The Impact of the Format of the Financial Statements on the Disposition Effect.

Abstract

With a between subjects experiment, this study investigates the impact of the format of the financial statements on reducing the disposition effect. The disposition effect is an identified bias of investors that results in the sale of winning stock too early and the holding of losing stock too long. Results indicate that the format of the financial statements reduce the bias and interacts with the expertise in the use of the financial statements when investors have winning stock. However, when investors have losing stock, the interaction is cancelled and the level of expertise does not help investors in reducing the bias.

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I. Introduction

This paper investigates the impact of the format of financial statements on investors' decisions. In particular, it studies whether the format of financial statements reduces the bias from the disposition effect. The disposition effect was identified and defined first by Shefrin and Statman (1985) as the tendency of investors to sell winning stock too early and the holding of losing ones too long. In 2008, the FASB in conjunction with the IASB published an exposure draft to modify the presentation of financial statements. In this paper, the impact of the proposed format of the financial statements in reducing the disposition effect is investigated and compared to the impact of the traditional format of financial statements in reducing the bias.

The proposed format of the financial statements does not change the content of the financial information; it only modifies how information is presented in the financial statements. The traditional format of the balance sheet classifies information as assets, liabilities and stockholders' equity. Assets and liabilities are broadly classified as current and long-term. The proposed draft suggests grouping financial information in five sections: business, financing, discontinued operations, income tax, and equity. The business section is further divided into operating and investing activities. Every section in the balance sheet would present assets and liabilities associated with that section. For instance, operating activities present all assets and liabilities related to the business section such as accounts receivables, inventories, accounts payable, wages payable among others. The proposed format would apply to the balance sheet, the comprehensive income statement and the statement of cash flows (Board, 2008). IASB's and FASB's example of the proposed balance sheet is in Appendix A.

The purpose of the proposed format is to provide useful financial information to creditors and investors in their decision-making process and in order to achieve that goal the IASB and FASB propose three objectives. For the first objective the reporting entity should present its financial statements in a way that shows a “cohesive” financial picture of its activities. It means that all the financial statements should use the same classification for the economic transactions reported. The second objective is "disaggregation." Companies in their financial statements should disaggregate information in a way that is useful to assess the amount, timing and uncertainty of future cash flows. Finally, the third objective, "liquidity and financial flexibility" states that "an entity should present information in its financial statements in a manner that helps users to assess the entity's ability to meet its financial commitments as they become due and to invest in business opportunities" (Board, 2008).

Among the many users of financial statements, investors have a particular interest deciding whether to invest in a particular stock. Investors are concerned with the return and risk associated with a particular share. Consequently, they want to determine the amount of dividends a company might pay, the change in share price, and volatility or risk associated with those shares. Financial statements provide information to investors in their decision-making process and help them to attain their goals (Maines, 1995). The proposal of a new financial statement format assumes that the it would help investors in making more effective decisions.

Previous research in accounting and judgment and decision making has found that the

format in which information is presented could help individuals to improve the efficacy of their decisions. Whether the proposed format of financial statements helps investors in their decision-making process is an important empirical question for the accounting profession, researchers, and investors. In this study, an experiment is conducted to test for the disposition effect and for the effect of the format of the financial statements in reducing the bias from the disposition effect. The results are promising in proving that financial statements and in particular the proposed format of the financial statements can help in reducing the bias from the disposition effect.

The next section discusses the antecedents, theories and establishes the hypotheses for this paper. Section three describes the methodology used to test the different hypotheses and section four discusses the results. Finally, section five discusses the conclusions of this study.

II. Antecedents and Hypotheses

Traditional and behavioral research in financial accounting are in direct contradiction to each other because they do not share the assumption of rationality and they do not analyze the phenomenon of the financial markets from the same perspective. Behavioral research is concerned with investors' and creditors' behavior and their decisions. Meanwhile traditional research is concern with the factors that determine the price of the shares in the market assuming that investors act as rational economic agents. In its inquiry, the behavioral stream has identified several responses from investors that contradict expectations from traditional theories such as the efficient market hypothesis and expected utility theory. These deviations are called anomalies,

and they are defined as “systematic traits of behavior of economic agents, which cannot be explained by the expected utility model” (Stracca, 2004). Many anomalies have been identified. Some anomalies are the consequence of violations to the laws of probability. Other anomalies are biases such as the anchoring effect or the representativeness bias. Other studies have found that changes in accounting policies without economic substance affect share price, or the existence of factors other than fundamentals affecting share prices. Even in studies that can be categorized as traditional, many anomalies have been found, like the post-earnings-announcement drift. An inventory of these anomalies can be found in a number of papers (Lee, 2001; Libby, Bloomfield, & Nelson, 2002; Shiller, 2003; Stracca, 2004).

Among these anomalies, one is of particular interest for this study: the disposition effect. The disposition effect is the tendency of investors to sell a stock too early when they have a gain, and to hold a stock too long when they have a loss (Stracca, 2004). It is an anomaly because, according to expected utility theory and the efficient markets hypothesis, investors should buy more shares when expectations are that the stock price will rise, but they sell too soon. Similarly, traditional theories predict that when stock prices are expected to drop investors should sell their stock, but investors hold losers too long. The disposition effect has been demonstrated in experimental settings, such as the work by Krishnan and Booker (2002) that tests the disposition effect and the influence that analysts’ recommendations have on investors. The disposition effect has been investigated and tested under different circumstances since it was first identified by Shefrin and Statman in 1985. Weber and Camerer (1998) investigated the effect of the

changes in stock purchase price on investors' decisions. Evidence of the disposition effect has been found also in archival studies like those by Odean (1998) or even the paper by Shefrin and Statman (1985) in which they identify for the first time the disposition effect.

Prospect theory

As an anomaly, the disposition effect cannot be explained by the theories in the main stream, in particular "Expected Utility Theory" (EUT), which is a normative theory. However, Prospect Theory (PT), a descriptive theory, can help in explaining the disposition effect. PT was developed by Tversky and Kahneman in the 1970's and 1980's. It is based on the same basic elements as EUT like options, utility function, outcome, and probability but it modifies many of those elements to explain individuals' decision-making behavior. In PT, as in EUT, individuals make decisions by maximizing a modified utility function.

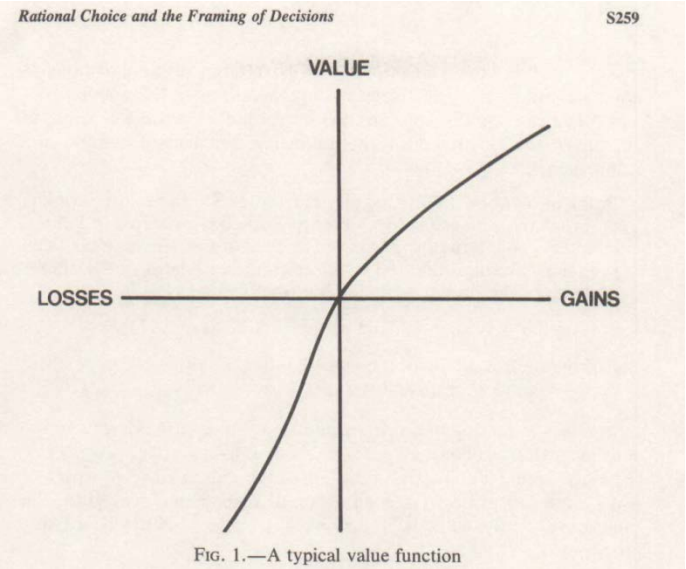
PT states that the decision-making process goes through two phases; a phase of framing and editing, and a phase of evaluating. In the first phase, individuals make a preliminary analysis of the problem considering contingencies and possible outcomes of each prospect (prospect is the term PT uses for options). In this preliminary analysis, individuals place the problem in context. This process largely depends on personal heuristics, and biases. A consequence of the framing and editing phase is that individuals may change their decisions when the problem is presented differently causing a violation of the invariance assumption. In the framing and editing phase individuals may, based on the cancellation assumption, eliminate some of the prospects under analysis. The accepted prospects are evaluated in the second phase.

During the evaluation phase, prospects are compared among each other with the intention to choose one prospect. The theory describes two possible ways to choose a prospect; if one of the prospects is clearly superior to the others the evaluation process ends here, choosing the superior prospect. The second option occurs when there is not a clear prospect. In this case individuals calculate the expected value for all prospects and choose the prospect that maximizes expected value. The expected value function shares some features with EUT, such as individuals assigning a value to each outcome (utility in EUT), multiplying the value by a decision weight (probability in EUT), and choosing the prospect (option in EUT) that yields the highest expected value (expected utility in EUT).

One of the distinct futures of PT is the value function. It is calculated in terms of gains or losses. This is in contrast to EUT, where the utility function considers only positive accumulated amounts of utility. To compute a gain or loss, individuals determine a reference point and compare the outcome against the reference point. When the outcome is higher than the reference point, individuals consider this result a gain, and, when lower, a loss. The reference point is a kink in the value function and carries a zero value. The value function then has two components, the gain and loss sections. Gains behave the same as the utility function in EUT; the function is concave. A marginal change that happens close to the reference point has a larger impact on value, compared to a marginal change that happens on gains far from the reference point. For losses, the value function is convex and steeper than the gain part of the function. The convexity gives an "S" shape to the entire value function and the steepness of the loss section

reflects individuals' behavior toward losses: risk aversion for small losses and risk seeking for big losses. The reference point is arbitrary and is defined during the framing process. Individuals set the reference point using their experience and some heuristics. Consequently, the reference point is sensitive to different factors, such as the way information is provided, the type of task involved, or the heuristic used. The value function can be graphed with gains and losses on the x-axis and value on the y-axis. Figure I shows the value function for PT. The graph is taken from Tsversky and Kanheman (1986).

Figure I



PT, as EUT, deals with decision under uncertain conditions. EUT includes risk by multiplying the probability of occurrence of a particular state by the utility assigned to that state. In prospect theory, risk is introduced by multiplying the value by a weighting function. This function is derived from individuals' perception about probabilities. For example, events with very low probability are considered almost impossible by individuals who accordingly assign these a zero probability. Similarly, individuals consider very high probability events as certain

and assign these a 100 probability. In contrast to the extremes of very low or high probability events, individuals overestimate the probability of events with low probability; they consider that these events have a higher probability of occurrence than they have in reality. For medium and high probability events, the opposite is true. Individuals underestimate those events and consider that their probability is lower than it really is. Figure II represents the weighting function used in prospect theory and compares it with the stated probability. Tsversky and Kanheman (1986) shows on the x-axis probability and on the y-axis the weighting function. The bold line is the weighting function and the dotted line is stated probability.

Figure II

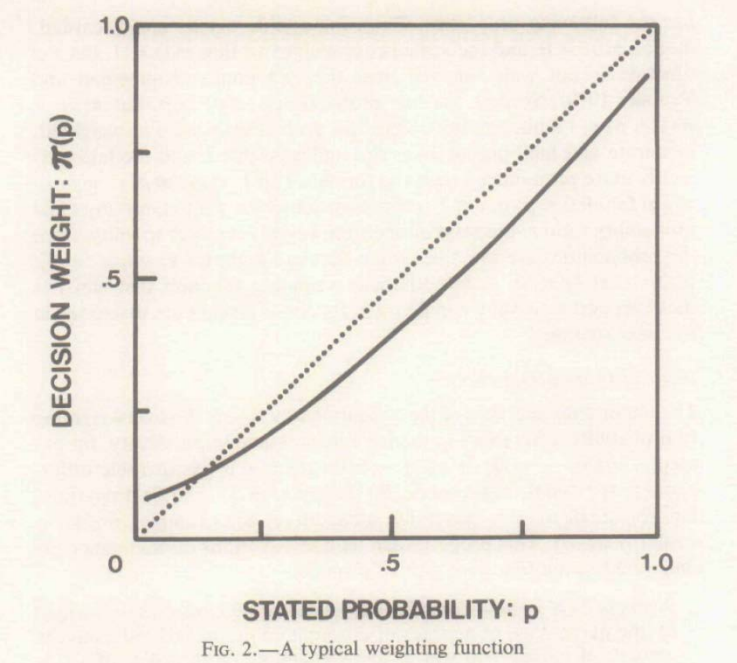


FIG. 2.—A typical weighting function

PT introduces a richer scope of predictions for individuals' behavior than EUT; it is the "S" shape function in part that is responsible for this variance in responses. When individuals face the probability of large gains they become risk-averse; in this section of

the value function, additions in gain provide just a marginal increase in value. There is not that much satisfaction in adding extra gains and individuals may not take the risk; investors face this situation when they own stock that has earned large gains. Even if the expected future share price makes the share an attractive investment, investors would try to sell the share and lock in the gain; they do not want to take additional risk over the gains already earned. In the loss section of the value graph, the convexity and the steepened shape make any marginal change in losses have a significant impact on value; in other words, losses are proportionally more painful for individuals than gains are satisfactory.

An individual is a risk taker for small gains. It is, when they are situated in the section of the value graph that is close to the point of reference. Any incremental change in gains in this section of the curve has a large impact on value. There is another region on the value function where individuals become risk takers, the section representing large losses. At this point individuals are willing to take risk; here changes in loss represent a small change in value. Investors facing this situation will tend to hold the losing share and keep risking. A possible explanation of this behavior is that when investors face a big loss they do not want to realize the loss, and keeping the share gives them the opportunity even if it is small, to recover part of the loss.

Hypotheses 1 and 2 on disposition effect.

Predictions from EUT and PT conflict under some circumstances. For instance, if a share has a current price below its future expected price, EUT predicts that investors will buy that share. This is not necessarily the case for PT because the decision depends on an additional

variable, the share purchase price. Investors would compute first the gain, or loss, on the share comparing current price against purchase price and then evaluate the expected value. If the purchase price is lower than the current price, then investors have a gain. If that gain is significant enough, PT predicts that investors will sell the share. This conflicting scenario leads to the first hypotheses; a hypothesis for a gain condition where the expected future share price is higher than the current stock price and the current stock price is higher than the purchase stock price. The gain scenario provides an investor with a possible gain under both theories: EUT and PT. Hypotheses H1 contrasts the conflicting predictions from both theories in terms of the decision or the willingness to make a decision.

Hypothesis H1. When the expected future price is higher than the current price and the current price is higher than the purchase price then (Gain condition), investors are more likely to sell or hold their shares than buy as predicted by EUT.

Another circumstance where EUT and PT theories lead to contradictory predictions is when individuals face the probability of large losses. EUT predicts that investors will sell their shares when the current price is higher than the expected future price. However, and similar to the previous case, PT's prediction depends on a third variable: the purchase price. If the purchase price is above the current price and expected future price, investors have a loss. If the loss is significant, PT predicts that investors will hold their shares rather than sell. The second hypotheses H2 test this discrepancy between the two theories and compares investors' decision under a loss condition.

Hypothesis H2. When the expected future price is lower than the current price and the current price is lower than the purchase price then (Loss condition), investors are more likely to hold their shares than sell as predicted by EUT.

The conditions established in Hypotheses H1 and H2 serve the purpose of determining the existence of the disposition effect in the sample of the experiment; once the condition is established, the next step is to assess the impact of the financial statements on investors' decision.

Hypotheses 3 and 4 on the format of the financial statements.

Judgment and decision-making has been schematized as a three steps procedure: Input, process, and output (Maines, 1995). EUT and PT are mainly concern with one step: process. The input component concerns the information necessary to make a decision. Research in this area studies the characteristics, uses and effects of information, the presentation format, sequence of presentation, and aggregation or disaggregation of the information. (Libby & Lewis, 1977).

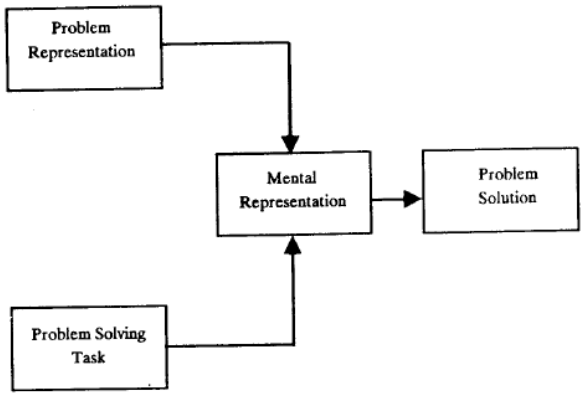
EUT and PT both assume that the individual already gathered all necessary information to solve a particular problem. In contrast, while EUT assumes that the way information is presented does not affect the outcome of the decision, PT recognizes that the way information is presented plays a role in the decision-making process. Individuals organize and edit information related to all possible options according to the problem and task presented during the framing phase, and framing is not free of biases or human limitations. On the contrary, "framing is

controlled by the manner in which the choice problem is presented as well as by norms, habits, and expectancies of the decision maker" (Tversky & Kahneman, 1986). This implies that when individuals are presented with the same information but under different formats, the change in format itself rather than the information may affect the outcome of the decision-making process. Consequently, the efficiency and efficacy of the decision depends not only on the heuristic used in the process but also on the way information is presented.

In terms of the input and the format, it is important to know whether the proposed format of financial statements by IASB and FASB is capable of improving the investors' decision. IASB and FASB assume that the format will help users in making better and more accurate decisions. Therefore, an important question is: How do different formats in financial statements affect the efficacy of the decision-making process? Neither EUT nor PT can address this question because they focus on the process. It is necessary to look at a theory that explains the input part of the Judgment and Decision Making model.

Cognitive fit is a theory introduced by Vessey (1991) and improved by Shaft and Vessey (2006). The theory establishes that the way information is presented to individuals is going to have an impact on the outcome of their decision. In other words, the information format will affect the efficacy and efficiency of the outcome. The diagram in Figure III summarizes the proposition of the cognitive fit theory (Vessey, 1991).

Figure III



The theory states that the efficacy and efficiency of the outcome depends on the mental representation an individual uses to solve a task. In turn, mental representation is affected by both the complexity of the task (problem solving) and the format of the information (problem representation). The theory is based on the concept of "information processing" which states that a task can be extremely complex to solve because we have limited capabilities to process information. However, the complexity of the task can be reduced with the proper use of tools and aids. In particular, task complexity can be reduced when the mental representation used to solve the task is the same mental representation used to analyze the information. This match between task and information is referred to as cognitive fit (Vessey, 1991).

Investors face specific decisions, such as whether to buy, sell or hold shares. To solve this problem, they may perform, among other tasks, a financial statement analysis to assess the profitability, liquidity and solvency of the firm. This whole process can be framed using Cognitive Fit Theory in the following way. Deciding over the share is “the problem solution” in cognitive theory. Performing a financial statements analysis is the “problem solving task.”

“Mental representation” would be the type of analysis investors perform. Financial statements and their format are the “problem representation.” The theory states that if the mental representation (the way investors analyze financial statements) is the same as the “problem representation” (the way financial information is presented) then the “problem solution” will be more effective.

Investor's financial analysis is driven by the company’s operating, investing, financing, and dividends strategies (Palepu, Bernard, & Healy, 1996). Individuals look for the information that best serves their mental representation of the problem. Thus, they will in part search for information related to the company’s operating, investing, financing and dividends activities in the financial statements. If the information obtained fits the investors' mental representation then the task complexity is reduced and the outcome of the decision, according to cognitive fit theory, would be more effective. The traditional format of the financial statements provides only a partial fit to the investor’s mental representation. The statement of cash flows in particular is where information is presented classifying economic transactions as operating, investing and financing activities. The income statement only partially fits the investors’ mental representation, for although it has a section for operating activities, the format is ambiguous regarding investing and financing activities. The balance sheet, in its current format, does not provide a proper fit aligned with the investor's mental representation. In the balance sheet, information is presented by grouping transactions by assets, liabilities and stockholders' equity. As a result, investors interested in analyzing operations transactions using the balance sheet, have to determine which items in the balance sheet pertain to

operation activities and which do not. After this determination is made, they then have to re-group different accounts for analyses purposes. In short, when investors analyze financial statements using the traditional format, they have to switch from the task mental representation (operation, investment, financing and dividends) into problem representation (assets, liabilities and stockholders' equity). The process of going forward and backwards between the two representations does not help to reduce task complexity which in turn does not help in making more efficient and effective decisions.

In contrast, the IASB and the FASB proposed format of financial statements clearly identifies and presents information related to operation, investment, and financing activities across all the financial statements. Investors will find a section for operating activities in all the financial statements, eliminating the necessity for them to go through all items in all financial statements identifying and extracting items related to the firm’s operating activities. The proposed format would reduce the complexity of this task by matching the format used in the financial statements with the mental representation used in analyzing financial statements for assessing a firm's value. Based on these observations the following hypotheses are proposed.

> Hypothesis H3. When the expected future price is higher than the current price and the current price is higher than the purchase price then (Gain condition), investors are more likely to buy or hold their shares when they are provided with the proposed financial statements format than when they are provided with traditional financial statements format.

Hypothesis H4. When the expected future price is lower than the current price and the current price is lower than the purchase price then (Loss condition), investors are more likely to sell their shares when they are provided with the proposed financial statements format than when they are provided with traditional financial statements format.

III. Methodology

An experiment is conducted to test the aforementioned hypotheses using a 2 x 3 between subjects design. The first factor measures the disposition effect at two levels for a gain and loss. The second factor measures the impact of the financial statements in reducing the disposition effect at three levels. The first level is for no financial statements, the second for the traditional format of financial statements and the third for the proposed format of financial statements. The dependent variable is the investors' willingness to sell, buy or hold share and it is measured in a nine point Likert-scale.

The experiment is conducted online. Online participation allows subjects to work at their own pace and location with the consequence that there is admittedly some lack of control over the experiment’s environment. Each participant receives a financial case where they are asked to assume the role of an investor that has a wealth consisting of cash and stock. As investors, they have to decide whether to sell, buy or hold the stock they have been assigned in the case. Participants are provided with the table in Figure IV. This table contains information about future share prices and it includes computations for the expected future share price which is $10 for all cases. The expected future share price is calculated by

multiplying a future share price (first row) by the probability the price occurs (second row) and adding the products of all future prices. The $10 is the average of future share prices if those prices occur with high frequency.

Figure IV Table for Future Expected Price

Share Price in one year	$ 0	$ 2.50	$ 7	$ 10	$12.50	$17.50	$20	
Probability	1%	4%	20%	50%	20%	4%	1%	100%
Expected Future Price	$ 0.00	$0.10	$ 1.50	$ 5.00	$ 2.50	$ 0.70	$ 0.20	$ 10.00

The first factor, as mentioned, measures the disposition effect at two levels of a gain and loss. Participants in the gain condition are presented with a purchase price (the price they paid for their shares a year ago) of $8 and current share price (the actual price in the market) of $9. Under this scenario, they have a gain for both theories; the gain for utility theory is computed by comparing the expected future price against the current price and for prospect theory by comparing the initial purchased price and the current price. Participants in the loss condition are presented with a purchased price of $15 and a current price of $11. Under this scenario, participants face losses for both theories too; similar to the gain condition, losses are computed by comparing current price to initial purchase price and expected future price. These conditions are used to test the disposition effect.

The second factor measures the impact of the financial statements on investors' decision and is tested at three levels. The group in the first level is provided with no financial statements at all, this is the same group that is used to test for the disposition effect. The second group is provided with the financial statements prepared using the traditional format and the third group is

provided with the proposed format of financial statements. The groups provided with financial statements have to compute four of the most commonly known ratios for profitability. Because participants have only a basic knowledge in computing and analyzing financial ratios, instructions are included regarding these calculations.

There are six groups in total that combine the two factors of the experiment with participants randomly assigned to each group. Participants were selected among undergraduate students from the college of business administration from an accredited university. The reason for this restriction is to control for the level of expertise of the participants in the use of the traditional format of the financial statements. The use of more skillful participants in the use of financial statements could compromise the integrity of the experiment's results, as these could be driven by the level of expertise of the participants and not the treatment from the experiment. Restricting the experiment to undergraduate-level students control and neutralize their level of expertise in financial statements. The level of expertise in financial statements is further controlled by including a construct as part of the questionnaire. This construct measures the level of expertise in the use of financial statements and it was developed by Thompson et. al. (2005). The construct measures the level of familiarity and expertise an individual has regarding a product. The scale was adapted for the use of financial statements. The construct consists of five items with reliability measured by a reported alpha of .93 (Thompson et al., 2005) . With the use of these two tools, the type of subjects in the sample and scale for expertise, it is possible to have control over the level of expertise in the use of the financial statements. However, the inclusion of expertise in the design is at

a cost. Expertise is expected to interact with financial statements. As Hodge and Pronk (2006) suggest, “more experienced investors are better able to predefine their information needs, execute focused searches to acquire relevant information, and interpret and integrate financial statement information than are less experienced investors.” Consequently it is expected that the higher the level of expertise in the use of the financial statements the higher the impact of the financial statements will have in the decision making of investors. This may be true for both formats of the financial statements.

Following Krishnan and Booker (2002), the dependent variable for the investors' decision does not measure the final decision (buy, sell or hold) but rather the intention or likelihood toward the final decision. They use a six-point Likert scale to measure the intention to sell or hold share. Some modifications to this scale were made in this study. This study uses a nine-point Likert scale instead of six, in order to include a buying decision in the scale. In this way, it is possible to measure the three possible decisions. The modified scale assigns a one to indicate definitely sell, a five to definitely hold, and a nine to definitely buy, with other points in the scale measuring intermediate steps between these three main decisions. The demographic variables include age, gender, years in college, accounting and financial classes taken, and experience in trading shares. As mentioned before, there is also a variable for the level of expertise in the use of financial statements.

The purpose of hypotheses 1 and 2 is to test for the existence of the disposition effect in the sample. A one sample t-test is used to test hypotheses 1 and 2 by comparing the sample value for decision with the predicted value by EUT. A regression analysis is used for testing hypotheses H3 and H4. The dependent variable is the likelihood for the investors' decision

measured by a nine-point Likert scale and the format of the financial statements, proposed and traditional, are measured with a dummy variable where 1 indicates the existence of the financial statements. The intercept in the models measures the contribution of the control group, the group with not financial statements. As mentioned before, the level of the expertise of the participants on the use of financial statements has to be controlled or it could lead the results toward the traditional format. A construct measuring the level of expertise is included for this purpose. However, it is expected that the level of expertise will not only partialize expertise in the model but also will interact with the format of the financial statements. Consequently two variables are added that measure the interaction between the format of the financial statements, proposed and traditional, and the level of expertise in the use of financial statements. The model use to test hypothesis H3 and H4 is as follows:

$$\text{Likelihood of the Decision} = \beta o + \beta 1 \text{ Traditional Format} + \beta 2 \text{ Proposed Format} + \beta 3 (\text{Traditional Format x Expertise}) + \beta 4 (\text{Proposed Format x Expertise}) + \varepsilon$$

It is important to mention that the model does not include the main effects for expertise in the use of the financial statements. The proposed and traditional format of the financial statements are dummy variables and the interaction with the level of expertise is the linear transformation of expertise as including expertise in the model creates multicollinearity.

IV. Results

Subjects

A total of 256 participants, all undergraduate students taking classes in the college of business administration in an accredited university, participated in the study. Undergraduate students were chosen as subjects to minimize the level of expertise in the use of financial statements. The experiment compares two formats of financial statements: the traditional and proposed format. Because the traditional format has been utilized for a long time, users of the financial statements are well aware of this format. The level of knowledge and expertise in the use of the traditional format of financial statements could bias the results from the experiment. With undergraduate students, the level of expertise in the traditional format is kept at its minimum and the risk of a bias is reduced.

From the total number of participants, 54.3% are females and 45.7% are males. On average, participants are 24.95 years old and have taken 3.59 classes in finance and/or accounting. As for the number of years in school, 11.0% are sophomore, 40.4% are junior and 48.6% are senior. In total, 83.2% of the participants have no experience investing in stock with only 9.8% having between 1 and 2 years of experience, 3.1% having between 3 and 4 years, 1.2% between 6 and 7 years, and 2.7% having more than seven years of experience.

The experiment consisted of six different conditions and was conducted online. Participants were contacted by their professor and in some cases were offered extra credits to participate in the experiment. Professors provided students with a link to the experiment where students could access the experiment at their convenience. Participants were randomly assigned to one of the six conditions.

Descriptive statistics

Expertise is a construct variable that captures the level of expertise in the use of the financial statements. It consists of five questions using a five-point likert-scale on each question. Expertise showed high levels of reliability-Cronbach's alpha = .915. The final scale for the construct is obtained by summing the five questions; the minimum possible score is 5 and the maximum is 25. The higher the score means a higher level of expertise in the use of financial statements.

Table I shows the descriptive statistics and correlations for the gain condition. Participants have an average of 5.30 which is a clear decision to hold their current position in the stock. As for the level of expertise, participants perceive themselves as not expert in the use of financial statements; the average score for expertise is 9.130.

Table II contains descriptive statistics and correlations for the loss condition. When participants face the loss conditions, on average their decision is 3.860 which is between hold and probably sell. The level of expertise is on average 9.50.

Table I
Gain Condition
Descriptive Statistics and Pearson Correlation

Variable	Mean	Std. Dev.	Decision	Expertise	Traditional Format	Proposed Format	Traditional x Expertise	Proposed x Expertise
Decision	5.300	1.857	1.000	.190 **	.019	.077	.067	.143
				(.024)	(.819)	(.360)	(.430)	(.090)
Expertise	9.130	8.036		1.000	.488 ***	.471 ***	.558 ***	.543 ***
					(.000)	(.000)	(.000)	(.000)

Traditional Format	.320	.467	1.000	-.441 *** (.000)	.945 *** (.000)	-.417 *** (.000)	
Proposed Format	.300	.458		1.000	-.417 *** (.000)	.944 *** (.000)	
Expertise x Traditional	4.710	7.343			1.000	-.394 *** (.000)	
Expertise x Proposed	4.42	7.254				1.000	

Pearson correlation (p-value)

*,**,*** significance at 10%, 5% and 1% respectively

Decisions measures investors' decision to sell, hold or buy; it is a nine-point Likert scale where 1 is definitely sell, 5 is hold and 9 is definitely buy and is also a dependent variable. Expertise is a construct that measures the level of expertise in the use of financial statements; this variable takes the value of 0 when there is no financial statement. Traditional format is a dichotomous variable for participants using the traditional format of financial statements, and proposed format measures participants using the proposed format of financial statements. Expertise x Traditional is the interaction between expertise and the traditional format of the financial statements and Expertise x Proposed is the interaction of expertise and the proposed format of the financial statements.

Table II
Loss Condition
Descriptive Statistics and Pearson Correlation

Variable	Mean	Std. Dev.	Decision	Expertise	Traditional Format	Proposed Format	Traditional x Expertise	Proposed x Expertise
Decision	3.860	1.871	1.000	-.127 (.176)	.112 (.236)	-.218 ** (.020)	-.137 (.145)	.010 (.913)
Expertise	9.500	8.456		1.000	.536 *** (.000)	.408 *** (.000)	.370 *** (.000)	.265 *** (.004)
Traditional Format	.320	.467			1.000	-.443 *** (.000)	.118 (.210)	.053 (.573)
Proposed Format	.300	.460				1.000	-.052 (.580)	-.121 (.201)
Expertise x Traditional	.043	.544					1.000	.006 (.947)
Expertise x Proposed	-.043	.557						1.000

Pearson correlation (p-value)

*,**,*** significance at 10%, 5% and 1% respectively

Decisions measures investors' decision to sell, hold or buy; it is a nine-point Likert scale where 1 is definitely sell, 5 is hold and 9 is definitely buy and is also a dependent variable. Expertise is a construct that measures the level of expertise in the use of financial statements; this variable takes the value of 0 when there is no financial statement. Traditional format is a dichotomous variable for participants using the traditional format of financial statements, and proposed format measures participants using the proposed format of financial statements. Expertise x Traditional is the interaction between expertise and the traditional format of the financial statements and Expertise x Proposed is the interaction of expertise and the proposed format of the financial statements.

Hypotheses H1 and H2

Hypotheses H1 and H2 establish the existence of the disposition effect in the group of participants. Hypothesis H1 tests the disposition effect under gain conditions where investors are

more likely to sell or hold their shares than buy as predicted by EUT. In the experiment, investors' decision is measured with a nine-point Likert-scale where 1 represents a decision of "definitely sell", 5 is for "hold" and 9 is for "definitely buy." Under a gain condition, EUT predicts that investors would buy shares which in the previous scale is represented by a score of 8 or higher. The group of participants in the gain condition and no financial statements are used to test for the disposition effect. On average, participants' decision (see table III) is lower than expected by EUT (M=5.09, Std Dev=1.993). The difference of -2.91 between the decision predicted by EUT and participant's decision is significant at $t(54) = -10.824$, $p<.01$. Results confirm hypothesis H1 and the existence of the disposition effect on gain conditions.

Hypothesis 2 intends to establish the existence of the disposition effect for the loss condition. When investors face a loss, they will tend to hold their shares even though EUT predicts that the optimal decision is selling. For the loss condition the decision predicted by EUT is 2, meaning investors are willing to sell. To test this hypothesis the group with a loss condition and no financial statements are used. This group shows on average a decision (See table V) that is higher than expected by EUT (M=4.09, Std Dev=2.219) This difference of 2.091 is statistically significant at $t(43)=6.252$, $p<.01$. The results confirm hypothesis H2 and the existence of the disposition effect for the loss condition.

The results for hypotheses H1 and H2 are not surprising. The disposition effect is a very well-known and documented phenomenon in the literature. However, once

established the existence of the disposition effect in the participants, the next step is to determine whether the financial statements may reduce the disposition effect. This is addressed in hypotheses 3 and 4.

Hypotheses 3 and 4.

Hypotheses 3 and 4 test the format of financial statements as an aid in reducing the bias from the disposition effect. Hypothesis 3 tests the effect on the gain condition and hypothesis 4 does the same for the loss condition. H3 predicts that investors are more likely to hold or buy shares when they are provided with the proposed format of financial statements than when they are provided with the traditional format of financial statements and the effect is going to be greater as the level of expertise in the use of financial statements increases.

Table III shows the descriptive statistics for the gain condition calculated for the different groups in terms of the treatment of the financial statements: no financial statements, traditional format and proposed format. The group with no financial statements has an average score on the intention scale of 5.09, the group with the traditional format of financial statements has an average of 5.36 and the group with the proposed format of financial statements has an average of 5.52. The decision is moving closer to buying which is according to the predictions of hypothesis H3.

Table III
Gain Condition
Descriptive Statistics per Group

	No Financial Statements			Traditional Format of FS			Proposed Format of FS		
Variable	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.

Decision	55	5.09	1.99	45	5.36	1.69	42	5.52	1.85
Expertise	55	0.00	0.00	45	14.86	4.28	42	14.95	4.437

Decisions measures investors' decision to sell, hold or buy; it is a nine-point Likert scale where 1 is definitely sell, 5 is hold and 9 is definitely buy and is also the dependent variable. Expertise is a construct that measures the level of expertise in the use of financial statements; this variable takes the value of 0 when there is no financial statement.

Table IV shows the results of the regression analysis for hypothesis H3 and H4. For the gain condition the regression is statistical significant at $F(142)=2.818$ $p<.05$ with an R-square of .076 and an Adjusted R-square of .049.

Table IV
Regression Analysis for Gain and Loss Condition
Model: Decision = $\beta o + \beta 1$ Traditional$+ \beta 2$ Proposed $+ \beta 3$ (Traditional x Expertise) $+ \beta 4$ (Proposed x Expertise) $+ \varepsilon$

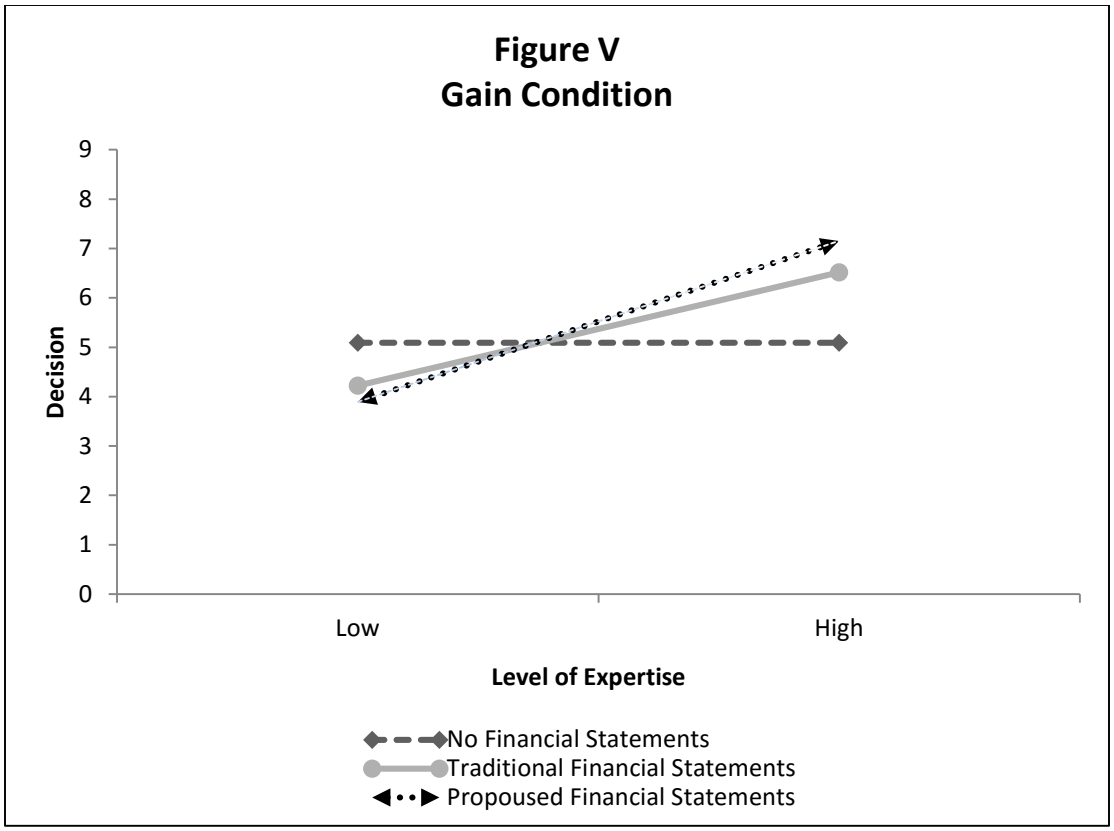
Variable	Gain			Loss		
	Coefficients	Standardized Coefficients		Coefficients	Standardized Coefficients	
Constant	5.091		***	4.091		***
Traditional	-1.446	-.364		.148	.037	
Proposed	-2.011	-.496	**	-.864	-.212	**
Traditional x Expertise	.115	.455	*	-.525	-.153	
Proposed x Expertise	.163	.639	***	-.055	-.016	
R-Square	.076			.071		
Adj R-Square	.049			.037		
F-Value	2.818		**	2.091		*
N	142			114		

*,**,*** significance at 10%, 5% and 1% respectively
Decision is the dependent variable measured with a nine point Likert-scale where 1 is definitely sell, 5 hold and 9 definitely buy. Traditional is a dummy variable that takes a value of 1 when participants are present the traditional format of financial statements and zero otherwise. Proposed is a dummy variable that takes value of 1 when participants are presented the proposed format of financial statements. Traditional x Expertise is the interaction between level of expertise and the traditional format of financial statements. Proposed x Expertise is the interaction between the proposed format of financial statements and expertise. Expertise is excluded from the model because it causes multicollinearity in the model

The constant measures the group with no financial statements. This group works as a control group and it also was used to test for the existence of the disposition effect in the participants. The coefficient for the intercept is significant at $P<.01$. Because this

group was not shown financial statements, there is no measure on the level of expertise in the use of the financial statements for this group. In other words, the value of expertise for this group is zero. Expertise is a variable that interacts with the traditional and proposed format of financial statements and because they are dummy variables, the interaction variables are a lineal transformation of the level of expertise.

Figure V graphically shows the results of the interactions in the gain condition. The coefficient of the interaction between expertise and the traditional format of the financial statements is positive and statistically significant at $p<.10$. This indicates that when the traditional format of the financial statements is used, it reduces the disposition effect but only as the level of expertise increases. As shown in the graph, lower level of expertise participants perform worse than participants with no financial statements. As for the interaction between the proposed format of financial statements and expertise, the coefficient is also positive and statistically significant at $P<.01$. This also suggest that the proposed format of financial statements reduces the disposition effect but only at a high level of expertise. At a lower level of expertise participants would do better if they would not use financial statements. Both formats of financial statements help reduce the disposition effect under gain conditions but when the standardized coefficients are compared it is the proposed format of the financial statements that helps investors most in reducing the disposition effect. The standardized coefficient for the interaction of the traditional format is .455 and the coefficient for the interaction of the proposed format is .639 a difference of more than 40%.



As shown in the graph, at low level of expertise both formats of financial statements perform worse than the group with no financial statements but as the level of expertise increases both formats reduce the disposition effect. Financial statements seems to behave as any other tool or device, like a car or a hammer. When they combined with expertise, performance is dramatically improved. The proposed format of the financial statements can be a more powerful decision-making aid for investors but also a potentially more dangerous one for other investors. Investors can make better decision by using the proposed format as long as they know how to use them but they also may cause more damage if investors lack the experience and knowledge necessary to use financial statements. The results of this experiments not only confirm hypothesis 3 but also carry many implications for regulators, IASB and FASB, for the profession and even for

educators. Financial statements are really a great tool but only if they are in the right hands.

Hypothesis 4 examines for the effect of the format of financial statements in investors' decision under a loss condition. The hypothesis predicts that investors are more willing to sell their shares when they are presented with the proposed format of the financial statements than when they are presented with the traditional format of the financial statements. Similar to hypothesis 3, it also states that the effect of the financial statements increases as the level of expertise in the use of the financial statements increase.

Table V has descriptive statistics for the loss condition for each one of the different groups according to the financial statements provided. On average, the group with no financial statements has a decision of 4.09. For the intention scale, it represents a clear decision of hold the shares which is consistent with the disposition effect. The group with the traditional format of financial statements has an average decision of 4.17 and the group with the proposed format has an average of 3.24. The average for the group with the traditional format of the financial statements is higher than the one in the group with no financial statements. The tendency is contrary to what is expected. However, the group with the proposed format shows a substantial reduction on its average following the tendency expected in reducing the disposition effect. As for expertise, the group with the traditional format of the financial statements has an average score of 16.13 and the group with the proposed format has an average score of 14.74.The means for both groups are located at the middle of the range of expertise. Participants consider themselves with enough knowledge of the financial statements but by no means as experts in the use of the financial statements. This is the level of expertise that was intended for the subjects in

the experiment to avoid any possible threat that could mitigate the impact of the format of the financial statements.

Table V
Loss Condition
Descriptive Statistics per Group

	No Financial Statements			Traditional Format of FS			Proposed Format of FS		
Variable	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Decision	44	4.09	2.21	36	4.17	1.74	34	3.24	1.32
Expertise	44	0.00	0.00	36	16.13	4.69	34	14.76	4.94

Price is the minimum price subjects are willing to accept for selling one share of stock; it is one of the dependent variables. Decisions measures investors' decision to sell, hold or buy; it is a nine-point Likert scale where 1 is definitely sell, 5 is hold and 9 is definitely buy and is also a dependent variable. Expertise is a construct that measures the level of expertise in the use of financial statements; this variable takes the value of 0 when there is no financial statement. Traditional format is a dichotomous variable for participants using the traditional format of financial statements, and proposed format measures participants using the proposed format of financial statements.

Table IV shows the results of the regression analysis on the loss condition group. The regression is significant at $F(114)=2.091$ $p<.10$ with an R-Square of .071 and Adjusted R-Square of .037. Similar than the gain model, the coefficient for the intercept represents the control group, the group with no financial statements. The coefficient for the intercept is significant at $P<.01$. However, the story from the gain condition changes dramatically when it is told from the perspective of the participants that are facing losing shares. The first and most important difference is that neither of the interactions for the formats are significant. The interaction for the traditional format of financial statements is $p>.102$ and significance for the proposed format is $p>.860$. Clearly, level of expertise does not play a role in participants' decision when they are facing losses.

This is not the first time that similar results have been found. Krishnan and Booker (2002) investigated the effect of analysts' recommendations on reducing the disposition effect. In an experiment, they provide participants with a set of analysts'

recommendations on different stocks. Each participant was assigned with shares some of which were holding gains and other that were holding losses. They also were instructed on making a decision of whether to sell or hold their shares. Results show that for those shares that were holding gains, the analysts' recommendation reduces the disposition effect; participants were more willing to hold their shares than without the report. However the situation was totally different for those shares that were holding losses. The analysts' recommendation did not influence participants' decision. Participants still held their shares instead of selling them. The recommendation did not help in reducing the disposition effect under a loss condition (Krishnan & Brooker, 2002).

This behavior is consistent with predictions from prospect theory. The loss part of the value function is deeper than the gain part holding an approximated ratio of two to one. The dissatisfaction of any loss is twice as painful as the satisfaction of any gain of the same magnitude. Humans tend to avoid pain at any cost and one of the most painful emotions is regret. When Shefrin and Statman (1985) began studying the disposition effect in the 1980's they considered regret as responsible for the behavior of investors. They state that "regret is an emotional feeling associated with the ex post knowledge that a different past decision would have fared better than the one chosen. The positive counterpart to regret is pride…While closing a stock account at a loss induces regret, closing at a gain induces pride." (Shefrin & Statman, 1985) It seems now that regret is such a powerful feeling that not only is capable of making investors to hold their losing shares but it is also capable of cancelling the effect of expertise in the decision making process.

Although no interaction effects, main effects still tell us a story. The coefficient for the traditional format of the financial statements is not significant at p>.721 and there is practically no difference between the control group and the group with the traditional format. However the coefficient for the group with the proposed format of the financial statements is significant at P<.05. When facing losses, participants with the traditional format of the financial statements on average would hold their shares exactly the same as participants without financial statements, this is regardless of the level of expertise they have in using financial statements. However, when participants are presented with the proposed format, on average, they are more willing to sell their losing shares. The proposed format of the financial statements identifies and reports transactions from operations in every one of the financial statements. Operations is the main engine of earnings and consequently of a company's value. It is possible that a clear view of the company's operating performance convinces investors that it is time to take losses and sell their shares. And again, this is regardless of the level of expertise participants have on the use of financial statements.

Results for the loss condition partially support hypothesis 4 in the way that the proposed format of the financial statements is an effective tool for investors in reducing the disposition effect. Unfortunately, that is not the case for the traditional format. However, even if the hypothesis is not fully supported, the results reveal an interesting effect that is worth for further investigation, how fear and, in particular regret, can cancel the effect of expertise in the use of the financial statements.

V. Discussion and Conclusions

This study provides some surprising results and interesting insight in the process of investing. There are two main conclusions from this study both equally revealing and important not only for the current and future research but for practitioners and regulators.

The fact that the way information is provided can influence the judgment of investors should not be surprising. This is the basic lesson from the framing effect and from a large amount of research in decision making. In that regard, this study confirms that what happens in general areas of life also happens in this particular area of accounting. The important contribution of this experiment is the finding that financial statements can help investors make better decisions and reduce the negative effect of biases, in particular the disposition effect. Further, this study provides evidence that the proposed format of the financial statements by IASB and FASB is a more effective aid in reducing the negative effects of the disposition effect and may help investors in making better investment decisions. But there is a word of caution here, as with any tool, financial statements require some level of expertise for proper handling. Previous knowledge and some level of expertise appear required to get the most out of the financial statements as an aid. This seems quite logical as it cannot be expected that a tool could be handled properly without of minimum training. That is as true for hammers as it is for financial statements. On the other side of the same coin is the fact that investors would do much better by avoiding using financial statements when they don't have a minimum level of financial education that allows them understanding financial information. They would do much better by seeking advice from experienced or professional investors. In brief, financial statements help

investors in reducing the disposition effect but the proposed format by IASB and FASB is a better aid as long as users have some minimum knowledge in the use of financial statements.

This study carries another interesting conclusion, fear and in particular regret is such a powerful emotion that it may cancel out the positive moderation of expertise. One of the most plausible explanation for investors holding losing shares is that they want to avoid the regret of recognizing a bad decision. By taking a loss investors would have to recognize that they made a mistake by buying a losing share. Consequently they hold losing shares with the hope of reversing the loss so as not to face the pain of regret (Shefrin & Statman, 1985). And regret is so pervasive that affects both novices and experts. The proposed format of the financial statements is one of the many possible aims that can help overcome those fears and lead to a better decisions.

The results from this experiments may be helpful to IASB and FASB in their inquiry over the proposed format of the financial statements. It is clear that the main purpose of the financial statements is not to reduce the disposition effect but to assists investors and creditors in making their decisions by helping them assessing the amount and timing of future cash flows, risk, and the financial position among other economic conditions of an entity. However, the users of the financial statements may benefit not only by the financial information they provide but also by the reduction of psychological biases like the disposition effect. Biases may causes huge economic losses to investors and the economy and the proper use of the financial statements could help in reducing

those losses. This experiment provides additional evidence to regulatory bodies in making a more informed decision on the adoption of the new format of the financial statements. In the same line of thought, this study is one of the first explorations of financial statements as an aid in reducing psychological biases. One of the purposes of any cognitive research area is helping decision makers in overcome psychological biases. It is important to detect biases, but once they have been identified the next logical step is developing or identifying tools that may help decision makers in reducing the effect of those biases. Financial statements could be a very important aid for investors and creditors and it is important that some future research is dedicated to this area. There are multiple research opportunities in this area with additional benefits for practitioners and investors.

From a methodological point of view, this study introduces the use of constructs in accounting experiments. Constructs are widely used in psychology and marketing research but not in economic, finance or accounting research. The use of constructs could expand our understanding of accounting by adding psychological variables that are not normally studied. In this study in particular, expertise was used but it is only one of many constructs that are available.

There is not a perfect experiment and this is not an exception. The results found in this study have to be taken in the context of the experiment and cannot be extrapolated easily to the total population. In particular the fact that subjects are undergraduate students limits generalizing results to the total population. It is important to remember the reasons for the selection of this group in particular, controlling for the level of expertise in the use of the financial statements,

mainly the traditional format of the financial statements. Not controlling for expertise may have confounded the results of this experiment. However, this limitation opens the door to further research and one possible expansion would be replicating the experiment with more sophisticated subjects but always controlling for the level of expertise they have in the use of financial statements.

Understanding the factors that motivate investors in making their decisions may be the best line of research for behavioral finance researchers. The traditional research stream in finance has focused entirely on predicting returns but results have been elusive and it seems will always be. It may be time for a new and fresh approach -understanding the dynamics of the financial markets at both individual and aggregated levels. Taking this approach has the advantage that investors can be helped in avoiding common pitfalls. Pitfalls that have as consequence the loss of investors' wealth and the waste of resources that could be allocated in productive projects for the society as a whole. There is no possible way to eliminate uncertainty from investing activities but it is possible to improve investment decisions and with that investors', companies' and society's wealth well-being. This is something that behavioral finance can do.

Appendix A. Proposed format of Balance Sheet (Board, 2008)

TOOLCO STATEMENT OF FINANCIAL POSITION
(proposed format)

	As at 31 December	
	2010	**2009**
BUSINESS		
Operating		
Accounts receivable, trade	945,678	541,375
Less allowance for doubtful accounts	(23,642)	(13,534)
Accounts receivable, net	922,036	527,841
Inventory	679,474	767,102
Prepaid advertising	80,000	75,000
Foreign exchange contracts—cash flow hedge	6,552	3,150
Total short-term assets	*1,688,062*	*1,373,092*
Property, plant and equipment	5,112,700	5,088,500
Less accumulated depreciation	(2,267,620)	(2,023,500)
Property, plant and equipment, net	2,845,080	3,065,000
Investment in associate A	261,600	240,000
Goodwill	154,967	154,967
Other intangible assets	35,000	35,000
Total long-term assets	*3,296,647*	*3,494,967*
Accounts payable, trade	(612,556)	(505,000)
Advances from customers	(182,000)	(425,000)
Wages payable	(173,000)	(200,000)
Share-based remuneration liability	(39,586)	(21,165)
Current portion of lease liability	(35,175)	(33,500)
Interest payable on lease liability	(14,825)	(16,500)
Total short-term liabilities	*(1,057,142)*	*(1,201,165)*
Accrued pension liability	(293,250)	(529,500)
Lease liability (excluding current portion)	(261,325)	(296,500)
Other long-term liabilities	(33,488)	(16,100)
Total long-term liabilities	*(588,063)*	*(842,100)*
Net operating assets	**3,339,504**	**2,824,795**
Investing		
Available-for-sale financial assets (short-term)	473,600	485,000
Investment in associate B (long-term)	46,750	39,250
Total investing assets	**520,350**	**524,250**
NET BUSINESS ASSETS	**3,859,854**	**3,349,045**

(proposed format)—continued

	As at 31 December	
	2010	2009
FINANCING		
Financing assets		
Cash	1,174,102	861,941
Total financing assets	**1,174,102**	**861,941**
Financing liabilities		
Short-term borrowings	(562,000)	(400,000)
Interest payable	(140,401)	(112,563)
Dividends payable	(20,000)	(20,000)
Total short-term financing liabilities	*(722,401)*	*(532,563)*
Long-term borrowings	(2,050,000)	(2,050,000)
Total financing liabilities	**(2,772,401)**	**(2,582,563)**
NET FINANCING LIABILITIES	**(1,598,299)**	**(1,720,621)**
DISCONTINUED OPERATIONS		
Assets held for sale	856,832	876,650
Liabilities related to assets held for sale	(400,000)	(400,000)
NET ASSETS HELD FOR SALE	**456,832**	**476,650**
INCOME TAXES		
Short-term		
Deferred tax asset	4,426	8,907
Income taxes payable	(72,514)	(63,679)
Long-term		
Deferred tax asset	39,833	80,160
NET INCOME TAX ASSET (LIABILITY)	**(28,255)**	**25,388**
NET ASSETS	*2,690,132*	*2,130,462*
EQUITY		
Share capital	(1,427,240)	(1,343,000)
Retained earnings	(1,100,358)	(648,289)
Accumulated other comprehensive income, net	(162,534)	(139,173)
TOTAL EQUITY	**(2,690,132)**	**(2,130,462)**

Total short-term assets	**4,197,021**	**3,605,591**
Total long-term assets	**3,383,231**	**3,614,377**
Total assets	**7,580,252**	**7,219,968**
Total short-term liabilities	**(2,252,057)**	**(2,197,406)**
Total long-term liabilities	**(2,638,063)**	**(2,892,100)**
Total liabilities	**(4,890,120)**	**(5,089,506)**

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