

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 reduces the bias and interacts with investors' level of expertise in the use of the financial statements.

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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 as the tendency of investors to sell winning stock too early and to hold losing ones too long (Shefrin & Statman, 1985). 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 the financial statements in reducing the same 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 disaggregated 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). Investors have a particular interest deciding whether to invest in a particular stock. They 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 help them attaining their goals (Laureen A. Maines, 1995). The proposed format of financial statements 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 provided could help individuals to improve the efficacy of their decisions. (Kelton, Pennington, & Tuttle, 2010; Laureen A Maines & McDaniel, 2000; Taguchi,

2010) Whether the proposed format of financial statements helps investors in their decision-making process is an important empirical question for the accounting profession, researchers, regulatory agencies, FASB, IASB 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. 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 finance are in direct contradiction to each other because they do not share the assumption of rationality and they do not study 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 concerned with the factors that determine the return of the shares in the market, assuming that investors act as rational economic agents. In its inquiry, behavior finance stream has identified several responses that contradict expectations from the efficient market hypothesis and expected utility theory, two fundamental theories in the traditional financial research. These deviations or

anomalies are defined as a “systematic traits of behavior of economic agents, which cannot be explained by the expected utility model” (Stracca, 2004). Many anomalies have been identified. Some are the consequence of violations to the laws of probability. Other are biases such as the anchoring effect or the representativeness bias. Some studies have found that the existence of factors other than fundamentals affect 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 (Fama, 1998; 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 is one of the most robust and pervasive phenomenon in the financial literature and one of the most studied since it was first identified by Shefrin and Statman in 1985. It has been studied in correlational studies at an aggregated level using financial data bases (Kaustia, 2004; Odean, 1998; Shefrin & Statman, 1985) and it has been tested in the controlled environment of an experiment where causal relationship can be

established (Da Costa, Mineto, & Da Silva, 2008; Krishnan & Brooker, 2002; Weber & Camerer, 1998). In an effort for understanding the characteristics of the investors that are affected by the disposition effect, research has been conducted with databases from large brokers. These databases provide a more specific information on investors and trades. In one of these studies Dhar and Zhu found that high income level and professional occupation reduce the bias from the disposition effect (Dhar & Zhu, 2006); in a similar study, Chen et. al compare characteristics of U.S. and Chinese investors (Chen, Kim, Nofsinger, & Rui, 2007); in another example, Brown et. al find that the disposition effect reduces in proportion to the time the investment is holding (Brown, Chappel, Da Silva Rosa, & Walter, 2006). Disposition effect is not an exclusive phenomenon of the US financial markets. It has been identified in other countries like China, Israel, Australia or Estonia (Brown et al., 2006; Chen et al., 2007; Vaarmets, Liivamägi, & Talpsepp, 2015; Yonghong, 2001) and in other markets, like the National Football League (Hartzmark & Solomon, 2012) or in specific financial markets like IPO (Kaustia, 2004). The majority of the work on disposition effect aims to identify the anomaly in different environments or to describe the characteristics of the investors affected by the bias. There has been a few examples of research looking for aids that may help in reducing the disposition effect. In an experiment, Krishnan and Booker study the influence of analysts' recommendations on investors' decision. They find that high quality reports may help in reducing the disposition effect on a gain condition but not under a loss condition (Krishnan & Brooker, 2002). In a survey, Vaarmets et al. found a negative correlation between the level of education and learning abilities to the disposition effect (Vaarmets et al., 2015). Regardless of the importance of this topic, there are no studies on the influence of the financial statements and the format of the financial statements on reducing the disposition effect. This paper intends to

cover this gap.

Since disposition effect was identified, there has been attempts to give it a theoretical foundation and prospect theory has emerged as the most adequate candidate. Shefrin and Statman in their 1985 paper argue that “prospect theory suggest the hypothesis that investors display a disposition to sell winners and ride losers when standard theory suggests otherwise” (Shefrin & Statman, 1985). More recently, Li and Yong develop a general equilibrium model for the implications of prospect theory to disposition effect, asset pricing and volume (Li & Yang, 2013). There are some voices, of course, that support different alternatives in explaining disposition effect. Dai et al propose a portfolio rebalancing model that explains the disposition effect when transactions cost and capital gains are included (Dai, Liu, & Xu, 2015). Hens and Vlcek argue that investors that show disposition effect would have not invested in stock in the first place and conclude that prospect theory is not an explanatory model for the bias (Hens & Vlcek, 2011). Regardless the criticism, prospect theory stands as the best explanation for the disposition effect so far.

Prospect theory was developed by Tversky and Kahneman in the 1970's and 1980's (Tversky & Kahneman, 1986). It explains decision under uncertainty and it is based on the same basic elements as expected utility theory, elements like options, utility function, outcome, and probability. However, prospect theory modifies some of those elements to explain individuals' decision-making behavior. One of the distinctive features of prospect theory is the value function which is calculated in terms of gains or losses. This is in contrast to expected utility theory 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. The reference point is a kink in the value function and carries a zero value. The gain 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 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. 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 (Tversky & Kahneman, 1986).

Prospect theory introduces a richer scope of predictions for individuals' behavior than expected utility theory. It is the "S" shape function in part 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. Investors face this situation when they own stock that has earned large gains; they would try to sell the stock and lock in the gain. In the loss section of the value graph, the convexity and the steepen shape make that any marginal change in losses has a significant impact on value; losses are in general more painful for individuals than gains are satisfactory. An individual is a risk taker for large losses – losses far from the reference point. Investors facing this situation will tend to hold the losing stock and keep risking; by doing so, they will avoid the pain of realizing the loss with the hope to recover part of the loss.

Predictions from expected utility theory and prospect theory conflict under some

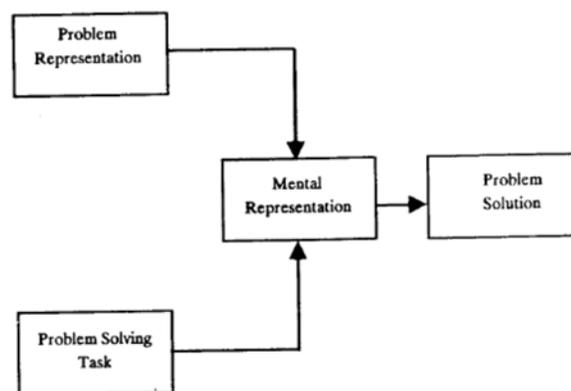
circumstances. For instance, if a stock has a current price below its future expected price, expected utility theory predicts that investors will buy the stock. This is not necessarily the case for prospect theory because the decision depends on an additional variable, the stock purchase price. Investors would compute first the gain, or loss, on the stock comparing current price against purchase price. If investors have a significant gain, prospect theory predicts that investors will sell the share. Expected utility theory and prospect theory also lead to contradictory predictions when individuals face the probability of large losses. Expected utility theory predicts that investors will sell their shares at the time that prospect theory says investors will hold their stock.

Expected utility and prospect theory assume that the individual already gathered all necessary information to solve a particular problem. In contrast, while expected utility assumes that the way information is provided does not affect the decision process, prospect theory recognizes that the way information is provided 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 efficacy of the decision depends not only on the heuristic used in the process but also on the way information is presented. In this regard, 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. A valid question is: How do different formats in financial statements affect the efficacy of the decision-making process? Neither expected utility nor prospect theory can address this question because they focus on the decision process. It is necessary to look at a theory that explains the how the way information is provided affect the judgment and decision making process.

Cognitive fit theory, introduced by Vessey in 1991 (Vessey, 1991) and improved by Shaft and Vessey (Shaft & Vessey, 2006), establishes that the way information is presented to individuals is going to have an impact on the outcome of their decision. The diagram in Figure 1 is taken from Vessey's paper and summarizes the proposition of the cognitive fit theory (Vessey, 1991).

Figure 1



Cognitive fit states that the efficacy of the solution depends on the mental representations which is the way the problem is set in the human working memory. In turn, mental

representation depends on the complexity of the task (problem solving task) and the format of the information is provided (problem representation). A task can be complex and difficult to solve because we have limited capabilities for processing information. However, the complexity can be reduced with the proper use of tools and aids. In particular, complexity can be reduced when the problem representation and problem solving task are presented in the same form. This match between task and information is what Vessey calls cognitive fit (Vessey, 1991).

Investors face a complex decisions when deciding whether to buy, sell or hold stock. To solve this problem, they perform, among other tasks, a financial statement analysis. Their analysis is driven by the company's operating, investing, financing, and dividends strategies (Palepu, Bernard, & Healy, 1996). This perspective on how to analyze the financial statements constitutes the investors' mental representation and they will look for information that best serves their mental representation. Thus, they will search for information related to the company's operating, investing, financing and dividends activities in the financial statements. If the way information provided by the financial statements matches the mental representation then the task complexity is reduced and the outcome of the decision would be more efficient and efficacy.

The traditional format of the financial statements provides only a partial fit to the investor's mental representation. The statement of cash flows classifies economic transactions as operating, investing and financing activities and it is the only one that fits investors' mental

representation. 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 what items pertain to operation activities and which do not. After this determination is made, they then have to re-group different accounts for analyses purposes. The process of going forward and backwards between the two representations does not help to reduce task complexity of the analysis which in turn does not help in making more efficient and efficacy 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. The proposed format would reduce the complexity of the analysis 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 H 1. When investors are in a gain condition (the expected future price is higher than the current price and the current price is higher than the purchase price) then, 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 H 2. When investors are in a loss condition (the expected future price is lower than the current price and the current price is lower than the purchase price) then, 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: gain and loss. The second factor measures the impact of the financial statements in reducing the disposition effect at three levels: no financial statements, the traditional format of financial statements and the proposed format of financial statements. The dependent variable is the investors' willingness to sell, buy or hold stock and it is measured in a nine point Likert-scale.

The experiment consisted of six different cases and is applied online; applying it online allows participants to work at their own pace and location with the consequence that there is admittedly some lack of control over the experiment's environment. Participants are provided with a link to access the experiment. Participants are randomly assigned to the different groups. A pilot study is run to identify possible errors in the instrument and to verify that the system allocates cases properly. The problems that were identified are not critical for the development of the experiment and were corrected before running the experiment.

Each participant receives a financial case where she is asked to assume the role of an investor that has a wealth consisting of cash and stock. As investor, participants 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 2. This table contains information about future stock prices and it includes computations for the expected future stock price which is \$10 for all cases. The expected future stock price is calculated by multiplying a future stock price (first row) by the probability the price occurs (second row) and adding the products of all future stock prices. The \$10 is the average of future stock prices if those prices occur with high frequency.

Figure 2

Table for Expected Future Stock Price

Stock Price in one year	\$ 0	\$ 2.50	\$ 7.5	\$ 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 stock a year ago) of \$8 and current stock 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. Similarly to the gain condition, participants face losses for both theories.

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 not provided with financial statements at all. This is the control group and it is used to test for the existence of the disposition effect in the sample. 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 financial ratios for profitability. Because participants have only a basic knowledge in computing and analyzing financial ratios, instructions are added regarding these calculations.

Participants are selected among undergraduate students from the college of business administration from an accredited American university. Undergraduate students are 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 on the traditional format of financial statements could bias the results from the experiment. With undergraduate students, the level of expertise is kept at its minimum and the risk of bias is reduced. More skillful participants in the use of financial statements, such as MBA students or professional analysts, could compromise the

results as these could be driven by the level of expertise of the participants and not the treatment from the experiment. The level of expertise in the use of 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. The construct measures for the level of familiarity and expertise an individual has regarding a product and it can be adapted for financial statements. The construct consists of five questions measuring different aspects of expertise; each question uses a five points Likert-scale where 1 is the lowest and five is the highest level of expertise. The construct is built by adding the scores of the five questions. The reliability measured for this construct is a reported alpha of .93 (Thompson et. al, 2005). With the use of these two tools, the subjects in the sample and the scale for expertise, it is possible to control for the level of expertise in the use of the financial statements. However, the inclusion of expertise in the design is at cost. Expertise is expected to interact with financial statements. As Hodge and Pronk 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” (Hodge & Pronk, 2006). 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 investors’ decision. This may be true for both formats of the financial statements.

Following Krishnan and Booker (2002), the dependent variable measures investors’ intention or likelihood toward a final decision of buying, selling or holding stock (Krishnan & Booker, 2002). They use a six-point Likert scale to measure the likelihood to sell or hold stock,

where one indicates definitely hold and six definitely sell. Some modifications are made in this study to the scale. First is the use of a nine-point Likert scale instead of six, in order to include a buying decision and measure all possible outcomes. The modified scale assign one to indicate definitely sell, five for definitely hold, and nine for definitely buy. The demographic variables include age, gender, years in college, accounting and financial classes taken, and experience in trading stock. As mentioned before, there is also a construct variable for the level of expertise in the use of financial statements.

A one sample t-test is used to test for the presence of the disposition effect in the sample. The values of the investors' decision from the control groups are compared against the predicted values from expected utility theory. For the gain condition, the prediction from expected utility theory, is buying and it is represented for 8 in the Likert-scale. For a loss condition the prediction is selling and it is represented by 2 in the scale. The use of normative values against which to make comparisons has been previously used in the behavioral sciences (Baron, 1994; Vessey, 1991). Once the disposition effect is established in the sample, it is possible to compare the control groups against the groups with financial statements and measure the impact on disposition effect.

A regression analysis is used for testing hypotheses H1 and H2. 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. 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 H1 and H2 is as follows:

$$\text{Likelihood of the Decision} = \beta_1 \text{ Traditional Format} + \beta_2 \text{ Proposed Format} + \beta_3 (\text{Traditional Format} \times \text{Expertise}) + \beta_4 (\text{Proposed Format} \times \text{Expertise}) + \varepsilon$$

The intercept and the main effect of the variable expertise are not included in the model because the control groups are not provided with financial statements. Consequently they cannot be measured for expertise in the use of financial statements. By removing the control groups, the interactions between expertise and the groups with financial statements –a dummy variables- are a lineal combination of expertise and creates multicollinearity. Additionally, without the control groups, it is necessary to change the null hypotheses in order to test for the significance of the coefficients. Normally the null hypotheses states that the coefficient is equal to zero. However, in this case the null hypotheses states that the coefficient is equal to the mean value of the control group. This process permits to test for the effect of the financial statements on the disposition effect.

IV. Results

Subjects

There is a total of 256 participants, all undergraduate students taking classes in the college of business administration in an accredited American university. From the total number of participants 54.3% are females and 45.7% are males. In 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 at all 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.

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 with high level of reliability. Cronbach's alpha is .915 and only the fifth question raises the Cronbach's alpha when it is removed. However, the Cronbach's alpha would rise to .919; consequently, none of the questions are dropped from the construct and the scale is obtained by adding the answers from 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 142 participants in the

gain condition. Participants on average have a decision of 5.30 which means holding their current position in stock. As for the level of expertise, they perceive themselves as an average user of financial statements with a score of 14.908. The analysis shows that decision only correlates with expertise, $r=.343$, $p(\text{two tails}) p<.01$. It also shows that the level of expertise, as expected, is correlated with its interactions with traditional and proposed format of the financial statements at $r=.259$, $p(\text{two tails}) p<.05$ and $r=.276$, $p(\text{two tails}) p<.01$ respectively. On this first analysis, the influence of expertise seems pervasive; apparently it is not possible to talk about decisions and the format of the financial statement without talking about expertise. The relationship among these variables can be elucidated later on with the regression analysis.

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	.343 *** (.001)	-.048 (.659)	.048 (.659)	.032 (.771)	.152 (.161)
Expertise	14.908	4.336		1.000	-.010 (.927)	.010 (.927)	.259 ** (.015)	.276 *** (.010)
Traditional Format	.52	.503			1.000	-1.000 *** (.000)	.925 *** (.000)	-.926 *** (.000)
Proposed Format	.48	.503				1.000	-.925 *** (.000)	.926 *** (.000)
Traditional x Expertise	7.689	8.077					1.000	-.857 *** (.000)
Proposed x Expertise	7.218	8.116						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. Expertise is a construct that measures the level of expertise in the use of financial statements. Traditional format is a dichotomous variable for participants using the traditional format of financial statements. Proposed format is also a dichotomous variable that measures participants using the proposed format of financial statements. Traditional x Expertise is the interaction between expertise and the traditional format of the financial statements and Proposed x Expertise is the interaction of expertise and the proposed format of the financial statements.

Table II 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 reports an average decision of 5.09 meanwhile traditional and proposed format groups reported and average score of 5.36 and 5.52 respectively. The average decision is moving closer to buying which is according to the predictions of hypothesis H1. In terms of expertise in the use of financial statements, the group with the traditional format reports an average score of 14.86 and the proposed format reports 14.95.

Variable	No Financial Statements			Traditional Format of FS			Proposed Format of FS		
	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				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. Expertise is a construct that measures the level of expertise in the use of financial statements.

Table III contains descriptive statistics and correlations for the loss condition. When participants face the loss conditions, on average their decision is 3.860 which falls between hold and probably sell. The level of expertise (15.471) is slightest higher than in the gain group but by no means represents something more than an average understanding of the financial statements. Decision is correlated to the traditional format at $r=.290$ (two tails) at $p<.05$, to the proposed format at $r= -.290$ (two tails) at $p<.05$ and the interaction of proposed format and expertise at $r= -.273$ (two tails) $p<.05$. These results contrast with the one from the gain group. Comparing both conditions, it seems like expertise has much more influence on the gain condition but does not on the loss condition. The opposite is truth for the format of the financial statements, at least for the

proposed format, it does not have an influence under the gain condition but it does at the loss conditions. The regression analysis will provide more inside in the relationship between the formats of the financial statements, the level of expertise in the use of the financial statements and the decision made by participants.

Table III
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	-.131 (.280)	.290 ** (.015)	-.290 ** (.015)	.183 (.130)	-.273 ** (.022)
Expertise	15.471	4.835		1.000	.143 (.237)	-.143 (.237)	.396 *** (.001)	.166 (.170)
Traditional Format	.510	.503			1.000	-1.00 *** (.000)	.925 *** (.000)	-.908 *** (.000)
Proposed Format	.490	.503				1.000	-.925 *** (.000)	.908 *** (.000)
Traditional x Expertise	8.300	8.786					1.000	-.840 *** (.000)
Proposed x Expertise	7.171	8.182						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. Expertise is a construct that measures the level of expertise in the use of financial statements. Traditional format is a dichotomous variable for participants using the traditional format of financial statements. Proposed format is also a dichotomous variable that measures participants using the proposed format of financial statements. Traditional x Expertise is the interaction between expertise and the traditional format of the financial statements and Proposed x Expertise is the interaction of expertise and the proposed format of the financial statements.

Table IV reports 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 shows a decision of 4.09; it represents a clear decision of hold the stock which is in line to the disposition effect. The group with the traditional format reports an average decision of 4.17 and the group with the proposed format has an average of 3.24.

Variable	No Financial Statements			Traditional Format of FS			Proposed Format of FS		
	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				36	16.13	4.69	34	14.76	4.94

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. Expertise is a construct that measures the level of expertise in the use of financial statements.

The average decision of the traditional format is higher than the group with no financial statements. This tendency is contrary to what is expected. However the group with the proposed format shows a substantial reduction on its average decision following the tendency expected in reducing the disposition effect. At this point, it seems like participants that were provided with the proposed format are more willing to sell their shares than participants with the traditional format of the financial statements. Even more, participants with the traditional format of financial statements show almost no difference comparing to the group with no financial statements. As for expertise, the group with the traditional format reports an average score of 16.13 and the group with the proposed format has an average of 14.74. Participants consider themselves with enough knowledge of the financial statements but by no means experts in the use of the financial statements.

Disposition Effect

Participants in the gain condition and no financial statements are the control group and are used to test for the disposition effect. 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, expected utility theory predicts that investors would buy stock which in the previous scale is represented by a score of 8 or higher. On average, participants' decision ($M=5.09$, $Std\ Dev=1.993$) is lower than predicted by expected utility theory. The difference of -2.91 is significant at $t(54) = -10.824$, $p<.01$. Results confirm the existence of the disposition effect in the sample for the gain conditions.

Similarly, the group with lose and no financial statements is the control group for the loss condition. When investors face a loss, they will tend to hold their stock even though expected utility theory predicts that the optimal decision is selling. According to the theory, investors should in average show a decision of 2, meaning investors are willing to sell. The group with no financial statements and lose reports in average a decision ($M=4.09$, $Std\ Dev=2.219$) that is higher than expected by the theory. This difference of 2.091 is statistically significant at $t(43)=6.252$, $p<.01$. The results confirm the existence of the disposition effect for the loss condition.

These results are not surprisingly at all; 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 sample, the next step is to determine whether the financial statements may reduce the disposition effect; this is address in the following section.

Hypotheses 1 and 2.

Hypotheses 1 and 2 test financial statements as an aid in reducing the bias from the disposition effect. Hypothesis 1 tests the effect on the gain condition and hypothesis 2 does the same for the loss condition. H1 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 V shows the results of the regression analysis for hypothesis H1 and H2.

For the gain condition the regression is statistical significant at $F(87)=230.477$ $p<.01$ with an R-square of .917 and an Adjusted R-square of .913. On normal conditions, the constant would represent the control group and the coefficients would be compared against it. However, the constant and the main effect of the variable expertise have been removed from the model for the reasons explain in previous section. Consequently, in order to test the significance of the coefficients, the null hypothesis is modified. It would normally state that the coefficient is equal to zero but, in this case, the null hypothesis states that the coefficient is equal to the mean value of the dependent variable in the control group which is 5.091. This value, as tested in the previous section, represents the existence of the disposition effect in the gain group. Any value higher than it would represent a reduction in the disposition effect. The coefficient for the main effect of the traditional format of the financial statements is not significant meanwhile the coefficient for the proposed format is significant at $p<.05$.

Table V
Regression Analysis for Gain and Loss Condition

Model: Decision = β_1 Traditional+ β_2 Proposed + β_3 (Traditional x Expertise) + β_4 (Proposed x Expertise) + ε

Variable	Coefficients	Gain Standardized Coefficients		Coefficients	Loss Standardized Coefficients	
Traditional	3.645	.459		5.919	1.049	
Proposed	3.080	.375	**	3.402	.586	*
Traditional x Expertise	.115	.224	***	-.109	-.323	***
Proposed x Expertise	.163	.310	***	-.011	-.030	***
R-Square	.917			.864		
Adj R-Square	.913			.856		
F-Value	230.477		***	104.778		***
N	87			70		

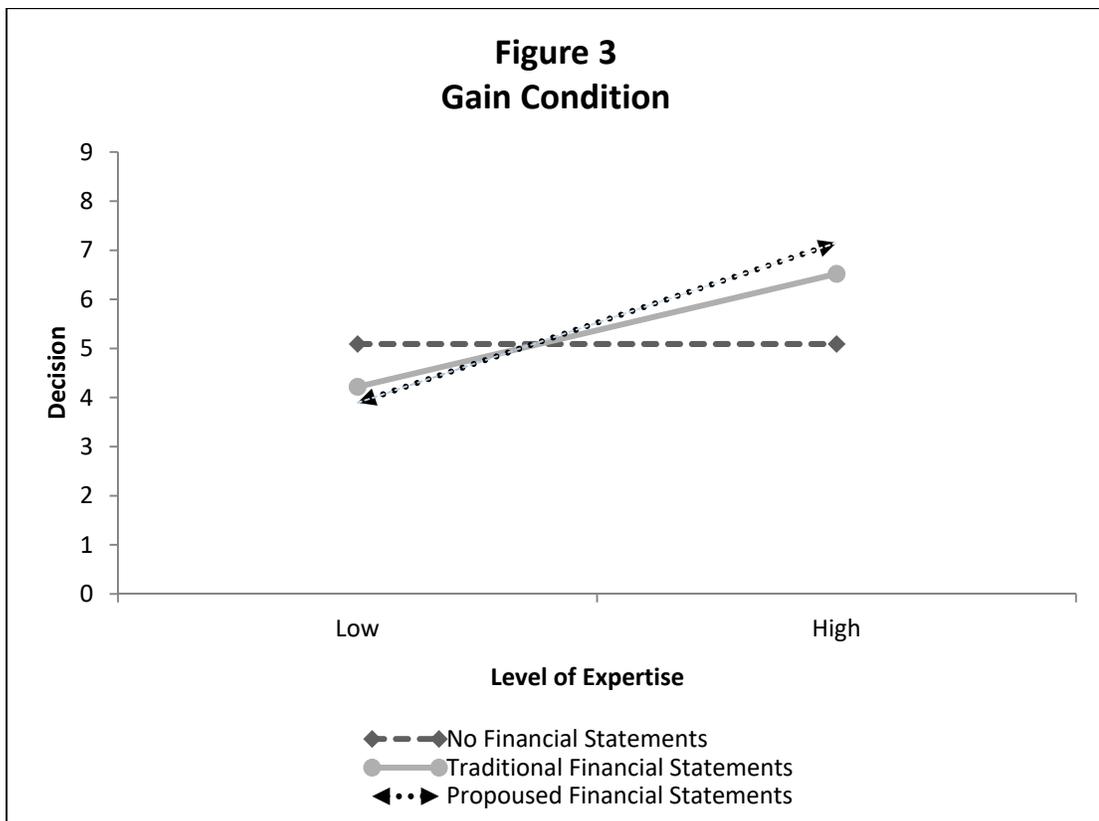
***, **, * significance at 10%, 5% and 1% respectively

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

Figure 3 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 statistical significant at $p < .01$. 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, for 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 high level of expertise. At lower level of expertise participants

would do better if they would not use financial statements.

Both format of financial statements help reducing the disposition effect under gain conditions but when the standardize coefficients are compared it is the proposed format of the financial statements the one that helps investors best in reducing the disposition effect. The standardize coefficient for the interaction of the traditional format is .224 and the coefficient for the interaction of the proposed format is .310 a difference of more than 38%.



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 are put on expert hands they dramatically

improve performance. Tools make us going faster, being stronger or in the case of the financial statements, they make us take better decisions. However when all this aids are put on novice hands they become a dangerous weapon. Nothing more dangerous than a car in the hands of a ten years old kid or the financial statements on the hands of some financial illiterate investor. They may damage themselves and anybody else that crosses on their path. But the same as cars are different, some are faster than others, the formats of the financial statements perform different. The proposed format of the financial statements seems to be a more powerful decision-making tool for investors but also a more dangerous. Investors can make better decision by using the proposed format as long as they know how to use them but they also cause more damage if they lack the experience and knowledge necessary to use financial statements. The results of this experiments not only confirm hypothesis 1 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 2 inquiries 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 sale 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. Similarly than hypothesis 1, 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 shows the results of the regression analysis on the loss condition group.

For similar reasons than hypothesis 1, the constant and the level of expertise variable are

dropped from the model and the null hypotheses for the coefficients are modified. For the loss condition, the null hypothesis compared the coefficients against the mean value of the decision variable in the control group which is 4.910; this value indicates the existence of the disposition effect and any value lower than it is a reduction of the bias. The regression is significant at $F(70)=104.778$ $p<.01$ with an R-Square of .929 and Adjusted R-Square of .864. The coefficient for the main effect of the traditional format of the financial statements is not statistically significant. Meanwhile the coefficient for the proposed format of the financial statements is statistically significant at $p<.10$.

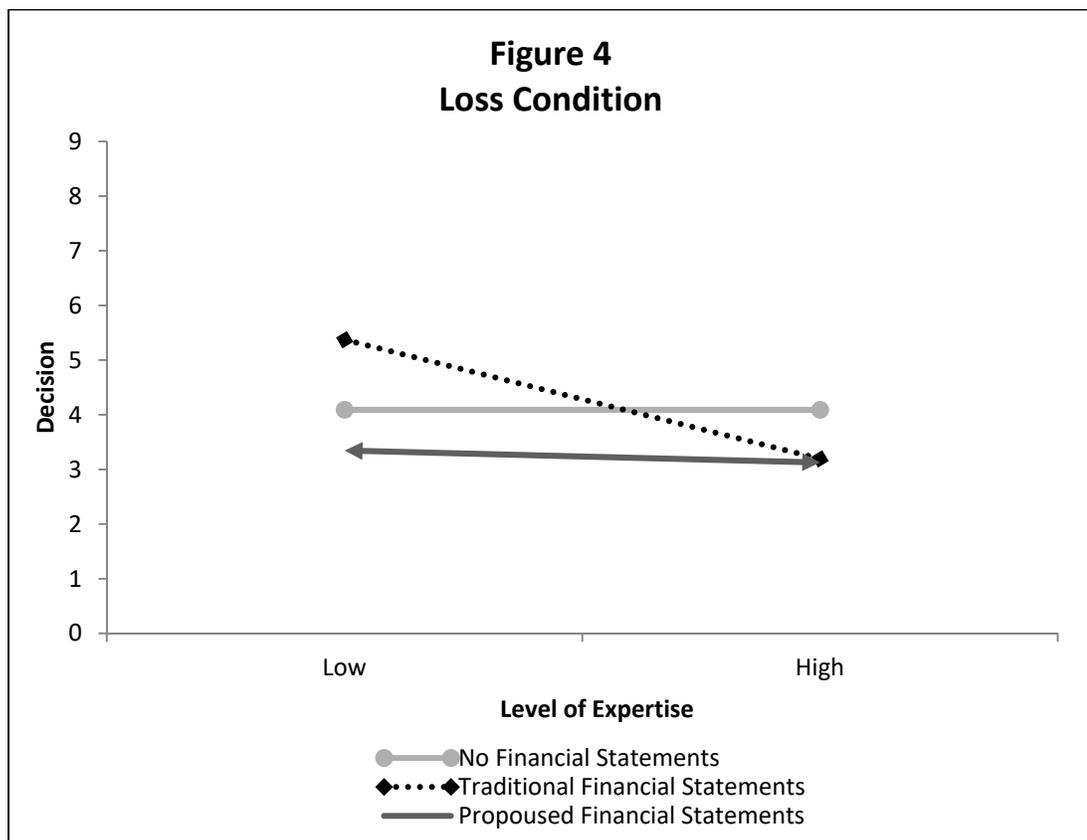


Figure 4 shows graphically the results of the interactions between the level of expertise and the two formats of the financial statements in the loss group. Both interactions are

statistically significant at $p < .01$ and their coefficients are negative; meaning that both formats help in reducing the disposition effect under the loss condition and both reduce the effect more as the level of expertise increases. However, they behave different than formats under the gain condition. The traditional format is heavily affected by the interaction with the level expertise. At low levels of expertise, subjects hold their shares more than subjects in the control group and at high levels of expertise subjects tend to sell their shares as much as subjects in the group with the proposed format of the financial statements. In contrast, the group with the proposed format of the financial statements have a more stable behavior. At low and high of expertise, subjects are selling shares more than subjects in the control group and the influence of the level of expertise, even if significant, is minimal. These results partially confirm hypothesis 2, at least at a low level of expertise because at high levels of expertise both formats seems to be equally effective in reducing the disposition effect.

The results for the proposed format of the financial statements under the loss condition are puzzling and keep many open questions for further inquiry. Even though, results are satisfactory and the proposed format help reducing the disposition effect, it seems like the level of expertise losses much of its influence in the interaction. A possible explanation comes from the fact that the loss section of the value function is deeper than the gain section 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. (Tversky & Kahneman, 1986) Humans tend to avoid pain at any cost and one of the most painful emotions is regret. When Shefrin and Statman began studying disposition effect in the 1980's they considered regret as a possible responsible for the behavior of the 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. ...closing a stock account at a loss induces regret.” (Shefrin & Statman, 1985) It seems now that regret is so a powerful feeling that not only is capable to make investors to hold their losing shares but it is also capable, if not to cancel the effect of the expertise in the decision making process, at least to impose a limit on its effectiveness. Similar effects have been reported previously. When Krishnan and Booker investigated the effect of analysts’ recommendations on reducing the disposition effect, they found 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 holding their shares instead of selling them. The recommendation did not help in reducing the disposition effect under a loss condition. (Krishnan & Brooker, 2002)

V. Discussion and Conclusions

This study provides surprising results and great inside in the intricate 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 influences the judgment and decision of investors should not be a surprises at all. This is the basic lesson from the framing effect and from a large amount of research in decision making. In that regard, this study only confirms that what happens in general areas of life also happens in the particular area of accounting and finance. The important contribution of this experiment is the suggestion and the evidence that

financial statements can help investors in making better decisions and reduce the negative effect of biases, in particular the disposition effect. But even more, this study provides evidence that the proposed format of the financial statements by IASB and FASB is a more effective tool in reducing the negative effects of the disposition effect and may help investors in making better investment decisions. But there is a word of cautious here, as any tool, financial statements require some level of expertise for a properly handling. Previous knowledge and some level of expertise is required to get the best out of the financial statements as an aid. This seems totally logical, it cannot be expected that a tool could be handled properly without a minimum training. That is as true for hammers as it is for financial statements. On the other side of the 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. 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 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 reduces 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 reverse the loss and not face the pain of regret.(Shefrin & Statman, 1985) And this fear for regret is so pervasive that affects the novices and the experts. Apparently no body is immune to the blunders that fear and pain make us do. It does not mean that there is not possible help for investors. It

only means that experts are human too and need to be helped to overcome their fears. The proposed format of the financial statements is one of the many possible tools 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 hug 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 thoughts, this study seems to be the first in seeing financial statements as a tool in reducing psychological biases and not only as information provider. One of the purposes of any cognitive research area is helping decision makers in overcome psychological biases. It is important to detect those biases first of course, 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 creditor and it is important that some research is dedicated to this area. There are multiple research opportunities in this area with the additional benefit for practitioners and investors.

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

There is not perfect experiment and this is not the exception. The results shown in this study has to be taken in the context of the experiment and cannot be extrapolate easily to the total population. In particular the fact that subjects are undergraduate students post a limitation in generalizing results to the total populations. 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 had lead 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. Traditional research stream in finance has focused entirely in predicting returns but results have been elusive and it seems will still be. It may be time for a new and fresh approach, understanding the dynamics of the financial markets at both individual and aggregated level. 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. This is something that behavioral finance can do.

Appendix A. Proposed format of Balance Sheet

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
<i>Total short-term assets</i>	<i>1,688,062</i>	<i>1,373,092</i>
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
<i>Total long-term assets</i>	<i>3,296,647</i>	<i>3,494,967</i>
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)
<i>Total short-term liabilities</i>	<i>(1,057,142)</i>	<i>(1,201,165)</i>
Accrued pension liability	(293,250)	(529,500)
Lease liability (excluding current portion)	(261,325)	(296,500)
Other long-term liabilities	(33,488)	(16,100)
<i>Total long-term liabilities</i>	<i>(588,063)</i>	<i>(842,100)</i>
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)
<i>Total short-term financing liabilities</i>	<i>(722,401)</i>	<i>(532,563)</i>
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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