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Gender and Risk: A Framing Analysis

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Abstract

The existing literature digs into the effect of gender, personality characteristics, and age on economic education. This paper covers literature by studying gender and risk to decision making of individuals for matters of risk and uncertainly. This paper studies violation of expected utility theory by framing risky situations differently among men and women. In this study, four situations are framed in two different ways and presented to respondents to study howframing and gender influence behavior. These findings exhibit that framing plays an important role in risk perception among gender. The study also reveals that gender plays an important role when individuals evaluate risky outcomes. The findings are consistent with view point of behavioral finance that human beings are irrational in decision making under risk and uncertainty. Gender is found to yield significant difference in choice of risky outcomes.

Keywords: behavior, decision making, framing, gender, and risk.

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1. INTRODUCTION

Individuals don't behave as per the expected utility theory. The economic interactions in which individuals are involved consist of some kinds of risk. Taking into account significance of economic interactions, a fairly large body of research in social science especially psychology, economics, and finance has tried to know and comprehend the nature of how decision makers incorporate risk in their choices.

Expected utility, the dominant theory of decision making under risk, makes some testable empirical predictions. Expected utility theory is a descriptive model of decision making under risk (Sewell, 2007). Expected utility theory states that individuals choose between risky prospects by comparing their expected utility values (Linciano & Soccorso, 2012). However, under expected utility the actual level of risk-taking behavior by the agent is left as a free parameter, allowing for individual differences (Charness & Gneezy, 2012).

All humans are subject to context sensitivity. Humans simply don't see through the way in which questions are asked (Montier, 2010). Individuals have a tendency to be risk averse when situations' outcomes are framed positively but risk seeking when these are framed negatively (Tversky & Kahneman, 1981).Framing is basically of three types: - attribute framing (in which only single attribute is subject to manipulation), absolute versus relative framing (whether loss or gain is presented in absolute or relative terms), and number size framing (people assign more significance to smaller numbers than to the small differences between large numbers) (Panasiak & Terry, 2013).

Levin, Schneider, & Gaeth (1998) classified framing into three major types: - risky choice, attribute, and goal framing. Hallahan (1999) classified framing into seven major types: - situations, attributes, choices, actions, issues, responsibility, and news. In this research paper, framing is a combination of above mentioned classifications.

Experimental studies have documented that decision-makers react differently to the same proposition depending upon the manner in which it is presented. This phenomenon is known as preference reversal and violates a strict expected utility analysis of decision-making (Machina, 1987). When the emotional context rather than the outcome influences managerial decisions, the issue of framing arises. For example, a reference point may influence the manager. The choice of reference point determines whether an uncertain choice is perceived as a gamble, (with a chance to win) or as insurance (where the certain choice limits loss) and influences the subject's decisions (Schoemaker & Kunreuther, 1979; Hershey & Schoemaker, 1980; McNail, Pauker, Sox & Tversky, 1982; Slovic, Fischoff & Lichtenstein, 1983).

To demonstrate this concept, alternate scenarios are presented with the same expected value outcomes. These alternate scenarios focus on four different risky situations and evaluate the impact of framing these four risky situations on decision making among men and women. Tversky and Kahneman (1981, 1986) present the classic decision for certain scenario and the same decision cases are used to study framing analysis in present research.

Gender is one of most important variable to be studied if we are studying risk and decision making (King & Hinson, 1994).Since birth a

human holds a set of heuristics and biases inherently, and an emotion is attached to choice because of these heuristics and biases which influences decision making (Qawi, 2010). This paper is an attempt to understand that if risky situations are presented differently, how perception of risk between male and woman varies. Behavioral studies have shown that framing of questions changes perception among individuals, but this study is unique because role of gender is studied and analyzed in this study.

2. REVIEW OF LITERATURE

Framing effect has been explained with different theories (Kuhber-ger, 1998). Gonzalez, Dana, Koshino, & Just (2005) divided these theories into formal, cognitive, and motivational theories. Under formal theory; the widely explained theory is Prospect Theory. Prospect theory describes value framing effect as a function of gains and losses from a reference point. The gain or loss perception of an outcome depends upon individual's reference point. The weighting of gains and losses is determined by cognitive processing through cognitive theories.

A fuzzy-trace theory and cost-benefits tradeoff are two critical theories in cognitive theories (Gonzalez, Dana, Koshino, & Just, 2005). Fuzzy trace theory states that superficial and simplified processing of information results in framing effect (Reyna & Brainerd, 1991). Cognitive cost benefit theory states that when there is a compromise between the desires to make a correct decision and the desire to minimize effort, the framing effect is framed (Payne, Betman, & Johnson, 1993).The third type of theory in framing effect is motivational theory. Motivations theory states that consequences of hedonic forces (fears and wishes) of an individual result in framing effect (Lopes, 1987; Maule, 1995).

The risk women are taking in decision making is different from men. Literature concludes that women have a lower preference for risk than men (Hyde, 1990: Powel &Ansic, 1997: Sonfield, Lussier, Corman, & KcKineey, 2001) but no difference in decision making values or styles (Powel, 1990). Gender is one of the most important independent variable that should be investigated when looking at risk and decision making (King & Hinson, 1994). Women are considered to choose more certain outcomes. In an abstract lottery choice, Schubert, Gysler, Brown & Brachinger (1999) frame choices as either potential gains or as potential losses. They find that women were more risk averse than men in the gain domain frame, consistent with the evidence presented earlier. For the loss-domain gambles, however, this result is reversed: men are more risk averse than women. Women communicate and make better decisions than men (Parker & Spears, 2001). Parker & Spears (2002) conducted a study on 249 students and found that behavior is influenced by personality types and gender.

Stanovich & Siegel (1994) found the same results that women hold a conservative long term investment strategy which can result in lower wealth accumulation. However, Zhong & Xiao (1995) found no gender effect on dollar holding of stocks). Sung & Hanna (1996) found than women have lower rates of participation in retirement plans as compared to men. Existing research gives a mix of results for role of gender in decision making. Women choose to invest their financial resources more conservatively and are generally more risk averse than men (Hinz, McCarthy, & Turner, 1997). The determinants for retirement plan for men and women are same (Devaney & Su, 1997).

3. NEED OF THE STUDY

The need for the study is not only for investment decisions but is also important for social and economic decisions. The study is relevant for individuals, corporations, and policy regulators. Framing of situation plays an important role in decision making among men and women. Corporation can present the information differently across gender to increase shareholder's wealth, individuals can try to avoid the trap of being caught in biases of narrow framing, and policy makers can plan and implement policies depending on the manner in which information is presented. However, there have been very few studies on framing analysis of risky situations among gender in India. The present study has been carried out to fill the research gap.

4. OBJECTIVES OF THE STUDY

The study is based on following objectives: -

i). To study and analyze the role of framing in change of risk perception.

ii). To study and analyze the role of gender in risk perception.

5. HYPOTHESES OF THE STUDY

The objectives generate the following hypothesis:

H1: There is a role of framing in change of risk perception.

H2: There is a role of gender in risk perception.

6. RESEARCH METHODOLOGY

The research methodology for the research titled "Gender and Risk: A Framing Analysis" is given below:

Study Design: - The study design for the present study is descriptive in nature because it addresses the questions of how, what and why of gender and framing analysis.

Sample Size: -The sample size for survey is 200 respondents. A total of 200 questionnaires and 400 responses are obtained because each questionnaire consists of two rounds. Hence 400 responses are analyzed.

Sample Selection: -A total of 200 business management or commerce students are selected for the study. To study role of gender equal proportion (100 male and 100 female students) of male and female students is selected to collect information.

Data Collection Instrument and Procedure: - In order to study and analyze gender and risk: - a framing analysis, a survey instrument, which captured framing and relative risk preferences based on alternate scenarios of four uncertain decisions, is used. In order to capture alternate framing environment four different questions were askedto each respondent. The questions which were used in survey response were based on scenarios of money, death, jobs, and stock. The question for money was presented as a straight monetary gamble in the first round; in the second round same type of question was framed differently as a decision to an investment in the stock market. Similarly questions of death, jobs, and stock were presented differently in round 1 & 2. The questions were same but the framing was done differently. On the same ground of methodology adopted by Parker, et.al (2001), the study was administered to a population of 200 business management and economics students.

Once the survey responses were collected, discrete measures were created for the variables. The variables on the four scenarios were dependent variables in the study. Hence, the

dependent variable includes: Money, with value equal 1 if the respondent chooses the uncertain option for the money question; death with value equal 1 if respondent chose the certain option for life and death question; Jobs, with value equal 1 if the respondent chooses the certain option for jobs; and Stocks with value equal 1 if respondent choose uncertain option for the stock question. Cross variable was then created between Frame and Gender variables.

7. RESEARCH METHODOLOGY FOR FRAMING AND RISK.

Framing issue arises when outcome is influenced by emotional context. The reference point is most critical point in such decisions because it is reference point only which decides whether a risky choice is perceived as gain or loss and reference point influences subject's decisions (Schoemaker & Kunreuther, 1979; Hershey & Schoemaker, 1980; Slovic, Fischoff & Lichtenstein, 1983). The below mentioned are four classic decision problems used in this research. These problems are taken from Tversky & Kahneman (1981, 1986).

> Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimate of the consequences of the programs are as follows:
>
> a. If program A is adopted 400 people will die.
>
> b. If program B is adopted, there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.
>
> **Versus**
>
> a. If program C is adopted 200 people will be saved.
>
> b. If program D is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that nobody will be saved.

The results described in Program A are similar to Program C. Both of these cases deal with situations where 200 people will live and 400 people will die. On similar grounds, the situations in Program B and Program D are similar. Both cases have a 1/3 probability that 600 people will live and 2/3 probability that 600 people will die. Now, both the situations have similar outcomes, but the results show that there is difference in risk perception of male and female.

The survey instrument captured framing and relative risk preferences based on alternate scenarios of four uncertain decisions. The same methodology is followed by Parker & Spears, 2002. The respondents were asked four different questions with an objective to capture how decision making changes if alternate framing environments are considered. The framing of one question is done as straight monetary gamble; alternatively, another question presents the same type of decision as an investment in stock market. One more situation discussing life and death choice with disease prevention strategies was included. Apart from these situations, a situation of corporate restructuring involving job loss was presented. In the questionnaire, no respondent was asked only questions framed as loss or gain rather both questions were asked from same respondent. The question with each variation is given in appendix.

The study was administered on 200 students in business management and commerce. Both the versions of questions were administered on all the respondents. The information of the gender of the respondents was also collected. Parker & Spears (2002) stated that results with student's survey used in framing literature can be replicated for other populations.

In order to get the data, the survey results gave discrete variables for analysis. The dependent variable includes: MONEY, with value of 1 if

the respondent chooses the uncertain situation for money questions; DEATH with value of 1 if the respondent chooses certain option for life and death question; JOBS. With value of 1 if respondent choose uncertain option for the stock question. To capture the influence of the framing of the question another 0 or 1 variable, FRAME, was created identifying the form used (Parker & Spears, 2002). For FRAME and GENDER, the cross variables were created.

A total of four discrete variables, MONEY, DEATH, JOBS, and STOCKS, were collected. In order to analyze the relationships, logistic probit procedure estimation technique was used. A value of Z under a normal curve is estimated by determining the probability of dependent variable with the help of probit procedure. In order to calculate probability associated with independent variable, a change in Z statistic as the dependent variable is introduced is evaluated.

Once the data was collected, a value of 0 or 1 is assigned to the responses. Depending on the version of situation formed, a value of 0 or 1 is assigned to the variable FRAME. In order to determine the probability a constant term can be used and a value of 1 is coded when respondent chooses the decision. In order to identify if a significant change in responses is linked with use of alternate statement, the coefficient on FRAME can be used. Framing is presumed to occur, when coefficient on FRAME is significantly different from 0.

The primary attribute in consideration is risk and gender. The change in risk preference is captured by incorporating an attribute directly into the model by the coefficient. A cross term is used for illustrating differences in framing behavior by entering the attribute.

8. RESULTS

The evidence from the series of estimation reflects that framing plays an important role in risk perception of individuals and gender also influences risk perception. The four questions posted shows that framing plays a significant role in risk perception.

The results of probit analysis of Framing are reported in Table 1. The intercept term captures the basic tendency to opt for either the choice of certain outcome or choice of the gamble for each situation; so it measures risk preference. For example, the first column shows an intercept of -.218 for Money variable and for others as well.

Table 1: Probit Analysis of Framing

	Money	Death	Jobs	Stocks
Intercept	-.218	.015	-.060	-.375
Standard Error	.286	.315	.292	.296
Wald Chi-Square	.584	.002	.042	1.605
n = 200				

The results of probit analysis of Gender are reported in Table 2. The results are shown at a cut value of .500. The results show that percentage correct for male is 65% while for female is 44%. The overall correct percentage for gender is 54.5%.

Table 2: Classification Table				
		Predicted gender of respondent		Percentage Correct
		Male	Female	
Gender of respondent	Male	65	35	65.0
	Female	56	44	44.0
Overall Percentage				54.5
a. The cut value is .500				

The results of Omnibus tests of model coefficients are reported in Table 3. The Omnibus tests of model coefficients table reports the chi square associated with each step in step wise model. There is only one step from the constant model to the block containing predictors so that all three values are same. The significance value or p value indicator our model is significantly different from the constant only model, meaning there is no significant effect for the combine predictors on the outcome variables.

Table 3: Omnibus Tests of Model Coefficients			
	Chi-square	df	Sig.
Step	2.336	4	.674
Block	2.336	4	.674
Model	2.336	4	.674

The results of Model summary are reported in Table 4.

Table 4: Model Summary		
-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
274.923[a]	.012	.015
a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.		

The Nagelkerke R Square is the power of explanation of model, which is .015 in the results reported. The model is fitted with above mentioned percentage points. This number adjusts Cox and Snell in order to make the range of value equal to 1. The two R square are not the only r squares, there are pseudo r squares. Nagelkerke R Square is calculated in such a manner that it is between 0 and 1. In it, we want p value to be greater then cut off .05 to indicate good fit.

The ratio of likelihood represents the improvement of full model over the intercept model. The ratio here is .012, which indicates the greater the improvement because the ratio is small comparatively. Cox and Snell R uses L(M), it uses conditional probability of dependent variable given independent variable. It is y=used to determine convergence of logistic regression.

9. CONCLUSION

This study reports findings of framing of risky decisions and reports that framing of risky decisions results in choosing different outcomes. This study also reports that gender plays an important role in evaluating risky outcomes. The findings measure the significance of gender

while evaluating decisions in risky outcomes. The study reports framing and gender to produce differences in choice of risk preference and framing.

The study used four outcomes to study and analyze role of framing in change of risk perception and the role which gender plays in risk perception. The four situations of Money, Death, Jobs and Stock were easily understood by students. The increased risk aversion for female students characterizes females being risk averse compared to males. The example of Jobs also induces framing behavior by showing a loss of jobs. These four examples are most universally understood examples of framing behavior.

10. LIMITATIONS OF STUDY AND FUTURE DIRECTIONS FOR RESEARCH

The present study focused only on management and commerce students, this study can also be extended for financial analyst, investment advisors, and mutual fund managers. The present study focused only on framing and gender, other personality characteristics can also be studied. Framing can also be linked to the age, occupation, personality type, and other attributes. So the variable of interest for the study can be increased and more detailed research can be conducted with a view to gain more insights into framing and gender or other personality characteristics. The present study is conducted with existing data collection instrument; further research can be conducted by developing a new instrument as per the existing situations in Indian economy. Nevertheless, the present study investigated and found critical results which are useful for the practitioners, and academicians.

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