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Financial Decision-Making by University of Northern Iowa Business Students

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FINANCIAL DECISION-MAKING BY UNIVERSITY OF NORTHERN IOWA BUSINESS STUDENTS

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Abstract

We continually need to make decisions, but it is clear that, in so doing, we do not act in accordance with strict rules of rationality. For example, the effect of framing (i.e. the choice of particular words to present a given set of facts) can influence our choices, which raises some serious questions about our real freedom of choice. An increasing body of literature on framing supports a tendency for people to take more risks when seeking to avoid losses as opposed to securing gains. This is explained by framing and the value function within Tversky and Kahneman's (1981) prospect theory. An empirical study was undertaken within UNI's College of Business to test the hypothesis that framing influenced subjects' choices when presented with two pairs of financial decisions (Problem 1 vs. Problem 2) as indicated above. In addition, pairs of financial decisions with equal expected values were presented in order to determine the level of risk aversion expressed by business students at UNI. The results, based on a sample of 80 adults, supported the hypotheses that the framing of financial investments influences the financial decisions made by participants and that investors act in accordance with the prospect theory (i.e. loss-aversion theory). Such findings challenge the idea of a "rational" investor and might require serious alterations in the future to the core assumptions of economic theory.

Introduction

Everyday life is full of dilemmas in which individuals (or groups) are faced with choices which require that decisions be made. When it comes to money and investing decisions, however, we're not always as rational as we think. Much economic theory is based on the belief that individuals behave in a rational manner and that all existing information is embedded in the investment process (Simon, 1959). This assumption is the crux of the efficient market hypothesis (EMH). This investment theory states that it is impossible to "beat the market" because stock market efficiency causes existing shares prices to always incorporate and reflect all relevant information (McGrew & Wilson, 1982).

According to the EMH, this means that stocks always trade at their fair value on stock exchanges, and thus it is impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices. Thus, the crux of the EMH is that it should be impossible to outperform the overall market through expert stock selection or market timing, and that the only way a rational investor can possibly obtain higher returns is by purchasing riskier investments McGrew & Wilson, 1982).

Researchers questioning this assumption, however, have uncovered evidence that rational behavior is not always as prevalent as we might believe. As a result, a field of study entitled behavior finance places an emphasis upon investor behavior leading to various market anomalies such as violations to the assumption of a "rational" investor. Behavioral finance attempts to understand and explain how human emotions influence investors in their decision-making process. In addition, behavior finance focuses upon how investors interpret and act on information to make informed investment decisions (Meyerowitz & Chaikenm, 1987).

Although the field of behavior finance is a "new" field, there has been a considerable amount of research published on the topic in previous years. This research explores various

phenomenon such as investor regret, the framing of financial decisions, prospect theory (a.k.a., loss aversion theory), and violations to expected utility functions. This paper attempts to examine the latter three issues in more detail.

Framing

Psychological principles governing the perception of dilemmas '....produce predictable shifts of preference when the same problem is framed in different ways' (Woodside & Singer, 1994; pp. 33). This raises some serious questions regarding economic theories of rational decision-making, given that many explanations and predictions of individual choice are based on assumptions of rational behavior. Among the criteria by which rationality be defined are consistency and coherence, but the evidence from research studies on framing shows that these criteria are frequently (and systematically) violated (Woodside & Singer, 1994).

In addition to criteria such as consistency and coherence, the notion of rational decision-making is based on various assumptions about the factors which guide behavior as well as the unit of analysis (e.g., whether it is the individual actor or an organization). At a simple level, involving an individual decision-maker faced with the need to make a choice among competing solutions to a problem, the rational approach is for the decision-maker to specify his/her objective function (e.g., maximization of utility) and then to assess the alternative choices in order to identify the one which best meets the objective (Thaler, 1980).

The traditionally rational approach supported by economists sees the individual as trying to do the best thing for himself/herself and being aware of all the available options (Thaler, 1980). In other words, the approach reflects a means-ends analysis: so long as the most appropriate means (i.e. choice) are chosen for a specified ends (i.e. objective), then the decision is rational. This is, of course, a normative model of how decisions ought to be made (from an economics perspective) rather than an empirically-grounded model of how decisions are actually made. Not only does it

deal with a world of certainties, there are also human frailties which render it limited value (Takemura, 1993).

Real people's actual behavior was contrasted with the norms of rational economic behavior in Tversky and Kahneman's 1981 paper. This paper, however, was not the first such assault on modern economic theories: the late Herbert Simon's theory of bounded rationality in his University of Chicago PhD dissertation almost 60 years ago was an earlier attack. Simon (1996) observed that, as individuals, we possess limited cognitive capabilities for knowing what is best, or for identifying the full array of alternative choices, or for processing information, hence the notion of economic rationality in decision-making is empirically unsustainable.

Reference has already been made in regards to the phenomenon of framing. Framing refers to the particular choice of words used to present a given set of facts (Tversky & Kahneman, 1981). Framing a choice situation in different ways can lead to different patterns of response from subjects. In other words, the way in which the alternatives are framed has a substantial impact on people's judgments. Studies conducted by Tversky and Kahneman (1981), McNeil et al. (1982), and Meyerowitz and Chaiken (1978) have supported this view, and it raises questions which are non-trivial in considering the extent to which our decision-making processes are consistent and transparent.

Kahnamen & Tversky (1984) also found that subjects are much more likely to identify factors other than framing to justify their choices, which makes one wonder how much freedom of choice people have if they are susceptible to manipulation by framing. McGrew and Wilson also reviewed the framing literature and noted the tendency for people to take more risks to avoid losses than to make gains while observing that "...it cannot be rational to make different decisions on the same problem depending on how it is posed (1982; pp. 223-4). He concluded that, while some satisfaction will be obtained by making a certain gain, the additional satisfaction which might

accumulate by making a larger but uncertain gain may not be sufficient to compensate for the sense of disappointment in making no gain at all if the gamble does not come off. This concept, known as the prospect theory, is another interesting phenomenon in behavior finance and will be reviewed next.

Prospect/Loss-Aversion Theory

It is not a surprise to know that people prefer a sure investment return to an uncertain one – we want to get paid for taking on any extra risk, a reasonable demand. Prospect theory suggests people express a different degree of emotion towards gains than towards losses. Individuals are more stressed by prospective losses than they are happy from equal gains. An investment advisor won't necessarily get flooded with calls from clients when reporting a $500,000 gain in the client's portfolio. However, the reaction to a $500,000 loss would be a lot different and would definitely cause clients to react negatively among clients. A loss always appears larger than a gain of equal size - when it goes deep into our pockets, the value of money changes (Takemura, 1992).

Prospect theory also explains why investors hold onto losing stocks: people often take more risks to *avoid losses* than to *realize gains* (Wilson & Gilligan, 1997). For this reason, investors willingly remain in a risky stock position, hoping the price will bounce back. Gamblers on a losing streak will behave in a similar fashion, doubling up bets in a bid to recoup what's already been lost. So, despite our rational desire to get a return for the risks we take, we tend to value something we own higher than the price we'd normally be prepared to pay for it.

Studies by Tversky and Kahneman (1981) have also shown that the concepts of risk aversion and prospect theory are in fact behavioral finance principles that investors display. The study proposed a new framework for pricing assets, derived in part from the traditional consumption-based approach, but which also incorporates two long-standing ideas in psychology: prospect theory, and evidence on how prior outcomes affect risky choice. Consistent with prospect

theory, the investor in their model derives utility not only from consumption levels but also from changes in the value of his financial wealth. He is much more sensitive to reductions in wealth than to increases, the "loss-aversion" feature of prospect utility. Moreover consistent with experimental evidence, the utility he receives from gains and losses in wealth depends on his prior investment outcomes; prior gains cushion subsequent losses -- the so-called 'house-money' effect -- while prior losses intensify the pain of subsequent shortfalls (Tversky & Kahneman, 1981).

The researchers studied asset prices in the presence of agents with preferences of this type, and find that their model reproduces the high mean, volatility, and predictability of stock returns. The key to their results is that the agent's risk-aversion changes over time as a function of his investment performance. This makes prices much more volatile than underlying dividends and together with the investor's loss-aversion, leads to large premiums. The study helps demonstrate that investors are risk-averse and do sometimes go against the assumption of a "rational investor" (Wilson, 1974).

Violations to Expected Utility Function Theories

Neale and Bazerman (1985) conducted an asset market experiment in which 64 subjects traded two assets on eight markets. The trading was conducted in a computerized continuous double auction and indicated that objectively irrelevant information influences trading behavior. The researchers also found that positively and negatively framed information leads to a particular trading pattern among investors, but leaves trading prices and trading volumes unaffected. The experiment provided support for the disposition effect and indicated that those participants who experience a gain sell their assets more rapidly than those who experience a loss. Moreover, it was concluded that positively framed subjects generally sell their assets later than negatively framed subjects.

Expected utility theory assumes, among other others, descriptive invariance, implying that different representations of the same choice problem should yield the same preferences. This study, along with others, indicated that this assumption is frequently violated in individual decision making. McNeil et al. (1982) found, for instance, that the same medical statistics, framed either in terms of mortality or in terms of survival rates, lead to different preference. When applying the concept of framing to financial decisions, this study found some interesting results. Thaler (1980) concluded that overpricing was observed more often for negatively framed market participants than for positively framed participants.

Baron and Byrne (1987, pp. 352-3) discuss framing in the context of social bargaining, noting that individuals tend to focus either on potential losses or on potential gains, and this exerts powerful effects on the strategies they adopt in social exchange, and on the outcomes they achieve. For example, when the focus is primarily on losses which might be experienced (i.e. a negative frame is adopted), bargainers are prone to digging in their heels and resisting making any compromises. On the other hand, when the focus is primarily on the gains which might be achieved (i.e. a positive frame is adopted), bargainers demonstrate greater flexibility and are likely to be more successful in securing agreement.

In the light of studies by Bazerman and his colleagues (e.g. Neale & Bazerman, 1985), there appears to be strong support for the benefits of positive framing. Subjects who adopt this perspective are likely to make larger concessions, resolve more difficulties, and achieve more favorable settlements than those adopting a negative frame. Indeed, the frame which is adopted can be more important in achieving a negotiated settlement than the more objective factors (such as costs and benefits) involved.

Prospect theory (Kahneman & Tversky, 1984) has been used to explain the phenomenon of entrapment, and it helps in showing why people typically undervalue potential gains and over value

potential losses. Figure 1 portrays a value function which shows the relationship between objectively-defined gains and losses, and the subjective value placed on these by the decision-maker

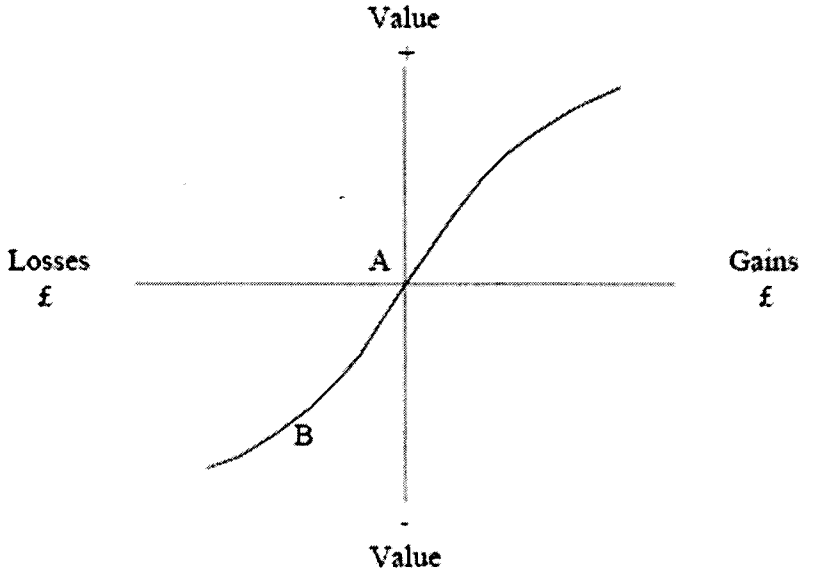


Figure 1 : The Value Function

At the outset the decision-maker is at point A, but if the decision has an unsuccessful outcome he/she will move to point B where further losses do not result in large decreases in value. On the other hand, any gains will result in large increases in value, thus, at point B, the decision-maker will risk further losses in the hope of making gains. Despite the sunk costs, risky behavior is much more likely at point B than it was at point A. (Kahneman & Tversky, 1984)

Based on the above discussion, the primary focus of this paper is on the preference for avoiding losses as opposed to securing gains, and the way in which different ways of framing what is essentially the same situations might result in preference reversals. After reviewing past research in the new field of behavior finance, I have developed my own hypotheses about what I expect to see in the research study. I want to challenge some of the core assumptions in modern economic theories such as the idea of the "rational" investor. Therefore my central research question is whether or not certain aspects of behavior finance such as framing, violations to utility functions,

and prospect theory can be demonstrated in the UNI business classroom setting. I hypothesize that UNI business students will be influenced by the effects of framing and will be more willing to invest in a financial opportunity presented in a positive framework and less willing when presented in a negative framework. Due to the fact that a majority of previous research does not examine the effects of framing in regards to gender, major, and age, I hypothesize that these demographics will not influence how an individual would response to framing. My second hypothesis is that UNI business students will engage in a manner that is consistent with the prospect theory/loss aversion theory. I believe that UNI business students, when presented with a gain situation, will choose the sure gain over gambling. When students are presented with a loss situation, however, I believe that participants will choose to gamble over taking the sure loss. Lastly, I hypothesize that UNI business students will select responses in the questionnaires that conflict with their personal utility functions.

Method

a) Participants

The participants in this research study included 80 students at the University of Northern Iowa (UNI) enrolled in two business classes, Corporate Finance and Income Tax. These classes were randomly selected out of the pool of business classes available at UNI, minus the ones taught by the study's project advisor Professor Johnson. The sections of these classes chosen to participate in the study were also randomly selected. The participants ranged in age from 20 years old to 44 years old, with a mean age of 23.025 years. A total of 47 males and 33 females chose to be participants in the study's sample. Descriptive statistics are given below in regards to gender, age, and business major for the sample. The participants in this study were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct".

SAMPLE

Age	Male		Female		Total	
20 years old	8	17.02%	3	9.09%	11	13.75%
21 years old	15	31.91%	16	48.48%	31	38.75%
22 years old	10	21.28%	6	18.18%	16	20.00%
23 years old	6	12.77%	2	6.06%	8	10.00%
24 years old	2	4.26%	1	3.03%	3	3.75%
25 years old	1	2.13%	0	0.00%	1	1.25%
26 years old	1	2.13%	1	3.03%	2	2.50%
28 years old	1	2.13%	0	0.00%	1	1.25%
29 years old	2	4.26%	0	0.00%	2	2.50%
36 years old	0	0.00%	2	6.06%	2	2.50%
40 years old	0	0.00%	1	3.03%	1	1.25%
44 years old	0	0.00%	2	6.06%	2	2.50%
TOTAL	47		33		80	

Major	Male		Female		Total	
Accounting	23	48.94%	27	81.82%	50	62.50%
Accounting & Finance	3	6.38%	0	0.00%	3	3.75%
Accounting & Marketing	1	2.13%	0	0.00%	1	1.25%
Accounting & Russian	1	2.13%	0	0.00%	1	1.25%
Finance	4	8.51%	2	6.06%	6	7.50%
Finance & Real Estate	4	8.51%	0	0.00%	4	5.00%
Management	5	10.64%	4	12.12%	9	11.25%
Marketing	5	10.64%	0	0.00%	5	6.25%
Marketing & Real Estate	1	2.13%	0	0.00%	1	1.25%
TOTAL	47		33		80	

b) Design

This study used a 3 (Risk Aversion) x 2 (Framing Influence) factorial design using between-subject variables. The independent variables measured included students' level of risk aversion and the effects of question framing on their preference between sets of financial investments. The first independent variable, risk aversion, consisted of three levels: more risk-seeking, risk-neutral, and more risk-aerse. The classifications for these levels were based on the results from a paper-and-pencil questionnaire administered to the participants. The second independent variable that was manipulated, the effect of framing of questions on financial decision making, had the two levels of either being influenced by question framing (and thereby responding differently to the same

question presented in different forms) or not being influenced by framing (and therefore responding similarly to the same question presented in different forms). The researcher manipulated the independent variables in this study in order to examine the effects or changes in the dependent variable, the participant's violation or adherence to their expected utility function. Individual's expected utility functions are based on the "rational" investor principle, thereby assuming that any "rational" investor will choose the investment with the highest expected value. Expected value was measured by finding the sum of the weighted returns of the two investments. The financial decision-making questionnaire created in this study was modeled after one used by Tverksy and Kahneman (1981) in their research measuring the effects of question framing on individual's financial decisions.

c) Materials

Risk Aversion

Participants in the study were asked to complete a paper-and-pencil, self-report questionnaire (see Appendix A), designed to examine investor's preference in regards to several financial investment opportunities. Several questions presented on the questionnaire were also used to measure each participant's level of risk aversion (Tverksy and Kahneman, 1984). The results from completed questionnaires were collected and analyzed to arrive at three classes of risk averseness: more risk-seeking, risk-neutral, and more risk-averse. In this study a risk-seeking individual is defined as one who is attracted to risk, meaning an investment with a lower expected return but greater risk would be preferable to a no-risk investment with a higher expected return. Risk-neutral individuals are those who consider the level of risk irrelevant, and consider only the level of return of risk prospects. Lastly, an investor who only buys a risky asset if it provides compensation for risk via a risk premium is considered to be more risk-averse.

Framing

In order to study the effects of framing, participants were asked to complete the same paper-and-pencil, self-report questionnaire (see Appendix A) as previously described in the *Risk Aversion* section above. Several pairs of questions were presented to participants in which the same fundamental question was asked however in a different manner. One question in the set was presented as a percentage chance of winning while the other was expressed as the equivalent percentage of losing. For example, the first question would ask the investor if he/she would invest in a stock that was said to double your money 98 percent of the time. Another question would be presented later in the questionnaire that asked the investor if he/she would invest in a stock that was said to lose all your money invested 2 percent of the time. The effects of framing of questions would occur if investors choose different responses to these two questions, being that they are the same question only presented differently. Five such pairs of questions aimed at measuring the effects of framing were presented on the questionnaire. The answers to these questions were analyzed to determine any potential framing influence.

d) Procedures

The questionnaire was designed by the principal researcher, Steffany Zabokrtsky, and modeled after the survey presented in *The Psychology of Judgment and Decision Making* (see Appendix A; Plous, 1993). The questionnaire consisted of 18 questions requiring participants to choose their preference for one investment over another. The last three questions were aimed at determining the demographics of the sample. As previously mentioned in the "Participants" section, two business classes (Corporation Finance and Income Tax) at the University of Northern Iowa were randomly chosen as the sample for this study out of a population consisting of all business classes offered. In addition, two sections of each class were randomly chosen to be participants in this study and receive the questionnaire.

The course instructors for these sections were notified of the study and asked for their cooperation. A day and time was scheduled in which the questionnaire was to be administered in the classrooms. The administration of the questionnaires was significantly different for the two classes, however, due to stipulations requested by one professor in exchange for their cooperation. On the day the questionnaires were to be administered to the Corporate Finance sections, the principal investigator arrived at the classroom five minutes before the end of the chosen class. There were 31 students present in class that day. The course instructor was asked to leave before explanation of the study occurred, as to eliminate any feelings of discomfort and to ensure participants that involvement in the study would in no way affect their course grade. The Recruitment Script was then read to each class section (see Appendix B).

After participants were informed about the study and their voluntary involvement, any students who choose not to participate were allowed to leave the classroom. All participants choose to stay and participate in the research study, however, so the population size was equal to the same size, equaling 31 students. The Informed Consent forms were distributed (see Appendix C) to those who remained. All participants willing to participate in the study were asked to read the Informed Consent, print and sign their name and date the document as well. The Informed Consent forms were then collected and the questionnaires were distributed to the participants. Following completion, the questionnaires were collected and the debriefing documents were handed out to participants. The participants were thanked for their time and were allowed to leave.

As mentioned, the administration of the questionnaires was completely different for the Income Tax class. The Income Tax professor agreed for me to use her class as the sample for my research study, however I was not allowed to administer the questionnaire during her class period. Consequently, a packet was designed prior to the day of the study that contained the Informed Consent (see Appendix B), Questionnaire (see Appendix A), and Debriefing document (see

Appendix D). On the day of the study, the investigator arrived at the Income Tax sections five minutes before class end. Similar to the Corporate Finance class, the professor was asked to leave the room. After which, a different Recruitment Script (see Appendix E) was read that explained the purpose of the study, asked the participants for their voluntary cooperation, and lastly listed the instructions for the participants. The packets were distributed to all 81 students who were present in class that day. Participants were asked to fill out the questionnaire voluntarily on their own time and then return the completed questionnaire in the sealed manila envelope to the next class period. In addition, the participants were informed of the Debriefing document located in the manila envelope (see Appendix D). They were told that the Debriefing document was there's to keep but were asked to not read the document until after fully completing the questionnaire.

The principal researcher asked the course instructor to collect all completed questionnaires in the manila envelopes during the next class period. The professor collected 49 completed questionnaires from the students and as a result, 49 participants were the sample from the Income Tax class. The researcher collected the manila envelopes from the course instructor later that same week, after which all questionnaire results were analyzed and the consequent statistics calculated. The percentage of individuals that chose either option A and B were tallied and percentages were broken down by gender, major, and age. Gender includes the Male and Female classification, while Major includes Accounting Single Major (Accounting), Accounting Double Major (Accounting & Finance, Accounting & Marketing, and Accounting & Russian), Finance Single Major, Finance Double (Finance & Real Estate), and Other Majors (Management, Marketing, and Marketing & Real Estate).. The Age classification was divided into the three following ranges in order to make calculations easier and more meaningful: 20-23 years, 24-28 years, and 29-44 years.

The following section describes the results achieved from the questionnaire during this research experiment and discusses the significance of such results. As previously mentioned, the

percentages of responses associated with each classification are presented for each pair of questions. In addition, ANOVA calculations were performed among each classification in order to determine a statistically significant difference. A p-value less than .10 was used as the benchmark for classifying a result as being statistically significant.

Results

The questionnaires were analyzed according to the pairs of questions that were established to measure the effects of framing and investor's degree of risk aversion. The following section describes the results achieved by dividing the questionnaire into its respective pairs and analyzing the data.

Pairs of Questions

The first question set presented on the questionnaire, Problem 1 with its two Decision requirements, was designed to measure the sample's level of risk aversion. According to modern economic theory, a "rational" investor facing a choice among alternative investments would choose the investment that offers the highest expected value. Expected value is determined by taking the weighted average payoff for each investment decision. The first question set and the expected value calculation can be seen in Figure 2 below.

1) **Problem 1:** Imagine that you face the following pair of concurrent decisions. First, examine both decisions, then indicate the options you prefer.
   Decision (i) Choose between:
   A. a sure gain of $290
   B. 30% chance to gain $1000 and 70% chance to gain nothing

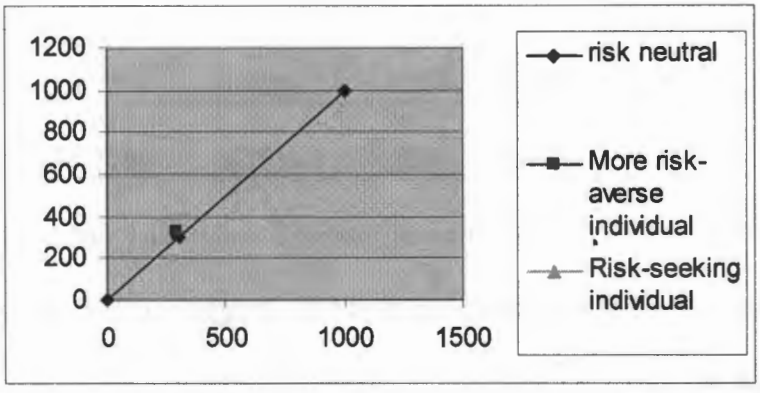
   Decision (ii) Choose between:
   A. a sure loss of $800
   B. 80% chance to lose $1000 and 20% chance to lose nothing

Figure 2

Question Number 1	Expected Utility Equation for Risk Neutral Investor	Expected Utility Payoff
Decision 1		
A	=$290*1	=$290
B	=$1000*.30 + $0*.7	=$300
Decision 2		
A	=-$800*1	=-$800
B	=-$1000*.8 + -$0*.20	=-$800

Using this average expected payoff, a graph can be designed that visually illustrates the investment preference for risk-seeking, risk-neutral, and risk-averse investors (see Graph 1). As illustrated, a risk-neutral investor's expected payoff is depicted by the straight blue that starts at the origin (0,0), and continues in a linear fashion to the point (1000,1000). The pink dot lying above the risk-neutral investor's payoff illustrates the investment decision of a more risk-averse individual. This type of investor is concerned more with taking on low-risk investments regardless of the return. The yellow dot lying below the risk-neutral investor's payoff represents the investment decision of a more risk-seeking individual. This type of investor is willing to take on more risk regardless of the additional payoff required as compensation for more risk. Each question in the questionnaire that measures the sample's degree of risk aversion will be analyzed in a similar manner, although graphs for each pair will not be presented in this paper. Graph 1 should be used as a guideline for understanding how the principal investigator measured risk-aversion in the sample.

Graph 1:



After calculating the expected payoff for each decision, it is expected that for Decision 1 a "rational" investor would choose investment B. This is the investment that offers the highest expected payoff. If option A was chosen more by the sample over option B, it can be implied that the sample violated their personal utility function by selecting the investment with the lower payoff. In addition, a higher selection of option A over option B indicates that the sample was more risk-averse, choosing to take a certain gain of $290 versus gambling for the possibility of receiving either $1000 or $0. Problem 1 and the distribution of questionnaire results for this question are presented below in Figure 3.

When examining the expected payoffs for options A and B in Decision 2, the payoffs derived were exactly equal to each other and totaled -$800. A preference of option A, the sure loss of $800, over option B, gambling to lose either $1000 or $0, in this situation would clearly indicate a risk-averse sample. Thus, it was expected that a larger percentage of the sample would display the characteristics of risk-averse investor and choose option A over option B. The questionnaire results for Decision 2 are illustrated below in Figure 3.

Figure 3:

Pair 1	Gender		Business Major					Age		
	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
Decision 1:										
A	34 42.50%	32 40.00%	43 53.75%	3 3.75%	6 7.50%	4 5.00%	10 12.50%	55 68.75%	5 6.25%	6 7.50%
B	13 16.25%	1 1.25%	7 8.75%	2 2.50%	0 0.00%	0 0.00%	5 6.25%	11 13.75%	2 2.50%	1 1.25%
Decision 2:										
A	6 7.50%	8 10.00%	11 13.75%	0 0.00%	0 0.00%	0 0.00%	3 3.75%	13 16.25%	0 0.00%	7 8.75%
B	41 51.25%	25 31.25%	39 48.75%	5 6.25%	6 7.50%	4 5.00%	12 15.00%	53 66.25%	6 7.50%	1 1.25%

After analyzing the Pair 1 Decision 1 results, more males (42.50%) and females (40.00%) chose option A over option B. This suggests that both male and female participants in the sample were displaying the characteristics of a more risk-averse investor, choosing the sure return of $290

versus gambling for $1000. In addition, only 1% of females in the sample choose to gamble with option B, suggesting that this group of individuals is largely risk-averse. In regards to major, the data show that the majority of Accounting Single majors (53.75%) favored option A over option B. Lastly, the data shows that 66.75% of the 20-23 year old group preferred option A over B. By and large the statistics suggest that option A was the preferred investment decision for the sample. When performing ANOVA tests on the Decision 1 results achieved between gender, major, and age to determine if any statistically significant differences exist, a p-value larger than .10 was calculated for each classification. Consequently, although large percentage differences were found between the different classifications the results are not statistically significant at the $p<.10$ level.

As Figure 2 illustrates above, a majority of males (51.25%) chose to gamble in this loss situation and selected investment option B. This suggests that males in the sample were more risk-seeking than females, with only 31.25% of females selecting option B. In terms of majors, Single Accounting majors made up the largest percentage of the sample that selected option B, indicating that this group of individuals are more likely to display the characteristics of a risk-seeking investor. Finally, in regards to age classifications the data suggests that the 20-23 age range includes the most risk-seeking individuals, with 66.25% of the sample choosing alternative B over A. When performing an ANOVA analysis on the results presented in Figure 3, p-values larger than .10 were found for the gender and age classifications, thus suggesting that these differences are not statistically significant. For the major classification however, a p-value of .081 was found. This suggests that the differences in investment preferences found between the majors are statistically significant at the $p<.10$ level. As a result, it can be believed that Single Accounting majors are significantly more likely to act in a risk-averse manner when presented with gain decision alternatives, thereby choosing the sure gain. When presented with loss situation alternatives,

however, Single Accounting majors are significantly more like to gamble by displaying the characteristics of a more risk-seeking investor.

The second pair of questionnaire problems includes Problem 2 and Problem 14 and were designed to measure the effects of framing on the investment decision selected by the sample. Problem 2 was framed in a positive manner and states the question in terms of the probability of success (i.e. 200% return 99% of the time). Problem 14 is the same exact question as Problem 14 and therefore has the same expected payoff. The key difference in Problem 14, however, is that the question is framed in a negative manner (i.e. lose entire investment 1% of the time). According to economic theory, a "rational" investor should have similar responses to these questions being that they are exactly the same in terms of the investment risk and return but are only framed differently. Differences in responses to these two problems suggest that the sample was not acting in a rational manner and instead violated their expected individual utility function. If the sample violated their expected individual functions simply due to how the question was worded, then it can be suggested that the effects of framing were significant and definitely influenced the investment decision selected by participants. Problem 2 and Problem 14 as stated in the questionnaire are listed below. In addition, the statistical results from the responses to each Problem are presented in Figure 4.

2) **Problem 2:** You have $2million dollars that you want to invest and you hear about a stock that guarantees a return of 200% ($4million dollars) 99% of the time. Would you invest your $1million dollars in this stock?
   A. Yes
   B. No

   Problem 14: Suppose you want to make an investment worth $2million dollars. A friend tells you about a stock that has been proven to be nearly risk-free. Your friend says the stock can earn you $4million dollars with a 1.0% chance of you losing everything invested. Would you invest in this stock?
   A. Yes
   B. No

Figure 4:

Pair 2	Gender		Business Major					Age		
Problem 2:	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
A	40 50.00%	27 33.75%	40 50.00%	4 5.00%	6 7.50%	3 3.75%	14 17.50%	55 68.75%	5 6.25%	6 7.50%
B	7 8.75%	6 7.50%	10 12.50%	1 1.25%	0 0.00%	1 0.00%	1 1.25%	11 13.75%	2 2.50%	1 1.25%
Problem 14:										
A	36 45.00%	18 22.50%	18 22.50%	4 5.00%	4 5.00%	2 2.50%	12 15.00%	51 63.75%	12 15.00%	4 5.00%
B	11 13.75%	15 18.75%	18 22.50%	1 1.25%	2 2.50%	2 2.50%	3 3.75%	7 8.75%	3 3.75%	3 3.75%

After reviewing the above statistics, the data suggests that more males and females in the sample did in fact prefer to invest in this stock regardless of whether the question was framed in a positive or negative manner. The percentage of males and females choosing to invest in the stock did decline a little, however, when the investment was framed in a negative manner. When calculating an ANOVA table on gender, however, a p-value greater than .10 was derived, suggesting that the framing effect was not statistically significant. The only large difference in responses between the problems occurred among the Accounting Single majors. The percentage of Single Accounting majors that decided to invest in the stock when the framing was negative (Problem 14) was approximately 28% lower than those who wanted to invest when the question was framed in a positive manner (Problem 2). When examining the age categories, there was no large difference between the 20-23 years classification and the 29-44 years classification. The 24-28 category behaved in a peculiar manner however, and almost doubled the percentage of respondents who would invest in the stock when it was presented in a negative manner (Problem 14) than in a positive manner (Problem 2).

The ANOVA statistics calculated from these results indicate that the only statistically significant difference in the sample occurred between the Accounting Single major's responses to

Problem 2 and 14. With a p-value of .095, the data suggests that Single Accounting majors are significantly more likely to choose an investment when it is presented in a positive manner. In addition, the p-value derived of .014 indicates that when the same investment decision was framed in a negative manner, Accounting Single majors were less likely to invest. The statistical results indicate that investors are in fact influenced by the framing of financial decisions, and that Accounting Single majors are more extremely influenced by such framing.

The third set of questionnaire pairs includes Problem 6 and Problem 12. This pair of questions was also designed to measure the effects of framing on financial decision-making. As mentioned above, the sample should respond similarly to the two problems, as they are the same question only framed differently. If the sample's preference for investment varies between the two alternatives then it can be suggested that framing influenced the sample's investment decision. Problem 6 was framed in a positive manner, while Problem 12 was presented in a negative manner. The problems and consequent questionnaire results are presented below in Figure 5.

3) **Problem 6**: You want to invest $100,000 and you have found an investment strategy that will double your money in one month 98% of the time (you will have a total of $200,000). Will you choose to invest your money?
   A. Yes
   B. No

   Problem 12: You just heard about a new investment that will take your money and double it in one month. If there is a 2% chance that you will lose your entire investment, will you take the $100,000 that you plan to invest and put it in this new investment?
   A. Yes
   B. No

Figure 5:

Pair 3	Gender		Business Major					Age		
Problem 6:	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
A	45 56.25%	29 36.25%	45 56.25%	5 6.25%	6 7.50%	3 3.75%	15 18.75%	63 78.75%	6 7.50%	5 6.25%
B	2 2.50%	4 5.00%	5 6.25%	0 0.00%	0 0.00%	1 1.25%	0 0.00%	3 3.75%	1 1.25%	2 2.50%

Problem 12:										
A	34 42.50%	15 18.75%	28 35.00%	3 3.75%	5 6.25%	2 2.50%	11 13.75%	45 56.25%	1 1.25%	3 3.75%
B	13 16.25%	18 22.50%	22 27.50%	2 2.50%	1 1.25%	2 2.50%	4 5.00%	21 26.25%	6 7.50%	4 5.00%

The results in Figure 4 suggest that females were more likely to invest in the positively framed investment (36.25%) and were less likely to invest in the negatively framed investment opportunity (18.75%). In addition, Single Accounting majors were again more likely to invest in the stock when the investment was positively framed (56.25%) then when it was framed in a negative manner (35%). In regards to the age classifications, participants in the 24-28 age range were more likely to invest when the question was framed in positive manner (7.50%), then when the same investment was presented in a negative manner (1.25%). The only statistically significant difference at the $p<.10$ level occurred among the Single Accounting majors. With a p-value of .057, Accounting Single majors are significantly more likely to choose to invest in a stock when the framing of the investment is presented in a positive manner. The p-value of .0017 suggests that this same category is also significantly less likely to choose the same investment when presented in a negative framework.

Problem 11 and Problem 18 makeup the fourth pair of questions presented on the questionnaire. Similar to the previous two questionnaire sets, this pair was established to measure the influence on framing on the sample's financial decision-making. Problem 11 was expressed in a positive framework while Problem 18 was negatively framed. The results from the problems are presented in Figure 6 below.

4) **Problem 11:** Suppose you have $1 million dollars to invest. Your broker tells you about this portfolio to invest in that has a 99.9% probability of doubling your money in one year. Would you invest in this portfolio given the risk and return mentioned above?
   A. Yes
   B. No

Problem 18: Your broker came to you and informed you about a portfolio that will take your $1 million dollars to invest and make it be worth $2 million dollars in only a year. However, there is a 0.01% chance that you will lose everything. Would you invest your money in this portfolio?

A. Yes
B. No

Figure 6:

Pair 4	Gender		Business Major					Age		
	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
Problem 11:										
A	44 55.00%	31 38.75%	48 60.00%	4 5.00%	6 7.50%	3 3.75%	14 17.50%	63 78.75%	5 6.25%	7 8.75%
B	2 2.50%	2 2.50%	2 2.50%	1 1.25%	0 0.00%	1 1.25%	1 1.25%	3 3.75%	2 2.50%	0 0.00%
Problem 18:										
A	43 53.75%	27 33.75%	43 53.75%	4 5.00%	6 7.50%	2 2.50%	15 18.75%	60 75.00%	5 6.25%	5 6.25%
B	4 5.00%	6 7.50%	7 8.75%	1 1.25%	0 0.00%	2 2.50%	0 0.00%	6 7.50%	2 2.50%	2 2.50%

The results achieved for the gender, major, and age classifications as expressed in Figure 6 do not appear to have major differences in the percentages of responses. Although most of the categories expressed a greater interest in investing in the stock when it was presented in a positive framework (Problem 11) versus a negative framework (Problem 18), the difference is not extremely large. The only peculiar finding was that more participants in the Other Majors category decided to invest in the stock when it was presented negatively, however the difference was small at only 1.25%. This finding contradicts the fundaments of framing effects; however the small sample size in this category makes such results meaningless. ANOVA calculations showed that all differences in the percentages had p-values greater than .10, suggesting these results were not statistically significant.

The fifth questionnaire pair attempts to measure the participant's level of risk aversion and includes Problem 3 and Problem 4. The expected values for the two investment decisions were calculated and presented in Figure 7 below. Due to the fact that the expected value for the two

alternatives are equal, the distribution of responses among option A, the sure gain/loss of $100, and option B, gambling for a gain/loss of either $200 or $0, will accurately reflect the degree of risk aversion characteristic of the sample. The statistical results from this question set are presented in Figure 8 below.

5) **Problem 3:** Assume yourself richer by $300 then you are today. You have to choose between
   A. a sure gain of $100 or
   B. 50 chance to gain $200 and 50% chance to gain nothing

Problem 4

Assume you are now $500 richer than you are today. You have to choose between
   A. a sure loss of $100
   B. 50% chance to lose nothing and 50% chance to lose $200

Figure 7:

Question Number	Expected Utility Equation for Risk Neutral Investor	Expected Utility Payoff
Problem 3		
A	=$100*1	=$100
B	=$200*.5 + $0*.5	=$100
Problem 4		
A	=-$100*1	=-$100
B	=$0*.5 + -$200*.5	=-$100

Figure 8:

Pair 5	Gender		Business Major					Age		
Problem 3:	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
A	29 36.25%	27 33.75%	26 32.50%	4 5.00%	6 7.50%	2 2.50%	9 11.25%	38 47.50%	5 6.25%	4 5.00%
B	18 22.50%	6 7.50%	24 30.00%	1 1.25%	0 0.00%	2 2.50%	6 7.50%	28 35.00%	2 2.50%	3 3.75%
Problem 4:										
A	11 13.75%	18 22.50%	13 16.25%	1 1.25%	2 2.50%	0 0.00%	3 3.75%	16 20.00%	2 2.50%	1 1.25%
B	36 45.00%	15 18.75%	37 46.25%	4 5.00%	4 5.00%	4 5.00%	12 15.00%	50 62.50%	5 6.25%	6 7.50%

The results achieved in Figure 8 illustrate that in Problem 3 both males (36.25%) and females (33.75%) preferred the sure gain of $100 (option A) over the gambling option B. When a

loss situation was presented in Problem 4 however, more males choose to gamble versus taking the sure loss (45.00%), while more females still preferred the sure loss (22.50%). This suggests that in terms of gains/losses, males tend to be more risk-averse when dealing with gains but display the characteristics of a risk-seeking individual in a loss situation. Females maintained their risk aversion for both gain and loss situations. In regards to major, 32.50% of Accounting Single majors preferred the sure gain in Problem 3, however in Problem 4, 46.25% now preferred the loss gamble situation. Accounting Single majors appear to display the same investor characteristics as the male category did as described above. When looking at the age ranges, the 20-23 years range also preferred the sure gain (option A) in Problem 3 (47.50%) over option B, while favoring option B (loss gambling situation) with 62.50% of the votes in Problem 4. This suggests results similar to those previously described, that the 20-23 age range is more risk-averse when its comes to gains but are more risk-seeking when presented with a loss situation. This same characteristic was expressed by the 24-28 age range as well.

After calculating ANOVA results on these statistics, it was found that a participant's major was significantly related to their preference for the sure gain/loss or the gain/loss gambling situation. P-values for Problem 3 of .044 and .0004 were found for such relationships, suggesting the differences between majors and their level of risk aversion in a gain situation were statistically significant at the p-value<.10 level. In addition, the age ranges of 20-23 and 24-28 showed significant differences in levels of risk aversion in a gain situation with a calculated p-value of .018. These results suggest that although gender did not have a significant influence on a participant's level of risk aversion when examining a gain situation, major and age played a significant role in the financial decisions selected by participants in regards to levels of risk aversion. When examining the p-values derived during the loss situation presented in Problem 4, major was found to also play a significant role in financial decision-making with statistically significant p-value

calculations of .108 and .0085. Such findings suggest that although both major and age influenced a participant's level of risk aversion in a gain situation, only a participant's major significantly altered their investment preference when given a loss situation.

Problem 8 and Problem 15 represent the sixth questionnaire pair and were presented in order to measure the effects of positive/negative framing on the sample's investment decision-making. Problem 8 is presented as an investment that has a 40% chance to fall over the next year, while Problem 15 offers the same investment but with a 40% chance of rising. Differences between the two problems will indicate the amount of influence framing had on investor's decisions, as well as help determine the sample's level of risk aversion. The results are presented in Figure 9 below.

6) **Problem 8:** Imagine that you have a windfall of $1000 to invest and that you are considering investing in a particular company's shares – but only for 12 months.

   Your financial advisor offers you the following forecast: There is a 40% chance that the share price of the company in which you are interested will **fall** over the next year and a 20% chance that it will remain unchanged.

   Would you invest in the company's shares?
   A. Yes
   B. No

   Problem 15: Imagine that you have a windfall of $1000 to invest and that you are considering investing in a particular company's shares – but only for 12 months.

   Your financial advisor offers you the following forecast: There is a 40% likelihood that the share price of the company in which you are interested will **rise** over the next year along with a 20% likelihood that it will stay the same.

   Would you invest in the company's shares?
   A. Yes
   B. No

Figure 9:

Pair 6	Gender		Business Major					Age		
Problem 8:	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
A	5 6.25%	6 7.50%	8 10.00%	1 1.25%	0 0.00%	1 1.25%	1 1.25%	9 11.25%	1 1.25%	1 1.25%
B	42 52.50%	27 33.75%	42 52.50%	4 5.00%	6 7.50%	3 3.75%	14 17.50%	57 71.25%	6 7.50%	6 7.50%

Problem 15:										
A	26 32.50%	25 31.25%	28 35.00%	3 3.75%	6 7.50%	1 1.25%	13 16.25%	44 55.00%	4 5.00%	3 3.75%
B	21 26.25%	8 10.00%	22 27.50%	2 2.50%	0 0.00%	3 3.75%	2 2.50%	22 27.50%	3 3.75%	4 5.00%

The results indicate that both male and females changed their response, with Problem 8 option A (i.e. saying Yes to the investment opportunity) only receiving 6.25% of the votes by males and 7.50% by females. For Problem 15, however option A (i.e. saying Yes to the investment strategy) was chosen more frequently with 32.50% of males and 31.25% of females selecting such a response. In addition, the Finance Single major section had a large difference in response between the two problems. In Problem 8, all participants (100%) in the Finance Single major choose not to invest in the opportunity presented. When the question wording was changed in Problem 15 to a more positive situation, however, all Finance Single major participants (100%) now selected option A and wanted to invest in the opportunity. The Other majors category had only 1.25% of the sample select option A in Problem 8, but in Problem 15 this percentage rose to 16.25%, showing a strong preference for the favorable situation. Lastly, in terms of age the 20-23 age range had only 11.25% of their category willing to invest in the opportunity when presented in a negative manner (Problem 8). When this situation was changed in Problem 15 to be more positive, a much larger percentage of this age category (55%) wanted to invest in the stock.

ANOVA calculations on these results show that all differences in the percentages achieved proved not to be statistically significant except for the major classification. A p-value of .011 was determined and suggests that Accounting Single majors, Accounting Double majors, Finance Single majors, Finance Double majors, and Other majors were significantly more likely to prefer the positive scenario presented in Problem 15 and fail to participate in the negative scenario as expressed in Problem 8. Such findings are not surprising however, as it is only logical for a rational investor to prefer investing in a situation that has a more favorable return.

Problem 13 and Problem 17 represent the seventh pair of investment questions and were selected to also measure the effects of framing on the sample's financial decision-making. Problem 13 expresses the situation as having a 30% chance that the cost of borrowing would rise (i.e. a negative situation), while Problem 17 stated the reciprocal of such a situation but in a more negative manner (i.e. 70% likelihood the cost of borrowing would not rise). The statistical results achieved when analyzing these question's responses are presented in Figure 10 below.

7) **Problem 13:** Would you borrow funds from a bank at an annual interest rate of 8% to invest in a project which promises a guaranteed return of 9% annually over five years if there was a 30% chance that the cost of borrowing will rise to10% annually at some point over the project's life.
   A. Yes
   B. No

Problem 17
Would you borrow funds from a bank at an annual interest rate of 8% to invest in a project which promises a guaranteed return of 9% annually over five years if there is a 70% likelihood that the cost of borrowing will not rise over the life of the project?
   A. Yes
   B. No

Figure 10:

Pair 7	Gender		Business Major					Age		
	Male	Female	Accounting Single Major	Accounting Double Major	Finance Single Major	Finance Double Major	Other Majors	20-23 years	24-28 years	29-44 years
Problem 13:										
A	15 18.25%	18 22.50%	20 25.00%	2 2.50%	1 1.25%	3 3.75%	9 11.25%	28 35.00%	2 2.50%	3 3.75%
B	32 40.00%	15 18.75%	30 37.50%	3 3.75%	5 6.25%	1 1.25%	6 7.50%	38 47.50%	5 6.25%	4 5.00%
Problem 17:										
A	23 28.75%	18 22.50%	24 30.00%	2 2.50%	4 5.00%	2 2.50%	9 11.25%	33 41.25%	5 6.25%	3 3.75%
B	24 30.00%	15 18.75%	26 32.50%	3 3.75%	2 2.50%	2 2.50%	6 7.50%	33 41.25%	2 2.50%	4 5.00%

The data provided in Figure 10 show that participants in the sample responded in relatively the same manner for the two questions when analyzing results among the gender, major and age categories. This suggests that the effects of framing were insignificant, if not completely eliminated, between the positive and negative framing scenarios presented in the two problems. The major

difference in responses between the two problems that is worth mentioning occurred in the 24-28 age range. It appears that the effects of framing had a large influence on the 24-28 age range participants' investment decision-making. When presented with the negative framing in Problem 13, only 2.50% of the participants were willing to participate in the investment opportunity. However, when the investment was expressed in a more positive framework in Problem 17, now 6.25% of participants were willing to invest. The small sample size of the 24-28 age range however, makes such results not meaningful numbers.

ANOVA results show that framing did significantly influence the investment decision made in regards to the age categories. In Problem 13, a p-value of .018 was derived, suggesting that age significantly influences an investor's willingness to invest when presented with a negative scenario. In addition, a p-value for Problem 17 was calculated to be .0037 and indicates that age also significantly influenced the participant's financial decisions when evaluating options in a more positive framing scenario.

The eighth pair of questions includes Problem 10 and Problem 16. The set of questions were presented in order to measure the risk aversion characteristics of the sample. The expected payoff between the investment alternatives given for both Problem 10 and Problem 16 are equal and can be seen in Figure 11. Therefore, differences in preference between options A and B for both problems indicate the degree of risk aversion experienced by the sample. The statistical results achieved among gender, major, and age classifications are presented below in Figure 12.

8) **Problem 10:** Which of the following two alternatives would you prefer?
   A. a certain gain of $250
   B. a 25% chance of gaining $1000 (with a 75% chance of gaining nothing)

   Problem 16: Which of the following two alternatives would you prefer?
   A. a certain loss of $750
   B. a 75% chance of losing $1000 (with a 25% chance of losing nothing)

Figure 11:

Question Number	Expected Utility Equation for Risk Neutral Investor	Expected Utility Payoff
Problem 10		
A	=$250*1	=$250
B	=$1000*.25 + $0*.75	=$250
Problem 16		
A	=-$750*1	=-$750
B	=-$1000*.75 + $0*.25	=-$750

Figure 12:

Pair 8	**Gender**		**Business Major**					**Age**		
	Male	**Female**	**Accounting Single Major**	**Accounting Double Major**	**Finance Single Major**	**Finance Double Major**	**Other Majors**	**20-23 years**	**24-28 years**	**29-44 years**
Problem 10:										
A	35 43.75%	25 31.25%	39 48.75%	3 3.75%	4 5.00%	2 2.50%	12 15.00%	51 63.75%	4 5.00%	5 6.25%
B	12 15.00%	8 10.00%	11 13.75%	2 2.50%	2 2.50%	2 2.50%	3 3.75%	15 18.75%	3 3.75%	2 2.50%
Problem 16:										
A	42 52.50%	33 41.25%	49 61.25%	4 5.00%	5 6.25%	4 5.00%	13 16.25%	61 76.25%	7 8.75%	7 8.75%
B	5 6.25%	0 0.00%	1 1.25%	1 1.25%	1 1.25%	0 0.00%	2 2.50%	5 6.25%	0 0.00%	0 0.00%

The results from Figure 12 indicate that all categories of investors, whether it is divided among gender, major, or age, preferred the more risk-averse option A and wanted the sure gain/loss. This is surprising given the fact that previous questions measuring participant's level of risk aversion found contradicting results, sometimes males were more risk-averse in a gain situation but more risk-seeking in a loss investment situation for example. A large difference can be seen between the gender classifications, with females preferring option A over option B in Problem 16. In fact, no females selected option B in Problem 16, indicating that in a loss situation, females are more likely to take the sure loss (i.e. behave in a risk-averse manner) versus gambling. These results can be extended to the major and age classifications because, as mentioned, a higher percentage of all groups selected the sure gain/loss versus the gambling situation.

ANOVA calculations showed that the difference in investment preference for option A over option B in Problem 10 for both males and females was statistically significant and resulted in a p-value of .094. In addition, the results obtained from the gender category in Problem 16 were significantly different with a p-value of .036. This indicates that gender plays a large role when determining an individual's level of risk aversion in both gain/loss situations. Because both males and females chose the more risk-averse option A (sure gain/sure loss) in both Problem 10 and Problem 16, it can be suggested that gender significantly encourages individuals to act in risk-averse manners in any situation.

Problem 5 and 9 were the two questions matched for pair nine. The expected payoff for each investment alternative was calculated and can be seen in Figure 13. This set of questions was designed to measure violations to individual's expected utility function through contradiction of the actions normally taken by a "rational" investor. A "rational" investor would choose alternative B in both Problem 5 and Problem 9 because these decisions result in the highest expected payoff. The results are shown below in Figure 14.

9) **Problem 5:** Which of the following options do you prefer?
   A. a sure gain of $40
   B. 80% chance to win $60 and 20% chance to win nothing

   Problem 9: Consider the following two stage game. In the first stage, there is a 75% chance to end the game without winning anything, and a 25% chance to move into the second stage. If you reach the second stage you have a choice between:
   A. a sure win of $40
   B. 80% chance to win $60 and 20% chance to win nothing

   Your choice must be made before the outcome of the first stage is known.

Figure 13:

Question Number	Expected Utility Equation for Risk Neutral Investor	Expected Utility Payoff
Problem 5		
A	=$40*1	=$40
B	=$60*.80 + $0*.20	=$48

Problem 9		
A	=$40*1	=$40
B	=$60*.80 + $0*.20	=$48

Figure 14:

Pair 9	Gender		Business Major					Age		
	Male	**Female**	**Accounting Single Major**	**Accounting Double Major**	**Finance Single Major**	**Finance Double Major**	**Other Majors**	**20-23 years**	**24-28 years**	**29-44 years**
Problem 5:										
A	22 27.50%	15 18.75%	21 26.25%	3 3.75%	4 5.00%	1 1.25%	9 11.25%	30 37.50%	3 3.75%	5 6.25%
B	25 31.25%	18 22.50%	29 36.25%	2 2.50%	2 2.50%	3 3.75%	6 7.50%	36 45.00%	4 5.00%	2 2.50%
Problem 9:										
A	24 30.00%	19 23.75%	23 28.75%	3 53.75%	5 6.25%	1 1.25%	11 13.75%	33 41.25%	5 6.25%	5 6.25%
B	23 28.75%	14 17.50%	27 33.75%	2 2.50%	1 1.25%	3 3.75%	4 5.00%	33 41.25%	2 2.50%	2 2.50%

The results suggest that in Problem 9 both males and females violated their expected utility functions when choosing option A over option B (males: 30. 00%; females: 23.75%). This is due to the fact that option B in both Problem 5 and Problem 9 has the highest expected payoff and thereby should be chosen by a "rational" investor. In addition, all majors but Accounting Single major and Finance Double major violated expected utility function with a larger percentage selecting option A over option B in both Problem 5 and Problem 9. When looking at age ranges, the 29-44 age range violated their expected utility function by having a larger percentage of participants select option A over option B in both Problem 5 and Problem 9. In addition, all other age ranges violated their expected utility function in Problem 9, with larger percentages of investors selecting option A. When ANOVA calculations were performed on the Problem 5 results, it was found that a significant more percentage of individuals in all majors violated their expected utility function and choose option A. This led to a p-value of .007. In addition, a p-value of .017 was calculated for the age classification, suggesting that the age of the individual had a statistically significant effect on whether expected utility function was violated or not. P-values of .007 for the major classification

and .002 for the age categories were found using Problem 9 results. This further suggests that major and age had a statistically significant influence on the participant's violation of their expected utility function.

The last question presented on the questionnaire did not have a pair but was instead a stand-alone question. Problem 7 was designed to measure violations to expected personal utility functions. The expected payoff for options A and B are shown in Figure 15. According to modern economic theory, a "rational" investor would prefer option B, with the higher expected payoff, over option A. The results from Problem 7 are displayed in Figure 16 below.

10) Problem 7: Which of the following options do you prefer?
A. 25% chance to win $40 and 75% chance to win nothing
B. 20% chance to win $60 and 80% chance to win nothing

Figure 15:

Question Number	Expected Utility Equation for Risk Neutral Investor	Expected Utility Payoff
Problem 7		
A	=$40*.25 + $0*.75	=$10
B	=$60*.20 + $0*.80	=$12

Figure 16:

Pair 10	**Gender**		**Business Major**					**Age**		
Problem 7:	**Male**	**Female**	**Accounting Single Major**	**Accounting Double Major**	**Finance Single Major**	**Finance Double Major**	**Other Majors**	**20-23 years**	**24-28 years**	**29-44 years**
A	15 18.75%	18 22.50%	20 25.00%	2 2.50%	1 1.25%	1 1.25%	9 11.25%	28 35.00%	2 2.50%	3 3.75%
B	32 40.00%	15 18.75%	30 37.50%	3 3.75%	5 6.25%	3 3.75%	6 7.50%	38 47.50%	5 6.25%	4 5.00%

The data suggest that females violated their personal utility function when preferring option A (22.50%) over option B (18.75%). In addition, the Other major classification was shown to violate their utility function; however with such a small sample size it is hard to apply meaning to such a result. All other categories were in coherence with the expected utility function theory and preferred to invest in option B over option A. When ANOVA calculations were derived, it was found that all p-values were greater than .10 and thus were not statistically significant.

Discussion

Choices involving prospective gains are often risk-averse while choices involving prospective losses are often risk accepting, even when the dilemmas are essentially identical apart from their framing. Inconsistent responses were found by Tversky and Kahneman (1981) who explained this phenomenon in terms of the combination of a framing effect with contradictory attitudes towards risks involving gains and losses - as portrayed in their prospect theory (outlined earlier). At the heart of this theory is the proposition that the displeasure associated with losing a sum of money is generally greater than the pleasure associated with winning the same amount. This is captured by the value function (see Figure 1) in which the curve above the origin is convex whereas below the origin it is concave.

Examining the overall results from the questionnaires in regards to the effects of framing on business student's financial decisions, shows that three out of the five pairs of questions aimed at measuring such an effect achieved statistically significant differences. Out of the three significant pairs, one showed a significant framing effect in regards to gender. In this particular pair, the data shows that both men and women were significantly more likely to say "No" and choose not to invest when the problem was presented in a negative manner. In addition, it appears that major had the most significant impact on participant's influence from framing with all three out of the five significant pairs displaying a statistically significant difference. In all three of these pairs, Single Accounting majors were significantly more likely to say "Yes" to positive framed and "No" to negative framed investment decisions. In only one of these three pairs, however, the results indicated that all majors were more likely to say "No" to negatively framed investments. Lastly, in regards to age, one pair was found to be significant and showed that while the 20-23 age range was significantly more likely to invest when the question was framed in a positively, all age ranges were also more likely to choose not to invest when presented with a negatively framed option.

Due to the fact that a majority of the questionnaire pairs results in statistically significant results, I feel that my first hypothesize was correct when stating that UNI business students would be influenced by the effects of framing. The data collected from the study suggests that UNI business students were significantly more likely to invest when the financial decision was presented in a positive manner and were significantly less likely to invest when presented in a negative manner. My second hypothesis was not validated by the study's results and suggests that major had a statistically significant influence on how participants were affected by the framing of financial decisions.

In regard to questions that were designed to measure participants' level of risk aversion, the results show (as did those of Tversky & Kahneman) that the majority choice in option A reflects risk aversion (i.e. a riskless prospect is preferred to a risky prospect of equal or greater expected value). Out of the four questions designed to measure risk aversion, three pairs achieved results that were deemed statistically significant. In regards to gender, one of the statistically significant pairs showed that both men and women were more risk-averse when presented with gain and also more risk-averse when presented with loss. This contradicted the results that were expected to seen (i.e. participants would be more risk-averse when dealing with a gain situation and more risk-seeking when dealing with a loss situation). When examining the effects of age, two out of the four significant pairs showed differences in risk aversion between the age ranges. In one pair of significant questions, the 20 – 23 age range, 24-28 age range, and 29-44 age range were more risk-averse when presented with a loss. In another pair, it was found that all age ranges were more risk-averse when presented with a gain and also more risk-averse when presented with a loss. Although overall the data achieved suggests that investors were more risk-averse when presented with a gain situation and more risk-seeking when presented with a loss situation, a few outliers did exist in the

data. These outliers were not ignored when arriving at a final decision in regards to the participants' risk averseness. Consequently, the study indicates that hypothesis three was validated.

Lastly, the data suggests that when presented with investment decisions that have the same expected payoff, participants would sometimes violate their expected utility function and choose the lower payoff decision. This was demonstrated in Problem 7 where females, Other majors, and the 29-44 age range all choose option A (with a lower expected payoff) over option B (with a higher expected payoff). The result was not consistency found among the sample but did occur on a noteworthy basis.

Conclusion

In conclusion, while it is acknowledged that there is an element of artificiality involved when subjects are presented with contrived dilemmas requiring them to choose what they consider to be the best option, the role of language in the social construction of reality (including our experience of specific decision-making dilemmas) is important in the context of framing. Forms of wording can be chosen to encourage subjects to perceive decision dilemmas in particular ways. As with the finding of Tversky and Kahneman (1981), evidence has been presented to show that seemingly inconsequential changes in the framing of dilemmas can generate significant shifts in preferences. This is due both to framing and to the shape of the value function (favoring the avoidance of losses over the securing of gains). A strong tendency to risk aversion among the participants probably explains the unexpected results for these particular dilemmas.

Although the results achieved from the study were statistically significant, it should be mentioned that the study did have a few shortcomings. Due to the professor's stipulation, the data collection for the two classes was significantly different. Using a consistent methodology when administering the questionnaires may have resulted in different findings from the study. Because random selection of business classes was used, the Income Tax class was selected and resulted in a

population consisting of 62.50% Accounting Single majors. The majority of significant results achieved in the study were found among the Accounting Single majors, suggesting that the large sample size of this major allowed the behavior finance effects to be seen easier. Future research could be conducted that assigns more equal weights among the majors in order to see if statistical results are also found. In addition, future research should consider examining the effects of behavioral finance on solely the Accounting Single major population.

In conclusion, the results achieved are consistent with findings from Tversky & Kahneman (1981). However, my study was different in the fact that participants used were UNI business students. All previous studies that were reviewed appeared to use either students or faculty in general and the business school student population was never examined. Consequently, I feel that my research helped contribute to the overall understanding of behavior finance. By conducting my study on business school students and finding similar results as to the effects of framing, prospect theory, and violations to expected utility function, I feel I further supported these new concepts and validated their existence. Because these results, along with many others, question the validation of the "rational" investor core economic assumption, the future of economics may bring re-evaluations to such assumptions and change the area of study significantly.

References

Baron, R. A. & Byrne, D. (1987). Social psychology. Boston: Allyn & Bacon, 5th edition.

Kahneman, D. & Tversky, A. (1984). Choices, values and frames. American Psychologist, *39*, pp.341-350.

McNeill, B. J., et al. (1982). On the elicitation of preferences for alternative therapies. New England Journal of Medicine, *356*, pp.1259-1262.

Meyerowitz, B. E., & Chaiken, S. (1987). Journal of Personality and Social Psychology, *52*, pp.500-510.

Neale, M. A., & Bazerman, M. H. (1985). The effects of framing and negotiator over confidence on bargaining behaviors and outcomes. Academy of Management Journal, *28*, pp.34-49.

McGrew, A.G. & Wilson, M. J. (1982). Decision making. Manchester U.P./O.U.

Simon, H. A. (1959). Theories of decision-making in economics and the behavioral sciences. American Economic Review, *49*, pp.253-283.

Simon, H. A. (1996). Models of my life. Cambridge, MA: MIT Press.

Takemura, K. (1993) The effect of decision frame and decision justification on risky choice. Japanese Psychology Research, *35*, pp.36-40.

Thaler, B. (1980). Journal of Economic Behavioral Organization, *1*, p.39.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. Science, *211*, pp.243-248.

Wilson, R. M. S. (1974). Financial control: A systems approach. London: McGraw-Hill.

Wilson, R. M. S. & Gilligan, C. (1997). Strategic marketing management. Oxford: Butterworth-Heinemann (2nd edition).

Wilson, R. M. S. & Zhang, Q. (1997). Entrapment and escalating commitment in investment decision-making: A review. British Accounting Review, *29*, pp.277-305.

Woodside, A., & Singer, A. E. (1994). Social interaction effects in the framing of buying decisions. Psychology and Marketing, *11*, pp.27-34.

Appendix A

Questionnaire

Instructions: *Your help would be greatly appreciated in completing a questionnaire related to the framing of financial decisions. It will only take about 10-15 minutes of your time. Please accept at face value the outlined circumstances of each of the choice situations described in this questionnaire. Do not query the assumptions underlying each situation. You are asked to choose one preferred opinion from each of the pairs of options given. Do not spend more than a minute or so in making each choice. It is your initial preference which is of particular interest in each case. There are no right or wrong answers: the thing that matters is your preference in each of the situations. Please indicate your choice by circling the appropriate letter (A or B) that corresponds with the answer of your choice. The answers you provide will be completely confidential and anonymous.*

Problem 1:
Imagine that you face the following pair of concurrent decisions. First examine both decisions, then indicate the options you prefer.

Decision (i) Choose between:
A. a sure gain of $290
B. 30% chance to gain $1000 and 70% chance to gain nothing

Decision (ii) Choose between:
A. a sure loss of $800
B. 80% chance to lose $1000 and 20% chance to lose nothing

Problem 2
You have $2million dollars that you want to invest and you hear about a stock that guarantees a return of 200% ($4million dollars) 99% of the time. Would you invest your $1million dollars in this stock?
A. Yes
B. No

Problem 3
Assume yourself richer by $300 then you are today. You have to choose between
A. a sure gain of $100 or
B. 50 chance to gain $200 and 50% chance to gain nothing

Problem 4
Assume you are now $500 richer than you are today. You have to choose between
A. a sure loss of $100
B. 50% chance to lose nothing and 50% chance to lose $200

(continued)

Problem 5
Which of the following options do you prefer?
A. a sure gain of $40
B. 80% chance to win $60 and 20% chance to win nothing

Problem 6
You want to invest $100,000 and you have found an investment strategy that will double your money in one month 98% of the time (you will have a total of $200,000) or lose all your money 2% of the time. Will you choose to invest your money?
A. Yes
B. No

Problem 7
Which of the following options do you prefer?
A. 25% chance to win $40 and 75% chance to win nothing
B. 20% chance to win $60 and 80% chance to win nothing

Problem 8
Imagine that you have a windfall of $1000 to invest and that you are considering investing in a particular company's shares – but only for 12 months.

Your financial advisor offers you the following forecast:

*There is a 40% chance that the share price of the company in which you are interested will fall over the next year and a 20% chance that it will remain unchanged.

Would you invest in the company's shares?
A. Yes
B. No

Problem 9
Consider the following two stage game. In the first stage, there is a 75% chance to end the game without winning anything, and a 25% chance to move into the second stage. If you reach the second stage you have a choice between:
A. a sure win of $40
B. 80% chance to win $60 and 20% chance to win nothing

Your choice must be made before the outcome of the first stage is known.

Problem 10
Which of the following two alternatives would you prefer?
A. a certain gain of $250
B. a 25% chance of gaining $1000 (with a 75% chance of gaining nothing)

(continued)

Problem 11
Suppose you have $1million dollars to invest. Your broker tells you about this portfolio to invest in that has a 99.9% probability of doubling your money in one year. Would you invest in this portfolio given the risk and return mentioned above?

A. Yes
B. No

Problem 12
You just heard about a new investment that will take your money and double it in one month. If there is a 2% chance that you will lose your entire investment, will you take the $100,000 that you plan to invest and put it in this new investment?

A. Yes
B. No

Problem 13
Would you borrow funds from a bank at an annual interest rate of 8% to invest in a project which promises a guaranteed return of 9% annually over five years if there was a 30% chance that the cost of borrowing will rise to 10% annually at some point over the project's life.

A. Yes
B. No

Problem 14
Suppose you want to make an investment worth $2million dollars. A friend tells you about a stock that has been proven to be nearly risk-free. The stock can earn you $4million dollars with a 1.0% chance of you losing everything invested. Would you invest in this stock?

A. Yes
B. No

Problem 15
Imagine that you have a windfall of $1000 to invest and that you are considering investing in a particular company's shares – but only for 12 months.

Your financial advisor offers you the following forecast:

*There is a 40% likelihood that the share price of the company in which you are interested will rise over the next year along with a 20% likelihood that it will stay the same.

Would you invest in the company's shares?

A. Yes
B. No

Problem 16
Which of the following two alternatives would you prefer?

A. a certain loss of $750
B. a 75% chance of losing $1000 (with a 25% chance of losing nothing)

(continued)

Problem 17

Would you borrow funds from a bank at an annual interest rate of 8% to invest in a project which promises a guaranteed return of 9% annually over five years if there is a 70% likelihood that the cost of borrowing will not rise over the life of the project?

A. Yes
B. No

Problem 18

Your broker came to you and informed you about a portfolio that will take your $1million dollars to invest and make it be worth $2million dollars in only a year. However, there is a 0.01% chance that you will lose everything. Would you invest your money in this portfolio?

A. Yes
B. No

Sex: Male Female

Age: _____

Major: _____

Thank you for completing this questionnaire.

Appendix B

Recruitment Script

Your help would be greatly appreciated in completing a questionnaire related to the framing of financial decisions. This questionnaire is part of my research examining the new area of behavior finance for my Honor's Thesis here at the University of Northern Iowa. My research focuses on how business students at UNI make financial decisions. The questionnaire will only take about 10-15 minutes of your time. Your participation in this study is completely voluntary and any answers provided will be completely confidential and anonymous. In addition, your participation will in no way affect your grade in this course being that the course instructor will be not informed of your choice to participate. At this time, if you volunteer to help collect data for my Honor's Thesis through the completion of a short questionnaire then please stay seated. Those who wish to exclude themselves in participation are free to go at this time.

(After those leave who do not want to participate)

Thank you for your participation in this research study. I will now be passing out an informed consent that outlines the details of the study and information about contacting either me or Professor Johnson if any negative side affects are experienced as a result from participating in this study. In addition, any questions or concerns about the research study can be directed to either Professor Johnson or me. Please read the informed consent at this time.

(Pause and let them read the informed consent)

If you could please sign and date the last page of the informed consent if you agree to and understand everything that is described. There are no major side effects anticipated as a result from participating in this research study, however if you feel any uneasiness or negative side effects while completing the questionnaire please inform me immediately; upon which your involvement will be ended and further help provided. Could you please pass the signed informed consent forms to the end of the row and I will come by and pick them up.

(Pick up informed consent forms)

I will now be passing out a manila envelope that contains the questionnaire. There are instructions on the top of the questionnaire. Please read the instructions and then proceed with filling out the questionnaire. Do not put your name or other identifiable information anywhere on both the manila envelope and questionnaire. There are a few questions at the end of the survey regarding your age, sex, and major. These questions are for analysis purposes only and will in no way be used to match your responses and identity. After you complete the questionnaire, please put it back into the manila envelope and place it on the desk here in a pile. After that, you are free to leave. Does anyone have any questions before I pass out the questionnaires? Ok, thanks again for your participation and you may start completing the questionnaire as soon as it is passed to you.

(Pass out the manila envelopes with questionnaires in them)

Appendix C

UNIVERSITY OF NORTHERN IOWA
HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT

Project Title: Financial Decision-Making by UNI Business Students

Name of Investigator(s): Steffany Zabokrtsky

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The University requires that you give your signed agreement to participate in this project. The following information is provided to help you made an informed decision about whether or not to participate.

Nature and Purpose: The purpose of the study is to examine how business students at The University of Northern Iowa engage in financial decision-making. The study will provide an insight into the nature of each individual's expected utility function and the manner in which they view risk/return tradeoffs. Through completion of this questionnaire, the study will determine the average risk-averseness of UNI business students and will test whether modern economic theories regarding expected utility function are accurate. Finally, the study will examine whether the framing of financial choices affects the decision made by students.

Explanation of Procedures: Your help would be greatly appreciated in completing a questionnaire related to the framing of financial decisions. It will only take about 10-15 minutes of your time. Please accept at face value the outlined circumstances of each of the choice situations described in this questionnaire. Do not query the assumptions underlying each situation. You are asked to choose one preferred option from each of the pairs of options given. Do not spend more than a minute or so in making each choice. It is your initial preference which is of particular interest in each case. There are no right or wrong answers: the thing that matters is your preference in each of the situations. Please indicate your choice by circling the appropriate letter (A or B) that corresponds with the answer of your choice. The answers you provide will be completely confidential and anonymous. The questionnaires will be collected by the investigator upon completion and will be viewed only by the investigator for analysis purposes.

Discomfort and Risks: Risks to participation are minimal. They include only the participant's inconvenience of filing out a questionnaire and the time required to do so. If you experience uneasiness during your involvement in this research study, you should notify the survey administrators, Steffany Zabokrtsky and/or Steve Johnson immediately; after which your involvement will be ended and further help provided. If you experience any uneasiness or negative side effects after participation in this research study has ended, please contact Steffany Zabokrtsky at 319-721-9321 or the project investigator's faculty advisor Steve Johnson at 319-273-2929.

Benefits and Compensation: The participant will receive no direct benefits or compensation from their participation in this research study. The only foreseeable benefit from participation may include a greater understanding of one's level of risk-averseness or pattern of decision-making when engaging in financial decisions.

Confidentiality: Information obtained during this study which could identify you will be kept confidential and completely anonymous. The details provided will be aggregated for purposes of analysis in ways which will ensure that no individual's identity will be revealed. The summarized findings with no identifying information may be published in an academic journal or presented at a scholarly conference.

Right to Refuse or Withdraw: Your participation is completely voluntary. You are free to withdraw from participation at any time or to choose not to participate at all, and by doing so, you will not be penalized or lose benefits to which you are otherwise entitled.

Questions: If you have questions about the study you may contact or desire information in the future regarding your participation or the study generally, you can contact Steffany Zabokrtsky at 319-721-9321 or the project investigator's faculty advisor Steve Johnson at the Department of Finance, University of Northern Iowa 319-273-2929. You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process.

Agreement:

> **I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement. I am 18 years of age or older.**

_____ _____

(Signature of participant) (Date)

_____

(Printed name of participant)

_____ _____

(Signature of investigator) (Date)

_____ _____

(Signature of instructor/advisor) (Date)

Appendix D

Debriefing

Thank you for participating in today's research study. Before you leave, there are a few things I need to tell you.

The study you have just participated in examined the possible relationship between the framing of financial decisions and the level of risk aversion on business student's adherence or violation of their expected utility function. The effects of framing on financial investment decisions refers to the notion that investors will respond differently to the same question asked in a different manner. Studies by Tversky and Kahneman (2002) have shown framing to have an influence on the investment decisions made by investors when presented with multiple options. In addition, in this study a risk-seeking individual was defined as one who is attracted to risk, meaning an investment with a lower expected return but greater risk would be preferable to a no-risk investment with a higher expected return. Risk-neutral individuals are those who consider the level of risk irrelevant, and consider only the level of return of risk prospects. Lastly, an investor who only buys a risky asset if it provides compensation for risk via a risk premium is considered to be more risk-averse.

I hypothesize that as a result of framing and the prospect theory, the participants will choose responses that differ from the ones a "rational" investor in finance would normally choose as defined by economic theories. My second hypothesis is that UNI business students will select responses in the questionnaires that conflict with their personal utility functions according to economic theories. I anticipate that this study's results will have important implications for the relatively new area of behavior finance. This study will contribute to both psychologist's and economist's understanding of investor's level of risk aversion, the effect of framing on financial decision-making, and violations or adherences to investor's personal expected utility function. By examining whether framing influences the choices made by investors, economists may be able to

both better understand and re-examine the fundamental principle of the "rational" investor. In addition, psychologists may be able to gain insight into how individuals make decisions and potential influencers of these decisions.

Your responses will be treated confidentially; in no way will your individual responses be made public. If you are feeling uncomfortable or upset after completing the questionnaires please let me know as soon as possible. If you have any other questions regarding the study please feel free to contact Steffany Zabokrtsky at 319-721-9321 or by e-mail at SteffZ@uni.edu. In addition, the study's project advisor, Assistant Professor Steve Johnson, can be reached at the University of Northern Iowa Department of Finance (319-277-4949). Thank you for your time, effort, and cooperation.

Appendix E

Recruitment Script: 9am and 10am classes

Your help would be greatly appreciated in completing a questionnaire related to the framing of financial decisions. This questionnaire is part of my research examining the new area of behavior finance for my Honor's Thesis here at the University of Northern Iowa. My research focuses on how business students at UNI make financial decisions. The questionnaire will only take about 10-15 minutes of your time. Your participation in this study is completely voluntary and any answers provided will be completely confidential and anonymous. In addition, your participation will in no way affect your grade in this course being that the course instructor will be not informed of your choice to participate.

(Pass out the manila envelopes with questionnaires and informed consent forms in them)

At this time, I am going to be passing out a manila envelope that contains an informed consent form and the questionnaire. What I am asking if you choose to participate is that you take these home with you, read and sign the informed consent form, and then complete the questionnaire. As I mentioned, it should only take about 10 minutes. Please bring the signed informed consent and completed questionnaire back to class on Friday, November 17 (this Friday) in the sealed manila envelope. Do not put your name anywhere on the questionnaire or manila envelope. Upon receiving the informed consent and questionnaires they will be separated into different piles so your responses will in no way be tied to your identity. So if you guys could please just sit down tonight when you get home from class or in your free time between classes and just quickly fill out the questionnaire and return it on Friday. It will greatly help me conduct my thesis research and give me a larger pool of data to work with. Thanks for your time and does anyone have any questions before I leave? Ok, thanks in advance for your participation and have a great day.