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The Impact of the Proposed Format of Financial Statements by IASB and FASB on Investors' Decisions

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THE IMPACT OF THE PROPOSED FORMAT OF FINANCIAL STATEMENTS
BY IASB AND FASB ON INVESTORS' DECISIONS

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Dedication

To: Sofia, Mariana and Karla. Your love made it possible

THE IMPACT OF THE PROPOSED FORMAT OF FINANCIAL STATEMENTS
BY IASB AND FASB ON INVESTORS' DECISIONS

by

FRANCISCO VILLANUEVA, MBA, M.S. Acct.

DISSERTATION

Presented to the Faculty of the Graduate School of

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Abstract

This dissertation investigates the impact of the proposed format of financial statements from the International Accounting Standard Board (IASB) and the Financial Accounting Standard Board (FASB) on investors' decisions. In particular, the research question of this study is whether the proposed format reduces the bias from the disposition effect. In 2008, the FASB in conjunction with the IASB published an exposure draft to modify the presentation of financial statements. The proposed format does not change the content of the financial information; it only modifies how information is presented in the financial statements. In other words, recognition of assets, liabilities, revenues, expenses, and stockholders' equity remains the same but these financial statement elements are now grouped differently in the financial statements. The main goal for this proposed format is to improve the usefulness of the financial statements which will help users of the financial statements to make better decisions. Investors are among the users of the financial statements and they have a particular goal, to decide whether or not to invest in a company's stock. However, investors, as decision-makers, are susceptible to biases. The Disposition Effect is an identified bias of investors that results in the sale winning stock too early and the holding of losing stock too long. Judgment and decision making research 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.

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1. Literature Review and Antecedents

1.1. FINANCIAL STATEMENTS FORMAT

The draft proposed by IASB and FASB recommends a new approach to financial statement presentation (International Accounting Standards Board, 2008). The current 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. Figure 1 and 2 provides an example of the proposed format.

The purpose of the proposed format is to provide useful financial information to creditors and investors¹ in their decision-making process and in order to achieve that the IASB and FASB propose three objectives. The first is "cohesiveness" in that an 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 they report. The second is "disaggregation" in that the information in the financial statements should be disaggregated in a way that

¹ Following the conventions of this research stream, the dissertation refers to capital investors as investors and credit investors as creditors.

is useful to assess the amount, timing and uncertainty of future cash flows. Finally, the third objective "liquidity and financial flexibility" in 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" (International Accounting Standards 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
<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

Figure 1 Proposed Financial Statements

(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)

Figure 2 Proposed Financial Statements (continued)

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 format would help investors in making more effective decisions, thus improving the decision-making process.

1.2. JUDGMENT AND DECISION MAKING.

Judgment and decision-making (JDM) is part of a more extensive process known as the cognitive process in which an individual is presented with at least two alternatives from which to choose. In its simpler model, the JDM process has three phases: input, process and output. Research in this area has been largely studied by cognitive psychology and decision-making researchers with different approaches; some research focuses on acquisition of information (input), other research is interested in the different strategies individuals use to evaluate information and make decisions (process) (Ghani, Laswad, Tooley, & Jusoff, 2009; Maines, 1995; Libby & Lewis, 1977).

There are three types of models or theories that have been developed to study JDM, normative, descriptive, and prescriptive. First, normative theories are concern with the way individuals should make decisions. These theories describe an ideal way to make decisions. They are based on logical principles and assumptions and constitute a standard against which researchers can compare individuals' decisions. These standards come from probability theory, utility theory, expected utility theory and statistics, and constitute what is normally called "rationality" (Baron, 1994). Second, descriptive theories investigate how individuals actually make decisions; individuals use different mechanisms when making decisions. These mechanisms are rules of thumb, often called heuristics that have evolved from interaction with the environment. Heuristics are highly efficient in the context in which they evolved. They can save time

and other resources. However, heuristics may lead individuals to make systematic mistakes in their decisions when they are applied to a different context than that from which they were created. Finally, Prescriptive models are heuristics with the purpose of helping individuals reach the standards settled by normative theories. Meanwhile, normative theories state the way individuals ought to make decisions, in contrast to descriptive theories that explain the way individuals make decisions. Prescriptive theories help individuals reducing the distance between normative and descriptive models (Over, 2004; Baron, 1994). Expected Utility Theory (EUT) is a normative model as Prospect Theory (PT) is a descriptive model (Baron, 1994; Tversky & Kahneman, 1986); EUT sets the rules individuals must follow to make optimal decisions under risk conditions, meanwhile PT explains how individuals make those decisions.

Research in JDM is based on the concepts of bounded rationality and satisficing developed by Simon (Libby et al., 2002; Stracca, 2004; Kelton et al., 2010). The decision-making process is the interaction between the individual and the problem where “the capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world—or even for first approximation to such objective rationality” (Simon, 1957). Normative theories, like expected utility theory, assume that individuals have access to and the capacity to process all the possible information needed to solve a problem, but there are limitations on the amount of information individuals can process. Consequently, it is almost impossible for individuals to be rational; it is to follow the recommendations of the normative theories. Instead, individuals rely on heuristics. Research in JDM studies heuristics and the way individuals use them. Research based on descriptive models, “put us back into our human skin and try to answer the questions, how do humans who have little time and knowledge behave?” (Gigerenzer, 2004).

2.3. JUDGMENT AND DECISION MAKING IN ACCOUNTING

The goal of accounting reports is to assist users in making decisions. It is not surprising then that accounting research has been influenced by cognitive psychology research. For instance, Riahi-Belkaoui (1990) adapts an information and decision-making model for accounting. In his model, users of financial statements are first exposed to accounting phenomena. Based on this exposure users create a mental structure called schema that classifies the phenomena. Schemas are stored first in short-term memory and then in long-term memory. When a user faces an accounting problem, the problem triggers the search and retrieval of a particular schema that might be useful in solving the problem. The selected schema is then compared and combined with new information to make a judgment and a decision. If the problem matches the chosen schema, the decision is almost automatic; but if the schema and the new problem do not match then the process becomes conscious and the schema might be modified or a new schema might be created.

Research in JDM accounting has spread and has a long tradition in auditing and information systems. Behavioral financial accounting research did not follow the same path. In the early 1970's, a criticism by Gonedes and Dopuch (1974) moved behavioral researchers away from financial accounting. The criticisms were based on the argument that individual biases would not hold on an aggregated basis and the markets would compensate for individual errors. They also argued that the methods available at that time did not match the questions and that there was a lack of psychological and economic theories that could explain investors' behavior (Libby, Bloomfield, & Nelson, 2002; Maines, 1995).

As a result of this criticism, financial accounting research followed mainstream research in economics and finance based on the assumption of the rationality of individuals. By rationality

mainstream research implies that individuals maximize utility and do not make systematic mistakes; individuals behave as normative theories suggest, such as in expected utility theory (Stracca, 2004). By the 1980's, new developments in psychology and methodology opened the door to challenge the assumptions of rationality. Prospect theory (PT) is a descriptive theory developed by Tversky and Kahneman in the 1980's that describes the way individuals make decisions under risk. PT describes how individuals use the information in their decision-making process and how individuals actually decide among different uncertain alternatives. PT conflicts with some normative theories like expected utility theory (EUT). For example, EUT invariance is a paramount assumption that states that "different representations of the same choice problem should yield the same preference. That is, the preference between options should be independent of their description" (Tversky & Kahneman, 1986). It has been demonstrated by Tversky and Kahneman and other researchers that the invariance assumption does not hold; people change their decisions when information is presented differently. Tversky and Kahneman call this the framing effect.

The development of new psychological theories like PT opened the door to research in behavioral economics, finance and accounting. De Bondt and Thaler (1984) are pioneers in using a psychological theory in economic and financial research. They published a seminal work where they use the representative heuristic which is "an assessment of the degree of correspondence between a sample and a population, an instance and a category, an act and actor or, more generally, between an outcome and a model" (Tversky & Kahneman, 2002). Based on the representative heuristic, De Bondt and Thaler (1984) explained changes in share prices as a reaction to large increases or decreases in previous share prices. Behavioral economics and finance are now among the most active research fields, and they –with the inclusion of psychology and sociology- stand in contradiction to mainstream research in finance and economics, research based on the rationality of individuals (Shiller, 2003).

Financial accounting research is one of the most dynamic and interesting streams in accounting research, and it follows a long tradition from research in economics and finance. In a very general sense, financial accounting research studies the impact of the financial accounting reports on different users, their decisions, and the outcome of those decisions. "Financial accounting research is a broad field that examines financial communication between managers, auditors, information intermediaries, and investors, as well as the effects of regulatory regimes on that process. Much of this literature focuses on managers' and auditors' reporting decisions and their relationships to analysts' forecasts and value estimates, investors' trading decisions, and resulting market prices" (Libby, Bloomfield, & Nelson, 2002).

Similar to economics and finance, research in financial accounting can be divided into two groups: mainstream and behavioral financial accounting. Mainstream research is typically based on the assumptions of utility maximization and rationality, where the efficient markets hypothesis is the central theory. Research in behavioral financial accounting focuses on investors and creditors in their role as decision-makers. This literature assumes investors face the problem of "predicting future dividends and change in stock price, as well as assessing the uncertainty (risk) of these returns." Meanwhile creditors' task is "determining the amount and terms of loans made to business ...and [t]he prediction of future cash flow necessary to assess the probability that the loan principal and related interest will be repaid" (Maines, 1995). In any case, a goal for behavioral financial accounting research is to understand the implications that psychological characteristics have for the markets, given investors' use of financial statements (Stracca, 2004).

Based on a decision-making framework of input-process-output, research in behavioral financial accounting can be classified into two streams. The first stream focuses on the inputs and looks for the effect of the information on investors and creditors. The second stream focuses on the process; this research applies JDM literature to investors and creditors, such as the use of heuristics and the resulting biases (Maines, 1995). Mainstream and behavioral research in financial accounting are in direct contradiction to each other because they do not share the assumption of rationality. Behavioral research is concerned with investors' and creditors' behavior and their decisions, and this behavior has been found to contradict expectations from mainstream (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. These include: violations to the laws of probability and 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 mainstream, many anomalies have been found, like the post-earnings-announcement drift. An inventory of these anomalies can be found in a number of papers (Stracca, 2004; Libby, Bloomfield & Nelson, 2002; Shiller, 2003; Berg, Dickhaut & McCabe, 1995; Lee, 2001).

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. 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, mainstream 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 that tests the disposition effect and the influence that analysts' recommendations have on investors' decision (Krishnan & Booker, 2002). Other work tests for the disposition effect and investigates the effect of the changes in stock purchase price on investors' decisions (Weber & Camerer, 1998). Archival studies study the disposition effect as well (Odean, 1998; Shefrin & Statman, 1985).

The disposition effect can be explained by PT. Under PT, individuals evaluate their alternatives by calculating a gain or loss which is computed by comparing the outcome from each alternative against a reference point. Individuals react differently when facing the possibility of losses or gains. They are risk-averse when evaluating large gains; this explains the common finding that investors decide to sell a winning stock. They do not want to take additional risk and prefer to cash in on their gains. On the other hand, individuals tend to be risk-takers when in a loss position; in this case, investors are reluctant to take losses, maybe with the expectation that losses could be reverted even marginally. In both cases, the decision made by investors is not optimal.

One goal of behavioral research in JDM is helping individuals make better decisions. This means that decisions are closer to the standard provided by normative theories, in other words, to provide individuals with prescriptive models and help them in their decision-making process. Despite the relevance of this research, there is a surprisingly little effort in this area; one of the few examples is the work by Krishnan and Booker. They not only test the existence of the disposition effect but also investigate whether analysts' reports can reduce the effects of the disposition effect. They study different characteristics of the analysts' reports that may have an impact on investors' decisions. In general they find that the disposition effect can be reduced when investors are provided with an analyst's recommendation and the reduction can be larger when the recommendation is supported by additional

financial and economic information (Krishnan & Booker, 2002). More effort is needed in this area in identifying different prescriptive models that can help investors make better decisions, decisions closer to the optimal decision prescribed by normative theories.

The second stream of research in behavioral financial accounting is related to inputs and their impact on decision-making. For accounting, this is a crucial research area. The accounting profession is responsible for determining the type of information included in the financial statements and the methods used to calculate that information. To better understand the impact of financial statements is important to understand how different characteristics of information affect individuals and how the format used to present information improves individuals' decision-making processes. Accounting research in this area focuses on four topics: How a specific type of information affect users of financial reports, the use of different accounting methods, the quantity of information presented and the format in which information is presented (Maines, 1995).

Research on formats in accounting did not start as early as other research in JDM in accounting. A possible explanation is that mainstream research in financial accounting assumed that different formats do not influence the judgment and decision process. It was later when Tversky and Kahneman, among other researchers, challenged this assumption that studies researching formats in accounting began. Accounting research on formats is highly relevant; previous studies have showed that the format influences the accuracy of decisions and judgments (Ghani, Laswad, Tooley, & Jusoff, 2009; Weber, Siebenmorgen, & Weber, 2005).

A judgment is a cognitive process that leads to the selection of a course of action among alternatives that begins with the acquisition of new information and knowledge. This is a step

constrained by our limited capabilities because individuals acquire information based on a particular context. When the information is moved into a different context, individuals tend to ignore the information previously acquired. Individuals also evaluate information based on format and placement; this effect is known as "placement signal" (Ghani, Laswad, Tooley, & Jusoff, 2009). In short, not only the content of the information but also the way it is presented affects individuals' decision making and consequently that of investors. Because the proposed format of financial statements modifies the way information is presented, it might be expected that investors' judgments are also affected, including their accuracy in financial statements analysis.

Individuals have limitations for learning and the format used to present information might help to overcome these limitations. In fact, the efficacy of the information is determined not only by its context but also its format. And, to be effective, the information not only has to be related to the problem to be solved, but must match the task presented to the decision maker. Thus, the format may reduce part of the cognitive load for the decision-makers and consequently improve the judgment (Bertin, 1983).

Research on formats in accounting has investigated different topics. Search behavior refers to the approach investors use to acquire the information they need. It has been found that professional investors use a direct approach; they go directly to the information they need in the financial statements. Non-professional investors are found to use a sequential approach; they read the financial statements from cover to cover (Bouwman, Frishkoff, & Frishkoff, 1987). There is research comparing tabular against graphical financial information; it was found that graphical information leads to a faster decision-making process (Tuttle & Kershaw, 1998). The amount of weight placed on information is another topic investigated in this area. It has been found that when the same information is disclosed in different financial statements, users weigh it differently (Maines & McDaniel, 2000). In another study, it

was shown that non-trained users make better decisions when they are provided with graphic rather than tabular cost accounting information (Cardinaels, 2008).

1.4. RESEARCH QUESTIONS

The new format of financial statements proposed by IASB and FASB drastically changes the format, but not the content. Investors make some errors, like the disposition effect, and these errors result in non-optimal decisions. The goal of the new format is to improve the usefulness of the information and ultimately to improve users' judgment and decision-making processes. A pertinent question is whether the proposed new financial statement format improves investors' decisions.

This question is important to the FASB and IASB as organizations that set accounting standards so that they can have a clear understanding of how the financial statements, and in particular the proposed format, affects users of the financial statements. It is also relevant to the academic community. The proposed format gives the unique opportunity to compare two different formats of financial statements that contain the same information and test whether the format does affect investors' decisions. Additionally, this study pursues one of the goals of behavioral research by considering financial statements as a prescriptive model; in this regard, the particular questions for this study are: Can financial statements help in reducing the gap between investors' decisions and the normative solution? And, do financial statements have a prescriptive value for investors? There has been research testing for the different heuristics and biases in the investors' decision-making process (De Bondt & Thaler, 1984; Finucane, Alhakami, Slovic, & Johnson, 2000; Siddiqi, 2009) and research that uses analysts' reports as a prescriptive norm to reduce the disposition effect (Krishnan & Booker, 2002), but

there is no research using financial statements as a prescriptive model. The purpose of this research is to close this gap in the literature.

2. Theory and Hypotheses

2.1 EXPECTED UTILITY THEORY

Individuals face a multitude of decisions every day, from simple things like what coffee to order, to more complicated matters like what career to choose. Making a decision implies a choice among different available options, a selection that is led by our goals and desires. We all make decisions and investors are not an exception. They have to decide among different securities to invest in; at a basic level, investors have to decide whether to buy a new stock, or sell or hold their current stock. People make decisions because they want to achieve a particular goal and the best option is the one that best achieve their goals.

Utility Theory (UT) is a normative theory that provides rules for an optimal decision making process. A critical part of the theory is the concept of utility that is defined as the extent to which an option achieves our goals. The basic assumption behind utility is that it can be measured. In this regard, the scale used to measure utility is not important by itself as long as the scale is consistent among all options. Then, different options can be compared by comparing the amount of utility each option produces. According to utility theory, we should choose the option that maximizes total utility. In other words, the more utility an option yields the better, and the option that yields the most utility is the one that should be chosen. However, more of a particular option does not necessary yield more utility at the same rate of increase. This is particularly true for wealth, what economists call the marginal utility of wealth. It means that more wealth does not necessary bring the same proportionate increase in utility, an additional unit of wealth provides decreasing levels of utility. Graphing wealth on the x axes and utility on the y axes, the wealth function of utility is concave (Baron, 1994).

As a normative theory, utility theory is derived from a logical reasoning and supported on a set of assumptions, in particular transitivity and connectivity. Transitivity and connectivity state that if option A is preferred over option B, and option B is preferred over option C, then it follows that, option A is preferred over option C. Following the rules and prescriptions from the theory, we are assured that in the long run we are making the best decision.

However, most of our decisions include additionally complexity beyond the choice between two or more alternatives where we are sure about the results of the options. In most of the cases, we do not know the outcome of our decisions. In other words, we normally make decisions under uncertainty. Utility theory can be expanded to include probabilities to analyze different options under uncertainty, and this theory is called Expected Utility Theory (EUT).

Under EUT the maximizing principle still holds. We must choose the option that maximizes total utility, but now utility is calculated considering risk, as reflected by the probability of an outcome. According to Baron, "the theory says that the overall utility of an option is the expected utility. That is, the utility averaged across the various possible states, with the outcomes weighted according to the probability of the state" (Baron, 1994). There are important concepts worth explaining regarding this definition. Option refers to the possible courses of action. In fact, when we are making a decision we are choosing among different options. For instance, when investors analyze a particular stock there are only three possible options, buy, sell or hold.

State refers to the different situations that may happen in reality. Following the example of investors, states are the different prices a share may take in the future. A share price may be \$10, \$15,

\$20 a year from now, or any other price. States have some worthwhile characteristics; only one state can be true, and they are exhaustive, meaning that all the possible states are included. Uncertainty is included to EUT by assign probabilities to the different states and the sum of all those probabilities must be equal to one.

An outcome is the result of taking a particular option when a particular state occurs. For instance, an investor decides to buy a share today (option), and one year from now that share rises in price (state). The outcome is the number of shares multiplied by the future share price. If the investor had taken a different option like selling, the outcome would be different.

The expected utility of an option is calculated by multiplying the probability for each state by its utility and summing the products for that option. The expected utility value for a particular option A can be represented by the following formula.

$$EU_A = \sum p(i) * u(i)$$

Where $p(i)$ is the probability of occurrence for the i^{th} outcome, and $u(i)$ is the utility for the i^{th} outcome. According to EUT, we need to calculate the expected utility for each one of the different options that we have and compare those expected utilities. The chosen option is the one that yields the maximum expected utility.

EUT, as Utility Theory, is a normative theory that depends on a logical development of its principles, rules and assumptions. EUT follows the principles of transitivity, connectivity (both explained before), cancellation, domination and invariance. Cancellation states that only those states that

are different among options should be included in the analysis. This property is the essence of the decision making process itself. If all states are the same for all options, then there is no decision to make. The outcomes are no different and there is no longer any uncertainty. In the investors' example, it would be like saying that in the first state the share price will rise ten percent as well as for the second state, the third and so forth.

Dominance states that if an option is best in one state, and at least as good as the other options in all other states, then that option should be selected. This characteristic reflects the basic rule of utility maximization. Invariance means that if options are presented in a different way, using different formats for instance, they should yield the same result. In other words, the format should not impact the outcome. The invariance principle has been heavily questioned, and it has been proved that it does not hold. A review of this literature can be found in Tversky and Kahneman (1986).

If an investor uses EUT to make an investment decision, the following are the steps he or she should follow. First they must determine their options and, as mentioned before there are three: buy, sell, or hold. Second, investors have to estimate the possible states; in this case possible future share prices, in let's say, a year from now. Once the states are determined (future share prices) each one is assigned the corresponding probability. The outcome is the result of multiplying of the number of shares from each option times the expected future share price; the outcome will be part of the investor's wealth. However, wealth is not the same as utility and consequently it has to be converted to utility. The utility function of wealth is concave and it can be approximated by computing the square root of total wealth (Baron, 1994). With the utility of each option and the probability of each state, the next step is to calculate the expected utility for each option. Each utility is multiplied by the probability of its particular state and these values are added across an option. The result is the expected utility for that option. The

process has to be repeated for each option and the investor should choose the options with the highest expected utility. It is worth mentioning that for EUT the initial purchase price of a share is not relevant. The cancellation property renders the initial purchase price irrelevant to the decision. In this regard, the only relevant prices are the current and the future share price.

2.2. PROSPECT THEORY

Contrary to EUT, which is a normative theory, Prospect Theory (PT) is a descriptive theory, and its purpose is explaining phenomena observed in the individual's decision-making process. PT was developed by Tversky and Kahneman in the 1970's and 1980's (Tversky & Kahneman, 1986) and it is based on the same basic elements as EUT like options, utility function, outcome, and probability. In PT, as in EUT, individuals make decisions by maximizing a modified utility function. However, even though PT uses the same basic elements as EUT, PT modifies many of those elements to explain individuals' decision-making behavior.

PT, similar to EUT, focuses on how individuals make decisions and pays little attention to other steps in the Judgment and Decision-Making process like acquiring, storing, or retrieving information. The theory 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 it by a decision weight (probability in EUT), and choosing the prospect (option in EUT) that yields the highest expected value (expected utility in EUT). Prospect theory modifies the way the utility function is computed calling it the value function, and modifies the probability calling it a weighting function.

The value function is calculated in terms of gains or losses. This is in contrast to EUT, where the utility function considers 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 3 shows the value function for PT. The graph is from Tsversky and Kanheman (1986)

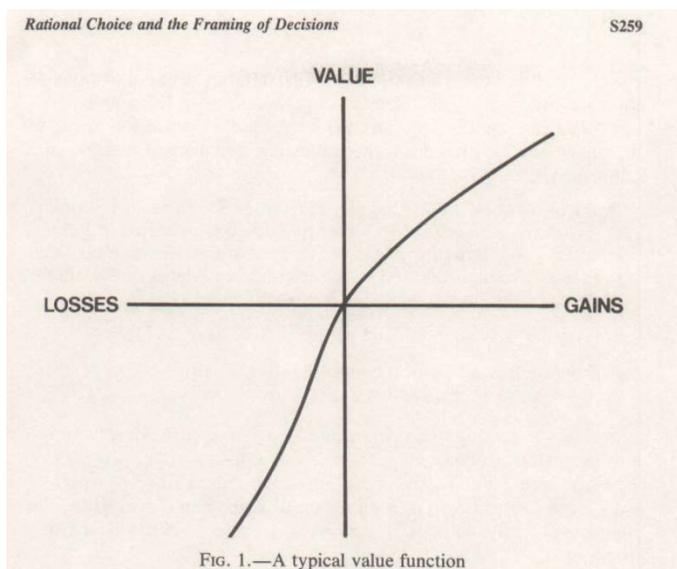


Figure 3 Value Function for Prospect Theory

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. Individuals overestimate the probability of events with low, not very low but low probability; they consider that

these events have a higher probability of occurrence than they have in reality. For medium and high probability events, but not very high probability, the opposite is true. Individuals underestimate those events and consider that their probability is lower than it really is. Figure 4 represents the weighting function used in prospect theory and compares it with the stated probability. The graph from Tsversky and Kanheman (1986) shows on the x-axe probability and on the y-axe the weighting function. The bold line is the weighting function and the dotted line is stated probability.

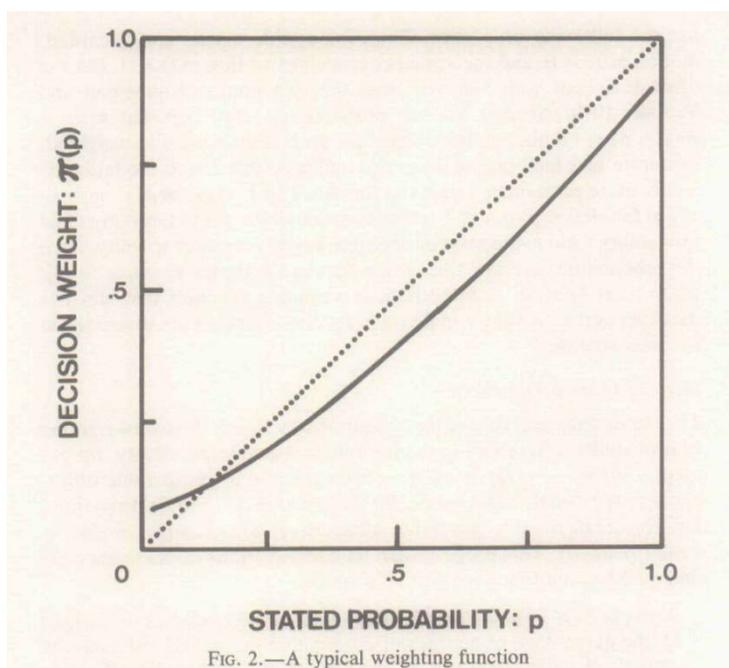


Figure 4 Weighting Function for **Prospect Theory**

PT introduces a richer scope of predictions for individuals' behavior than EUT; 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. 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. Individuals are also risk-averse when they face the probability of a small loss. The convex and the steep shape of the value function at small losses make any marginal change in losses have a significant impact on value; in other words, losses are painful for individuals. Investors would try to avoid small losses; as soon as investors face a loss they try to sell the shares. An individual is a risk taker for small gains. In the gain section that is close to the point of reference, any incremental change in gains 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 rational 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.

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 set of hypotheses; all these hypotheses are 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. In other words, this scenario provides an investor with a possible gain under both theories: EUT and PT. Hypotheses H1a contrasts the conflicting predictions from both theories in terms of the decision or the willingness to make a decision. Hypothesis

H1b looks for the difference in prices between what individuals are willing to pay or receive for their stock, and the price set by the normative EUT.

Hypothesis 1. When the expected future price is higher than the current price and the current price is higher than the purchase price then,

H1a. Investors are more likely to sell or hold their shares than buy as predicted by EUT.

H1b. The maximum price investors are willing to pay for a share is lower than 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 expected future and current price, investors have a loss. If it is a significant loss, PT predicts that investors will hold their shares rather than sell. The second set of hypotheses test this discrepancy between the two theories. As in the previous set of hypotheses, hypotheses H2a compares investors' decision under a loss condition and hypothesis H2b test for the difference in price between the investors' decision and the norm.

Hypothesis 2. When the expected future price is lower than the current price and the current price is lower than the purchase price then,

H2a. Investors are more likely to hold their shares than sell as predicted by EUT.

H2b. The minimum price investors are willing to sell their shares is higher than predicted by EUT.

2.3. COGNITIVE FIT

EUT and PT are concerned just with one part of the judgment and decision-making process which in its simpler form includes three components: Input, process, and output. The input component concerns the information involved and its characteristics. Research in this area studies the characteristics, uses and effects of information on decision-making. Some of the variables studied in this regard are the presentation format, sequence of presentation, and aggregation or disaggregation of the information. The process component concerns the way individuals use the information in their judgments and how those judgments are formed including the rules used by individuals in their judgments such as the weight given to each piece of information or the actual heuristic used (Libby & Lewis, 1977).

EUT and PT both assume that the individual already gathered all the 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-making process PT in its framing and editing phase, 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. One reason is that

individuals set the frame in terms of gain or loss, and these may depend on a "point of reference." A change in the point of reference itself may affect the final decision. Points of reference are not universal; they depend on each individual and can be modified. As Tversky and Kahneman also comment, "shifts of reference can be induced by different decompositions of outcomes into risky and riskless components; the reference point can also be shifted by a mere labeling of outcomes" (Tversky & Kahneman, 1986). Consequently, the efficiency and efficacy of the decision-making process 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 information format, it is important to know whether the proposed format of financial statements by IASB and FASB is capable of improving the investors' decision. In other words, it is important to know whether the proposed format reduces the bias on the investors' decision making and closes the gap between the optimal price and the one chosen by investors. 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 efficiency 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 JDM model.

Cognitive fit is a theory introduced by Vessey in 1991 and improved by Shaft and Vessey in (2006). Its main idea is that the way information is presented to individuals is going to have an impact on the outcome of their decision. As such, the format information is presented in will affect the efficacy and efficiency of the outcome. The diagram in Figure 5 summarizes the proposition of the cognitive fit theory (Vessey, 1991).

Figure 1: General problem-solving model.

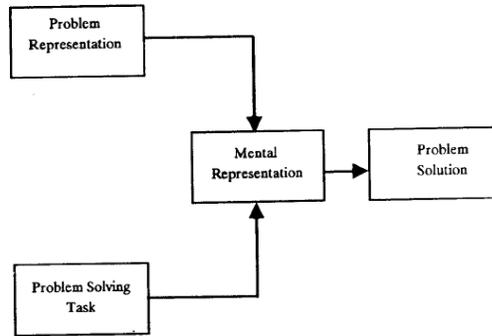


Figure 5 Diagram for Cognitive Fit Theory

The theory states that the efficacy and efficiency of the outcome depends on the mental representation an individual use to solve a task. In turn, mental representation is affected by both the complexity of the task (problem solving task in the graph) and the format of the information (problem representation in the graph). 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 what Vessey calls cognitive fit (Vessey, 1991).

Mental representations are the tools and aids individuals use to solve a problem. Several of these tools that have already been identified, with research still searching for more. These tools are normally referred as heuristics and they are rules of thumb that are extremely efficient when there are applied in the context where they were developed. Individuals chose the mental representation that best fits when facing a particular task, with the information necessary to solve a task obtained in various ways. Individuals use a mental representation to basically extract the required information. Cognitive fit theory

predicts that when individuals use the same mental representation for the task and the information there is a better performance in solving the problem. This theory also states that when there is a mismatch between the mental representation used for the task and the information the efficiency and efficacy of the decision-making process is reduced. In a mismatch, individuals have to work with two different mental representations and switch from one to another. This continual switching requires an additional cognitive effort which does not help in making the task less complex.

Investors face specific decisions, such as decide whether to buy, sell or hold shares. To make 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. In this regard, Palepu, Bernard and Healey (1996) propose frame for assessing the value of a company that can be used as mental representation by investors. This frame is explained in the next paragraph. Financial statements and their format are the “problem representation” in the cognitive fit theory. 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 efficient.

Palepu, Bernard and Healy (1996) propose a model that can be used as “mental representation” by investors when analyzing financial statements. They state that a firm’s value is a function of the firm's profitability and growth as influenced by the “product” and “financial” markets strategies adopted by the firm. In other words, managers can affect a firm's value by designing and implementing the proper policies and strategies in “product” and “financial” markets. The strategies used for the product

market depends on operating and investing management. Operating management deals with activities related to managing revenues and expenses, and investing management deals with working capital and fix assets. The financial market strategies are categorized into dividends policy and financial strategies that concern liabilities and equity. In short, there are four drivers for profitability and growth in a firm: operating, investment, financing and dividends (Palepu, Bernard, & Healy, 1996).

Investor's financial analysis is driven then by the company's operating, investing, financing, and dividends strategies. 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 efficient and efficacy. The current 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 separating the operating, investing and financing activities of the firm. 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 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 accounts for analyses purposes. In short, when investors analyze financial statements using the current 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 efficacy decisions.

In contrast, the International Accounting Standard Board and the Financial Accounting Standard Board 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 to identify and extract 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 3. Hypothesis for share price

Hypothesis 3a. For the gain condition. When investors are provided with the current financial statements format, the price at which they are willing to buy shares is closer to the price predicted by EUT than when they are not provided with the financial statements.

Hypothesis 3b. For the gain condition. When investors are provided with the proposed financial statements format, the price at which they are willing to buy shares is closer to the price predicted by EUT than when they are provided with the current financial statements format.

Hypothesis 3c. For the loss condition. When investors are provided with the current financial statements format, the price at which they are willing to sell shares is closer to the price predicted by EUT than when they are not provided with financial statements.

Hypothesis 3d. For the loss condition. When investors are provided with the proposed financial statements format, the price at which they are willing to sell shares is closer to the price predicted by EUT than when they are provided with current financial statements format.

Hypothesis 4. Hypothesis for investors' decision.

Hypothesis 4a. For the gain condition. Investors are more likely to buy or hold their shares when they are provided with the current financial statements format than when they are not provided with financial statements.

Hypothesis 4b. For the 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 current financial statements format.

Hypothesis 4c. For the loss condition. Investors are more likely to sell their shares when they are provided with the current financial statements format than when they are not provided with financial statements.

Hypothesis 4d. For the 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 current financial statements format.

3. Methodology

Experiments were 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 or 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 current format of financial statements and the third for the proposed format of financial statements. There are three dependent variables for the different hypotheses. The first dependent variable is for the investors' willingness to sell, buy or hold share. The second is for the maximum prices at which investors are willing to buy shares, and the third is the minimum prices at which investors are willing sell shares.

The experiment is conducted online using Qualtrics. Each participant receives a set of instructions where they are asked to read the information provided and answer some questions. Applying the experiment 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. 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. Participants, depending on the case they receive, have to decide on the maximum (minimum) share price they are willing to pay (sell) for the share. They are provided with table in figure 6. This table contains information about future share prices and it includes computations for the expected future share price which is \$10 for all participants. 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. The

\$10 is also the maximum price EUT predicts investors would pay to buy more share or the minimum price investors would receive for selling their share.

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

Figure 6 Future Expected Price

The first factor, as mentioned, measures the disposition effect at two levels of a gain or 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; similarly 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; they also work as a basis from which to compare the effect from the financial statements formats.

The second factor measures the impact of the financial statements on investors and is tested at three levels. The first level is provided with no financial statements at all; this group, as with the first factor, works as basis from which to compare the effect of the financial statements. The second group is

provided with the financial statements prepared using the current format. 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 added 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 are selected among undergraduate students from the University of Texas at El Paso College of Business Administration. The reason for this restriction is to control for the level of expertise of the participants in the use of the current 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 may partially 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. The construct measures for the level of familiarity and expertise an individual has regarding a product. The scale can be adapted for the use of financial statements. Five questions conform the construct which 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.

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 (Krishnan & Booker, 2002). They use a six-point Likert scale to measure the likelihood to sell

or hold share, where one indicates definitely hold and six definitely sell. Some modifications to this scale are made in this study. First 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 assign one to indicate definitely buy, five definitely hold, and nine definitely sell, with other numbers measuring intermediate steps between these three main decisions. The use of the modified Likert scale allows itself to statistical testing and comparison of participants' decisions. The variables measuring the maximum price to buy and minimum to sell are open questions. 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 control variable for the level of expertise in the use of financial statements.

A one sample t-test is used to test hypotheses 1 and 2. These hypotheses compare the value from the sample (share price or investors' decision) against the value predicted by EUT. For the share price the normative value is the expected future price of \$10. For the investors' decision the normative value depends on the condition the investors face. For a gain condition, the normative decision is buying and for a loss condition, the normative decision is selling. The use of normative values against which to make comparisons has been previously used in the behavioral sciences (see Vessey, 1991; and Baron, 1994). Hypothesis H1a states that investors in a gain condition prefer to sell or hold their shares instead of buy. Using the Likert scale described previously, expectations under H1a are that investors' decisions will score lower than the value predicted by EUT. Hypothesis H1b deals with the maximum price investors are willing to pay. It is expected under H1b that investors will be willing to pay a price that is lower than \$10, which is the maximum price predicted by EUT. Hypotheses H2a and H2b are mirror image of H1a and H1b. The prediction for H2a is that investors' decision will score higher than the value expected by EUT, and for H2b that investors will choose a price higher than \$10, the value

predicted by EUT. The purpose of hypotheses 1 and 2 is twofold: first, they test for the disposition effect, and second, they are used as a base for hypotheses 3 and 4.

A regression model is used for testing hypotheses 3. The dependent variable for hypothesis 3a and 3b is the maximum price investors are willing to pay. The coefficient for the current format of financial statements and the coefficient for the proposed format are expected to be positive. However, the coefficient for the proposed format of financial statements is expected to have a larger magnitude than the coefficient for the current format. The dependent variable for hypothesis 3c and 3d is the minimum price investors are willing to sell. The coefficients for both formats are expected to have a negative sign and the coefficient for the proposed format is expected to be larger. Regression analysis allows assessing not only the direction but also the magnitude of the influence from each independent variable on the dependent variable. The models for hypotheses 3 are as follows:

$$\text{Maximum/Minimum share price} = \beta_0 + \beta_1 \text{ Expertise} + \beta_2 \text{ Current Format} + \beta_3 \text{ Proposed Format}$$

A regression analysis is also used for testing hypotheses 4. The dependent variable is the likelihood for the investors' decision measured by a nine-point Likert scale. The coefficients for H4a and H4b are expected to be positive for both formats of financial statements. However, the coefficient for the proposed format of financial statements is expected to be larger than the coefficient for the current format. The coefficient for H4c and H4d are expected to be negative for both formats of financial statements. However, the coefficient for the proposed format is expected to be larger than the current. The model for hypotheses 4 is as follows:

$$\text{Likelihood of the Decision} = \beta_0 + \beta_1 \text{ Expertise} + \beta_2 \text{ Current Format} + \beta_3 \text{ Proposed Format}$$

4. Results

4.1. SUBJECTS

Participants are all undergraduate students taking classes in the University of Texas at El Paso College of Business Administration. 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 current and proposed format. Because the current 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 current format of financial statements could bias the results from the experiment. With undergraduate students, the level of expertise in the current format is kept at its minimum and the risk of a bias is reduced.

From the total number of participants 51.7% are females and 48.3% are males. In average, participants are 25.25 years old and have taken 3.86 classes in finance and/or accounting. As for the number of years in school, .6% of the subjects are freshman, 9.8% are sophomore, 38.7% are junior and 50.9% are senior. In total, 78.6% of the participants have no experience at all investing in stock with only 12.7% having between 1 and 2 years of experience, 3.5% having between 3 and 4 years, 0.6% between 6 and 7 years and 4.6% having more than seven years of experience.

The experiment consisted of six different cases and was applied online using Qualtrics. 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. The six different groups in the experiment were randomly assigned to the different participants. A pilot study was run to identify possible errors in the instrument

and to verify that the system was allocating the cases properly. The problems that were identified were not critical for the development of the experiment and were corrected before running the experiment.

A total of 450 observations were recorded in the system in a period of two and half weeks, although only 392 observations were completed. Two main reasons explain the existence of 58 uncompleted observations. First, some of the professors accessed the experiment to understand it and better explain its requirements to their students. Second, some students started the experiment only to immediately quit to return later; in most cases to obtain a calculator, pencil or paper. Only two subjects refused to answer the case and quit the questionnaire at the beginning. To verify that participants earnestly responded to the experiment some financial ratios calculations were included as part of the questionnaire. Based on the financial ratios and other reasons, a total of 191 responses were eliminated. Among the other reasons, the buying/selling price and its relationship with the decision was used to identify useful questionnaires. For instance, the experiment proposes a range of share prices between \$0 and \$20. When a participant offers a selling or buying price per share higher than \$20, that observation is eliminated completely. Another reason is that students are often enrolled in more than one class at the time, so chances are that a student participated more than once in the experiment. For those students, only the first attempt was included; a total of 28 observations were eliminated for duplicity. After removing all incomplete and incorrect observations 173 useful observations remained. The following table summarizes the number of observations and the reasons for eliminating some of them.

Table 1 Subjects and observation

Table 1 Subjects and observation	
Concept	Number of Observations
Total responses	450
Not completed	56
Refuse to answer	2
Control questions	81
No earnest response	110
Duplicated	28
Useful responses	173

Not completed: In this case subjects access the experiment but leave it before they completed it. Refuse to answer: The subjects did not want to answer the case after they read the inform consent. Control questions: These subjects did not response correctly to questions asking for financial ratios; the purpose of these questions is to verify that subjects read and solve the case carefully. Non earnest response: These subjects answered the control questions properly but their answers reflect a lack of care in solving the casa such as providing prices greater than the maximum possible price.

4.2. DESCRIPTIVE STATISTICS

When participants open the link they access a case where they have to assume the role of an investor. Under this role, they already own certain number of shares from a fictitious company and certain amount of cash. The total current wealth considering shares at their current price and cash is \$75,000.00. Every participant is asked to make two decisions: to decide whether to sell, buy or hold their position in shares, and to decide the maximum/minimum price they are willing to pay/sell their shares.

The cases are first divided by gain and loss conditions. Under the gain condition participants are told that they bought their shares a year ago and paid \$8 per share; that the current price is \$9 and the expected future price is \$10 per share. This scenario provides a gain condition under Expected Utility Theory by comparing current price and expected future price, and under Prospect Theory by comparing purchased price and current price. Participants in this condition are asked to make a decision and state the maximum price they are willing to pay for another share. In the loss condition the purchased price is \$15, the current price is \$11 and the expected future price is \$10. The loss condition also provides a loss scenario for participants under both theories tested in the experiment. Participants in the loss condition are also asked for their decision. However, they are asked for the minimum price they are willing to sell their shares. Each condition is further divided in three groups where the first group is not provided with financial statements, the second group is provided with the current format of financial statements and the third group is provided with the proposed format of financial statements.

The disposition effect is measured with two dependent variables, price and decision. The manipulation is at three levels, no financial statements, current format of financial statements and proposed format of financial statements. There is an additional independent variable, expertise. This variable captures the level of expertise in the use of the financial statements. This is important for the same reason undergraduate students are the subjects of the experiment, because the current format of financial statements has been used for a long time and users have developed certain level of expertise using this format. This level of expertise may bias the results toward the current format. To mitigate this problem two measures are taken. First is the use of undergraduate students in the expectation that this reduces their level of expertise in the use of financial statements, and second is the use of a construct that measures the level of expertise in the use of financial statements. This construct was developed in marketing to measure the level of expertise in the use of a product. It consists of five questions using a

five-point likert-scale. The level of expertise in the use of financial statements showed high levels of reliability. Cronbach's alpha is .912 and only the fifth question raised the cronbach's alpha when it is dropped. However, the cronbach's alpha would rise to .926. Consequently, none of the questions were dropped from the construct and the final scale for the construct is obtained by adding answers from the five questions; the minimum score possible is 5 and the maximum is 25. The higher the score means a higher level of expertise in the use of financial statements.

Table 2 shows the descriptive statistics and correlations for the gain condition. On average, participants in the gain condition are willing to pay \$9.76 for an additional share of the fictitious company. In terms of their decision, participants have an average of 5.56 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 9.779. The analysis shows that price and decision are correlated, $r=.267$, $p(\text{two tails}) p<.05$. It also shows that the level of expertise is highly correlated with both formats of the financial statements. Expertise and the current format are correlated at $r=.491$ at $p<.01$. Expertise is also correlated to the proposed format at $r=.457$ at $p<.01$. Both formats of the financial statements are correlated at $r=-.461$ at $p<.01$.

Table 3 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, current format and proposed format. The average price participants are willing to pay for a share in the group without financial statements is \$9.92, \$9.45 for the group with the current format of the financial statements, and \$9.91 for the group with the proposed format of financial statements. The tendency for the change in prices is minimum and contrary to what is expected in hypothesis 3a and 3b. Expectations are that the

price would get closer to the future expected price but the price decrease for the group with the traditional financial statements and remains the same for the proposed format.

Table 2 Gain Condition Descriptive Statistics

Table 2 Gain Condition Descriptive Statistics and Pearson Correlation							
Variable	Mean	Std. Dev.	Price	Decision	Expertise	Current Format	Proposed Format
Price	9.763	1.027	1.000				
Decision	5.560	1.855	.267 (.017)**	1.000			
Expertise	9.779	8.223	-.112 (.326)	.239 (.020)**	1.000		
Current Format			-.218 (.054)*	-.004 (.972)	.491 (.000)***	1.000	
Proposed Format			.107 (.348)	.171 (.097)*	.457 (.000)***	-.461 (.000)***	1.000

Pearson correlation (p-value)
 *, **, *** significance at 10%, 5% and 1% respectively
 Price is the maximum price subjects are willing to pay for buying 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. Current format is a dichotomous variable for participants using the current format of financial statements, and proposed format measures participants using the proposed format of financial statements.

As for the decision, the group with no financial statements has an average score on the Likert-scale of 5.17, the group with the current format of financial statements has an average of 5.55 and the group with the proposed format of financial statements has an average of 6.03. The decision is moving closer to buying which is according to the predictions of hypothesis 4a and 4b. In terms of expertise in the use of financial statements, the group with the current format of financial statements has an average score of 15.55 and the group with the proposed format of financial statements has a score of 15.41.

Table 4 contains descriptive statistics and correlations for the loss condition. When participants face the loss conditions, on average the minimum price they are willing to accept for their shares is

\$11.70 and in average their decision is 3.28 which is between hold and sell. The level of expertise is in average 10.371. As in the gain condition, the price is correlated to the decision with $r=.673$ at $p<.01$ and expertise is correlated to both format of financial statements. Expertise correlation with the current format is $r=.550$ at $p<.01$ and with the proposed format is $r=.391$ also at $p<.01$. Both formats of financial statements are also correlated at $r=-.458$ at $p<.01$.

Table 3 Gain Condition Descriptive Statistics per Group

Table 3 Gain Condition Descriptive Statistics per Group									
Variable	No Financial Statements			Current Format of FS			Proposed Format of FS		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Price	26	9.92	1.27	26	9.45	.56	27	9.91	1.08
Decision	35	5.17	1.99	31	5.55	1.86	29	6.03	1.61
Expertise	35	0.00	0.00	31	15.55	3.74	29	15.41	4.77

Price is the maximum price subjects are willing to pay for buying 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. Current is a dichotomous variable for participants using the current format of financial statements, and Proposed measures participants using the proposed format of financial statements.

Table 5 has descriptive statistics for the loss condition calculated for the different groups according to the financial statements provided. The minimum price participants are willing to accept for their shares in the group without financial statements is in average \$11.19, \$12.15 for the group with the current format of the financial statements and \$11.87 for the group with the proposed format of financial statements. The tendency is contrary to the one expected according to hypotheses 3c and 3d. It is expected that the price would get closer to the expected future price. However the minimum price increases. As for the decision, on average the group without financial statements has a decision of 2.97. The group with the current format of financial statements has an average decision of 3.52 and the group with the proposed format has an average of 3.42. Again, it is expected that the decision for the loss condition would get closer to the selling decision. However the decision gets closer to the holding

decision. As for expertise, the group with the current format of the financial statements has an average score of 17.44 and the group with the proposed format has an average score of 15.54.

Table 4 Loss Condition Descriptive Statistics

Table 4 Loss Condition Descriptive Statistics and Pearson Correlation							
Variable	Mean	Std. Dev.	Price	Decision	Expertise	Current Format	Proposed Format
Price	11.707	2.139	1.000				
Decision	3.280	1.511	.673 (.000)***	1.000			
Expertise	10.371	8.876	.137 (.232)	.137 (.231)	1.000		
Current Format			.143 (.211)	.109 (.343)	.550 (.000)***	1.000	
Proposed Format			.051 (.655)	.060 (.603)	.391 (.000)***	-.458 (.000)***	1.000

Pearson correlation (p-value)
 *, **, *** significance at 10%, 5% and 1% respectively
 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. Current format is a dichotomous variable for participants using the current format of financial statements, and proposed format measures participants using the proposed format of financial statements.

4.3. HYPOTHESES 1 AND 2

The purpose of hypotheses 1 and 2 is to establish the existence of the disposition effect. Hypothesis 1 is designed to test disposition effect under gain conditions for the buying price of a share and for the investors' decision. H1a says that under gain conditions investors are more likely to sell or hold their shares than buy as predicted by EUT. Investors' decision is measured with a nine-point Likert-scale where 1 represents a decision of "definitely sell", 2 is "sell", 5 is for "hold", 7 is for "probably buy" and 9 is for "definitely buy." When there is a gain condition, EUT predicts that investors would buy shares. In terms of the previous scale, investors would have an average decision of 8 which is a decision

to buy. The results from participants in the gain condition and no financial statements are used to test for the disposition effect. On average, participants' decision (see table 3) is lower than expected by EUT ($M=5.17$, $Std\ Dev=1.992$). The difference of -2.829 between the decision predicted by EUT and participant's decision is significant at $t(34) = -8.399$, $p<.01$. These results confirm the existence of the disposition effect in participants' decision under gain conditions.

Table 5 Loss Condition Descriptive Statistics per Group

Table 5 Loss Condition Descriptive Statistics per Group									
Variable	No Financial Statements			Current Format of FS			Proposed Format of FS		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Price	29	11.19	1.99	25	12.15	2.31	24	11.87	2.09
Decision	29	2.97	1.45	25	3.52	1.558	24	3.42	1.53
Expertise	29	0.00	0.00	25	17.44	4.23	24	15.54	5.22

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. Current format is a dichotomous variable for participants using the current format of financial statements, and proposed format measures participants using the proposed format of financial statements.

As for the price, hypothesis H1b says that the maximum price investors are willing to pay for a share is lower than predicted by EUT. In this context the maximum price that investors would be willing to pay is slightly less than the expected future price for the shares which in this experiment is set as \$10 per share. At \$10 investors are indifferent whether to buy or not to buy more shares. For the group of the gain condition and no financial statements the average price at which they are willing to buy more shares (see table 3) is lower than the price expected by EUT ($M = 9.92$ $Std\ Dev = 1.270$). However, the difference of $-.0769$ is not statistically significant at $t(25)=-0.309$, $p>.38$. It is not possible to confirm

the disposition effect under the gain condition for the maximum share price participants are willing to pay.

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. Hypothesis H2a test disposition effect for the participants' decision and uses the same nine-point Likert-scale used for testing hypothesis H1a. However, for the loss condition the decision predicted by EUT is 2, meaning investors are willing to sell. To test this hypothesis data from the group with a loss condition and no financial statements is used. This group shows in average a decision that scores higher in the Likert-scale (see table 5). It is a decision that is closer to the hold. (M=2.97, Std Dev=1.451) This difference of 0.966 is statistically significant at $t(28)=3.583$, $p<.01$. The results confirm the existence of the disposition effect for the decision under loss condition.

Hypothesis H2b tests the existence of the disposition effect for the share price under a loss condition. H2b predicts that the minimum price investors are willing to sell their shares is higher than predicted by EUT which is the expected future price. Participants in the group with loss condition and no financial statements on average have a higher minimum price (see table 5) than predicted by EUT (M=11.19, Std Dev=1.9882). The difference in prices of \$1.19 is statistically significant at $t(77)=7.049$, $p<.01$. However, it is not possible to clearly conclude the existence of the disposition effect for the price under the loss condition. The main reason is the low level of sophistication of the participants in financial statements analysis. Participants can make decisions whether buy, sell or hold their shares; their current skills allow them for it. However, it requires a higher level set of skills to decide over the price at which they sell or buy shares. This point is discussed in the conclusions.

4.4. HYPOTHESES 3 AND 4.

Hypotheses 3 and 4 test financial statements as aid in reducing the bias from the disposition effect. Hypothesis 3 tests the effect on the share price and hypothesis 4 tests the effect on participants' decision.

Under the gain condition hypothesis H3a states that when investors are provided with the current format of the financial statements, the price at which they are willing to buy a share is closer to the price predicted by EUT than when they are not provided with financial statements. Similarly, H3b predicts that when investors are provided with the proposed format of financial statements the price is closer to the price predicted by EUT than when investors are provided with the current format of financial statements. In other words, the difference between the expected future price of \$10 and the average price of the group with no financial statements will be reduced when participants are provided with financial statements and between the two formats the proposed format has a larger impact in reducing the disposition effect.

Hypotheses H4a and H4b also test the impact of the financial statements in reducing the disposition effect. However, in this case it is the intention of making a decision that is tested. H4a predicts that investors are more likely to buy their shares when they are provided with the current format of financial statements than when they are not and H4b states that investors are more willing to buy their shares when they are provided with the proposed format of financial statements than when they are provided with the current format of financial statements. It means that the disposition effect, the difference between the optimal decision proposed by the EUT and the average decision made by the group with no financial statements, is going to be reduced when investors are provided with financial

statements and that the largest impact in reducing the difference will come from the proposed format of the financial statements. Table 6 shows the results of the regression testing for hypotheses H3a, H3b, H4a and H4b.

The first regression is used to test for hypotheses H3a and H3b (price). None of the coefficients for the independent variables are statistically significant and the model itself is not significant. The model shows multicollinearity. Even though the regression is not statistically significant because of the multicollinearity, for the reasons explained in the next paragraph, a second regression is run with only expertise as independent variable. However the results are similar, neither the coefficient nor the model is statistically significant.

The second regression tests hypotheses H4a and H4b (decision). In this regression only the coefficient for expertise is statistically significant at $p < .10$. The coefficients for the current and for the proposed format of the financial statements are not significant. The adjusted r square of .059 is statistically significant at $F(95) = 2.974$, $p < .05$. However, as in the first regression the model has multicollinearity among the three variables. The average VIF is 5.954 and all the tolerance index are higher than .16. The multicollinearity is also supported by the correlation between expertise and both formats of financial statements. It suggests that expertise, current format and proposed format are measuring the same phenomenon: the use or not of the financial statements.

This explanation is supported by the level of expertise in the use of both formats of the financial statements. Expertise is the same for both formats even though it may be expected that the level of expertise from the current format would be higher. A t test comparing these two groups is not significant ($t = .813$, $p > .8$). In other words, subjects cannot recognize the difference between the two formats of the

financial statements; it is like if they were seen a financial statement for the first time. The level of expertise in the use of financial statements for the participants is so basic that they do not identify the differences between the formats. For instance, one participant using the new format could not find total assets in the financial statements but never realize that the format was different. At the end, the independent variables measuring the new format, the traditional format and the level of expertise were measuring only whether financial statements were provided or not. This problem of the multicollinearity and its consequences in the experiment are further commented in the conclusions.

As a consequence of the multicollinearity, a second regression was run using only expertise as independent variable. The rationale behind this analysis is that, since there is no difference between the two formats, expertise is basically measuring whether subjects were provided with financial statements or not. The coefficient for the second regression is .054 and it is significant at $p < .05$ and so is the model at $F(95) = 5.635$ $p < .05$.

Table 7 shows the results for the loss condition for hypotheses H3c, H3d (price) and H4c, H4d (decision). The models, for both price and decision, are not statistically significant. For decision the model is not significant at $F(77) = .707$ $p > .7$ and for the price $F(77) = 1.180$ at $p > .3$. As for the coefficients, only the constant are statistically significant in both models. The problem of multicollinearity is also present in both regressions, decision and price. Consistent with the previous analysis, a regression with only expertise as independent variable was run. However, the models are not statistically significant. The model for decision is not significant at $F(77) = 1.461$ at $p > .2$ and the model for price is not significant at $F(77) = 1.449$ at $p > .2$.

Table 6 Regression Analysis for Gain Condition

Table 6								
Regression Analysis for Gain Condition								
Model: Decision/Price = $\beta_0 + \beta_1$ Expertise + β_2 Current Format + β_3 Proposed Format + ϵ								
Variable	Price				Decision			
Constant	9.923	***	9.913	***	5.171	***	5.031	***
Expertise	-0.004		-0.014		.127	*	.054	**
Current Format	-.411				-1.599			
Proposed Format	.055				-1.095			
R-Square	.048		.013		.089		.057	
Adj R-Square	.009		.000		.059		.047	
F-Value	1.248		.979		2.974	**	5.635	**
N	79		79		95		95	

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

Decision is a dependent variable measured with a nine point Likert-scale where 1 measure definitely sell, 5 hold and 9 definitely buy. Price is a dependent variable measuring the maximum price participants are willing to pay for buying one share. Expertise is a construct built with five questions that capture the level of expertise in the use of the financial statements. Current format is a dichotomous variable that measures the use of the current format of financial statements. Proposed format is a dichotomous variable measuring the groups that used the proposed format of financial statements.

In summary, the disposition effect was established as hypotheses 1 and 2 are tested. The disposition effect exist under both gain and loss conditions and for both price and decision. However, it was not possible to clearly probe that the financial statements can help investors in making better decisions. Only hypotheses H4a and H4b were partially tested. Problems with the selection of the participants can be the cause for these results. This is commented in the next section.

5. Conclusions

5.1. DISPOSITION EFFECT

Hypotheses 1 and 2 are set to test the disposition effect for two dependent variables: decision and price. However, the design of the experiment only allowed for proving the disposition effect for the decision and not for the price. Hypotheses H1a and H2a test the disposition effect for the investors' decision. In both cases the results are statistically significant. These results do not surprise, the disposition effect has been tested under different circumstances and is a well-known phenomenon in literature. It is important to remember the definition of disposition effect as "a general disposition to sell winners too early and hold losers too long" (Shefrin & Statman, 1985) because it only talks about investors' disposition or intention. Disposition effect does not mention anything such as share's price or any other phenomenon. This is the first attempt that I am aware of, in trying to test the impact of the disposition effect on the share's price; previous studies use number of transactions or number of shares traded as dependent variable (Weber & Camerer, 1998; Odean, 1998). However, the design of the experiment did not allow capturing the impact of the disposition effect, if any, in the share's price. The main reason relies on the low level of expertise in the use of financial statements of the subjects of the experiment. In an attempt to control the level of expertise in the use of the financial statements, undergraduate students were chosen as proxy for non-professional investors. Even though it was required that students come from the college of business, the level of expertise in matters like the use of financial statements and the computation of a share price was too basic.

A consequence for having undergraduate students as subjects is that they were not able to make a clear computation for the share's price. Deciding to sell, hold or buy shares is easier than deciding the

price to pay or ask for a share. The level of skills and knowledge for computing a share's price is way beyond an undergraduate student's level. Recognizing the low level of expertise, the experiment provided the table in page 36 containing computations for the future expected price. The idea of this table is to provide subjects with the future prices and their probabilities so subjects do not have to make any computation for the share's price and the risk associated with it. However, the concepts included in the table were particularly difficult for the subjects to understand and use in the context of the experiment.

Table 7 Regression Analysis for Loss Condition

Table 7								
Regression Analysis for Loss Condition								
Model: Decision/Price = $\beta_0 + \beta_1$ Expertise + β_2 Current Format + β_3 Proposed Format + ϵ								
Variable	Price				Decision			
Constant	11.190	***	11.365	***	2.966	***	3.040	***
Expertise	-.051		.033		-.011		.023	
Current Format	1.855				.755			
Proposed Format	1.478				.630			
R-Square	.046		.019		.029		.019	
Adj R-Square	.007		.006		-.012		.006	
F-Value	1.180		1.449		.707		1.461	
N	78		78		78		78	

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

Decision is a dependent variable measured with a nine point Likert-scale where 1 measure definitely sell, 5 hold and 9 definitely buy. Price is a dependent variable measuring the minimum price participants are willing to accept for selling one share. Expertise is a construct built with five questions that capture the level of expertise in the use of the financial statements. Current format is a dichotomous variable that measures the use of the current format of financial statements. Proposed format is a dichotomous variable measuring the groups that used the proposed format of financial statements.

The level of expertise required from the subjects in the use of the financial statements to avoid any bias in the results is a paradox. On one hand a high level of expertise may bias the results and on the

other hand a low level of expertise reduces the level of sophistication required for some computation in the financial analysis of a company. With the current experience, it seems possible to perform this experiment using MBA students as proxy for non-professional investors and control the level of expertise as in this experiment. This may solve the paradox. However, the conclusion for this experiment is that it was not possible to establish the disposition effect for the share's price only for the decision.

5.2. FINANCIAL STATEMENTS

Once the existence of the disposition effect was established, the next step is determining whether the financial statements can help investors in making better decisions. Hypotheses 3 test whether the financial statements help investors in choosing a better share's price. Because the disposition effect for prices could not be established in hypotheses 1 and 2, it is not surprising that none of the subsequent analysis related to share's price were not supported. Neither the regressions nor the coefficients used to test hypotheses 3 are statistically significant. Consequently, no conclusion can be drawn from this part of the experiment.

Hypotheses 4 on the other hand provides data that allow a richer analysis. Hypotheses 4 look for the impact of the financial statements on investors' decision. In particular it investigates whether the formats of the financial statements help reducing the disposition effect. In the gain condition the regression is significant and only the variable of expertise is significant and positive. Coefficients for the current and the proposed format are not significant and negative. A first interpretation would be that it is the level of expertise in the use of the financial statements and not the format that helps investors in

making better decisions. However the fact that the model shows multicollinearity requires a different interpretation.

Expertise, current format and proposed format basically measure the same phenomenon: the existence or not of the financial statements. This interpretation is supported by the fact that there is no difference between the current and proposed format, neither for the decision nor for the level of expertise. The low level of expertise that affects establishing disposition effect for share's price also affects the possible influence of financial statements. Subjects showed the same level of expertise in the use of the two financial statements. In other words, the two formats, current and proposed, were totally new for them. It may be said that the format of the financial statements did not influence their decision because for both groups it was the "first time" they saw the financial statement. This statement is an exaggeration, of course, but summarizes what happened with the subjects when using the financial statements. The consequences for the experiment is that expertise becomes a variable that measures the use or not of the financial statements. Following this logic, a regression with only expertise as dependent variable was run and the result shows that it is statistically significant. Generally speaking this result indicates that financial statements help in reducing the bias caused by the disposition effect.

However the original hypotheses looked for the impact from the current and the proposed format. With this result it is not possible to assure anything regarding the different formats of the financial statements. On the one hand, results show that both formats are exactly the same. There is no difference in the influence of the financial statements in the disposition effect; that would be a good finding by itself as long as both formats were different in the level of expertise showed by participants. Because the proposed format is not in use yet, it is expected that participants should show a lower level of expertise in the proposed format than in the current format but they show the same level of expertise.

It is like if participants were shown financial statements for the first time in their lives so the format is totally irrelevant. Because they have no expertise at all, they are reading financial statements completely in order to grab the information they need. With this evidence it can only be concluded that the financial statements help in reducing the bias from disposition effect but nothing can be said regarding the formats of the financial statements themselves.

Hypotheses 4 also test the impact of financial statements when a loss condition exists. Even though the disposition effect was confirmed for a loss condition and decision, it was not possible to probe the impact of financial statements in reducing the bias. The regression for the loss condition with decision as dependent variable is not significant. The low level of expertise from the subjects also explains the lack of results; it seems like the low level of sophistication did not allow participants to make a deeper analysis of the financial situation of the company. For instance, the income statement for the loss condition shows next figures for three consecutive years. In 2008 the company has a net income of \$2,762 representing 6% of sales. For 2009 net income is \$2,461 and ratio to sales is 5.51%. By 2010 the numbers are \$2,296 and 4.61%. The figures clearly show a decline in the company's profitability. However the company still had positive net income, gains. Apparently these numbers combined with a slight increase in sales for the three years created confusion in participants. In fact the mean for decision goes in the opposite direction than predicted. Instead of decreasing, the mean for decision increases from the group without financial statements compared to the other two groups with financial statements. It is like if participants computed the financial ratios without thinking about their meaning and only saw raw numbers. This phenomenon could also be a consequence of the low level of expertise showed by participants in the use and analysis of the financial statements.

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Vita

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