES IN STOCKHOLDERS' EQUITY For the Years Ended December 31, 19x3, 19x2, and 19x1

<u>(in millions)</u>	<u>19x3</u>	<u>19x2</u>	<u>19x1</u>
<b>Common Stock</b>	\$ <u>15.9</u>	\$ <u>15.9</u>	\$ <u>15.9</u>
<b>Additional Paid in Capital</b>	<u>322.3</u>	<u>322.3</u>	<u>322.3</u>
<b>Retained Earnings</b>			
Beginning balance	172.2	137.2	103.1
Net income	51.8    \$ <u>51.8</u>	50.9    \$ <u>50.9</u>	50.0    \$ <u>50.0</u>
Dividends	<u>(15.9)</u>	<u>(15.9)</u>	<u>(15.9)</u>
Ending balance	<u>208.1</u>	<u>172.2</u>	<u>137.2</u>
<b>Accumulated Other Comprehensive Income</b>			
Beginning balance	45.6	120.5	15.3
Unrealized gains (losses) on investments, net of reclassification adjustment (see disclosure below)	(31.4)	(95.8)	133.7
Foreign currency translation gains	<u>0.4</u>	<u>0.3</u>	<u>0.1</u>
Other comprehensive income before income tax	(31.0)	(95.5)	133.8
Income taxes related to other comprehensive income	<u>6.5</u>	<u>20.6</u>	<u>(28.6)</u>
Other comprehensive income, net	<u>(24.5)</u> <u>(24.5)</u>	<u>(74.9)</u> <u>(74.9)</u>	<u>105.2</u> <u>105.2</u>
Comprehensive Income	<u>\$ 27.3</u>	<u>\$ (24.0)</u>	<u>\$ 155.2</u>
Ending balance	<u>21.1</u>	<u>45.6</u>	<u>120.5</u>
<b>Total Stockholders' Equity</b>	<u>\$ 567.4</u>	<u>\$ 556.0</u>	<u>\$ 595.9</u>
 <b>Disclosure of reclassification amount:</b>			
Unrealized holding gains arising during the year	\$ 78.4	\$ 10.6	\$ 234.9
Less: Reclassification adjustment for realized gains included in net income	<u>(109.8)</u>	<u>(106.4)</u>	<u>(101.2)</u>
Net unrealized gains (losses) on investments	<u>\$ (31.4)</u>	<u>\$ (95.8)</u>	<u>\$ 133.7</u>

### 3. Statement of Comprehensive Income – SFAS No. 130 Format

**DSM CORPORATION**  
**STATEMENT OF COMPREHENSIVE INCOME**  
**For the Years Ended December 31, 19x3, 19x2, and 19x1**

	<u>19x3</u>	<u>19x2</u>	<u>19x1</u>
<b>Net Income</b>	\$ 51.8	\$ 50.9	\$ 50.0
<b>Other Comprehensive Income:</b>			
Unrealized holding gains arising during the year	78.4	10.6	234.9
Less: Reclassification adjustment for realized gains included in net income	<u>(109.8)</u>	<u>(106.4)</u>	<u>(101.2)</u>
Unrealized gains (losses) on investments, net of reclassification adjustment	(31.4)	(95.8)	133.7
Foreign currency translation gains	<u>0.4</u>	<u>0.3</u>	<u>0.1</u>
Other comprehensive income before income tax	(31.0)	(95.5)	133.8
Income taxes related to other comprehensive income	<u>6.5</u>	<u>20.6</u>	<u>(28.6)</u>
Other comprehensive income, net	<u>(24.5)</u>	<u>(74.9)</u>	<u>105.2</u>
<b>Comprehensive Income</b>	<u>\$ 27.3</u>	<u>\$ (24.0)</u>	<u>\$ 155.2</u>

#### **Footnote Disclosures – All formats** (Note: Some text description differed by format.)

##### **Investments**

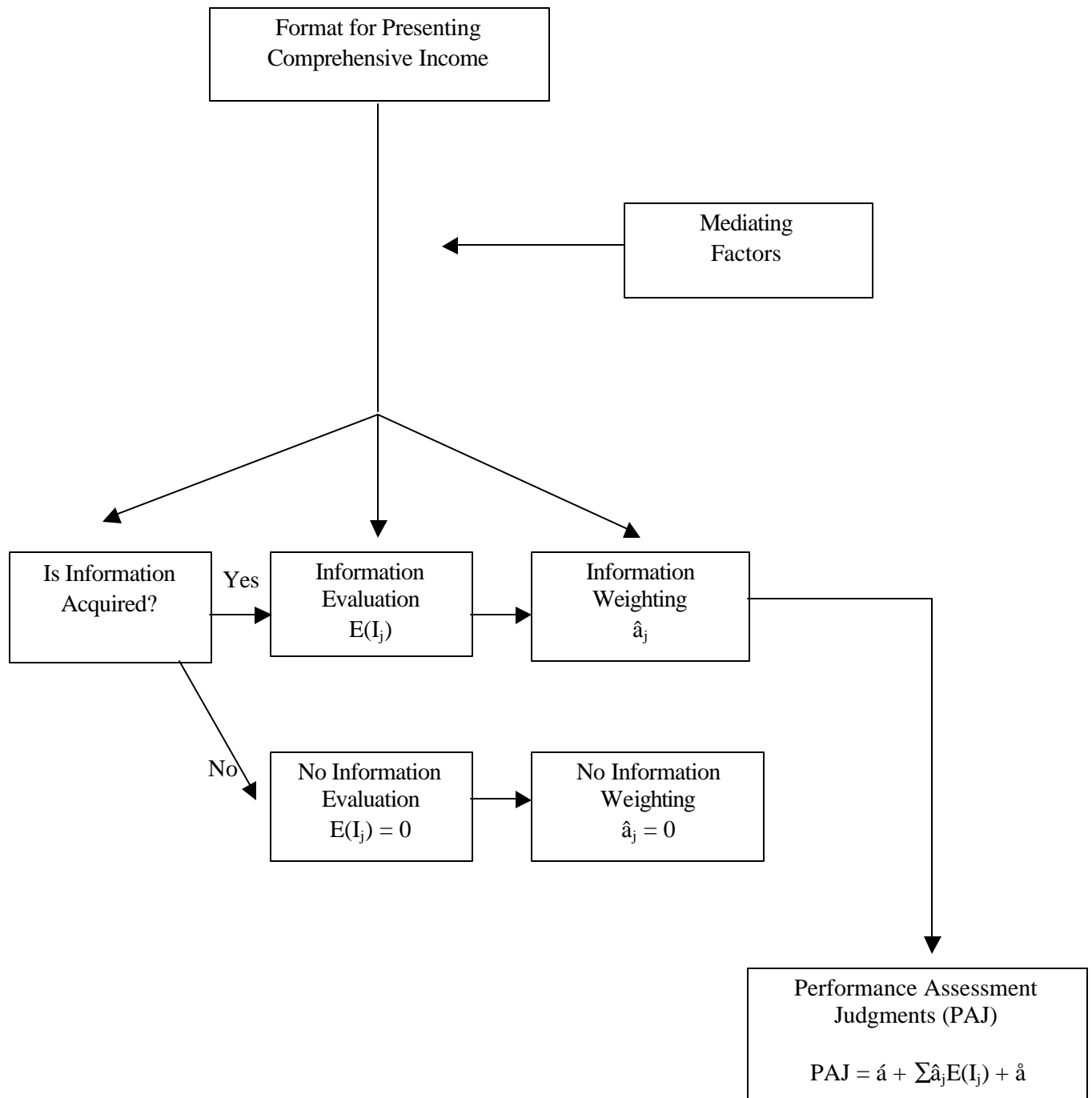
The company's investments are classified as available-for-sale securities. Interest income and dividends are recorded as revenues ("Investment Income"). In accordance with Statement of Financial Accounting Standard No. 115, investments are re-valued to their current market value, with the unrealized gain or loss for each year shown as "Other Comprehensive Income" in the Statement of Comprehensive Income. "Accumulated Other Comprehensive Income" is shown in the stockholders' equity section of the balance sheet.

When securities are sold the realized gain or loss on sale is recorded as "Realized Gains or Losses on Investments" in the Income Statement. At that time, any portion of the gain or loss that was previously shown as an unrealized gain or loss in "Other Comprehensive Income" is reclassified from "Other Comprehensive Income" to "Realized Gains or Losses on Investments" using a reclassification adjustment.

The gross unrealized holding gains and losses on fixed maturity and equity investments are shown below.

	Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Market Value
<u>12/31/19x3</u>				
Fixed Maturity	891.8	8.2	3.3	896.7
Equity	394.5	35.5	22.3	407.7
<u>12/31/19x2</u>				
Fixed Maturity	896.6	20.9	14.2	903.3
Equity	355.8	106.1	69.8	392.1

**FIGURE 1**  
**Framework for the Effects of Comprehensive-Income Presentation Format**  
**on Investors' Performance Assessment Judgments**



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**TABLE 1**  
**Effects of Presentation Format Dimensions on Weighting of**  
**Comprehensive-Income Characteristics**

<u>Format Dimension</u>	<u>Format for Presenting Comprehensive-Income Items<sup>a</sup></u>		
	<u>115EQ</u>	<u>130EQ</u>	<u>130IS</u>
<u>Performance Signals Category<sup>b</sup></u>			
Placement in Financial Statements	Negative <sup>c</sup>	Negative	Positive
Labeling of Comprehensive Income	Negative	Positive	Positive
Linkage to Net Income	Negative	Positive	Positive
<u>Cognitive-Costs Category<sup>d</sup></u>			
Isolation	Negative	Negative	Positive
Aggregation	Negative	Positive	Positive

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<sup>a</sup> The 115EQ format presents net changes in comprehensive-income components (i.e., UGL) in the statement of changes in stockholders' equity, as was required under SFAS No. 115. The 130EQ and 130IS formats represent two alternative presentations under SFAS No. 130, with 130EQ presenting gross changes in UGL in a statement of changes in stockholders' equity and 130IS presenting gross changes in UGL in a statement of comprehensive income.

<sup>b</sup> The *placement* dimension refers to whether comprehensive-income items are presented in a performance or nonperformance statement. The *labeling* dimension refers to whether or not comprehensive-income components are explicitly labeled as income. The *linkage* dimension refers to whether or not other comprehensive-income items are directly linked to net income in the financial statement.

<sup>c</sup> For each format/dimension combination, "positive" and "negative" refer to the effects of format on nonprofessional investors' weighting of other comprehensive-income items and their resulting performance assessment judgments.

<sup>d</sup> The *isolation* dimension refers to whether comprehensive income is the only information in the statement or whether other information categories appear in the statement. The *aggregation* dimension refers to whether the gross changes in comprehensive income are displayed in the statement, or only the net change is shown.

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**TABLE 2**  
**Perceived UGL Volatility Assessments (H2)**

*Panel A: Mean Assessments (Standard Deviations) for Perceived UGL Volatility (PVOL)<sup>a</sup>*

<u>Format<sup>b</sup></u>	<u>Volatility</u>		<u>Difference (High - Low)<sup>c</sup></u>
	<u>Low</u>	<u>High</u>	
115EQ	6.72 (2.77) n = 16	8.31 (3.36) n = 16	1.59*
130EQ	7.74 (2.59) n = 17	9.25 (2.82) n = 16	1.51*
130IS	6.13 (3.40) n = 16	9.36 (3.03) n = 14	3.23***

*Panel B: Planned Contrasts*

*High versus Low Volatility by Format*

	<u>t</u>	<u>p<sup>c</sup></u>
115EQ (High versus Low volatility)	2.25	0.0686
130EQ (High versus Low volatility)	2.09	0.0757
130IS (High versus Low volatility)	8.64	0.0021

*Pairwise Format Comparisons for Differences between High and Low Volatility*

	<u>t</u>	<u>p<sup>d</sup></u>
130EQ (High - Low) versus 115EQ (High - Low)	-0.00	0.9578
130IS (High - Low) versus 115EQ (High - Low)	1.07	0.2868
130IS (High - Low) versus 130EQ (High - Low)	1.13	0.2609

<sup>a</sup> Participants assessed the volatility of UGL (PVOL) on a scale of 1-14, with higher values representing greater volatility.

<sup>b</sup> The 115EQ format presents net changes in comprehensive-income components (i.e., UGL) in the statement of changes in stockholders' equity, as was required under SFAS No. 115. The 130EQ and 130IS formats represent two alternative presentations under SFAS No. 130, with 130EQ presenting gross changes in UGL in a statement of changes in stockholders' equity and 130IS presenting gross changes in UGL in a statement of comprehensive income.

<sup>c</sup> \*\*\* and \* indicates significance at  $p < 0.01$  and  $p < 0.10$ , respectively. One-tailed tests are reported given directional predictions for the comparisons of high versus low volatility.

<sup>d</sup> Comparisons are based on two-tailed tests since H2 predicts no difference among formats.

**TABLE 3**  
**Management Effectiveness Judgments (H3)**

*Panel A: Means (Standard Deviations) for MGTEFFECT<sup>a</sup>*

<u>Format<sup>b</sup></u>	<u>Volatility</u>		<u>Difference (High - Low)<sup>c</sup></u>
	<u>Low</u>	<u>High</u>	
115EQ	7.28 (2.76) n=16	8.50 (2.68) n=16	1.22
130EQ	6.85 (2.66) n=17	6.56 (3.10) n=16	-0.29
130IS	7.31 (2.36) n=16	5.71 (2.40) n=14	-1.60**

*Pairwise Format Comparisons for Differences between High and Low Volatility*

	<u>t</u>	<u>p<sup>d</sup></u>
130EQ (High - Low) versus 115EQ (High - Low)	-1.14	0.1294
130IS (High - Low) versus 115EQ (High - Low)	-2.07	0.0207
130IS (High - Low) versus 130EQ (High - Low)	-0.97	0.1680

*Panel B: Regressions of Management Effectiveness on Perceived UGL Volatility (PVOL)<sup>e</sup>*

$$MGTEFFECT_i = \hat{a}_0 + \hat{a}_1(PVOL_i) + \hat{a}$$

<u>Format</u>	<u>Coefficient Estimates (t-statistics in parentheses)<sup>c</sup></u>		<u>Adjusted R<sup>2</sup></u>
	<u>Intercept</u>	<u>PVOL</u>	
115EQ (n=32)	6.74 (5.27)***	0.15 (0.97)	-0.00
130EQ (n=33)	5.91 (3.62)***	0.09 (0.52)	-0.02
130IS (n=30)	8.60 (8.48)***	-0.27 (-2.21)**	0.12

*Pairwise Format Comparisons of Differences in Coefficients on PVOL*

$$MGTEFFECT_i = \hat{a}_0 + \hat{a}_1 D_1 + \hat{a}_2 D_2 + \hat{a}_3 (PVOL_i) + \hat{a}_4 (D_1 * PVOL_i) + \hat{a}_5 (D_2 * PVOL_i) + \zeta_i$$

	<u>Differences in PVOL Coefficients</u>	<u>t<sup>f</sup></u>	<u>p<sup>d</sup></u>
130EQ versus 115EQ	-0.06 ( $\hat{a}_4$ )	-0.25	0.4003
130IS versus 115EQ	-0.42 ( $\hat{a}_5$ )	-2.03	0.0226
130IS versus 130EQ	-0.36 ( $\hat{a}_5 - \hat{a}_4$ )	-1.64	0.0519

<sup>a</sup>  $\overline{\text{MGTEFFECT}}_i$  is participant  $i$ 's judgment of management's effectiveness at managing operations, on a scale of 1-14.

<sup>b</sup> The 115EQ format presents net changes in comprehensive-income components (i.e., UGL) in the statement of changes in stockholders' equity, as was required under SFAS No. 115. The 130EQ and 130IS formats represent two alternative presentations under SFAS No. 130, with 130EQ presenting gross changes in UGL in a statement of changes in stockholders' equity and 130IS presenting gross changes in UGL in a statement of comprehensive income.

<sup>c</sup> \*\*\* and \*\* indicates significance at  $p < 0.01$  and  $p < 0.05$ , respectively. Given directional predictions for both the comparisons of high versus low volatility and the effect of PVOL on MGTEFFECT, one-tailed significance levels are reported except when results are not consistent with the directional predictions of H3. This situation occurred in panel A for the high versus low volatility comparison for 115EQ and in panel B for the coefficients on PVOL for 115EQ and 130EQ. In these situations, we tested for significance using 1 minus the one-tailed p-values.

<sup>d</sup> Format comparisons are based on one-tailed tests given the directional predictions of H3.

<sup>e</sup> Participants assessed the volatility of UGL (PVOL) on a scale of 1-14, with higher values representing greater volatility.

<sup>f</sup> t-statistics relate to the  $\hat{\alpha}_4$  and  $\hat{\alpha}_5$  coefficients from the pooled regression and the test of  $\hat{\alpha}_5 - \hat{\alpha}_4 = 0$ .

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**TABLE 4**  
**Stock Risk Judgments (H3)**

*Panel A: Means (Standard Deviations) for STOCKRISK<sup>a</sup>*

<u>Format<sup>b</sup></u>	<u>Volatility</u>		<u>Difference (High – Low)<sup>c</sup></u>
	<u>Low</u>	<u>High</u>	
115EQ	5.53 (2.79) n=16	6.31 (2.91) n=16	0.78
130EQ	7.00 (2.50) n=16	7.88 (2.73) n=16	0.88
130IS	5.00 (2.63) n=16	7.93 (2.81) n=14	2.93***

*Pairwise Format Comparisons for Differences between High and Low Volatility*

	<u>t</u>	<u>p<sup>d</sup></u>
130EQ (High - Low) versus 115EQ (High - Low)	0.00	0.4727
130IS (High - Low) versus 115EQ (High - Low)	1.55	0.0630
130IS (High - Low) versus 130EQ (High - Low)	1.48	0.0716

*Panel B: Regressions of Management Effectiveness on Perceived UGL Volatility (PVOL)<sup>e</sup>*

$$STOCKRISK_i = \hat{\alpha}_0 + \hat{\alpha}_1(PVOL_i) + \hat{\alpha}$$

<u>Format</u>	<u>Coefficient Estimates (t-statistics in parentheses)<sup>c</sup></u>		<u>Adjusted R<sup>2</sup></u>
	<u>Intercept</u>	<u>PVOL</u>	
115EQ (n=32)	6.64 (4.98)***	-0.10 (-0.58)	-0.02
130EQ (n=32)	5.97 (4.00)***	0.17 (1.03)	0.00
130IS (n=30)	3.59 (2.92)***	0.36 (2.49)***	0.15

*Pairwise Format Comparisons of Differences in Coefficients on PVOL*

$$STOCKRISK_i = \hat{\alpha}_0 + \hat{\alpha}_1 D_1 + \hat{\alpha}_2 D_2 + \hat{\alpha}_3 (PVOL_i) + \hat{\alpha}_4 (D_1 * PVOL_i) + \hat{\alpha}_5 (D_2 * PVOL_i) + \zeta_i$$

	<u>Differences in PVOL Coefficients</u>	<u>t<sup>f</sup></u>	<u>p<sup>d</sup></u>
130EQ versus 115EQ	0.27 ( $\hat{\alpha}_4$ )	1.13	0.1319
130IS versus 115EQ	0.46 ( $\hat{\alpha}_5$ )	2.14	0.0173
130IS versus 130EQ	0.19 ( $\hat{\alpha}_5 - \hat{\alpha}_4$ )	0.84	0.2011



<sup>a</sup> STOCKRISK<sub>i</sub> is participant i's judgment of the risk of investing in the company's stock, on a scale of 1-14.

<sup>b</sup> The 115EQ format presents net changes in comprehensive-income components (i.e., UGL) in the statement of changes in stockholders' equity, as was required under SFAS No. 115. The 130EQ and 130IS formats represent two alternative presentations under SFAS No. 130, with 130EQ presenting gross changes in UGL in a statement of changes in stockholders' equity and 130IS presenting gross changes in UGL in a statement of comprehensive income.

<sup>c</sup> \*\*\* indicates significance at  $p < 0.01$ . Given directional predictions for the comparisons of high versus low volatility and the effect of PVOL on STOCKRISK, one-tailed significance levels are reported except when results are not consistent with the directional predictions of H3. This situation occurred in panel B for the coefficient on PVOL for 115EQ. In this situation, we tested for significance using 1 minus the one-tailed p-value.

<sup>d</sup> Format comparisons are based on one-tailed tests given the directional predictions of H3.

<sup>e</sup> Participants assessed the volatility of UGL (PVOL) on a scale of 1-14, with higher values representing greater volatility.

<sup>f</sup> t-statistics relate to the  $\hat{\alpha}_4$  and  $\hat{\alpha}_5$  coefficients from the pooled regression and the test of  $\hat{\alpha}_5 - \hat{\alpha}_4 = 0$ .

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**TABLE 5**  
**Stock-Value Judgments (H3)**

*Panel A: Mean (Standard Deviations) for VALUE (in dollars)<sup>a</sup>*

<u>Format<sup>b</sup></u>	<u>Volatility</u>		<u>Difference (High - Low)<sup>c</sup></u>
	<u>Low</u>	<u>High</u>	
115EQ	31.92 (7.05) n=14	30.40 (10.13) n=12	-1.52
130EQ	32.70 (6.28) n=14	32.76 (5.75) n=16	0.06
130IS	32.28 (4.67) n=13	30.28 (6.93) n=13	-2.00

*Pairwise Format Comparisons for Differences between High and Low Volatility*

	<u>t</u>	<u>p<sup>d</sup></u>
130EQ (High - Low) versus 115EQ (High - Low)	0.42	0.6646
130IS (High - Low) versus 115EQ (High - Low)	-0.14	0.4501
130IS (High - Low) versus 130EQ (High - Low)	-0.56	0.2894

*Panel B: Regressions of Management Effectiveness on Perceived UGL Volatility (PVOL)<sup>e</sup>*

$$VALUE_i = \hat{\alpha}_0 + \hat{\alpha}_1(PVOL_i) + \hat{\alpha}$$

<u>Format</u>	<u>Coefficient Estimates (t-statistics in parentheses)<sup>f</sup></u>		<u>Adjusted R<sup>2</sup></u>
	<u>Intercept</u>	<u>PVOL</u>	
115EQ (n=26)	40.82 (10.44)***	-1.23 (-2.66)***	0.20
130EQ (n=30)	34.93 (10.17)***	-0.27 (-0.67)	-0.02
130IS (n=26)	35.09 (12.10)***	-0.47 (-1.42)*	0.04

*Pairwise Format Comparisons of Differences in Coefficients on PVOL*

$$VALUE_i = \hat{\alpha}_0 + \hat{\alpha}_1 D_1 + \hat{\alpha}_2 D_2 + \hat{\alpha}_3 (PVOL_i) + \hat{\alpha}_4 (D_1 * PVOL_i) + \hat{\alpha}_5 (D_2 * PVOL_i) + \zeta_i$$

	Differences in PVOL Coefficients	t <sup>g</sup>	p <sup>d</sup>
130EQ versus 115EQ	0.96 ( $\acute{\alpha}_4$ )	1.65	0.9491
130IS versus 115EQ	0.76 ( $\acute{\alpha}_5$ )	1.40	0.9170
130IS versus 130EQ	-0.20 ( $\acute{\alpha}_5$ - $\acute{\alpha}_4$ )	-0.36	0.3587

<sup>a</sup>  $VALUE_i$  is participant  $i$ 's valuation of a company's stock in dollars per share.

<sup>b</sup> The 115EQ format presents net changes in comprehensive-income components (i.e., UGL) in the statement of changes in stockholders' equity, as was required under SFAS No. 115. The 130EQ and 130IS formats represent two alternative presentations under SFAS No. 130, with 130EQ presenting gross changes in UGL in a statement of changes in stockholders' equity and 130IS presenting gross changes in UGL in a statement of comprehensive income.

<sup>c</sup> Comparisons between high and low volatility are based on one-tailed significance levels except when results are not consistent with the directional predictions of H3. This situation occurred in panel A for the high versus low volatility comparison for 130EQ. In this situation, we tested for significance using 1 minus the one-tailed p-value.

<sup>d</sup> Format comparisons are based on one-tailed tests except when results are not consistent with the directional predictions of H3. This situation occurred in panel A for the comparison of 115EQ versus 130EQ and in panel B for the comparisons between coefficients for 115EQ versus 130EQ and 115EQ versus 130IS. In these situations, reported significance levels are calculated as 1 minus the one-tailed p-values.

<sup>e</sup> Participants assessed the volatility of UGL (PVOL) on a scale of 1-14, with higher values representing greater volatility.

<sup>f</sup>\*\*\* and \* indicates significance at  $p < 0.01$  and  $p < 0.10$ , respectively. Given directional predictions for the effect of PVOL on stock value, one-tailed significance levels are reported.

<sup>g</sup> t-statistics relate to the  $\hat{\alpha}_4$  and  $\hat{\alpha}_5$  coefficients from the pooled regression and the test of  $\hat{\alpha}_5 - \hat{\alpha}_4 = 0$ .

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## ENDNOTES

<sup>1</sup> As noted by the Special Committee on Financial Reporting (AICPA 1994, 81), there is no consensus on the specific definition of core versus non-core business activities. We use the term core activities to represent significant operating activities and the term non-core activities to represent peripheral operating and non-operating activities.

<sup>2</sup> Our analysis of the 281 comment letters received by the FASB indicated that 90 percent opposed the exposure draft and 6 percent favored the draft. The remaining 4 percent were neutral. Financial-services firms wrote 35 percent of the comment letters, indicating the importance of the proposed standard to this industry.

<sup>3</sup> The validity of these arguments is questionable. For financial services companies, managing investments is a core business activity. Additionally, other core activities have factors not completely controllable by management (e.g., natural disasters for insurance companies), and yet managing these risks is part of managers' responsibilities. Finally, firms can use relative performance evaluation measures to eliminate effects of uncontrollable factors (Antle and Smith 1986).

<sup>4</sup> Additionally, it is possible for analysts to see the term comprehensive income and yet not read about the components of comprehensive income (e.g., UGL information). Because Hirst and Hopkins (1998) did not ask a manipulation check question specifically about the acquisition of UGL information, it is not clear whether analysts who indicated that they saw the term comprehensive income actually read UGL information.

<sup>5</sup> For the 1,142 firm-year observations of UGL in the top decile of their sample, Dhaliwal et al. (1999) find that 88 percent are associated with financial-services firms. Also, for their entire sample of 11,425 firm-year observations, other comprehensive-income items are larger for financial institutions than for other industries, representing on average 4.3 percent of market value for financial institutions compared to 0.5 percent of market value for all other industries combined. Additionally, to assess the importance of investments to electronics companies, we examined Standard and Poor's Industry Survey for the electronics industry for several years in the mid-1990s and saw no mention of investments (Standard and Poor's 1995). In contrast, the survey on the insurance industry discussed both realized and unrealized gains and losses on investments.

<sup>6</sup> There are some cases in which financial-statement format might differentially affect acquisition or evaluation of comprehensive-income items. For example, if a comprehensive-income characteristic is not visibly displayed in the format, nonprofessional investors might fail to notice that characteristic. In our experiment, UGL volatility (the characteristic of interest) was apparent even in the 115EQ net-change format.

<sup>7</sup> Lipe (1998a) recognized two of our five dimensions, placement and information aggregation, in her discussion of Hirst and Hopkins (1998).

<sup>8</sup> Although SFAS No. 130 does not require companies to use the specific term "comprehensive income" (FASB 1997, para. 10), the term is used explicitly in SFAS No. 130 and has been adopted by a significant number of companies.

<sup>9</sup> As Ryan (1997) notes, however, archival research to date has not provided direct evidence on whether fair value accounting (e.g., recognizing UGL on investments) helps investors assess risk.

<sup>10</sup> The effect of a comprehensive-income component on risk is a function of both its variance and covariance with other comprehensive-income components. To avoid ambiguity, we designed our experiment so that the variance of UGL was the primary driver of the variance of comprehensive income.

<sup>11</sup> We investigated whether nonprofessional investors have significant ownership in insurance stocks. For the 33 companies in the March 26, 1999 edition of the Value Line Investment Survey, non-institutional ownership ranged from 4 to 99 percent of total shares, with a mean (median) of 49 percent (53 percent). Thus, individuals own approximately half of insurance company shares.

<sup>12</sup> Seventeen participants had no investment experience. While these individuals were distributed across the six experimental conditions, we performed supplemental ANOVAs and regressions using investment experience as a covariate. Results with the covariate (not reported) are qualitatively similar to those presented in tables 2-5.

<sup>13</sup> In addition to these three judgments, participants made two judgments in the second question set related to management's effectiveness at managing *investments* and the likelihood that the historical pattern of realized gains on investments would continue three years into the future. Results for these two judgments were qualitatively similar to those reported in tables 3 and 4 for management's effectiveness for operations (MGTEFFECT) and the risk of investing in the company's stock (STOCKRISK).

<sup>14</sup> These seven individuals had an average of 5.1 years of investment experience so it is unlikely that their incorrect responses were due to inexperience with financial statements. Eliminating these individuals does not qualitatively affect the results, so they have been retained in all analyses.

<sup>15</sup> An ANOVA with format and volatility as independent variables also supports these results. The ANOVA shows a significant main effect for volatility ( $F=11.71$ ,  $p=0.0009$ ), an insignificant main effect for format ( $F=0.94$ ,  $p=0.3939$ ) and an insignificant format-by-volatility interaction ( $F=0.80$ ,  $p=0.4527$ ).

<sup>16</sup> Since the investment footnote provided amounts of gross unrealized holding gains and losses on investments at two balance sheet dates, participants may have detected UGL volatility from the footnotes rather than the financial statements per se. In a supplemental experiment, however, 26 M.B.A. students assessed higher perceived volatility for the high versus low UGL volatility using financial statements from the 115EQ condition without footnotes. This finding suggests that footnote information did not drive results in our primary experiment.

<sup>17</sup> For all regressions, we identified outliers using procedures described in Neter, Wasserman and Kutner (1989, chapter 11). Eight outliers were deleted for stock-value judgments. One participant did not provide a response for stock risk and five participants did not provide responses for stock value. None of the regressions exhibited heteroskedasticity at  $p<0.05$  based on White's test (White 1980). Equality of error variances across the three individual regressions by format could not be rejected at  $p<0.05$  for all three performance measures.

<sup>18</sup> We could not create strictly downward and upward trends since we needed a fairly large unrealized gain in 19x1 to generate realized gains of \$101.2. Recall that the unrealized gain carried over from the previous year (i.e., 19x0) was only \$15.3. We followed the practice used in the examples in SFAS No. 130 of having all gains flow through unrealized gains before being reclassified as realized gains on the sale of a security. This approach required unrealized gains of at least \$85.9 million (\$101.2 minus \$15.3) arising in 19x1.

<sup>19</sup> While we have not performed an extensive search of formats actually chosen by firms, we selected 10 large financial-services firms and found that seven used a statement of stockholders' equity for their fiscal years ended 1998. A second sample of 10 large firms in industries other than financial services revealed nine firms chose this format. Additionally, Smith and Robertson's (1999) informal survey of 200 companies (excluding financial institutions) indicated that very few firms chose the statement of comprehensive income.

<sup>20</sup> Mikhail et al. (1999) document that analysts' job stability is inversely related to their relative forecast accuracy, suggesting that forecast accuracy is important to analysts.

<sup>21</sup> However, seven of the 32 nonprofessional investors in the 130EQ format failed to indicate that they saw UGL in the statement of stockholders' equity, instead indicating that they acquired this information from the footnotes. Although this percentage (22 percent) is considerably less than that found by Hirst and Hopkins for professional investors (50 percent), it suggests that format may have some effect on acquisition for nonprofessional investors. In addition, since all participants in the 115EQ format correctly noted that UGL appeared in the statement of stockholders' equity, the effects on acquisition for nonprofessional investors appear to be unique to the statement of stockholders' equity allowed under SFAS No. 130.