THE ULTIMATUM GAME IN PAKISTAN: EXPERIMENTAL EVIDENCE ON THE EFFECT OF GENDER AND RAISING STAKES

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In the name of ALLAH who is most beneficent and merciful

Dedicated to my Most Loving and Caring Parents, Brother, Sisters and Wife

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Abstract

Laboratory experimentation was once considered impossible or irrelevant in economics. Recently, however, economic science has gone through a real 'laboratory revolution', and experimental economics is now a most lively subfield of the discipline. This study attempted to examine answers to the questions of the changing behaviour of the opposite sexes under conditions of both anonymity and knowledge of gender by playing ultimatum game in Pakistan. In this thesis, the behavior of the people was also observed with varying amount of monetary stakes in the ultimatum game. It had been observed that the behavior of males and females in Pakistani society was quite different from earlier studies. Insights from the previous experiments have already shown that normative economic theory had failed in its predictions of human behavior. Currently the ultimatum game is widely discussed in behavioral economic literature and this thesis will adjust the traditional ultimatum game into a new form where it will be tested in the country (Pakistan) with multidimensional behavior of subjects. The results indicate the preference for fairness for small, medium and large stakes. With regard to gender effect specifically it is the fact that all the earlier studies come up with some-what mixed results, since results do not always point in the same direction and it is early to draw far-reaching conclusion regarding the behavioral differences of males and females. More facts are required in order to move towards the development of a systematic theory. In this respect, this work is just a small attempt, in which the answers to the questions of changing behavior of opposite sexes under different controlled conditions were addressed using the various statistical techniques like Kolmogorov-Simrnov Test, mean comparison analysis and logistic regression.

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List of Abbreviations

UG		Ultimatum Game
DG	-	Dictator Game
TG	-	Trust Tame
M1		Offers by male proposers in Round-1
M2	-	Offers by male proposers in Round-2
M3		Offers by male proposers in Round-3
F1		Offers by female proposers in Round-1
F2		Offers by female proposers in Round-2
F4	-	Offers by female proposers in Round-4
R1	-	Response of Responders in Round-1
R2	-	Response of Responders in Round-2
R3	-	Response of Responders in Round-3
R4	-	Response of Responders in Round-4
R34	-	Response of Responders in Round-3 & 4
O1	-	Offers made in Round-1
O2		Offers made in Round-2
O3	-	Offers made in Round-3
O4	-	Offers made in Round-4
O34	-	Offers made in Round-3 & 4
D	-	Absolute Difference of Cumulative Distribution Function
M	-	Male Offers
F	-	Female Offers
MM	-	Male proposer make offer to Male responder
FF		Female proposer make offer to Female responder
MF		Male proposer make offer to Female responder
FM		Female proposer make offer to Male responder

CHAPTER 1

"Life must be understood backward, bur ... it must be lived forward."
Soren Kierkegooni

Introduction

1.1 Experimental Economics

Experimental Economics is the use of experimental methods to evaluate theoretical predictions of economic behavior. It uses controlled, scientifically- designed experiments to test economic theories under laboratory conditions. Conventional wisdom was that economics is a science concerned with complex, naturally occurring systems and the laboratory experiments had little to offer economists. But experimental economics has now become a well-established tool of economic research. Experimental economics has been the protagonist of one of the most stunning methodological revolutions in the history of economics. In less than three decades economics has been transformed from a discipline where laboratory experimentation was considered impossible, useless, or at any rate largely irrelevant, into a science where some of the most exciting discoveries and developments are driven by experimental data. Additionally, economic theory depends on assumptions about the preferences of economic agents. Whether these assumptions are correct is not observable from economic activity. All that can be said is that the preference can be inferred from the choice. Experimental economists use laboratory conditions to identify preferences and to examine if those preferences actually influence economic choices the way that theory says they should (Binmore *et al,* 1985; Roth, 1995; Camerer, **2003).**

Experimental economics is an inter-disciplinary science. Not only are the economists usually well-versed in areas other than economics and mathematics, but also they work with other social scientists to determine the biological, social, and psychological reasons and causes for the choices the test subjects make (Friedman & Casser, 2004). The Interdisciplinary Center for Economic Science at George Mason University, founded by 2002 Nobel Prize winner Vernon Smith, is one example of the collaboration of researchers with different areas of expertise.

The initial stimulus for this transformation came from studies of individual choice behavior. As economists focused on microeconomic theories which depend on individuals' preferences, the fact that these are difficult 'to observe in natural environments made it increasingly attractive to look to the laboratory to see if the assumptions made about individuals were in fact descriptive of their behavior (Romp, 1997; Roth & Erev, 1995).

Like many other scientific disciplines, experimental economics raises a number of interesting philosophical issues. Formal tests of economic theories of individual choice go back at least as far as L.L. Thurstone (1931), who used experimental techniques common in psychology to investigate whether the indifference curve representation of preferences could coherently describe individuals' choices (he concluded that it could). In the 1970's, the psychologists Daniel Kahneman and Amos Tversky systematically explored how decision-making heuristics introduce a number of biases in human behavior, adding considerable richness to our understanding of how the assumption of rationality may or may not be useful. One influential part of their work, Prospect Theory,

summarized their results in a form that could be viewed as an alternative to expected utility theory (Kahneman & Tversky, 1979). Numerous types of philosophical as well as methodological issues like bargaining, coordination, self-interest and preference for fairness etc have been explained by number of researchers, for experiments and models of fairness; see Fehr & Schmidt (1999) and Bolton & Ockenfels (2000). Surveys of experiments concerning co-ordination and bargaining may be found in Ochs (1995) and Roth (1995).

Moreover, in continuation to the Chamberlin's (1948) study of imperfect markets, Vernon Smith[1] and Charles Plott explored different rules of market organization (Smith & Plot, 1978). Smith (1962) famously showed that in a double oral auction (in which buyers and sellers can both propose prices to the market) there is a strong tendency for prices to converge to a competitive equilibrium. Kagel (1995) and Kagel & Levin (2002) survey the large modem literature on auctions, Sunder (1995) considers markets for commodities (such as financial securities) in which information plays a dominant role, and Holt (1995) surveys experiments in industrial organization generally.

Another extension of Experimental economics is Experimental finance, which is the application of Experimental economics in financial markets. The goals of Experimental finance are to establish different market settings and environment to observe experimentally and analyze agents' behavior and the resulting characteristics of trading flows, information diffusion and aggregation, price setting mechanism and returns processes. Testing focuses on markets and what makes them work, rules for commerce, i.e. trading, bartering, exchange, etc., and the behavior of economic agents under

[1] Vernon Smith shared the 2002 Nobel Prize in economics with Daniel Kahneman

different market or exchange mechanisms. With these lab experiments, it is possible to estimate or predict reactions to changes in economic rules. For example, predicting corporate behavior under different environmental policies has been difficult with traditional economic theory, but experiments can help to determine if a market of environmental or natural resource commodities, e.g. pollution allowances, water rights, electricity, etc., will provide a more efficient mechanism for allocated scarce resources (Giith & Yaari,1992; Bergstrom *et al.*, 2000).

Precisely, economic experiments can be loosely classified into Markets, Games, Decision making, Bargaining, Auctions, Coordination, Social Preferences, Learning, Matching, and Field Experiments. However, historically most economics experiments were conducted in the laboratory, but recently interest in economics field experiments has grown. The development of experimental economics has also led to increased interest in econometric studies of natural experiments.

1.1.1 Traditional Objections on Experimentation in Economics

Economists have generally worried about the practical hurdles that make experimentation difficult or ineffective: experimentation in economics may well be possible in principle, in other words, but is usually unfeasible for unfortunate contingent reasons. According to Guala (2006) John Stuart Mill has already pointed out practical constraints pertaining to experimentation with the political and economic principles in full detail during the nineteenth century. J.S. Mill said:

> "There is *a property* common lo all the moral sciences, and by which they are distinguished from *many* of *the* physical; that is, *that* it is seldom *in* our power to make *experiments in* them. In chemistry and *natural philosophy [i.e. physics],* we can not only observe what happens under all *combinations* of circumstances which nature brings together, *but* we may also try an *indefinite number* of *new* combinations. This we can seldom do in ethical, and *scarcely* ever in political science. We cannot *try* forms of governnient and systems of national policy on a *diminutive* scale in our laboratories, *shaping our experiments* as we think they may most conduce to the advancement of *knowledge."* (Mill 1836, p.124)

This view has been dominant until at least the 1980s: there is nothing intrinsic to economics that prevents it from applying the scientific methods of the natural sciences. The limitations are only of a practical kind, but phenomena used in are typically of "macro" nature, and unfortunately economists cannot experiment with firms, markets, or entire countries in the same way as a biologist can experiment with a cell or a population of fruit flies. The obstacles to experimentation thus have mostly to do with size and lack of access (and therefore, lack of control). These two obstacles of course are not unrelated, lack of access being often derivative from the big size of the object of study. One key move against practical objections consists therefore in showing that, contrary to the received opinion, economic phenomena can be studied on a small scale, and that it is possible to achieve control of the most important variables of a small-scale economic system (Guala, 2005a).

The study of small-scale laboratory economies became a legitimate method of inquiry only after World War II. Post-war economics was characterized by a number of important transformations. Morgan (2003a) summarized that in the middle of the twentieth century economics was in the process of becoming a "tool-based science": from the old, discursive "moral science" of political economy, to a scientific discipline where models, statistics, and mathematics fulfilled the role both of instruments and, crucially, of objects of investigation. In this sense, the rise of modeling is probably the most relevant phenomenon for the birth of experimental economics. Whereas the earlier economists like J.S Mill to **A.** Marshall believed that economics was mainly concerned witb the study of "real-world" markets, it was now possible to argue that economics was concerned with the study of whatever could be modeled by economic theory.

Walrasian economic theory on the other hand posed a serious obstacle to laboratory experimentation, for among the various restrictive conditions imposed on the existence of efficient markets, the theory postulates a high (indeed infinite) number of traders with perfect information and no transaction costs. One of the early important results of experimental economics was precisely the demonstration that in reality neither a high number of traders nor perfect information is necessary for the convergence to competitive equilibria (Smith 1962). This result, together with the systematization of microeconomics around expected utility and game theory, laid down the preconditions for the laboratory revolution to take place. As soon as economic theory turned to the study of small-scale systems, experimental economics became a real possibility.

Charles Plott, one of the pioneers of experimental economics, expresses this thought with great clarity: experimental economists had to remove two "constraints" that stood in the way of laboratory research:

> *"The first was a belief that the only relevant economies to study are those in the wild. The belief suggested that the only effective way to create an experiment would be to mirror in every detail. to simulate, so to speak, some ongoing natural process. As a result the experiments tended to be dismissed either because as simulations the experiments were incomplete or because as experiments they were so complicated that tests of models were unconvincing. Once models, as opposed to economies, became the focus of research the simplicity of an experiment and perhaps even the absence of features of more complicated economies became an asset. The experiment should be judged by the lessons it teaches about the theory and not by its similarity with what nature might have happened to have created."* (Plott 1991, p.906)

According to such an approach, experimental economics is theory-driven, just like economics as a whole. In other words, useful experiments are always theory-testing experiments.

1.2 Ultimatum Game

In the ultimatum game (UG) two people, a first-mover (proposer) and a second-mover (responder) are allocated a sum of money, which they can share if they can come to an agreement. Responders decide whether to accept or reject offers from the proposers. Accepted offers are implemented but rejected offers result in both players receiving nothing. Because the proposer is allowed to make a take-it-or-leave-it offer and because the proposer knows any reasonable responder will accept even a little money rather than rejecting an offer, the economic theory suggests that the proposer should receive nearly all the money. But the game-theoretic prediction for this game is straightfonvard. If both players are rational in the sense that each is concerned only with maximizing his own profit, proposer should propose to keep all but a penny for himself and give a penny to responder. Responder should accept this proposal since even a penny is better than nothing (Camerer, 1995). It can be explained that Ultimatum is a miniature Bargaining Game; Bargaining is very common and complex. Ultimatum is the last step in a bargaining game.

Ultimatum game experimenters began with the assumption that the pursuit of self-interest means participants will focus on improving their material well-being. It has been hypothesized that both proposers and responders would play the ultimatum game to maximize their material gains. The outcome of repeated ultimatum games and of variations of ultimatum games defied expectations, initiating an ongoing re-examination of the characteristics of self-interest (Napel, 2003).

The ultimatum game is a question that has interested several researchers in the past. The first experiment to use the ultimatum game was conducted by three German economists Giith, Schmittberger, and Schwarze (GSS, 1982). As the early work on ultimatum bargaining focused primarily on the issue that whether the behavior of the players/ bargainers was in accordance with game-theoretic predictions or against it. The conclusion drawn by GSS (1982) is as:

> *"Subjects often rely on what they consider to be a fair or justified result. Furthermore, the ultimatum aspect cannot be completely exploited since subjects do not hesitate to punish if their opponent asks for 'too much'."*

This conclusion from the early ultimatum game results has sparked a whole industry of research on bargaining behavior. Similarly, Burnham, Terence C. in Encyclopedia of Cognitive Science (2003), has explained the motivational aspect of players with reference to Ultimatum game. The main aspects explained are as below.

> *"The ultimatum game involves the question of basic human motivation. Economic theory is predicated on the notion that individuals pursue self-interest.."*

> *"For many who make nonnative judgments on policy matters, self-interest means consuming goods and leisure."*

"The ultimatum game results suggest that human motivations are more subtle than is assumed by this commonly used definition of economic self-interest. In a variety of settings, people show deep concern for the impact of their actions on others. Sometimes people act to help others, but they also show a spiteful willingness to damage others".

Burnham (2003) also explained that ultimatum game is helpful in understanding the player's thinking. The proposer knows that the outcome of the game depends not only on his actions, but also on those of the responder, so his offer takes into account his predictions of how the responder will act. Both players will choose among the alternative options that maximize the amount of money they receive. Also, ultimatum game predicts that since both the proposer and the responder know that rejection of the offer results in neither receiving any money, the proposer will offer the smallest possible amount (anything greater than $0) and the responder will always accept. For example, if the game is played with $10 in $1 units, the prediction is as follows:

"The proposer will act in her self-interest by offering a $9 / $1 split. The responder will accept the offer because he knows that he is better off with $1 than with $0. The proposer made the $9/$1 offer confidently because she expects the responder to maximize his well-being by accepting $1 rather than rejecting the offer and receiving nothing."

However, results from numerous experiments have shown that people do not behave in line with this prediction. Instead, offers typically average about 40 to 50 percent of the total; with the 50-50 split being the modal offer. Moreover, a substantial proportion of positive offers are rejected. These findings have been replicated across different populations of subjects using different amounts of money and different experimental procedures (Camerer & Thaler; 1995, Roth; 1995). This means people are wiser than economists – they know that low offers will be rejected and are not surprised when that happens. Economists think that low offers will be accepted and are surprised at the outcomes of the ultimatum game.

Ultimatum game has been the object of an extensive experimental work, and this is for at least two reasons: the simplicity of the game and the (notwithstanding) large empirical puzzling evidence associated with it. Most striking anomalies are the following: offers that are inferior to the 20% of the stake are rejected with a probability that exceeds one-half. Knowing this, proposer's average offer is between 30% and 40% of the stake, depending on how high the probability of rejection is anticipated by the senders (Giith & Tietz, 1986 & 1990).

1.2.1 Surprising Results of Ultimatum Game

Researchers[2] continuing fascination with ultimatum games derives from the fact that player do not act as the economic model of self-interest predicts. Surprisingly, proposers

[2] Detailed survey of experimental results on ultimatum game can be seen in Aurora *et al* (2007) and Bearden (2001).

generally offer more than the minimum, and even more surprisingly, responders frequently reject low offers, choosing to receive nothing. Hundreds of ultimatum games conducted by scores of researchers have produced the following results:

The mean split is 60% - 40% (meaning that in a $10 game, the proposer offers the responder $4 and keeps $6).

- The modal (most common) offer is a 50%-50% split.
- Approximately 20% of low offers are rejected (As the low offers are the offers less than 30%).

The results, especially the rejection of low offers by responders, pose a serious challenge to the selfishness axiom. The behavior of proposers could still be seen as materially self-interested, but only in the unlikely scenario that the proposer assumes that other people do not have the wealth maximizing motivation that he does. In that scenario, a proposer who fears that the responder will not act in his self-interest and accept any offer over $0 will make a more generous offer. This serves his self-interest by increasing the chance that the offer will be accepted. However, while a seemingly generous offer can be explained as self-interested, the explanation doesn't work for responders who reject offers knowing that they will end up with nothing (Henrich *et al*, 2001).

1.2.2 More Questions about Ultimatum Game

How to interpret the outcome of ultimatum games is a subject of on-going discussion and investigation. The results are considered to be "robust," meaning that they have been

replicated often enough to be generally accepted. That does not mean, however, that they are accepted uncritically; the research continues (Burnham, 2003). For example, the vast bulk of the data on ultimatum games comes from experiments done with college students. The similarities in the test subjects prompted researchers to know the fact that theory and actual behaviour don't go along with seems to be very robust to the experimental protocol retained: context, subjects, kind and size of the stake, repetitions of the game and many other elements of the experiment have been variously framed and specified but, despite of all that, the main puzzling results still appear that why people/ subjects offer more (Tompkinson & Bethwaite, 1995; Hoffman et *al.*, 1996 & 1994; Slonim & Roth, 1998; Cameron, 1999).

In this regard the experimental variables that have been tested include:

a. Individual characteristics, such as participants' age, gender, socio-economic status, or degree of risk-tolerance.

b. Group characteristics, including the dominant type of economic activity (cooperative or autonomous) in the society; the prevalence of markets in the culture, or the size of the economic unit.

c. Experimental design features, such as the wording of instructions to the participants, or the size of the stake to be divided.

However, the results from the expanded round of experiments found in literature have added to our understanding the dimensions and origin of self-interest as:

a. Ultimatum games played with larger amounts of money to be divided (up to a quarter of participants' annual income) indicate that the size of the stake does not significantly affect proposers' or responders' behavior (Cameron, 1999 & Hoffman *et al*, 1996).

b. Individual characteristics like age, socio-economic status, and gender have been eliminated as important explanatory variables (although in some studies it was found that females make marginally more generous offers as males) (Andreoni & Vesterlund, 2001 & Botelho *et al*, 2000).

c. A study of 15 small, indigenous societies on 4 continents found significant cultural group differences in behavior, hut no society upheld the predictions of the selfishness axiom (Henrich *et al*, 2004).

Here in this thesis two of the major variable gender and size of stake have been examined from the Pakistan's perspective.

1.2.3 Data Explanation for Ultimatum Game and Experimental Economics

The continuing challenge for experimental economists is to explain behaviors that tun counter to predictions based on the economic model. One effect of the expanded

experimental focus has been to broaden the conception of self-interest to include more than material preferences.

> *"One important approach involves what are culled 'other-regarding' preferences. Economists use the term 'preferences' to describe an individual's likes and dislikes. The standard assumption about preferences is thatpeople derive satisfaction only from their own lives and not from rhe lives of others. The ultimatum game results are inconsistent with these standard, materially self-interested preferences" (Burnham, 2003).*

Some of the behavioral economists have proposed that players have an innate conception of fairness, and that the 20% rejection rate is the result of responders believing that proposers offering highly unequal splits are acting unfairly. Vernon Smith and his colleagues considered and then abandoned "fairness" as an explanation. The results suggest that participant's behavior may be due not to a taste for "fairness" (other-regarding preferences), but rather to a social concern for what others may think, and for being held in high regard by other. In other words, participants' behavior is motivated by a concern for their reputation in society (Hoffman *et al.* 1994).

It has also been intrigued by the possibility that rejection is a form of punishment. The 1991 Bolton study concluded that responders reject splits they deem to be unfair because their dislike for a low offer is stronger than the value they place on the money at stake.

Proposers who offer highly unequal splits are seen as deserving punishment and responders punish them by rejecting their offers. Because proposers anticipate that responders might react this way, they make more generous offers (Bolton, 1991).

1.3 Objectives of this Study

Social Norms defining *"Fairness"* influence outcomes of Ultimatum Game. These norms vary across culture. Accordingly, ultimatum game has been studied in many different cultures (Croson & Buchan, 1999; Roth *et al.* 1991). *We* add to this literature by studying, for the first time; ultimatum game in Pakistan also by applying new statistical techniques which have never been used in existing literature.

The study is divided into five chapters. The organization is as follows. Review of literature on gender differences and raising stakes with reference to Ultimatum Game is presented in chapter-2. The methodology of experiments on the effects of gender, raising stakes in the Pakistani society is discussed in chapter-3. The main features of data and explanation of the experimental results are discusses in chapter-4. Major conclusion and policy recommendations of the study are illustrated in chapter-5.

CHAPTER 2

'We must next deal with its style of presentation. and so cover both what is to be said and how it is to be said '

(Plato, The Reptrblic, Part 3, 392c)

Literature Review

2.1 Gender and Varying Stakes (Low and High Stakes) Effect

People/ Agents are assumed to be self-interested income-maximizers in standard game theory. There is considerable evidence that this assumption is false. Economists are shocked by this, but ordinary people are not. Social interaction is much richer than the beautiful abstractions of game theory, and motivational factors other than income-maximization, such as fairness, anger and spite, seem to be equally strong determinants of behavior (Kagel & Roth, 1995; Kahneman & Tversky, 1979).

There is a substantial diversity in the social and economic behavior of male and female in different societies around the globe. In Pakistan, socio-economic groups behave differently in bargaining. These behavioral differences in both genders may affect wages and other economic outcomes. The Ultimatum Game[3] has been the basis for many experimental investigations (Thaler, 1998 & Roth, 1995). The outcomes of the ultimatum

[3] One player (Proposer) makes an allocation of a fixed sum of monetary stake and the other player may either accept or reject that allocation. In case of acceptance funds are divided acmrding to split and if the allocation is rejected both receive nothing.

game are not consistent with the results expected from standard economic theory for one-shot games and repeated games (Cameron, 1999 & Güth *et al.* 1982).

2.2 Gender Effect

The role of gender in human decision making has been extensively analyzed in the literature. More specifically, gender differences have been investigated in the laboratory using several environments one of which is the Ultimatum Game (UG)[4]. We now review the literature on effects of Gender on the Ultimatum Game, as a preliminary to our study of this issue in the context of Pakistan.

As far as the Ultimatum Game (UG) is concerned, Eckel & Grossman (2001) run the UG experiment specifically designed to test the gender effects in the bargaining process. In their design employs the "game method[5]", they implement an UG which is repeated along eight rounds. Proposers and respondents are matched using a face to face protocol. Each subject plays four rounds as a proposer and four rounds as a respondent. The sex of a subject's partner is made known by having a group of four proposers seated facing a group of four respondents. The design matches players with partners of their own gender, partners of the opposite gender or a mixed group. Subjects have no information on their partner's identity. They find that female

[4] See Eckel & Grossman (2005) for an exhaustive revision of differences in economic decisions of men and women. They examined these differences in several experimental scenarios.

[5] In game method the proposer makes an offer which is presented to the responder, who then decides whether to accept or reject the given offer.

proposals are, on average, more generous than males, regardless of the sex of the partner, and female respondents are more likely to accept an offer of a certain amount. Furthermore, a given offer is more likely to be accepted if it comes from a female, a result which is interpreted as chivalry. Females paired with females almost never fail to reach an agreement. Our design of experiment is closer to Eckel & Grossman's design. As in our study the players were seated face to face so that the players may see each other and make their ultimatum decision. Contrary to the findings of Eckel and Grossman, we find that male made more generous offers in the case where the gender of the responder was unknown, and also in the case where the responder was know to be female. This difference is most likely due to cultural differences.

In another study, Solnick (2001) conducted a one-shot UG game using the strategy method[6]. This method generates additional data (the minimum willingness can be analyzed directly) but is thought to lead to more analytical decision-making states than the game method used by Eckel & Grossman (2001). Gender is communicated by the first name of the counterpart (a practice which Holm (2000) suggests yields the same results as informing the participant "your counterpart is a (fe)male student"; see also Fertshman & Gneezy, 2001). The analysis involved two treatments. In first treatment, players remained mutually anonymous while in second treatment the gender of the players was known to both parties (proposer & responders). The game was played one time with 89 pair of subjects for $10 at the University of Pennsylvania USA). Subjects were also paid

[6] **Under the strategy method, the proposer decides the offer and, at the same time, the responder records a minimum acceptable offer. If proposer's offer equals or exceeds responder's minimum acceptable offer, the offer is accepted and the pie divided according to proposer's proposal.**

a $2 show-up fee in addition to their winnings from the game, if any. She analyzed the players behaviour using Wilcoxon test and found that both sexes make lower offer to females and that both sexes choose higher minimum acceptable offer (MAO) when he/she faces a woman. In general the highest rejection rate exists when a female player faces a female player. There are two fundamental differences in our study and Solnick's study which are (i) design of experiment, (ii) strategy to disclose player's identity. In Solnick study the strategy method was used whereas we haven't used strategy method (methodology of our study will be discussed in coming chapters). Solnick study revealed that players only knew the gender but they can't see the players themselves while in our study the players were seated face to face without allowing them to talk to each other. Our results are substantially different from those of Solnick, most likely due to cultural differences between Pakistan and USA.

Both studies (Eckel & Grossman, 2001; and Solnick, 2001) found little difference in the overall mean offers made by males and female (46.7 percent of the pie for male versus 46.8 percent for female in the Solnick study and 36.5 versus 38.5 in the Eckel & Grossman study). Both Solnick and Eckel & Grossman reported that offers to female were, on average, lower than those made to male, regardless of the sex of the proposer (43.7 and 37.2 percent versus 48.9 and 38.2 percent, respectively). Solnick's and Eckel & Grossman's results differ dramatically in the behavior of the respondents. While the overall rejection rates are similar (12.4 versus 12.8 percent, respectively), Solnick reported higher rejection rates of offers made by female, while Eckel & Grossman reported higher rejection rates for offers made by male. Both Solnick's and Eckel &

Grossman's results were significant. One of the most startling differences in the two results is the difference in rejection rates of offers made by female to female. In the Eckel & Grossman study, these offers were least likely to be rejected (3.1%), while in the Solnick study, these offers were the most likely to be rejected (23.1%). There are two important differences between the Solnick study and the Eckel & Grossman study. One is the one-shot design versus repeated-play design. The second important difference is the risk differences and potential for being "exploited" faced by the respondent in the "strategy" versus "game method" design[7].

Similarly, Saad & Gill (2001) conducted one shot UG in which subjects face randomly a subject of the same or contrary gender (i.e. male to female, female to male, male to male & female to female). The experiment was conducted at McGill University USA with 238 undergraduate & graduate enrolled students for $10. Here each subject knew the sex of his/her partner. They found that males make more generous offers when pitted against female, whereas, females made equal offers independently of the other's sex. They performed two ways ANOVA on the data with the sexes of the allocator and the recipient serving as the factors. They also found that the mode offer was 50% of the pie which was similar to the ultimatum finding already observed in the literature (Frey & Bohnet, 1995; Powell & Ansic, 1997; Bymes *et al.* 1999, Brown Kruse & Humnels, 1993; Nowell &

[7] In the game method design, the respondent, knowing the proposer's offer, knows the outcome of the game once his decision is made. There is no risk and no potential for exploitation. In the strategy method design, the respondent faces the same risk as the proposer. Both must make a decision without knowing for certain the other's choice. The smaller is a proposer's offer and the higher is a respondent's minimum acceptable offer, the higher is the probability that both will receive nothing. There is both risk and potential for exploitation. Reactions of subjects to these risk differences may vary by sex, and by other characteristics of the subject pool.

Tinkler, 1994 & Sell 1997). They also used the Anderson-Darling test for normality of the distribution and found that the distribution of offers made by the players was not distributed normally within the range of $1 to $10. Our results are similar to Saad & Gill (2001) but here again there is difference of experimental design. We have tested the player's behavior under anonymity as well as full gender knowledge where as Saad & Gill tested the player's behavior with full gender knowledge. Also, we have used non-parametric test & logistic regression analysis to analyze the distributional pattern of offers made and the responders' response to a given offer which was missing in the Saad & Gill's study. In our study the female players have shown learning behavior when the gender was unknown but this aspect of learning was not discussed in the Saad & Gill's study. However, in the Sand & Gill study an interesting rather more important parameter of physical attractiveness of the subjects was discussed to explore the plausible reasons for the gender differences. They were also of the opinion that the physical attractiveness of the subject has a very important role in determining the behavioral response of the subjects in ultimatum game. Rating the physical attractiveness is not easy because this relates to the mental state of mind where the mood & attitude of the subject also play a pivotal role. Therefore, we have tried to exclude all those confounding parameter which may affect the behavior of subjects other than gender to observe the natural response of the subjects when they were paired with a subject of opposite sex.

The factor of physical attractiveness influencing the gender decision on ultimatum game was also discussed by Solnick & Schweitzer (1999). They recruited 178 subjects to participate in this game for $10 ultimatum decisions both a proposer & responders. The

study revealed that one's own attractiveness did not influence decision making but did influence the decision process of others. In particular, it was found that more was offered to attractive people and to males, even though attractive people & males did not demand more. In this study the expected earnings of attractive people were 8 to 12% greater than the expected earnings of un-attractive people, and the expected earnings of males were 13 to 17% greater than the expected earnings of females. Thus, the physical appearance significantly influenced the types of offers and demands negotiations. The implications of this Study were consistent with Heilman's (1983) and Rynes & Gerhart (1990) findings.

Botelho *et al.* (2000) postulated the hypothesis that behavioral differences in bargaining in UG stems from the differences in demographic characteristics of the subjects within each country. They used the data previously collected in the USA & Russia to test not only for the effects of nationality on behaviour but also for the effects of other demographic factors. **A** total of 218 subjects participated in the study, 60 subjects from Russia participated in two sessions for 7000 & 8000 Rubles respectively. The remainders subjects were from USA and they played 6 sessions for $10, additionally they were paid $5 for participation. Wilcoxon-Mann-Whitney test for differences in proposer behaviour and Fischer's exact test for differences in responder's behavior was used for detailed statistical analysis. They found that proposer behaviors were fairly similar across USA & Russia but there were substantial differences in behaviour across genders. The average offers made by female subjects in both USA & Russia about 45% of pie whereas, male offered 31.5% of the pie. The results of this study are also in contradiction to our study.

Suner *et al.* (2006) studied the influence of gender and gender pairing on economic decision making in an experimental two-person UG where the other party's gender was known to both subjects. The game was played with four treatments (FF, FM, MF, MM) and for each treatment there were 19 pairs of players. The subjects were paid € 4.5 as show-up fee, whereas, the initial endowment was worth € 9. Using the censored Tobit regression analysis it was observed that gender has no significant effect on the subject's decision making whereas, gender pairing systematically affects the behavior. More competition and retaliation was observed which lowered the efficiency when the bargaining partners were having the same gender and vice versa.

Dufwenberg & Gneezy (2004) conducted the UG with six groups of male & female to check the coordination behaviour for 10 periods. They tried to examine whether 9 single sex groups of only males will coordinate differently than a group of only females. The game was played by group of players, each of whom simultaneously chooses an integer from 1 to 7. Using Wilcoxon rank test they found no differences between male & female groups. Their study failed to suggest any reason why a team of man would be more or less productive than a team of females because they haven't studied the interaction behaviour among groups as there were some other characteristics which were common along with gender.

The composition of the gender related games also affects the decision of the subjects as examined by Dufwenberg & Muren (2005). They tried to explain how does gender

composition influence team decisions. They use dictator game[5] (DG) to address this issue. The experiment was conducted at Stockholm University comprising of two sessions of play, 168 subjects, comprising of 56 groups participated in the two session of play. The players were seated together and were asked to propose a split of seen of 1000 Kronor (US $110). The results do indicate that there were significant gender effects in group decisions i.e. female-majority groups give more to individual recipient and also choose the equalitarian division more after than male-majority groups do. It was also found that the presence of a man triggers an exaggerated generosity among the females in the group. The results of Dufwenberg & Muren's this study receives some support from the observations already raised by Stockard *et al.* (1988). In another paper by Dufwenberg & Muren (2004) it was examined experimentally that how a person's generosity depends on the degree of anonymity between given and recipient, as well as on the sex of either party. Here again dictator game was used to base their answer experimentally at Stockholm University with 388 and they were asked to divide 1000 Swedish Kronor (US $110), Using Wilcoxon-Mann-Whitney test and Chi-square test it was concluded that females were mere generous than males.

[5] In the dictator game, the first player, "the proposer," determines an allocation (split) of some endowment (such as a cash prize). The second player, the "responder," simply receives the remainder of the endowment not allocated by the proposer to himself. The responder's role is entirely passive that he has no strategic input into the outcome of the game (Camerer & Fehr, 2003).

Cox & Deck (2002) tried to figure out the situations when females behave more generously than males under DG, UG and trust game[9]. This study specifically seeks to reconcile the previously reported disparate findings by systematically comparing actions taken in an allocation decision across several contexts with varied costs of generosity. The groups of between 12 and 20 subject participated in the experiment, and they were paid $5 as show-up fee. The experiment was a computer generated simulation programme in which the players have made their choice of offers which they want to offer the other players. Probit model was used to analyze the proposer's and responder's behavior and it was found that females tend to be mere generous than males when the social distance[10] is low, the monetary cost of generosity is low and/or there is an absence of reciprocal motivation. It was also found that females are mere sensitive to the economic costs of generosity. Therefore, this study helped in explaining the reason why previous studies have drawn seemly contradictory conclusions

[9] The trust game extends the dictator game one step by having the reward that the dictator can (unilaterally) split between himself and a partner partially decided by an initial gift from that partner. The initial move is from the dictator's partner, who must decide how much of her initial endowment to trust with him (in the hopes of receiving some of it back). Normally, she is encouraged to give something to the dictator through a specification in the game's rules that her endowment will be increased by a factor from the researchers. In a typical trust game an Investor and Trustee each receive an amount of money S from the experimenter. The Investor can invest all or part of her money by sending any amount y, between zero and S, to the Trustee. The experimenter then triples the amount sent, so that the Trustee has $3y$ (in addition to her initial allocation of S which is hers to keep). The Trustee is then free to return anything between zero and $3y$ to the Investor. The payoff of the Investor is $S - y + z$ and the payoff of the Trustee is $3y - z + S$ where z denotes the final transfer from the Trustee to the Investor. The trust game is essentially a dictator game in which the Trustee dictates an allocation, but the amount to be allocated was created by the Investor's initial investment (Camerer & Fehr, 2003).

[10] In our terminology, social distance refers to the degree of social separation between the decision-maker and other parties including the other player, the other subjects in the experiment, and the experimenters. Potential costs of not being generous include the decision-maker's belief about the perception that others have of him or her, how the decision-maker's interactions with people who have observed the decision are affected, and any emotional response such as shame or embarrassment felt by the decision-maker. The less social distance between the decision-maker and others, the greater the possible cost associated with non-generosity.

Gender effects in ultimatum game have also been analyzed by conducting field experiments. As in Ayres and Siegelman (1995), confederates expressed interest in purchasing a car at a dealership, and asked for the salesperson's price. In the field, this price is an opening barrage in an ongoing negotiation. However, in this study, the confederates always reject this (ultimatum) offer and leave without purchasing. The results show that white females in the role of buyers are offered somewhat (hut not significantly) higher car prices than white males; this is reversed in the African-American group in which the females are offered lower prices than the males. In a related lab experiment, Fertshman & Gneezy (2001) found that while males were discriminated according to their ethnicity, females were not. That is, the offers to females did not depend on ethnicity while the offers to males did.

In another ultimatum field experiment, Güth, Schmidt & Sutter (2004) asked readers of a weekly news magazine to propose (and respond to) offers in a three-party ultimatum game using strategy method. In this game, the proposer makes an offer to split a pie between himself, the responder (who can accept or reject as usual), and a dummy player who has no decision authority. They found that female participants are significantly more Likely to propose a three-way equal split than are males.

Bolton & Katok (1995) found no differences between the play of males and females in dictator games. They employ the same game structure as of Eckel and Grossman (2001), but their experimental environment differs in three ways. First, their study involves a small sample of subjects in each of three variations. Second, they restrict the choice set of

the dictator in several ways (the choice set in one variation was restricted to giving nothing or 50% of the pie). Third, between-subject anonymity may be some how compromised. Although subjects did not know the identity of their partner(s), all subjects were initially recruited to the same room. These factors may affect subject's play[11]. Whereas, Eckel and Grossman: (1) place no restrictions on subjects' choices; (2) have all subjects play the same game; and (3) maintain between-subject anonymity by using different rooms for dictators and respondents.

Hack & Lammer (2007) examines the gender as a moderator of the fair process effect in UG. Fair process refers to the mitigating effect that the procedural fairness (the perceived fairness of the process underlying and decision, Leventhal, 1980; Lind & Tyler, 1988) can have on outcome satisfaction and moderating role of gender. They investigated the data collected from 112 subjects (62 females and 50 males) and found that the procedural fairness has a significant negative impact on rejection behavior when the underlying distribution is unfair. Secondly, the role of gender in the assessment of procedural fairness revealed that there were significant procedural fairness and gender interaction. As the procedural fairness make more of a difference for females in accepting an unfair distribution than it does for male. Moreover, procedural fairness appears to have no significant impact on male's retaliatory behavior.

Andreoni & Vesterlund (1997) conducted a modified Dictator Experiment. Instead of making a decision over one choice set, a subject makes allocation decisions for eight

[11] The work of Hoffman *et al.* (1994, 1996) suggested that factors which reduce subject/subject anonymity can increase the generosity of offers in the dictator setting.

different choice sets (a subject's payoff was determined randomly from the decisions made). Each choice set differed in the number of tokens to be divided and the value of a token to each subject. The experiment was performed at University of Wisconsin and at Iowa State University. At Wisconsin both sessions consisted of 35 subjects, while the Iowa State contained 38 and 34 subjects (overall 142 subjects participated in the experiment). The experiment lasted less than half an hour and subjects earned an average of $9.6. Overall, females gave away more tokens than males (29.50 versus 25.74, respectively), but this varied considerably with the relative value of tokens to the two subjects. Female's token donations varied little with the relative price of giving, while male's donations were more responsive. Increasing the value of a token to the recipient has increased male's level of donations. On average, partners of female subjects earned more than partners of male subjects ($2.60 versus $2.56). and for five of the eight choice sets the earnings differential was significant. Andreoni and Vesterlund found that there were systematic differences by sex. They also indicated that depending on the price giving, either sex can be found to be more altruistic. When the price of giving was low, males appeared to be more altruistic and when the price was high, females were more generous. These results are consistent with Eckel & Grossman (1998)'s findings; females are significantly more generous than males, giving approximately 26 to 41% more than males.

2.3 Cultural Effect

There has been limited research on cultural differences in ultimatum bargaining causing the gender differences. Fortunately, however, the work that has been done (specifically,

Roth *et al.* 1991) has laid a firm foundation for future work. Roth *et al.* (1991) examined behavior in ultimatum bargaining games in the Israel, Yugoslavia, Japan, and the United States. Subjects played 10 rounds of ultimatum bargaining, maintaining their player position throughout but changing opponents on each trial. First round offers in Japan and Israel tended to be lower than offers in the U.S. and Yugosiavia. With experience (by playing through other rounds), the differences between the offers from the different countries increased. Overall, offers in Israel were lowest; offers in the U.S. and Yugoslavia the highest, and not significantly different. Japanese offers were in between.

Similarly, Henrich (2001) examined the experimental evidences (ultimatum game results) from the Peruvian Amazon with Machiguenga and Los Angeles under control experimental conditions. The results suggested that the economic reasoning and decisions are heavily influenced by the cultural differences. Because the average offers and rejection rates were substantially lower in the Machiguenga of the Peruvian Amazon compared to subjects from Los Angeles.

Some studies reported cultural differences in UG experiments. Such as, Cameron (1999) found that offers made by Indonesian subjects were statistically indistinguishable from those made by U.S. subjects in Hoffman *et al.* (1996) and that rejections rates were no different from U.S. subjects in Roth *et al.* (1991). Likewise, Oosterbeek *et al.* (2004) in their meta-analysis observed that country differences are reflected on respondent's behavior only and not on the shares offered to them. The study by Chuah *et al.* (2005) identities attitudinal dimensions (like altruism and faimess) of culture which significantly

influence experimental behavior of Malaysian and UK subjects. However, none of these papers addresses the issue of how gender effects **vary** across countries and cultures.

However, Aurora *et al.* (2007) studied the culture and risk aversion as causes of gender differences in the UG. They found that gender difference were also dependent upon cultural differences. The experiment was conducted with Greek, Spanish and British subjects. They observed that females from Spain and Greece behaved in similar ways, whereas, they both differ in similar ways from British females. Specially, female subjects from Spain and Greece made lower offers than males, whereas, no difference was obtained between male and female subject's offers in UK. As far as, the rejections are concerned, female subjects from Spain and Greece reject more, while female subjects from UK reject less than the corresponding male do. A central issue addressed by this study was the extent to which gender differences in bargaining behavior that can be explained as the result of gender differences in the decision making under uncertainty, They confirmed the broadly accepted result that females are more risk averse than males. In fact, it has been shown that the reported gender differences are not because of but rather despite female's higher risk aversion.

2.4 Raising Stakes Effect

The ultimatum game has generated considerable interest in the behavioral and experimental research because experimental evidence strongly rejects the standard game-theoretic predictions. **A** reasonable argument against laboratory findings from ultimatum

game experiments in that subjects simply do not take game very seriously because the pay offs are typically pretty meager. It has been proposed that raising the pie (stake) affect the behaviour of the subject and it would certainly be 'much closer to the game theoretic predictions (Bearden, 2001).

Along with this criticism, there has been a considerable difference in the thinking and methodology of economists, psychologist and sociologist while conducting behavioral research. As economists look at the issue of paying variable amount from the others while psychologists and sociologists use compensation to get subjects to show-up. Because economist believes that participants consider choices more carefully when there are financial implications. Higher financial stakes may be important for several reasons. i) High stakes might reduce responder's willingness to "punish" a given disproportionate offer, as it would raise the financial cost of indulging in such behaviour. ii) High stakes may induce proposers to make proportionally less fair (smaller) offers to responders because high stakes will raise the financial cost to make proportional offers if they believe that responders are more likely to accept a given disproportionate offer. Hence, high stakes may move the behaviour towards the prediction of economic theory (Lewicki *et al.* 2001).

In fact, this argument was put further by Telser (1995) in terms of law of demand. He developed an informal model which predicts that as the stakes increases, the responders will become more willing to accept a given percentage offer. He supported his argument by considering a game in which the stake size was $10 million; in contrast to a same with

$10 stake size where an offer of in $0.01, the corresponding (proportional) offers here in $1000. In the high-stakes game, Telser argued that it seemed much more likely that a subject would accept the $1000 offer. Because when the stakes are high it is much more costly for responder to demand fair offers. Therefore, proposer can safely offer less. He termed this as law of demand as the stakes increases the price of fairness increases and hence quantity demanded decreases.

Cameron (1999) conducted an ultimatum game experiment in Indonesia with rather substantial stakes; 50001-, 400001- and 2000001- Indonesian Rupiah (Rp). 141 pairs of subjects were recruited for the experiment. Each subject played two rounds of VG maintaining the same player position through opponent position do vary in both rounds. The highest stakes offered were roughly equal to three times the monthly average salary of the subjects. All the subjects received a flat rate of Rp.5000/- as show-up fee for playing in addition to any takings in the real money games. Three real money sessions were conducted. (Low, medium and high stakes sessions) The first round of each session was always for Rp5000 and the second round was for the same or an increased amount. Along with real money sessions, one hypothetical money session was also conducted. The results using Wilcoxon Mann-Whitney test thus indicated that the percentage mean offers in round 1 for low, medium, high and hypothetical stakes sessions were 47%, 43%, 38% and 36% of the stakes size, whereas, the corresponding acceptance rates were 77%, 85%, 79% and 47% respectively. Similarly, in round 2, the percentage mean offers were 40%, 45%, 42% and 40% with 69%, 91%, 90% and 55% acceptance rates. Quite surprising, the proportion of amount offered by proposer to responder did not vary

was examined, stakes also made a difference for proposals; offers declined in the higher stakes games as the proposer gained experience.

Munier & Zaharia (2003) tried to explore the ultimatum behavior of the subjects by increasing the monetary stakes by a factor of 50 (which had never been done before). They used strategy method and collected data for a one-period UG in two different countries (France and Romania). 124 students (62 French and 62 Romanian) were recruited for low stake equivalent to $7 (≈40 FF[12]) and high stake equivalent to $360 (≈2000 FF). The subjects were told that they would be paid a fixed amount for showing-up on time (i.e. 100 Francs in France and 10,000 Lei in Romania) and that, in addition, they would have an opportunity to bargain over sum of money. Each subject participated in two experimental sessions. Each session lasted five rounds. The subject played a 40 FF two player UG in the first sessions. Then, in the second experimental sessions, they played a 2000 FF two player UG. The results showed that the average earnings were equal to 133FF in France and 43000 Lei in Romania, while the actual individual winnings lied between 400 and 1100 francs in France and 10,000 and 1110,000 Lei in Romania. The data do reveal that the model offers were of 50-50 and average offers were 43% and 37% of the stakes in France and Romania respectively. Using the Wilcoxon Rank Test they found that lowest acceptable offers stated by the responder were proportionally lower in the high-stake condition than in low-stake condition. However, the results were consistent with the previous studies and they found that an important increase of the monetary stakes in the UG has no effect on the offers made by the proposer.

[12] FF refers to French francs

The change in the behavior of the people with reference to stakes in UG has also been discussed by Harrison & Rutstrom (2002). The re-examined the data from experiments of Slonim & Roth (1998) which were designed to test the effects of high stakes on behavior in UG. The authors drew quite different conclusion, based on the use of appropriate panel regression models and also used the unpublished demographic details on the individual subjects referred by Slonim & Roth. Harrison & Rutstrom rejected the findings of Slonim & Roth with respect to the initial effects of stakes on acceptance behavior, but confirmed their findings of no adaptation in acceptance behavior over time and also unconcerned a much richer pattern of effects of stakes on offer. The overall picture that emerged from the analysis of Harrison & Rutstrom was that the proposer in the high stakes appeared to have thought more about the underlying strategic nature of the game. Their offers were lower in the initial round, but did not decline significantly over the other rounds. The proposers in the medium stakes condition simply seemed to be more ready to adopt than the subjects in the low stakes condition. Responders first round. Responders do not appear to adapt over time in any of the stake condition. Also the demographic variables appeared to be associated with significantly different offers. Therefore, they stressed that it is potentially important to control for demographics when comparing treatments in experimental games.

Tompkinson *et al.*, (1995) examines the motivation of players in the ultimatum game when the stakes involved are significant sums of money. **A** questionnaire approach is used to elicit matched pairs of offers and minimum acceptances from respondents for games in which the stake size increases from $10 to $10,000. Only 16% of the sample

showed selfish preferences, the rest of the sample behaved as if they were concerned with relative payoffs. There was some evidence that the concern with relativities was not as strong in the large stake games. Despite these observations, for ***60%*** of the sample, the offer expressed as a proportion of the stake did not change as the stake increased, and 28% of the sample would have offered and accepted half the stake in the $10,000 game.

Camerer & Hogarth (1999) summarized the effect of stakes on behavior in economic experiments. Their analysis showed that stakes have little effect on average behavior but games with larger (or non-zero) stakes tend to generate data with less variance. However, when there are differences, the differences are in the direction of standard theory because games with no stakes (i.e. participants only receive a show-up fee) or low stakes are often afflicted with hypothetical biases that cause players to be less risk averse and more generous. The authors specifically note that bargaining games such as the ultimatum game show little change in average behavior when stakes are increased, but participants in dictator games tend to be less generous when the stakes are increased from zero to five dollars.

Tsu-Tan Fu *et al.*, (2007) carried out experiment on ultimatum games with subjects who were the representative of Taiwan Nation. They focused on the size effect of monetary stakes when experimental subjects are "real" people (randomly sampled from the adult population of a nation) rather than students. Whereas, the previous experiments on ultimatum games are conducted either with student subjects or subjects who were not representative of an economy. The experiment was performed in Taiwan with 800 individuals (20 years old or older). Of these 800 individuals, the actual number

participates in the game was 791, consisting of 397 proposers and 394 responders[13]. These individuals were randomly sampled from the stratified population of the economy to ensure their representative. The size of stakes was NT$200 (low stake) and NT$1000 (high stake)[14]. Of 800 chosen individuals, 400 individuals (200 pairs) were designated to play the low-stake game, while the other half the high-stake game. Each subject took part in a one-shot game. Using the Probit estimates they found that: (i) raising stakes substantially reduce the number of "outliners[15]" in both offers and rejections; (ii) higher stakes exert a significant impact on players' offer and rejection behavior as the standard economic theory predicts even for inexperienced or one-shot play; (iii) socioeconomic characteristics dominate responders' behavior when stakes are low, whereas monetary stakes dominates responders' behavior when stakes are high; (iv) age has a lifecycle effect on players' behavior when stakes are low: those subjects who are young and old offer less and reject less often than those who are in the middle age; and (v) females reject less often than males, but there is no gender difference in offer behavior.

Summarizing the discussion, it can be seen that there were several studies which found no differences in offers and rejection rates affected by the stake size. Using $10 and $30, Roth *et al.*, (1991) found no differences. Straub & Murninghan (1995) found little support for the hypothesis that ultimatum bargaining behavior is affected by the size of

[13] Out of 800 individuals 791 played the gaming session correctly whereas, three proposers and six responders played the game in the wrong way hence their offers and decisions were not counted.

[14] NT$ denotes New Taiwan dollar and the exchange rates were around NT$32+ per US$. The average hourly wage rate in Taiwan at the time of the experiment was around NT$100.

[15] Offering more than half of the "pie" to responders is a hyperfair offer and hence it may be viewed as an outliner. Similarly, rejecting a hyperfair offer may also be viewed as an outliner.

In our study new statistical techniques like Two Sample Kolmogorov-Simrnov Test, Logistic Regression Model and Test for Mean comparison has been used together, which have never been used together any where in the existing literature. Also the design of our experimentation was different which can give a new dimension for further empirical analysis. Details of design of experiment and significance of the new statistical techniques are presented in Chapter 3 & 4. Therefore, this study will be a contribution to the existing literature in ultimatum game with respect to gender and raising effects.

CHAPTER 3

I see rhe [ultimatum] game as simply providing counter evidence lo the general presumption that participation in o market economy (capitalism) makes a person more selfish. -- Prof. P.J. Hill, Wheaton College

Methodology of Experiments

I had tested the Ultimatum game in two sets of experiments in order to test the following economic, social, as well as psychological variables:

a) Gender Effect

b) Raising Stakes Effect

Now the experimental design of all the experiments is discussed briefly as below:

3.1 Gender Effcst

The ultimatum game was tested in the Govt. Postgraduate College Nawabshah, Ghizer, Kharan, Rawlakot and Professional Academy of Common Knowledge, Lahore (PACK) separately at the stake size of Rs.100, consisting of four rounds. The stake size remained fixed through out the study.[16] The advertisement about the game was done through pasting the posters in the institutes. No show up fee was taken from the participants. A short seminar was conducted in order to explain the rules of the game to the students. Thirty pairs of postgraduate students consisting of thirty male and thirty females from

[16] Including all the rounds 1, 2, 3, 4.

each *Govt. College,* were chosen except ten pairs of postgraduate students consisting of ten male and ten female, were chosen from ***PACK*** for the experiments.

In the first round at *Govt. Colleges,* there were *15* male and 15 female proposers, with 15 male and 15 female responders but in ***PACK*** there were 5 male and 5 female proposers, with 5 male and 5 female responders. The identity and gender of the players was kept secret in the first two rounds. The experimenter was the only one who has complete knowledge of the player's gender (identity). There was no opportunity for the mutual coordination among the proposers as well as the responders through out the experiment. The proposers were placed in one room and the responders in another. Two persons were assisting the experimenter.[17] In the start of round every player was allotted an identity number. In each round the players (proposers) were given a slip to write their identity number and make their offer. They have only two minutes to make their offer and then the assistants collected the offer slips and took them to the responders to make their decision (either to accept or reject the offer). After making the decision, the slips were taken back and given to the experimenter and he then announced the resulting payoffs to the players. After the announcement the payment was made to the players according to their decided share. After that round the players have to answer a short questionnaire. The same methodology was adapted in the second round with a slight difference that male proposers were making their offers to the male responders and female proposers were making their offers to the female responders. However, the gender was still not the not known to both player's parties.

[17] **One man in the proposer's room and the other in the responder's room from the respective institute.**

In the next two rounds (third and fourth) the players were seated face to face and the gender became a common knowledge. But still the players were not allowed to make mutual conversation. Here in the third round, all the male players were chosen to make offers to all the female responders. After that round both the parties have to answer the questionnaire regarding their decision and hand it over to the experimenter. In the fourth round, all the female players became the proposers and all the male players became the responders (the swapping of players was reversal within the same pairs of round-3, so that this would give a better analysis of the player's behavior)

After all these experimental rounds, the players had passed through a short interview regarding their preferences and their attitude towards the opposite sex.

3.2 Raising Stakes Effect

The ultimatum game was played for Rs: 10/-, 1001- & 10001-. Subjects were selected from the Pack (Professional Academy of Common Knowledge) Lahore, Pakistan. The advertisement about the game was done through pasting the posters in the institutes. No show up fee was taken from the participants. A short seminar was conducted in order to explain the rules of the games to the students. The instructions circulated among the player were explained loudly and clearly before the start of game. The game was played for 12 times. There were 20 pairs of postgraduate students consisting of twenty males and twenty females, with no gender discrimination as the players were selected randomly.

Players were anonymous in all games because in all the games player did not know about the identity of the other player. Proposers and responders were seated separately in two separate rooms. The ultimatum game was played three times for each of stake i.e. Rs: 10/-, Rs. 1001- and Rs. 1000/-. An offer slip was provided to each proposer to make his offer to other player, then slips were collected and distributed among responders to make their decision (either to accept or reject the offer) and at the end proposers were informed about the decision of responders. According to predefined method if offer was rejected both will get nothing. During all the rounds the responders were swapped among themselves in order to control for the reputation building. After each round both the parties have to answer the questionnaire regarding their decision and then hand it back to the experimenter.

CHAPTER 4

Results and Discussion

4.1 Gender Effect

4.1.1 Round 1

The offer data collected from all the experimental locations was pooled together. In this round of play both the player parties were ignorant of the gender of each other and there was no provision of making any bilateral or multilateral conversation among them. The hypothesis we were trying to test here is that either the distribution of male and female offer differ significantly from each other or otherwise. In this context two sample Kolmogorov-Simrnov Test (K-S Test)[18], for additional econometric analysis logistic regression model, percentage analysis and mean comparison test have been used.

Table 1 & 4 showed that the average offer of male and female proposers was Rs.40.492 and Rs.37.538 respectively. Overall, the offers to male and female responders by male proposers ***(MM: Male proposer to Male responder and MF: Male prosper to Female responder)*** were averaging Rs. 41.02 and Rs.39.93 respectively. At the same time 93%

[18] This test is used to investigate the significance of difference between two population distributions, based on two sample distributions (Kinji, 1999). The method used here is that we have segregated the male and female offers with sample size *n1* & *n2*, then we have calculated the cumulative distribution functions *Sn1(Xm)* & *Sn2(Xf)* for male and female sample respectively. Then we have calculated the absolute difference between cumulative distribution functions *Sn1(Xm)* & *Sn2(Xf)*. Hence, the maximum value of the difference between *Sn1(Xm)* & *Sn2(Xf)* is calculated denoted as maximum value of D and compared with the critical value of the null hypothesis (Ho: $Pm=Pf$, HI: $Pm \neq Pf$). As if the observed value exceeds the critical value the null hypothesis is rejected or otherwise. See Appendix -I for explanation of Kolmogorov-Simmov hypothesis.

MM and 89% MF offers were accepted. Whereas, the female offers to male and female players, the acceptance rates were 71% (FM: Female proposer to Male responders) and 57% (FF: Female proposer to Female responder) respectively. FF offers averaged to Rs.37.40 and FM was of average Rs.37.62, which showed that the offer behavior of female player is same for both male and female players. The rejection rate of MM & MF was 7% & 11% respectively, on the other hand for FF & FM offers the rejection rates were 43% & 29% respectively (Table 1). Contrary to these results Solnick (2001) and Eckel & Grossman (2001) found that female on the average were more generous towards males.

Table 1 Descriptive *Statistics* for Round I

Round 1 (Unknown Gender) Comparison Of Offers (n=65)	PERCENTAGE		MEAN	
	Accept	Reject	Accept	Reject
Female offers to Female (FF)	57%	43%	Rs: 42.96	Rs: 30.13
Male offers to Male (MM)	93%	7%	Rs: 42.06	Rs: 26.50
Female offers to Male (FM)	71%	29%	Rs: 42.33	Rs: 25.83
Male offers to Female (MF)	89%	11%	Rs: 41.22	Rs: 30

Considering Table 2, the offer range (41 to 50), which signifies proposer's (male & female) offers to responders (male & female) between 37% (24165) to 55% (36/65) of the pie for female and male players respectively with 0% rejection rate. Overall, the acceptance and rejection rate for male offers were 91% (59165) and 9% (6165)

respectively and for female it was 66% (42165) and 34% (23165) respectively. This indicate that male offers are higher than the female offers that is reason the rejection rate for female offers was higher. It has been observed that 89% of male players offering in between the range of Rs.31 to 501-. Comparatively there has been lower tendency on the part of female players for offering within the range of Rs.31-50/- i.e. 69% (Table 2).

Table 2 Percentage Analysis for Acceptance and Rejection of Offers for Round 1

Offer Range		0 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	Sum
Overall Offers	Male	0.00 (0/65)	0.00 (0/65)	0.09 (6/65)	0.34 (22/65)	0.55 (36/65)	0.02 (1/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	1.00
	Female	0.00 (0/65)	0.03 (2/65)	0.25 (16/65)	0.32 (21/65)	0.37 (24/65)	0.03 (2/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	1.00
Accepted Offers	Male	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.34 (22/65)	0.55 (36/65)	0.02 (1/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.91
	Female	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.26 (17/65)	0.37 (24/65)	0.03 (2/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.66
Rejected Offers	Male	0.00 (0/65)	0.00 (0/65)	0.09 (6/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.09
	Female	0.00 (0/65)	0.02 (2/65)	0.25 (16/65)	0.08 (5/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.34

On the other hand, while analyzing the offer pattern of male and female in round 1, it was observed that offers were not the same, meaning that there were significant differences in the offer pattern of male and female players according to the results of K-S Test (Table-3). As the computed p-value was less than significance level ($\alpha = 0.05$), also the computed value of (*Absolute Difference* of Cumulative Distribution Functions) was D = 0.246 which was higher than the critical value of D = 0.175 at $n=65$ rejecting the null hypothesis.

Table 3 *Kolmogorov-Simrnov Test for Distributional Analysis*

Variables	Two Sample Kolmogorov-Simrnov Test (Two Tailed Test)		
	Round 1	Round 2	Round3 & 4
D	0.246	0.138	0.331
P-Value	0.025	0.457	< 0.0001
Alpha (Level of Significance)	0.05	0.05	0.05

The gender effect was also analyzed by using the test of mean comparison by taking in account the more offer given by either male or female. In Table 4 the results of mean comparison test for male and female offers have been shown for this purpose. It was observed that the male players on the average gave more offers than the female players. These results were statistically significant to reject the null hypothesis of no difference in male and female offers. Graphically, it was represented in figure 1, which clearly showed that there were substantial differences in the offer pattern of male and female offer curves (both offer curves for male and female players gradually took the same pattern of offer after the offer of Rs.40/-).

Table 4 *Mean Comparison Analysis for Male & Female Offers in Round I*

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
F1	37.538	65	8.5697	Equal Variances	2.366	0.0195
M1	40.492	65	5.0563	Unequal Variances	2.366	0.0199

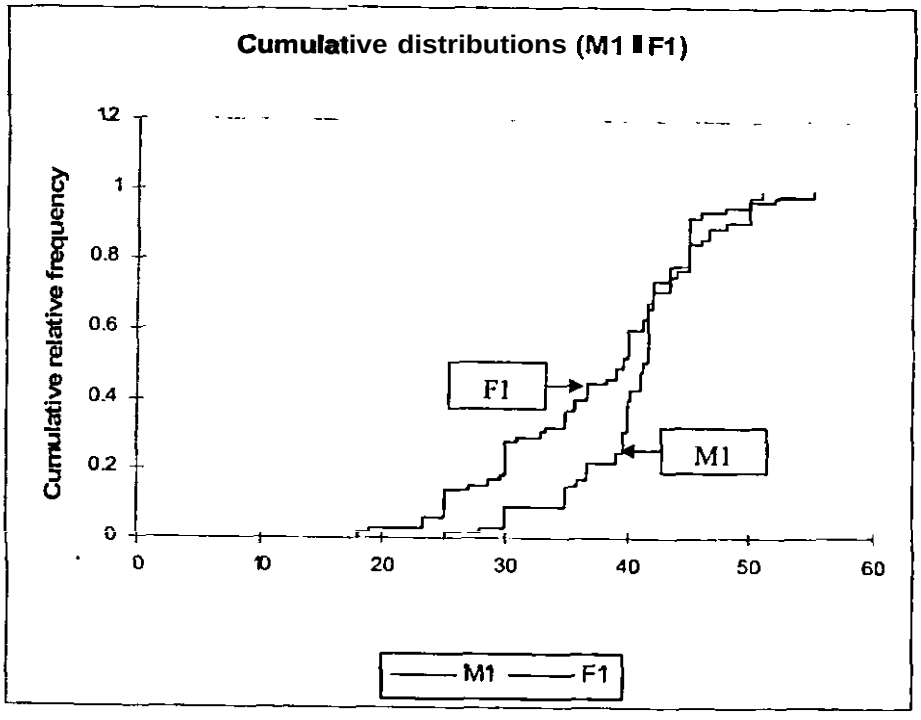

Figure 1 *Cumulative Distribution Curves for Mule & Female offers in Round I*

The logistic regression function was used to describe the probability of rejection for each given offer by including the gender variable first and then by dropping it. The logistic regression model given below:

$$p(X) = 1 - \frac{\exp(\alpha + \beta X)}{1 + (\alpha + \beta X)}$$

Where, p is the probability of rejection and X is the offer amount, as a proportion of the total stake. The rejection behavior of each sample then is described by two parameters α and β.

$R = \phi(\alpha + \beta O + \gamma G)$ with gender variable Equation (1)

$R = \phi(\alpha + \beta O)$ without gender variable Equation **(2)**

Where: ϕ denotes the Cumulative Density Function for the Standard Normal Distribution.

Where: R = Response of Responders to the proposed offers by the Proposers.

O = Offers made by Proposers to the Responders.

G = Gender of Proposers

In this specification gender and response of the players were the dummies that take value "1" for female proposers and "0" for male proposers. Similarly, value "1" is also for the offers being accepted by the responders and "0" for the rejected offers.

The results of logistic regression equation (1) given in Table 5 imply that the role of gender on responder's decision was insignificant. Also the test results do indicate that higher offer rate increases the probability of acceptance for a given offer (i.e. the coefficient of offers i.e. O = 0.7669). Therefore, the response of responder was not influenced by the gender of the players.

Table 5 *Logistic Regression Model including Gender Variable*

Variables	Round 1				Round 2				Round 3 & 4			
	Coefficient	S.E	Z – Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value
Intercept (C)	-24.7334	6.3252	-3.9102	0.0001	-38.3047	11.3363	-3.3789	0.0007	-23.6378	4.3067	-5.4887	0.0000
Gender (G)	-1.8431	1.2025	-1.5328	0.1253	-2.3009	1.6320	-1.4099	0.1586	-1.0974	0.7365	-1.4899	0.1363
Offer (O)	0.7669	0.1897	4.0419	0.0001	1.1517	0.3422	3.3651	0.0008	0.6369	0.1101	5.7842	0.0000

Keeping the same phenomenon the logistic regression was also tested by dropping the gender variable from the model. Here, again the test results for equation (2) given in Table 6 ascertain the results/estimates of the logistic equation with gender that higher the offer rate the higher will be the acceptance rate. Table 6 & Figure 2, where it was explained that the offer over Rs.40/- were having higher probability of acceptance and the offers below Rs.40/- were having lower level of acceptance probability.

Table 6 *Logistic Regression Model without Gender Variable*

Variables	Round 1				Round 2				Round 3 & 4			
	Coefficient	S.E	Z-Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value
Intercept (C)	-25.2654	6.1479	-4.1095	0.0000	-32.6848	8.9174	-3.6653	0.0002	-24.2138	4.2095	-5.7521	0.0000
O (Offer)	0.7481	0.1768	4.2327	0.0000	0.9523	0.2549	3.7360	0.0002	0.6309	0.1055	5.9782	0.0000

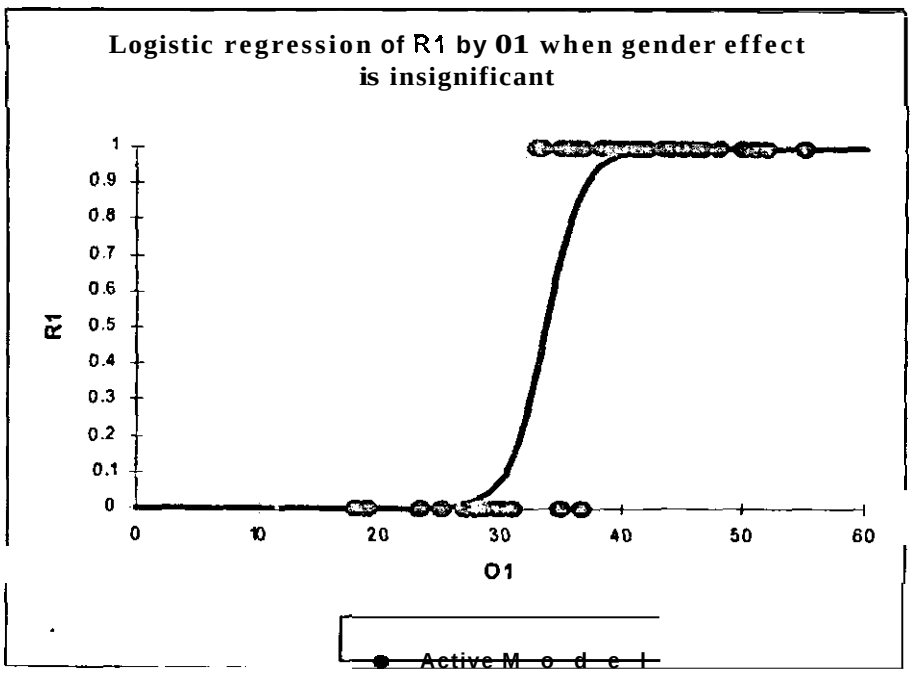

Figure 2 ***Logistic Regression Curve*** for ***Round I***

In short, the results of Round 1 do indicate that the pattern of offer for both male and female proposer was different from each other. Male proposers on average offered more than the female proposers; which was consistent with the results observed by Saad & Gill (2001). As Saad & Gill conducted a one shot UG and found that male offered more when paired with female players whereas, the female made equal offers independent of sex of the partner.

4.1.2 Round 2

The second round of experimentation was also carried out without the knowledge of gender to both the parties. But there was slight change of design that the male players

were making offers to male players and female to female[19]. The game was played with complete anonymity on the part of both parties of players.

The overall average offer of male players was Rs.41.308 and by female players Rs.38.662 (Table 9). It was observed that out of 65 MM and 65 FF offer, 78% of the male and 69% of female offers were accepted. However, the average rejection in MM and FF offers were Rs.30.02 and Rs.27.70. This pattern of offers by proposers and responders in comparison to round 1 showed that the both the parties have realized that if they want to earn or want to gain any monetary benefit then they have to make some what fair offer i.e. close to Rs.40/- and above as the offers below Rs. 401- were mostly rejected by both the parties in round 1. The overall rejection rate in FF and MM offers were 31% and 22% respectively. A surprising aspect in round 2 was that the female players have shown a little tendency of making some what higher offers because the average offer rate has increased which resultantly decreased the rejection rate of the female offers as compared to round 1[20] but this increase in offer rate is statistically insignificant (Table 9). Conversely, the rejection rates for male offers have increased as compared to round 1.[21]

[19] Experimenter was the only one who was well aware of the change in the design of experiment.
[20] In Round 1 FF rejection rate was 43% and in Round 2 FF rejection rate was 31% (Table 1 & 7).
[21] In Round I MM rejection rate was 7% and in Round 2 MM rejection rate was 22% (Table I & 7).

Table 7 ***Descriptive Statistics for Round 2***

Round 2 (Unknown Gender) Comparison Of **Offers (n=65)**	PERCENTAGE		**MEAN**	
	Accept	Reject	Accept	Reject
Female offers to Female (FF)	69%	31%	Rs: 43.49	Rs: 27.70
Male offers to Male (MM)	78%	22%	Rs: 44.40	Rs: 30.02

Table 8 shows the majority of the male and female offers were in the offer range (41 to 50), i.e. 49% (32/65) and 45% (29165) of the pie for male and female proposers respectively with 0% rejection rate. The overall offers which have been accepted and rejected falls with in the range of 69% (45/65) (female accepted offers) and 78% (51165) (male accepted offers), whereas, the rejection rate for male offers was 22% (14165) and for female offers 31% (20165).

From the comparison of offers in both the rounds (1& 2) it can be concluded the players have had a tendency to learn and coverage their offers to the average offers i.e. Rs.40/- and above. This was also discovered that the players either male or female do not like to have an offer which is slightly unfair i.e. less than Rs.30/-. As majority of the offers below Rs.40/- were rejected because the players feel it unfair.

Table 8 *Percentage Analysis for Acceptance and Rejection of Offers for Round 2*

Offer Range		0 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	Sum
Overall Offers	Male	0.00 (0/65)	0.00 (0/65)	0.18 (12/65)	0.29 (19/65)	0.49 (32/65)	0.03 (2/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	1.00
	Female	0.02 (1/65)	0.03 (2/65)	0.22 (14/65)	0.29 (19/65)	0.45 (29/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	1.00
Accepted Offers	Male	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.26 (17/65)	0.49 (32/65)	0.03 (2/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.78
	Female	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.25 (16/65)	0.45 (29/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.69
Rejected Offers	Male	0.00 (0/65)	0.00 (0/65)	0.18 (12/65)	0.03 (2/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.22
	Female	0.02 (1/65)	0.03 (2/65)	0.22 (14/65)	0.05 (3/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.00 (0/65)	0.31

For detailed statistical analysis to examine the behavioral responses of the players, in this round of play pooled offer data was used. The results of K-S Test in Table 3 indicated that there were no differences in the distributional pattem of the offers among male and female players as the computed p-value ($p = 0.457$) was greater than the level of significance $a = 0.05$. Also **the** computed value of D $= 0.138$ was less than the critical value of $D = 0.175$ at $n = 65$. Table **9** showed the results for the test of mean comparison also imply that the offer pattem of male and female did not differ systematically from each other. This behavioral pattern has been presented graphically in figure 3 showing no variation in the offer pattern of male and females across this round. It was also explained that the average male and female offers in Round 2 were (41.308 and 38.662 respectively) insignificant to show any change in overall average offer pattern of male and female.

Table 9 *Mean Comparison Analysis for Male & Female offers in Round 2*

Variable	Mean	N	SD	Assumptions	T-Stat	P-Value
F2	38.662	65	9.2505	Equal Variances	1.78	0.0775
M2	41.308	65	7.8281	Unequal Variances	1.78	0.0776

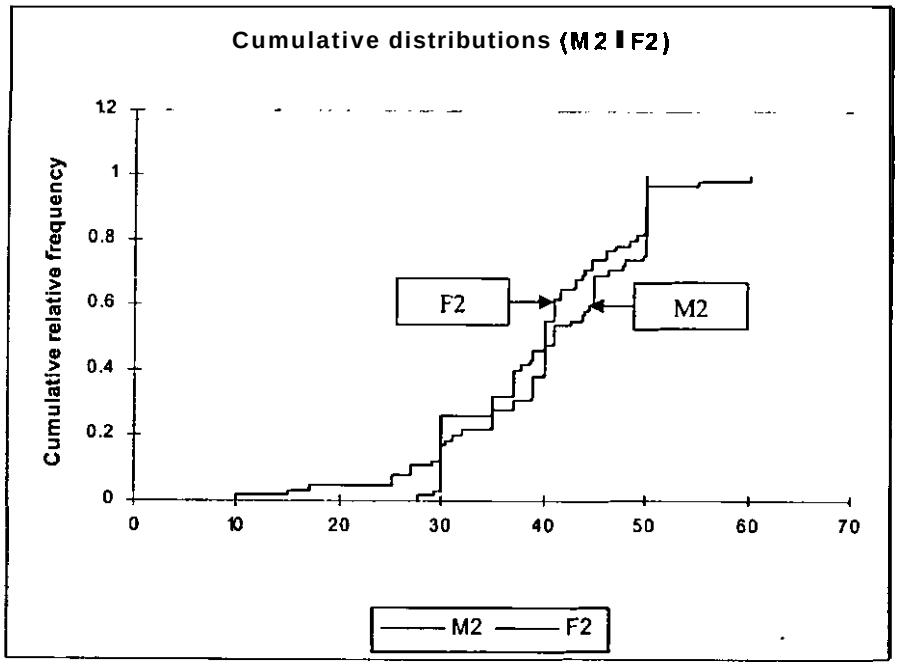

Figure 3 *Cumulative Distribution Curves for Male & Female offers in Round 2*

If we look at Table 5 & 6 for the logistic regression results for the regression with and without gender variable to analyze the behaviour of the responders it was observed that still the role of gender was insignificant in affecting the responder's behaviour. The results of logistic regression were same as in Round 1 showing that as the offer rates were increasing acceptance rate for the given offers were also increasing. Consistent with

Eckel and Grossman (2001), we find that women reject less often than men, but there is no gender difference in offer behavior.

This behavior of the players was presented graphically in Figure 4. Where it was obvious that as the offer rate was getting closer to Rs.40/-. The acceptance rate was gradually rising and after Rs.40/- showing almost 100% acceptance rate. At Rs.30/- and below, the rejection rate was 100%.

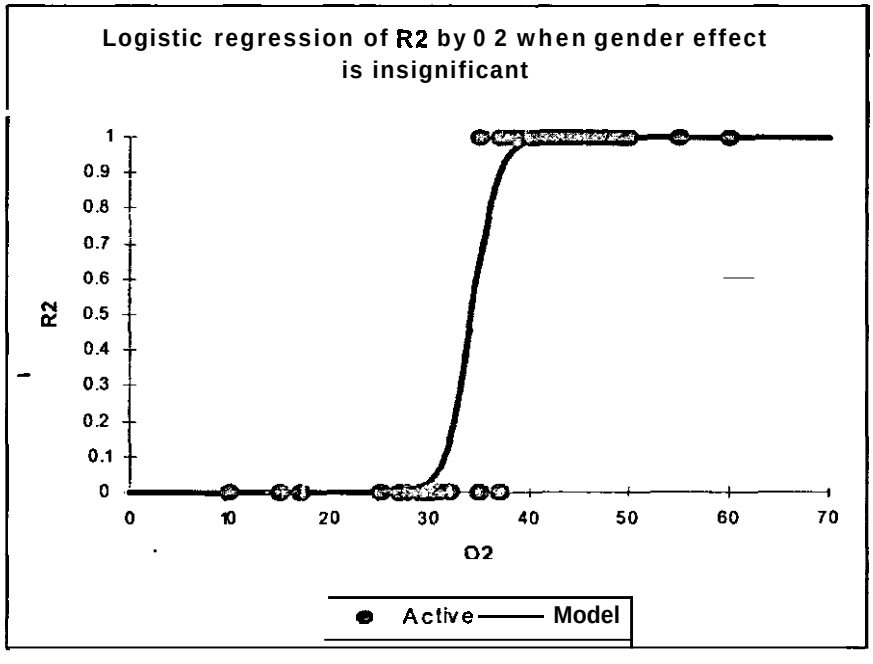

Figure 4 ***Logistic Regression Curve for Round 2***

The results observed in Round 2 were consistent with the findings of Sutter *et al.* (2006), Dufwenberg & Gneezy (2004) and Bolton & Katok (1995) in which they employed to

play a two player dictator game[2] and found no differences in male and female offers. Similarly, we also found no differences in the offer pattern of male and female in Round 2 and conclude that in this Round of play male and female offers were same. As the structure of our study was based on the repeated games and the players were employed for the four sessions of real money play. Therefore, the behavioral change in both male and female offer pattern during Round 1 was set aside by the players (both male and female) in Round 2 and showed realization for earning more monetary gain.

4.1.3 Comparison of Round 1 & 2.

While comparing the male offers in Round 1 with male offers on Round 2 it was observed that the offer pattern of male players was not the same across the rounds as the K-S Test results for analysis male offers in Round 1 & 2 rejected the null hypothesis showing significant differences in the offer pattern of male players, because computed *p-value* was lower than $a = 0.05$, also the computed value of D *(0.246)* was higher than the critical value of $D = 0.175$ at $n = 65$ (Table *10).* This has been presented graphically in Figure 5. On the other hand, the comparative analysis of female offer pattern across both rounds (Round 1 & 2) we found no significant change in the offer pattern of females as the K-S Test results showed in Table 10 accepted the null hypothesis showing no differences in the offer pattern of female players in both these rounds (the computed p-*value* $= 0.614$ is higher than the $a = 0.05$ and also the computed D-value of $D = 0.123$ is

[2] The structure of game for Bolton & Katok (1995) and Eckel & Grossman (2001) were same

lower than the critical value of D $= 0.175$ at n = 65). Graphically this behaviour is represented in Figure 6.

Table 10 Kolmogorov-Sirnrnov Test for Inter Round Gender Analysis

Variables	Two Sample Kolmogorov-Simrnov Test (Two Tailed Test)	
–	M1 & M2	F1 & F2
D	0.246	0.123
P-Value	0.023	0.614
Alpha (Level of Significance)	0.05	0.05

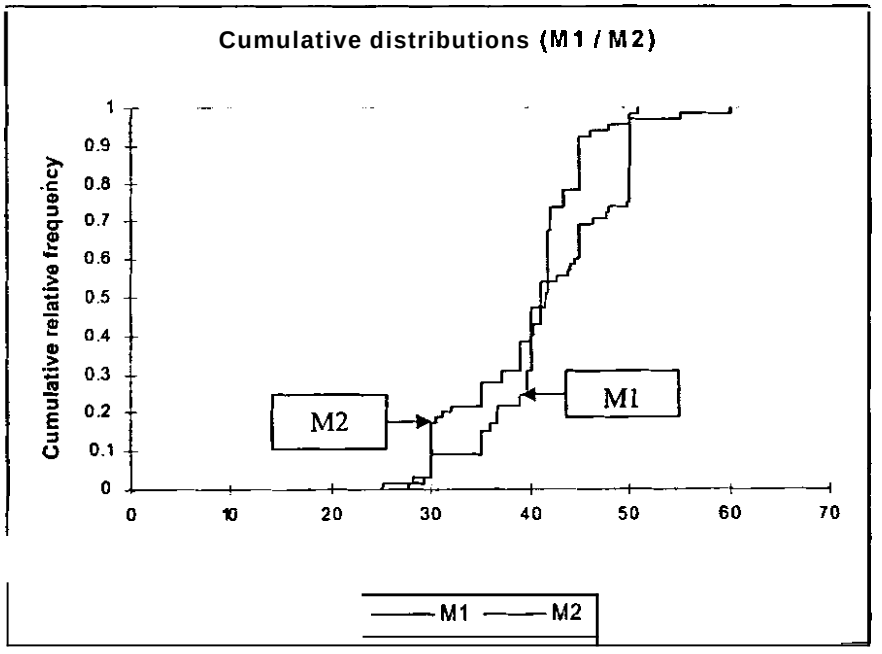

Figure 5 Curnularive Distribution Curves for Male offers in Round 1& 2

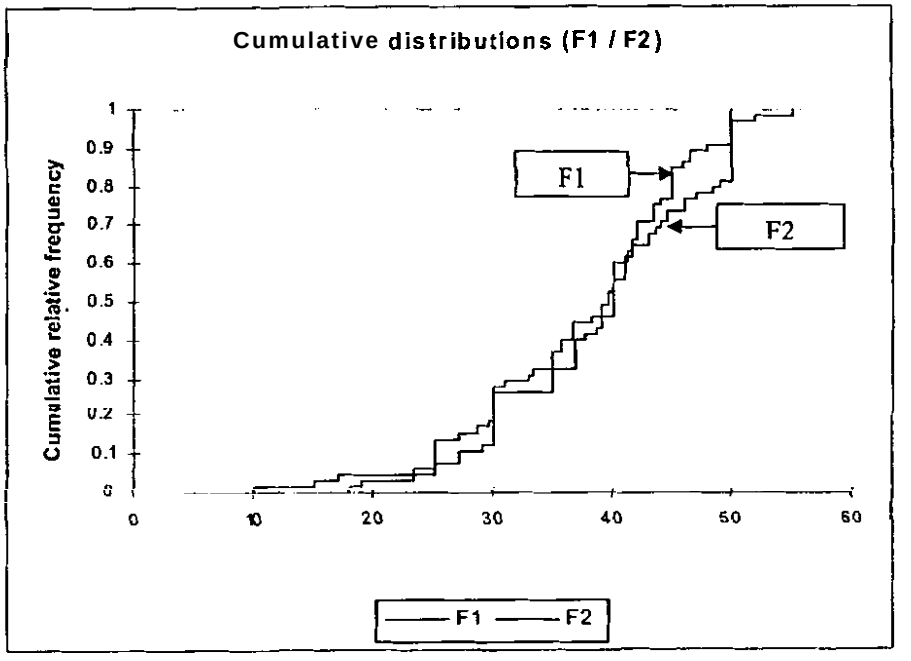

Figure 6 ***Cumulative Distribution Curves for Female offers in Round 1& 2***

The mean comparison for male offers in Round 1 and male offers in Round 2 also gave a clear indication that on average there were no significant differences among the male and female offers across rounds (Table 11 & 12).

Table 11 ***Mean Comparison Analysis for Male Offers in Round 1 & 2***

Variable	Mean	N	SD	Assumptions	T-Stat	P-Value
M1	40.492	65	5.0563	Equal Variances	-0.71	0.4818
M2	41.308	65	7.8281	Unequal Variances	-0.71	0.4820

Table 12 ***Mean Comparison Analysis for female Offers in Round 1 & 2***

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
F1	37.538	65	8.5697	Equal Variances	-0.72	0.4740
F2	38.662	65	9.2505	Unequal Variances	-0.72	0.4740

4.1.4 Round 3 & 4

The most distinctive point in both these rounds was that the players were having the complete knowledge of gender as both parties (proposers and responders were seated in-front of each other). Therefore, we have tried to make analysis of the results when the males were proposers and females were responders with results when the females were proposers and males were responders. We combined all the offer data of all the experimental locations and tried to figure out how behavioral patterns of players changes or affected by the knowledge of gender.

In round 3, when males were making offers to female players the acceptance rate was 93% and the average of accepted offers was Rs.50.80. Here, the male proposers have shown a strong tendency of offering more than even split of the money because 30% of the offers made were above Rs.50/-. This clearly showed that the behaviour of male players has change considerably in comparison to round 1 & 2. As there was 68% of the male offers made with in the range of Rs.40 to 501-. However, in round 4 female players were the proposers and the male players were responders and the behavior of female players was quite different from previous two rounds. The tendency of offering more than Rs.50/- was as low as 3% of the offers to male players. However, there is high proportion

of female offers in the range of Rs.40 to 501- (even split of money) i.e. 90%. The overall average of accepted female offers was Rs.45.37 which was less than the male offers in round 3. Similarly, 74% of the female offers in round 4 were accepted by male players and 26% were rejected. It was observed that all the offer below Rs.45/- were rejected by male players as the average of accepted offers was Rs.45.37/- (Table 13 & 14).

Table 13 ***Descriptive Statistics for Rounds 3 & 4***

Round 3 & 4 (Known Gender) Comparison Of **Offers (n=130)**	PERCENTAGE		MEAN	
	Accept	Reject	Accept	Reject
Male offers to Female in R 3 **(MF)**	93%	7%	Rs: 50.58	Rs: 31.33
Female offers to Male in R 4 (FM)	74%	26%	Rs: 45.37	Rs: 35.25

Table 14 ***Percentage Analysis for Acceptance and Rejection of Offers for Round 3 & 4***

Offer Range		0 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	Sum
Overall Offers	M	0.01 (1/130)	0.00 (0/130)	0.02 (2/130)	0.10 (13/130)	0.58 (76/130)	0.22 (28/130)	0.05 (6/130)	0.02 (2/130)	0.01 (1/130)	0.01 (1/130)	1.00
	F	0.00 (0/130)	0.00 (0/130)	0.07 (9/130)	0.32 (41/130)	0.58 (76/130	0.03 (4/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	1.00
Accepted Offers	M	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.05 (7/130)	0.58 (76/130)	0.22 (28/130)	0.05 (6/130)	0.02 (2/130)	0.01 (1/130)	0.01 (1/130)	0.93
	F	0.00 (0/130)	0.00 (0/130)	0.01 (1/130)	0.15 (19/130)	0.55 (72/130)	0.03 (4/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.74
Rejected Offers	M	0.01 (1/130)	0.00 (0/130)	0.02 (2/130)	0.05 (6/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.07
	F	0.00 (0/130)	0.00 (0/130)	0.06 (8/130)	0.17 (22/130)	0.03 (4/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.00 (0/130)	0.26

Here, it can be seen that male have made much higher offers to female players. Therefore, it was obvious that acceptance rate was also high and rejection rate was low. But in response to high offers the female players have not made high offers which the male players were expecting. The female players have not deviated from their over all offer pattern and made the offers in the corridors of even split of money. In response, male players rejected all the offers which were below Rs.45/-. Comparing the results of both 3" and 4" round it can be concluded that there has been strong reciprocal effect from the male side by not accepting any offer below Rs: 451-.

The results of K-S test (Table 3) showed that the null hypothesis of no-difference in male and female offers was rejected, as the computed P-value was lower than the level of significance also the computed value of $D=0.331$ was higher than the critical value of $D=0.1193$ at $n=130$. Therefore, we can conclude that distribution of male and female offers were statistically different from each other. This has also been explained graphically (Figure 7). In Figure 7, it was quite clear that the offer curves for both male and female proposers have no resemblance and they were showing different pattern of offers. As far as the females are concerned, offers starting from the range of *Rs.20* to *30/-* and it ended up to *Rs.50/-* where as the male offer curve started from the Rs. 0 to 201- and ended at *Rs.100/-*. The spread of male offers was wider than the female offers as majority of the female offers were clustering within the range of Rs: 30 to 50/-, where as, the majority of the male offers were clustering within the range of *Rs.40* to *60/-* but still there were few outliers (extreme offers very rarely observed) like the offer of *Rs.10 and Rs.100/-*.

Results of the test for mean comparison showed that on average male players were offering move as compared to female players i.e. average male offer = *49.462* and *average* female offer = *42.746.* These results were also statistically significant to reject the hypothesis of no difference in male and female offers on average and it can clearly be interpreted that distributional gap in the offer behaviour of proposer exist in both round **3** & 4 (Table 15). These results are in contradiction with the findings of Solnick (2001), Eckel & Grossman (2001). Dufwenberg & Muren (2005) and Botelho *et al.* (2000) in which it was found that females on the average gave more to males.

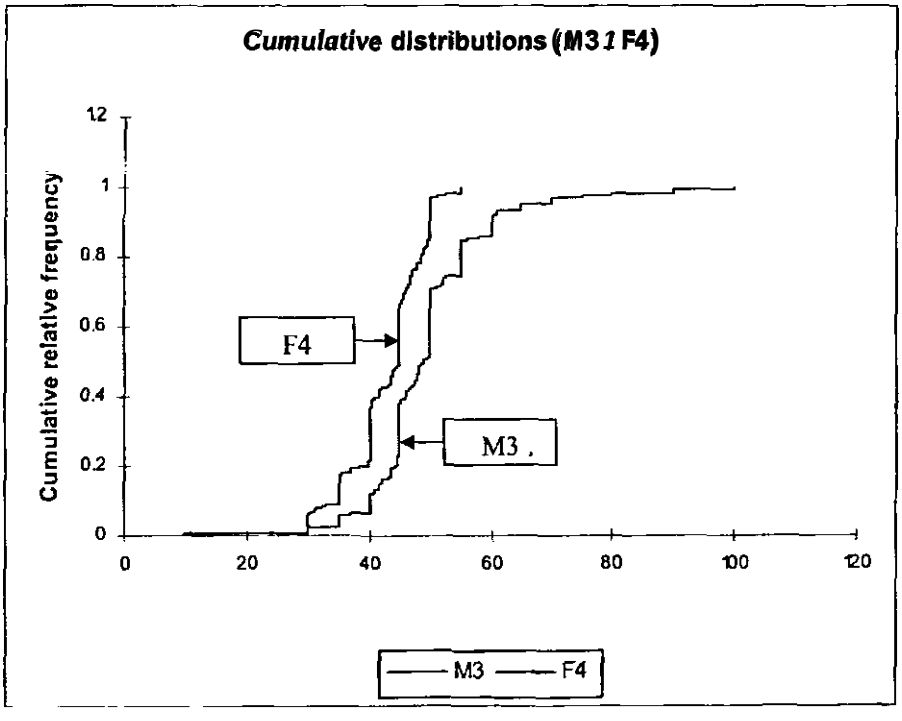

Figure 7 *Cumulative* Distribution Curvesfor Male & Female offers in Round **3** & 4

Table 15 *Mean Comparison Analysis for female Offers in Round 3 & 4*

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
M3	49.462	130	10.477	Equal Variances	6.29	0.0000
F4	42.746	130	6.1887	Unequal Variances	6.29	0.0000

It was observed that the results of logistic regression model (with and without gender variable) showed insignificant gender influence. Also the propensity of accepting higher offers was still their, means as the offer rate was increasing the probability of accepting the offer was also increasing (Table 5 & 6). This same behaviour was also represented graphically in Figure 8 given below.

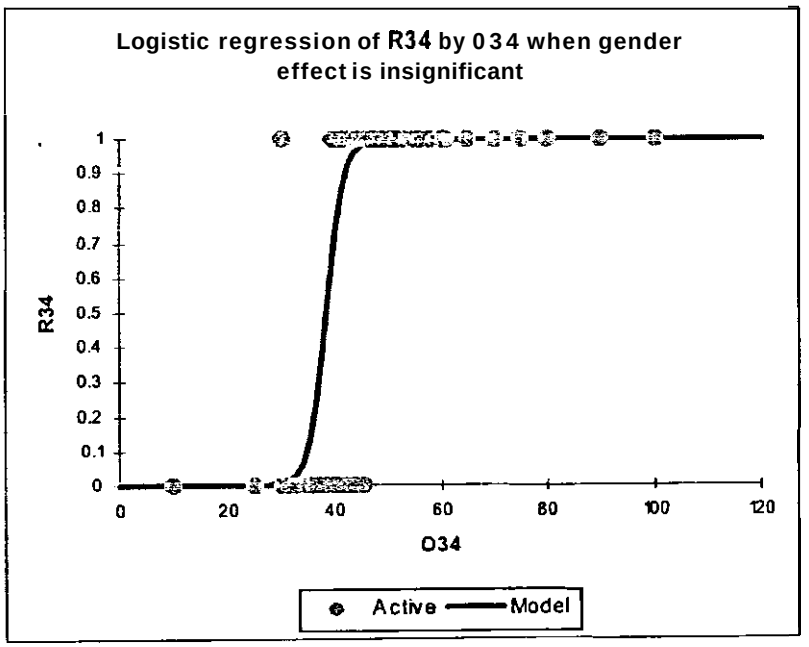

Figure 8 *Logistic Regression Curve for Round 3 & 4*

Hence, it was concluded that distribution gap in the responder's behavior for a given offer were present. Moreover, the behavioral pattern of offering high was triggered by the knowledge of gender as both male and female proposers started offering more as compared to their average offers in Round I & **2.** The effect of gender knowledge was more dominant on the male offers and almost more than 50% of the pie was offered. Whereas, the female offers were increased but not more than 50% of the pie. Such type of behavior has not been observed in the literature. The modal (most common and ideal) offer according to ultimatum game theory was 50-50% of the pie (Camerer, 2003) and the results of this study support this argument.

4.1.5 Comparison of Pooled Offers of Round 1 & 2 with the Offers of Round 3 & 4.

In order to have a detailed comparison of offer pattern for all the rounds of play with and without the knowledge of gender, the offer data for round 1 & 2 was pooled and was then compared with the offer data of round **3** & 4.

Table 16 *Kolmogorov-Simrnov Test for Distributional Analysis for Pooled Data of Round 1 & 2 with Round 3 & 4*

Variables	Two Sample Kolmogorov-Simrnov Test (Two Tailed **Test)**
D	0.3654
P-Value	7.6071 E-16
Alpha (Level of **Significance)**	0.05

Here, the K-S test results given in Table 16 clearly reject the hypothesis that both the distribution with gender and without gender knowledge was significantly different. As the computed p-value was lower than the significance level and along with that the computed value of $D=0.3654$ was higher than the critical value of $D=0.1193$. Hence, it can easily be derived that there were significant differences in the pattern of offers across all these rounds.

The results also explained the fact that the range where there was high probability of acceptance was (40-60) % of the pie. The logistic curves presented in figure 2, 4 & 8 showed that majority of the offers were clustering within the said range of offers. Although, there were few offers which were over 60% of the pie with almost 100% acceptance rate (as per the ultimatum theory[23]) and there was high rejection rate for the offers below 40% of the pie.

4.2 Raising Stakes Effect

The experiments were conducted with students in the Faculty of Economics and Business at PACK. The desired sample size was 20 pairs in each trial. The proposers sat in one room and the responders in the other. Three real money sessions were conducted (Rs.10/-, Rs.100/- and Rs.1000/-). In each session there were three rounds of real money play. The advantage of allowing players to play more than once was that it allows one to compare individual's behaviour across rounds and so, unlikely many similar analysis of

[23] **For detail survey analyses see** Camerer **(2003)** and Roth (1995)

experiments, it is possible to control for the large amount of player heterogeneity that is typical of such experiments.

A quick summary of our results was consistent with previous ultimatum game studies (Straub and Muringhan, 1995; Hoffman *et al*, 1996; and Cameron, 1999) and we detect no significant difference between low and high stakes proposals or between low and high stakes rejections frequencies when examining in experienced behaviour (i.e. behaviour in first period/round). However, using all the 12 rounds, it was observed that responder in higher stakes reject proportionally equivalent offers less often, although rejections still occur even when substantial financial loss results. And when learning is examined, stakes also make a difference for proposals; offers decline in higher stakes treatment as proposers gain experience.

Table 17 Descriptive Statistics for Raising Stakes

Raising Stakes Effect: Comparison Of Offers (n=60)	PERCENTAGE		MEAN	
	Accept	Reject	Accept	Reject
Rs: 10	68%	32%	Rs: 5.05	Rs: 3.89
Rs: 100	72%	28%	Rs: 50.58	Rs: 38.53
Rs: 1000	88%	12%	Rs: 495.28	Rs: 364.29

Table 17 describes proposer's and responder's behaviour aggregating across rounds. It has been observed that the acceptance rate for Rs.10/-, Rs.100/- and Rs.1000/- is 68%, 72% and 88% and the average offers across games are Rs.5.05, Rs.50.58 and Rs.495.28 respectively which gradually increased with the increase in the size of stake. This showed that players do not want to loose a substantial amount of financial gain.

Consider table 18, the offer range 5, (41 to 50) and (401-500) signifies that proposers were offering in between 50 to 63% of the pie. In the Rs.10/- condition, there were 50% (30160) of all offers and 3% (2160) of these offers were rejected. Similarly, 52% (31160) of the offers in Rs.100/- condition and 63% (38160) in the Rs.1000/- condition were offered by the proposers, and there were 7% (4160) and 0% (0160) rejections in the Rs.100/- and Rs.1000/- condition respectively. Also, the overall rejection rate decreases from 32% (19160) in the low stake (Rs.10/-), 28% (17160) in the middle stake (Rs.100/-) and 12% (7160) in the high stake (Rs.1000) condition. For disproportionate offers, in which responder were offered less than half the pie, the rejection rate decreases from 23% (1416) to 13% (8/6) to 8% (5160) as the stakes increases. To test responder's behaviour, we only investigated offers of less than 50% for offers of 50% (or more), we predict (on the basis of earlier experiments) that all offers will be accepted regardless of pie size, and thus do not expect any difference due to stakes. The results showed that for offer greater than 50% the proportion of offers was (about 5/60, 9160, 816) and the number of offers rejected were zero identical across stakes). For offers less than 50%, responders may obtain utility not only from monetary pay-offs, but also from punishing an unfair offer. Higher stakes may decrease rejections if the monetary reward dominates

punishment value at higher stakes while punishment value dominates the monetary reward at lower stakes. (However, stakes may not have this effect if, as stakes increases, a responder's utility from punishing a proportionally small offer rises at least as much as his utility from money increases).

Table 18 *Percentage Analysis for Acceptance and rejection of Offered Stakes*

Offer Range Rs: 10		Less than equal to 1	2	3	4	5	6	7	8	9	10	Sum
Offer Range Rs: 100		0 to 10	11 to 20	21 To 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	Sum
Offer Range Rs: 1000		0 to 100	101 to 200	201 to 300	301 to 400	401 to 500	501 to 600	601 to 700	701 to 800	801 to 900	901 to 1000	Sum
Overall Offers	Rs: 10	0.00 (0/60)	0.02 (1/60)	0.03 (2/60)	0.37 (22/60)	0.50 (30/60)	0.03 (2/60)	0.03 (2/60)	0.00 (0/60)	0.03 (2/60)	0.00 (0/60)	1.00
	Rs: 100	0.00 (0/60)	0.00 (0/60)	0.08 (5/60)	0.25 (15/60)	0.52 (31/60)	0.10 (6/60)	0.05 (3/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	1.00
	Rs: 1000	0.00 (0/60)	0.00 (0/60)	0.07 (4/60)	0.17 (10/60)	0.63 (38/60)	0.12 (7/60)	0.02 (1/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	1.00
Accepted Offers	Rs: 10	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.13 (8/60)	0.47 (28/60)	0.03 (2/60)	0.03 (2/60)	0.00 (0/60)	0.03 (2/60)	0.00 (0/60)	0.68
	Rs: 100	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.12 (7/60)	0.45 (27/60)	0.10 (6/60)	0.05 (3/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.72
	Rs: 1000	0.00 (0/60)	0.00 (0/60)	0.03 (2/60)	0.08 (5/60)	0.63 (38/60)	0.12 (7/60)	0.02 (1/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.88
Rejected Offers	Rs: 10	0.00 (0/60)	0.02 (1/60)	0.03 (2/60)	0.23 (14/60)	0.03 (2/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.32
	Rs: 100	0.00 (0/60)	0.00 (0/60)	0.08 (5/60)	0.13 (8/60)	0.07 (4/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.28
	Rs: 1000	0.00 (0/60)	0.00 (0/60)	0.03 (2/60)	0.08 (5/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.00 (0/60)	0.12

On the other hand, the distributional patterns of offers made and their responses have been analyzed by using the K-S test, test of mean comparison for offers and rejections and also the logistic regression to sum up the responder's behaviour to a given offer at different stake sizes. The whole offer data was converted into percentage stake size wise before making analysis of results all the data regarding offers at varying amount of stakes (i.e. Rs.10, 100 & 1000)

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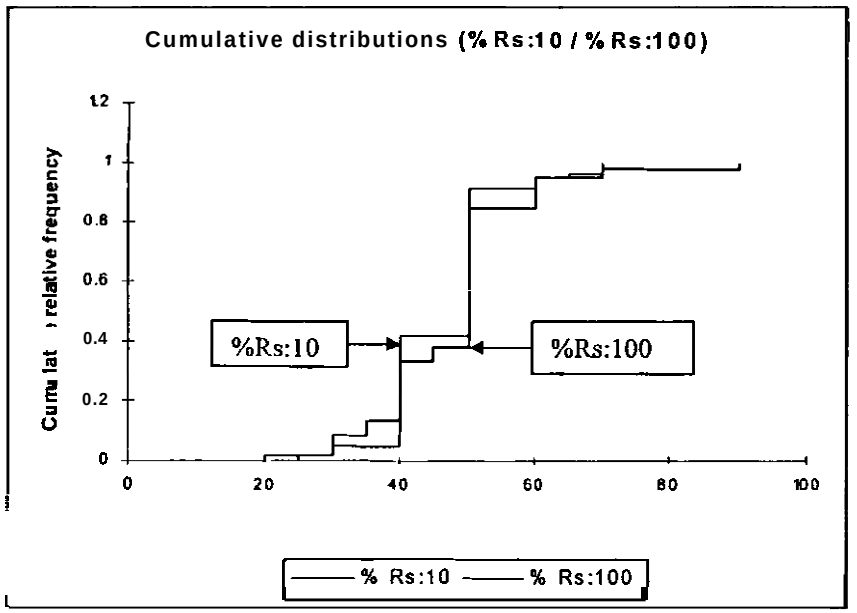
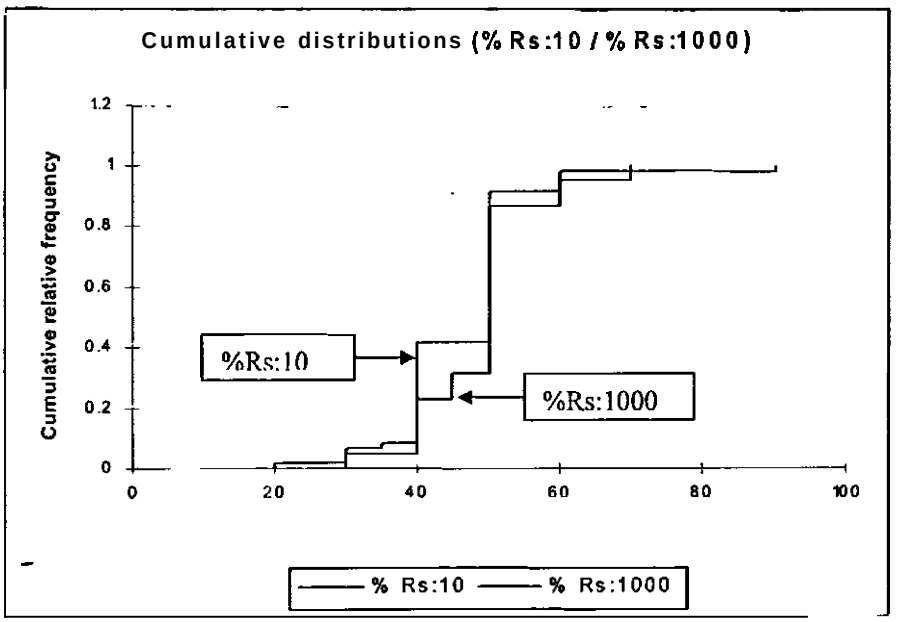
Table 19 *Kolmogorov-Simrnov Test for Distributional Analysis with Varying Amount of Monetary Stakes(RS: 10, Rs: 100 & Rs: 1000)*

Variables	Two Sample Kolmogorov-Simrnov Test (Two Tailed Test)		
	Rs: 10 & 100	Rs: 10 & 1000	Rs: 100 & 1000
D	0.083	0.183	0.100
P-Value	0.644	0.062	0.512
Alpha (Level of Significance)	0.05	0.05	0.05

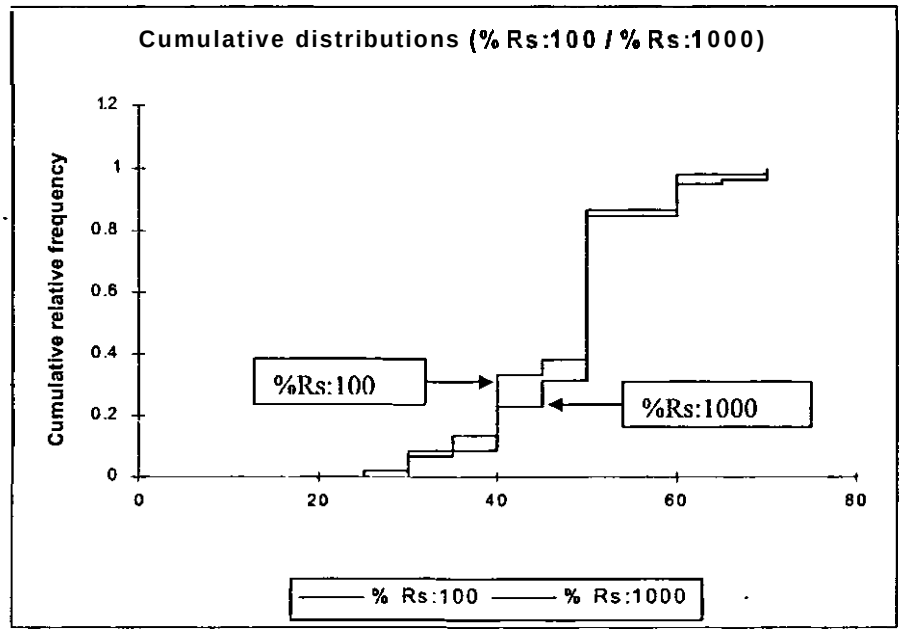
The results for the above mentioned analysis using K-S test were given in Table 19. It was observed that K-S test accepted the null hypothesis of no significant differences in the distributional pattern of offers being made by players with varying amount of monetary stakes i.e. Rs.10/-, Rs.100/- and Rs.1000/-. As the computed ***p-value*** was higher that the level of significance and the calculated ***D-value.*** was also lower than the critical value of $D=0.175$ at $n=60$. The graphically representations of the above given argument can be seen in Figure 9(a, b & c).



a) *Rs: 10/- & Rs: 100/-*



b) *Rs: 10/- & Rs: 1000/-*



c) *Rs: 100/- & Rs: 1000/-*

Figure *9* Cumulative Distribution Curves for *Varying* Amount d Monetaiy Stakes ***(Rs: 10, Rs: 100 & Rs: 1000)***

After viewing the graphs and the statistical results of K-S test it was apparent that there were no distributional pattern change in the offer behaviour of the player, although the stakes sizes were varying with substantial amount.

The logistic regression function was used to describe the probability of rejection for each given offer at varying stake level. The logistic regression model given below:

$$p(X) = 1 - \frac{\exp(\alpha + \beta X)}{1 + (\alpha + \beta X)}$$

Where, p is the probability of rejection and X is the offer amount, as a proportion of the total stake. The rejection behavior of each sample then is described by two parameters α and β.

$$R = \phi(\alpha + \beta O) \qquad \text{Equation (3)}$$

Where: ϕ denotes the Cumulative Density Function for the Standard Normal Distribution.

Where: R = Response of Responders to the proposed offers by the Proposers.

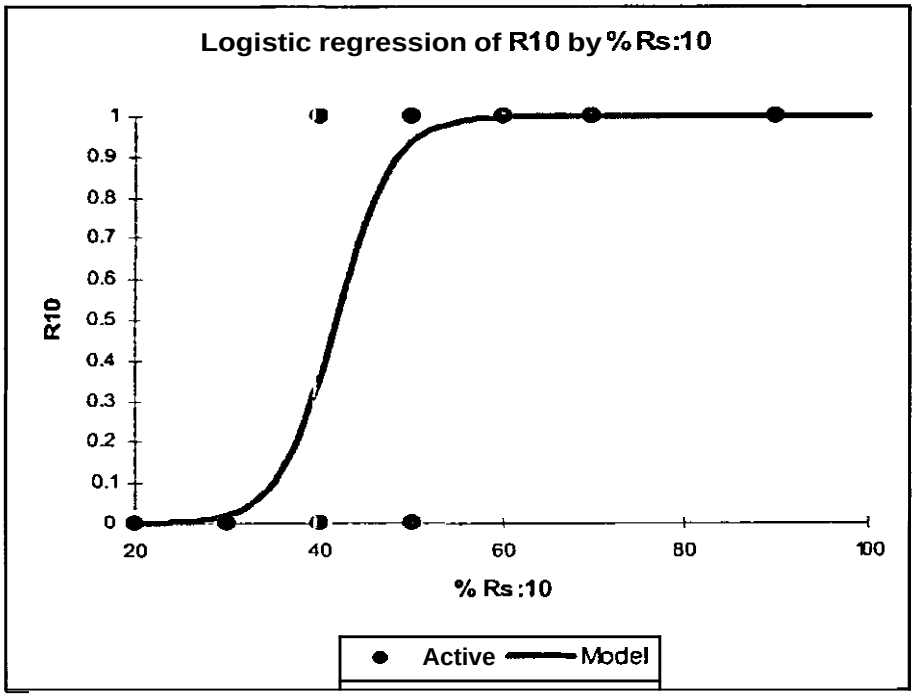
O = Offers made by Proposers to the Responders.

In this specification gender and response of the players were the dummies that take value "1" ts for the offers being accepted by the responders and "0" for the rejected offers.

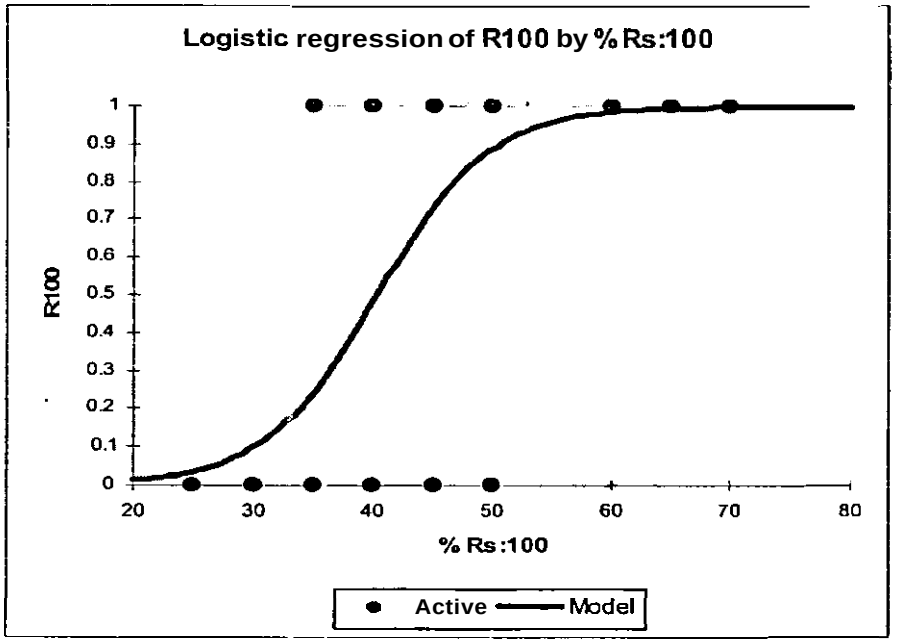
The results of logistic regression equation (3) given in Table 20 showed that the role of raising the stake level on responder's decision was significant. As the stakes size increases the responders were more willing to accept a given level of offers. Also the test results do indicate that slightly lower offer (made proportionally by the proposers) were accepted by the responders as the stakes increases, therefore, the probability of acceptance for a given offer (i.e. the coefficient of offers i.e. O = 0.3247, O = 0.2147 and O = 0.2579) has increased by raising the stake level. Therefore, the response of responder was influenced by the stake size. This trend has been shown in Figure 10 (a, b, c).

Table 20 Logistic Regression Model for Rs: 10, 100 & 1000

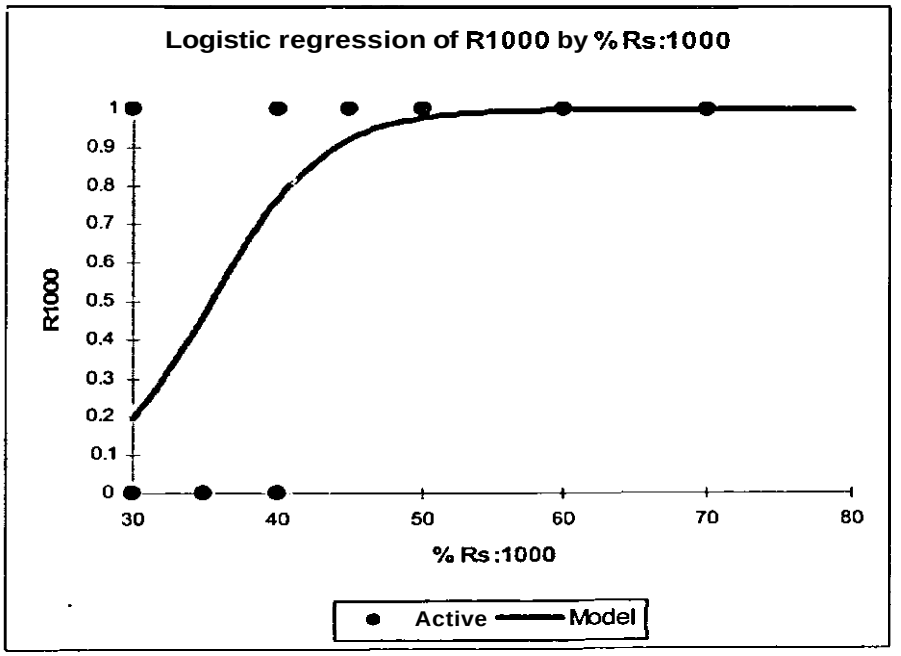
Variables	Rs: 10				Rs: 100				Rs: 1000			
	Coefficient	S.E	Z-Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value	Coefficient	S.E	Z-Stat	P-Value
Intercept (C)	-13.5676	3.5848	-3.78	0.000	-8.6478	2.5406	-3.40	0.001	-9.1339	3.2812	-2.78	0.005
O (Offers)	0.3247	0.0837	3.88	0.000	0.2147	0.0578	3.71	0.000	0.2579	0.0799	3.22	0.001



a) Logistic Curve for Rs: 10/-



b) *Logistic Curve for Rs: 100/-*



c) *Logistic Curve for Rs: 1000/-*

Figure 10 *Logistic Regression Curve for Varying Amount of Monetary Stakes (Rs: 10, RS: 100 & RS: 1000)*

To have a more detailed analysis the test of mean comparison was used to figure out the player/proposer behaviour (*that how much the proposers were offering under varying stakes*) Table 21, 22 & 23 were describing the offers comparison across varying stakes. The results of these comparisons clearly showed that there were no statistically significant differences in average offers. Therefore, it can be concluded the varying amount of monetary stakes were not been able to alter the proposer's behaviour and the propensity to offer a fair offer as majority of the average offers were close to 50% of the pie, also the players were hyper-fair in making their offers.

Table 21 ***Mean Comparison Analysis for. Offers of Rs: 10 & Rs: 100***

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
Offer Rs:10	46.833	60	9.9986	Equal Variances	0.1872	0.8518
Offer Rs:100	42.167	60	9.4943	Unequal Variances	0.1872	0.8518

Table 22 ***Mean Comparison Analysis for Male Offers of Rs: 10 & Rs: 1000***

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
Offer Rs:10	46.833	60	9.9986	Equal Variances	0.7081	0.4802
Offer Rs:1000	48	60	7.9298	Unequal Variances	0.7081	0.4803

Table 23 ***Mean Comparison Analysis for Male Offers of Rs: 100 & Rs: 1000***

Variable	Mean	N	SD	Assumptions	T- Stat	P-Value
Offer Rs:100	47.167	60	9.4943	Equal Variances	0.5218	0.6028
Offer Rs:1000	48	60	7.9298	Unequal Variances	0.5218	0.6028

The acceptance rates in each round of each session which were defined as the percentage of offers which were accepted by responders also increase as stakes increase. This cannot

be however, taken to indicate that responders were more willing to accept a given percentage offer at higher stake. As it has been seen above, there was evidence suggestive that some offers may have become more generous as the stakes increased, which may explain why more acceptance have been seen. In other words, it may be due to more generous offers (and not a greater willingness of responders to accept a given percentage offer) which explains the higher acceptance rates in the higher stakes games.

As far as the responder's behaviour was concerned, we predict (on the basis of earlier experiments[24]) that all offers equal to or more than 50% of the stake size will be accepted regardless of pie size, and thus do not expect any difference due to stakes. For offers less than 50%, responders may obtain utility not only from monetary pay offs, but also from punishing an unfair offer. Higher stakes may decrease rejections if the monetary reward dominates punishment value at higher stakes while punishment value dominates the monetary reward at lower stakes. (However, stakes may not have this effect if, as stakes increases, a responder's utility from punishing a proportionally small offer rises at least as much as his utility from money increases)

Thus, higher stakes may induce proposer to make lower offers for at least two reasons. First, proposers may obtain utility from both monetary rewards and fairness (Ochs & Roth, 1989; Bolton, 1991) at lower stakes fairness may out weigh monetary reward but at higher stakes monetary rewards may out weigh fairness. Secondly, as observed, rejection rate decreases as stakes increases and the expected pay offs may be maximized at lower offers.

[24] Bolton (1991) and Bolton and Zwick (1995)

4.2.1 Concluding Remarks

The-experiients in this section of raising stakes do not support the speculation that the rejection of game theoretic prediction in the experimental setting of ultimatum game is an artifact of small stakes. Significant deviations from the game theoretic behavior persist even in high stakes game. There is no evidence of any movement in proposer's behavior towards the predicted game theoretic outcome as the monetary stakes increase. However, the results do suggest that responders react to higher stakes becoming more willing to accept a given percentage offer. The rejection level decreases because all the players wanted to gain real monetary benefits. At higher stakes the cost of rejecting a given offer will be higher as compared to lower stakes, therefore, the same kind of behaviour from the responders in this experiment were also found. These changing responses of proposers and responders may reflect the reaction of proposers to the risk of losing a greater absolute amount. If a proposer is risk averse and he wants to maximize his monetary gain then his/ her optimal response to increase stakes may not be to offer less. In contrast, responders face a more transparent decision where rejecting a positive offer means foregoing a monetary payoff with certainty. In higher stakes game rejection of a given percentage offer involves foregoing a much larger absolute amount.

4.3 Questionnaire Analysis

4.3.1 Gender Effect

During the experimental analysis of gender effect it was interestingly observed that as in round 1 & 2 the knowledge of gender was not known to both the parties and when they

asked to answer the questionnaire[25]. It was revealed that in Rs. 101- experiments 87% of the players prefer fairness in their decision, 9% were generous enough to make high offers and only 5% were of the opinion that the stake size was very meager which could not create an impression of gaining or losing any monetary benefit to both parties therefore, their offers were below 40% of the stake size.

In Rs. 100/- experiment 8% of the players were of the view that they offered less to the other party because they were of the opinion that as the stake size has increased then any offer will be an acceptable offer to the responder. Similar to Rs. 10/-, a vast majority i.e. 77% showed their preference for fairness while 15% were afraid of rejection and loss of monetary reward.

In case of stake size Rs. 10001-, 7% of the players were anticipating that the responder will accept any offer which will be made to them. 80% were of the opinion that their behavior was based on the fairness axiom. Whereas, 14% offered more than ***60%*** of the stake due to the fear of losing a handsome monetary benefit.

Mean while, the responders were of the opinion that during the Rs. 10/- and Rs. 100/- experiments the stake size did not matter so much but they were expecting even split close to 50-50. However, they rejected the offers which were below Rs. 301- because these were unfair. On the other hand, in Rs. 10001- experiments the responders explained that it was big amount and they felt that it would not be a rational decision to reject even

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[25] **See Appendix-II for sample questionnaire. The questionnaire was same for gender and raising stakes effect.**

offers below 30% of the stake size. So it can be summarized in such a way that as the stake size increases the fear of rejection and fairness become more dominant.

CHAPTER 5

Conclusion

People do not like unfairness; in particular, they do not like unfairness perpetrated against them. Subjects in the experiments from which these data are taken offered less when they felt they could do so and get away with it, and made disadvantageous counterproposals to avoid being treated unfairly i.e., to avoid getting a substantially lower payoff than their opponent. Over and over we will see that proposers try to exploit their strategic position when they can, and responders try to avoid being exploited, even if doing so is economically disadvantageous. As every one wants to be treated fairly, that was why high offers (close to 50% of the stake size) were made through out the experimental phase. The behavior of the players was in accordance with the Islamic teachings, as Islam insists the humans to treat every one fairly and do not exploit anybody. Whereas, the conventional economic thinking is based on the notion of "Something is better than nothing" (selfishness) mean that rational economic agent (consumer1 economic man) must accept the smallest possible amount being offered (Lewicki *et al.*, 2001). If the agents do not perform in the way the economic theory explains he/she fall in to the category of irrational agents.

The behavior of both male and female was indorsing the fact that the people of Pakistan on the whole have their preference for fair dealings. When male and female (specifically)

were made to make deals, it has been observed that the male segment of the society was slightly generous as compared to the females. Also that males were bound tough to bargain with (negotiate) whether under anonymity or otherwise. The results of this thesis are in contradiction with the evidence that females are more generous than the males (Andreoni and Vesterlund, 2001; Eckel & Grossman, 2001; Solnick, 2001). It was also observed that in this particular study that the males displayed a rather severe reaction to being treated unfairly.

On the whole it has been seen that the people of Pakistan have preference for fairness[26]. Thus, the differences in making such offers were due to the socio-economic setup of Pakistani society where males were more inclined towards the opposite sex, on the other hand females were found to be less reciprocal. It had been observed that females had more preference for fairness whereas males were tough competitors and they retaliate to unfair offers. One important finding of this study was that the players did not show any fear of rejection while making their offers. Along with that quick learning from their past experience by the players of both sexes has been observed confirms the conventional economic thinking of rationality and intelligence of agents under controlled conditions (Eckel, C. & Grossman, 1996).

The results of this experiment do not support the game theoretic predictions in the experimental setting of the ultimatum game, as there has been significant variation in the behavior of players that persisted even with high and low stakes. It was also observed that

[26] See Percentage of acceptance and rejection also the average offers of Round 1, 2, 3 and 4 of gender analysis.

the behavior of the proposer did not change as predicted by game theory. But the results do indicate that the responders have changed their behavior by becoming more willing to accept the offers as the stake size increases so the rejection rates were kept on decreasing considerably. The observed behavior was consistent with the rest of the world studies (Cameron, 1999, Slomin & Roth, 1998).

It is herby stressed that experimental results should be interpreted with care. Furthermore, even if it is quite possible that these experimental findings say little about real behaviour they inspire the formulation of new questions and hypotheses that may be important. More precisely, the study investigates the gender and raising stakes effect with respect to the socio-economic behavior of the people of an Islamic society. As the observable characteristics of the individuals have predictable effects on the behavior and can lead economists to learn more about the techniques to observe changing behaviors, how to collect data and then analyze. This study provides more profound evidence to the proposition that gender differences and raising stakes in economic experiments may be such factors that the researchers will have to examine carefully in future.

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Appendix-I

The Kolmogorov-Smimov test assesses the hypothesis that two samples were drawn from different populations. Unlike the parametric t-test for independent samples or the Mann-Whitney U test, which test for differences in the location of two samples (differences in means, differences in average ranks, respectively), the Kolmogorov-Smimov test is also sensitive to differences in the general shapes of the distributions in the two samples, i.e., to differences in dispersion, skewness etc. Basically, Kolmogorov-Smirnov test compares two distributions and is used for distribution fitting tests for comparing an empirical distribution determined from a sample with a known distribution. It can also be used for comparing two empirical distributions (Massey, 1951)

Take sample S_1 comprising n_1 observations, with F_1 the corresponding empirical distribution function. Take second sample S_1 comprising n_2 observations, with F_2 the corresponding empirical distribution function.

The null hypothesis of the Kolmogorov-Smimov test is defined by:

$$H_0 : F_1(\mathrm{x}) = F_2(\mathrm{x})$$

The Kolmogorov statistic is given by:

D_1 is the maximum absolute difference between the two empirical distributions. Its value therefore lies between 0 (distributions perfectly identical) and 1 (separations perfectly separated). The alternative hypothesis associated with this statistic is:

$$H_a : F_1(x) \neq F_2(x)$$

The Smimov statistics are defmed by:

The alternative hypothesis associated with D2 is:

$$H_a : F_1(x) < F_2(x)$$

The alternative hypothesis associated with $D3$ is:

$$H_a : F_1(x) > F_2(x)$$

Appendix-II

QUESTIONNAIRE

(To *be filled* by *the players* after *completion* of every *round* of *ultimatum* game)

(ROUND# —— ID # _____)

1. NAME _____
2. EDUCATIONAL QUALIFICATION _____
3. MARTIAL STATUS (MALE/FEMALE)_____
4. AGE _____
5. SALARY/POCKET MONEY (MONTHLY) RS: _____
6. NATIVE CITY I VILLAGE _____

7. For Proposer:

Have you made your offer/decision on the basis of :(Tick as appropriate)

You Like Fairness

- You are afraid of Rejection
- You are kind enough to others (Altruistic)
- Any other reason explain briefly

8. For Responder:

Have you made your decision ** on the basis of: (Tick as appropriate)

- You Like Fairness
- You are kind enough to others (Altruistic)
- As a Reaction (Reciprocation)

Any other reason explain briefly

**=your decision (Accept/Reject) Offer.

Appendix-III

DECISION SLIP

Round # _____ For Rupees._____

P1 ID #_____ P1 Offer _____

P2 ID # _____ P2 Decision (A/R)

** A= Accept R= Reject