
1 Social preferences and values: an experimental analysis for religiosity

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1 INTRODUCTION

The role of values in general, and religion in particular, has long been debated in decision-making. For instance, the link between religion and economic decision-making has been rationalized in a number of ways. Adam Smith (1872) stated that religion as commands from God provides sacredness to the moral rules. Likewise, anthropologists believe that the performance of collective rituals in religious organizations promotes cooperation and cohesiveness in society (Sosis and Ruffle, 2003). Religion as social capital has the capacity to promote social interaction, cooperation and economic growth (Putnam, 2000; Barro and McCleary, 2003). Iannaccone (1998), in a detailed survey paper, links the religious adherence of individuals to a wide range of phenomena, including improved mental and physical health, marital stability, reduced incidence of criminal and delinquent activities, and lower rates of alcohol and drug abuse. Lipford et al. (1993) argue that adherence to ethics promoted by an organized religion benefits the economy at large as it induces a reduction in crimes by declaring them immoral and by saving public expenditure on policing them and so on.

The relationship between religion and economic behavior has not been left untouched even in experimental economics. However, the evidence from experimental studies on the link between religiosity and other-regarding behavior is mixed. For instance, Tan (2006), Tan and Vogel (2008), Johansson-Stenman et al. (2009) and Anderson et al. (2010) find no link between religion and economic behavior. In contrast, Sosis and Ruffle (2003), Ruffle and Sosis (2007), Eckel and Grossman (2003) and Ahmad (2009) establish that there exists a relationship between religiosity and economic behavior. Based on different dimensions of religiosity, such as belief in God, belief in the life hereafter, rituals, salvation and religious experiences, these studies examine the link between religion and economic behavior in a variety of games, including variants of the dictator, ultimatum, trust and public-good games. However, in most of the cases, such studies analyze the impact of religiosity on decision-making simply by comparing the payoffs of two groups differentiated on the basis of self-reported level of religiosity. This simple comparison of payoffs is not appropriate. The reason is that there is no pre-defined religious norm regarding the appropriate level of offers in the games discussed in this type of literature. Hence, there is nothing religiously wrong with choosing a low or a high level of offers or contribution and so on.

In this study, we analyze the impact of religiosity in a situation that has a pre-defined religious norm. We manipulate the experimental design of Kagel et al. (1996). In a modified version of ultimatum bargaining, Kagel et al. (1996) show that the proposer uses information asymmetry for his or her self-interest.¹ Camerer and Thaler (1995) believe that the

result of Kagel et al. (1996) is an important reminder that the behavior of self-interest is still alive. However, Kagel et al. (1996) do not tell us whether proposers consider 'seeming fair rather than being fair' as an unfair move. This answer is provided in Bicchieri and Chavez (2010), who claim that the proposers consider such type of behavior as unfair.² Bicchieri and Chavez (2010) show that, in the case of full information and private information, the agents in ultimatum bargaining mostly observe norm compliance. However, in the case of limited information, norm evasion is observed despite the fact that agents knew what is fair. Alternatively, the study shows that the proposers consider selfish gains from information asymmetry as unfair, but they still choose to be unfair.

Our primary goal is to investigate whether the above results are robust when we control for religiosity of the individuals. In particular, it is important when the belief on religious values forbids selfish gains from information asymmetry. We follow Kagel et al. (1996) with one exception, that proposers endogenously choose conversion rate of the chips from a given list. We hypothesize that an individual loaded with religious values is likely to hold sacred those religious norms, as stated by Adam Smith. Alternatively, a believer in religion would avoid using information asymmetry for selfish gains. We are not controlling for variables other than religiosity; however, the sort of information asymmetry that we propose in this study is expected to greatly minimize the impact of such factors. This is justified by the fact that choosing low or high levels is not religiously wrong, given that the prices of chips are known to all, as it does not involve any deception. In comparison, choosing relatively unfair conversion rates has moral issues when not known to the respondents, as it carries the intention of tricking the respondents to accept unfair offers made by the proposers. It is therefore reasonable to expect that the religious proposers would choose their conversion rates equal or close to those of the respondents. Thus, this study can better capture the effect of religiosity by alienating the impact of other factors in a convenient way.

Our analysis shows that priming religious identities makes the proposers offer equal chips and fair levels of conversion rates. That is, promoting universal values, such as justice, honesty, truth, care, respect, peace, freedom and human dignity, would enhance the regard for others in the preferences of individuals. The rest of the chapter is organized in six sections. Section 2 gives a brief review of the literature. In section 3, we explain the religiosity indicators used in this study. Section 4 provides the experimental design, the procedural details, the experimental treatment and the hypotheses of our analysis. Section 5 provides the results, while section 6 concludes the chapter.

2 REVIEW OF LITERATURE

There is limited literature in experimental economics about the role of religion in economic behavior. In contrast, the work on the role of other variables, such as culture, rationality and gender, on individuals' economic behavior is very common. However, here we cite some of the studies that elaborate on the impact of religion on choices in laboratory experiments. Eckel and Grossman (2003), while including religiosity as a dummy variable in their analysis, test the framing effect of subsidy on charities in the dictator game. The authors measure religiosity by the frequency of attendance of religious services, which is self-reported by the respondents. They conclude that regular attendance at

religious services increases charitable contributions while controlling for the amount of endowment, the presence of subsidies, and the age and sex of the subjects.³ In order to test further whether generosity is specific to church-based institutions or is more general, Eckel and Grossman (2004) examine the donating behavior of both the religious and non-religious participants. They show that the response of religious subjects to changes in endowments is stronger relative to that of non-religious individuals. However, the contributions of both types are equally responsive to subsidies.

Tan (2006) examines the role of religiosity in the games of dictator and ultimatum. The study measures religiosity through a multi-item questionnaire which was completed by German students. The questionnaire covered five dimensions of religiosity: belief, rituals, spirituality, salvation and participation.⁴ According to Tan's results, none of the five dimensions of religiosity had a significant effect on the offers in the ultimatum game. In contrast, the offers in the dictator game were positively affected by religious beliefs and were negatively affected by religious participation. Minimum acceptable offers in the ultimatum game were significantly lower with rituals and salvation, and significantly higher with spirituality. This implies that religiosity as a whole has no effect on the other-regarding behavior, as different dimensions of religiosity produce conflicting effects, cancelling out each other's effects. Tan and Vogel (2008) test the effect of religiosity in a trust game. In the analysis, the 'trustors' were provided information about the degree of the religiosity of 'trustee'.⁵ Tan and Vogel's results show that the senders' amounts were positively related to the receivers' degree of religiosity in a significant manner. Likewise, general religiosity had a positive and significant effect on the proportions returned by the receivers. Keeping in mind a multi-dimensional model of religiosity, Tan and Vogel attributed this positive effect to belief.

In the same manner, Anderson et al. (2010) analyse the effect of religious affiliation and participation on decision-making in a bilateral trust game and a public-good game. The study captures religious participation through the answers of the questions related to the frequency at which the participant took part in organized religious services in a month. The study did not find any evidence of a link between participation at religious services and the subjects' decisions. However, in the public-good game, the subjects' religious affiliation influenced their contribution. For instance, Protestants made significantly larger contributions to the group account as compared to Catholics and the participants of other religions. Also, the decline in the contributions to group account in the repeated game was significantly smaller among the Protestants relative to others.

Religion also has implications for within-group cooperation (Sosis and Ruffle, 2003; Ruffle and Sosis, 2007). In a common-pool resources game, both of these studies paired members of religious and secular Israeli kibbutzim with anonymous members from their own kibbutz. Also, in these studies, religiosity is captured through the frequency of attendance at religious rituals. The results show that religious rituals promote within-group cooperation. Furthermore, religious men are more cooperative than religious women. In contrast, Johansson-Stenman et al. (2009) find no support for within-group cooperation in a trust game. For instance, they study the behavior of Hindu and Muslim subjects from Bangladesh where they match some subjects with a partner from their own religious affiliation and other subjects with a partner of different religious orientation. As stated earlier, they find no support for within-group cooperation. This is

because neither the amount sent nor the proportion returned was significantly affected by the players' religion or by the religious differences among partners. Similarly, in a public-good game and in a dictator game, Ahmad (2009) states that the amount of positive contributions from pupils of religious schools is greater than that of pupils of non-religious schools. However, there is no statistical difference in the amount of their non-zero donation.

Thus, the majority of the cited literature states that the difference in behavior is due to difference in religious inclinations. However, there is no clear justification for this difference. It may be that if the immoral aspect of a decision in a game is clear to the subjects, then religious individuals may behave differently from non-religious individuals. However, what the experimenters consider immoral is not necessarily to be immoral for religious individuals. For example, neither a low offer in Tan (2006) nor trusting others in Johansson-Stenman et al. (2009) is necessarily unethical or immoral. Therefore, we take into account this aspect of immorality while designing our game in this study. We test whether religiously primed individuals behave differently to what we find in Kagel et al.'s (1996) study.

3 RELIGIOSITY INDICATOR AND THE PRIMING INSTRUMENT

There are different aspects of religious affiliations which are taken as indicators of religiosity in the existing literature. For instance, belief, religious experience, religious practices, individuals' moral consequences, religious knowledge and social consequences are some of the important dimensions that are applied in academic research. Most of the studies capture these dimensions through the use of questionnaires, which has the advantage of capturing many dimensions of religiosity at the same time. However, it may not necessarily identify religious identity. Also, it is very difficult to incentivize survey participants to give true information. Alternatively, the survey is not incentive compatible. Given these shortcomings, we use priming instead of a questionnaire. In this way, we are able to identify the religious identity of an individual in order to examine its impact on his or her behavior.

In order to prime, we utilize insights from the psychological theory of self-categorization (James, 1890; Turner, 1985). According to this theory, priming religious identity temporarily increases the strength of affiliation with that identity. This causes a shift in behavior towards the category's norms. Psychologists have tested the category salient mechanism by priming social categories with norms that are believed to be known and they have confirmed that the choices shift towards those norms. For example, LeBoeuf et al. (2010) find that undergraduate subjects are more likely to prefer highbrow periodicals and films when their 'scholar' social category is primed instead of priming their 'socialite' social category. Similarly, Chinese-American subjects make more collectivist choices when their 'Chinese' social category is primed instead of priming their 'American' social category. Reicher and Levine (1994) find that undergraduate science majors express more favorable attitudes towards practices such as animal vivisection when their scientist category is made salient. Similarly, Forehand et al. (2002) find that making the subjects' ethnicity salient causes them to have a favorable evaluation of the same-ethnicity spokesperson. If

subjects make a choice when a particular social category is salient, then they are subsequently dissatisfied with that choice if a different social category is salient at the time of post-choice evaluation.

In this study, the priming instrument is a *hadith*, a saying of the Holy Prophet Muhammad Peace Be Upon Him (PBUH). At the start of instructions, we ask the proposers to fill in a short questionnaire that contains four questions. In one of the questions, we give them a *hadith* and ask what they know regarding its reference.⁶ This priming instrument is in line with the existing literature. For instance, Benjamin et al. (2010) use a sentence-unscrambling task as a priming instrument. They ask the subjects to drop the irrelevant word in a five-word group and rearrange the remainder to form a four-word sentence.⁷ Each subject unscrambles ten sentences. They include religious content for religion-salient subjects such as ‘give thanks to God’. In the control treatment, there is no religious content for the subjects.

4 EXPERIMENTAL DESIGN AND RESEARCH HYPOTHESES

In this section we describe the experimental design, that is, the framework, procedural details, method of payments to the participants and experimental treatments. Afterwards, we state the research hypotheses of our analysis.

4.1 The Framework of Experiment

We have two players in our experiment. Player 1 is called the proposer and player 2 is called the responder. The proposer’s role is to make an offer while the responder’s role is to either accept or reject that offer. Here, we provide the complete details of each stage in the process.

4.1.1 The offer stage

In this stage, the proposer is given 500 experimental monetary units (EMU). The proposer has to propose a division of these EMU between him or her and a potential responder by making an offer to the responder. The offer of the proposer ranges from 0 to 500. After the partition of these EMU, the proposer has to decide about the exchange rate at which the EMU would be converted to Pakistan rupees both for him or herself and the responder. Any combination of exchange rates, ranging from A to K and given in Table 1.1, can be chosen by the proposer, who has complete information as he or she knows the total endowment and both his or her own and the responder’s exchange rates. In contrast, the responder is partially informed as he or she only knows the total endowment and the exchange rate of his or her own EMUs. In other words, he or she does not know the exchange rate at which the proposer’s EMU are converted to Pakistan rupees.⁸ The proposer knows that the responder knows the offer in EMU and the exchange rate of his or her EMU only.

4.1.2 The acceptance or rejection stage

The responder has two options, either to accept the offer or reject the offer given by the proposer. If the offer is accepted, the suggested division is implemented, and if the offer

Table 1.1 Possible combinations of exchange rates

ER combination	P	R
A	1.0	0.0
B	0.9	0.1
C	0.8	0.2
D	0.7	0.3
E	0.6	0.4
F	0.5	0.5
G	0.4	0.6
H	0.3	0.7
I	0.2	0.8
J	0.1	0.9
K	0.0	1.0

Notes:

P = the exchange rate at which the proposer's EMU is converted to rupees.

R = the exchange rate at which the responder's EMU is converted to rupees.

Proposer's earnings = P multiplied by proposer's EMU.

Responder's earnings = R multiplied by responder's EMU.

is rejected, both the proposer and the responder receive nothing. Each decision is made only once, that is, when the responder takes a decision, the game concludes.

4.2 Procedural Details

The experiment was conducted with the students in the School of Economics at Quaid-i-Azam University, Islamabad, Pakistan. The process was completed in two stages and a total of 120 students participated in the experiment.

4.2.1 Proposer's stage

We invited the students to the experimental laboratory.⁹ After making the necessary preparations, the participants were provided with the proper instructions. After reading the general instructions and answering the control questions, we provided them with more instructions which were made exclusively for the proposers. In addition, we gave them an envelope containing a decision sheet.¹⁰ After giving them enough time to read the proposers' specific instructions, we asked them to open the envelopes that contained the decision sheet. Each proposer had to make two decisions on the decision sheet. The first was about the offer in EMU and the other was about choosing the combination of exchange rates from the list, ranging from A to K. After the proposers took the decision, we collected the envelopes from them and with this, the proposer's stage is concluded.

We took the envelopes to another room and opened them in order to insert the conversion rate of the EMU for responders. We wrote the numerical value of the exchange rate for responders on each decision sheet and passed them on to the responders.

4.2.2 Responder's stage

On the following day, we invited students to the same experimental room. After their proper seating arrangements, they were provided the general instructions.¹¹ Once they completed reading the general instructions and answering the control questions, we provided them with the specific instructions made for the responders. After reading the responders' specific instructions, we randomly provided them the same envelopes that contained the decision sheets from the proposers.¹² They took the decision regarding the acceptance or rejection of the offers of the proposers. Accordingly, we paid them cash one by one by inviting them to the desk of the experimenters.

4.2.3 Payments to the proposers

After the spot payment to the responders, in the envelopes, we put in the money which was earned by the proposers. The same envelopes were provided to the proposers the following day.¹³ After the delivery of the envelopes, they were asked to collect their money and return the envelopes to the experimenter. We asked them to write a brief note regarding their motivation for taking this specific decision. After the receipt of their answers and the envelopes, the experiment ended. It is pertinent to mention that the proposers were from the final semester of MSc economics while the responders were from the final semester of BS economics. On average, each participant earned 150 rupees, which is enough for a good lunch at the university.

4.3 Experimental Treatments

There are two treatments in the experiment, that is, the baseline (BL) treatment and the primed treatment (PT). The only difference in the primed and baseline treatments is that, in the primed treatment, the instructions include a *hadith*, a saying of the Holy Prophet Muhammad (PBUH). In the baseline treatment, the participants were not primed. The rest of the game was a slightly modified version of Kagel et al. (1996).

4.4 Research Hypotheses

Institutions have a direct bearing on the transaction cost of a private decision of economic agents (North, 1990). Thus, social norms as informal institutions create a balance between self-interest and social interest. However, this interaction between self-interest and social interest clearly depends on adherence to norms. Regarding adherence to norms, there are mixed results in the existing literature. Chapra (1991) discusses that faith motivates individuals to sacrifice their private interest for social interest by giving to self-interest a long term perspective.¹⁴ Keeping in mind the life hereafter, individuals fulfil their obligations towards others even if they tend to hurt their short-term self-interest. Priming makes religious identity salient to individuals. Thus, a *hadith*, saying of the Holy Prophet Muhammad (PBUH), is going to make the religious identity much more salient, especially among the Muslim subjects. Our priming *hadith* urges individuals to do for others what an individual does for him or herself. For instance, an individual is likely to feel remorse, shame or irritation for violating what the Holy Prophet wishes for him or her. Unfair offer or exchange rate selection is likely in the presence of full information; however, in the case of information asymmetry, unfair offer or exchange rate selection is

less likely owing to the associated immorality. In light of this argument, our first hypothesis is stated as:

Hypothesis 1: The primed proposers will make identical offers in EMU.

In the case of symmetric information, the standard offer in an ultimatum game ranges from 40 percent to 50 percent (Guth et al., 1982; Roth et al., 1991; Prasnikar and Roth, 1992). In our case, the information regarding the total endowment of EMU is symmetric; therefore we do not expect much violation of these standard results.

Hypothesis 2A: The primed proposer will choose identical exchange rate ($P = R = F$) of EMU as compared to the result in the baseline and Kagel et al. (1996) experiment, at the same level of EMU offers.

Hypothesis 2B: The primed proposer will choose a relatively less high exchange rate for the EMU he or she keeps for himself or herself as compared to the baseline and the result in the Kagel et al. (1996) experiment, at the same level of EMU offer.

The purpose of hypothesis 2A is to test whether religiously primed individuals take account of the fairness in the gains from the information asymmetry. Also, it is to test whether a religiously primed individual selects an identical exchange rate for him or herself and the responder. Since strict adherence to values may vary across individuals, therefore, we test a weaker version of the hypothesis in hypothesis 2B.

5 EXPERIMENTAL RESULTS

In this section, we present the experimental results of the study. First, we provide an overview of the offers and the exchange rate combinations in both of the treatments by the proposers. Also, we provide the information regarding whether these offers are accepted or rejected by the responders. Onwards, we discuss the behaviors of the proposers and the responders in detail.

5.1 Overview of the Experimental Findings

In Tables 1.2 and 1.3, we show the summary of the exchange rate combinations and the level of offers by the proposers both in the BL treatment and in the primed treatment, respectively. Also, it is indicated whether these offers are rejected or accepted. As can be seen from the tables, the offers by the proposers provide support to hypothesis 1. Most of the offers are fair and revolve around 250 EMU in the primed treatment. In addition, in most of the cases, the modal combination of exchange rates is F in the primed treatment. This suggests the same monetary value of an EMU for both the proposer and the responder. Likewise, in the baseline treatment, the level of offer and the exchange rate combination are in line with hypothesis 1.

We can observe from Table 1.2 that 37 percent (11 out of 29) of the proposers either choose a fair (F) or an above fair combination of exchange rates in the BL treatment.

Table 1.2 Overview of the experimental findings in the baseline treatment

Combination of ER	P	R	Frequency (out of 29 offers) ^a	Average offer in EMU	Average offer in rupees (R*EMU)	Accept	Reject
A	1	0	0	0	0.00	0	0
B	0.9	0.1	7	125	12.50	4	3
C	0.8	0.2	4	150	30.00	4	0
D	0.7	0.3	4	219	65.63	2	2
E	0.6	0.4	3	233	93.33	3	0
F	0.5	0.5	10	225	112.50	10	0
G	0.4	0.6	0	0	0.00	0	0
H	0.3	0.7	1	50	35.00	1	0
I	0.2	0.8	0	0	0.00	0	0
J	0.1	0.9	0	0	0.00	0	0
K	0	1	0	0	0.00	0	0

Note: ^a One observation was dropped. The reason was that one proposer made an offer in EMU and chose ER combination correctly; however, at the same time he/she made a mistake and clicked 'I accept the offer'.

Table 1.3 Overview of the experimental findings in the primed treatment

Combination of ER	P	R	Frequency (out of 30 offers)	Average offer in EMU	Average offer in rupees (R*EMU)	Accept	Reject
A	1	0	1	400	0	0	1
B	0.9	0.1	3	350	35	3	0
C	0.8	0.2	1	150	30	1	0
D	0.7	0.3	1	70	21	0	1
E	0.6	0.4	4	152	60.8	4	0
F	0.5	0.5	13	277	138.5	13	0
G	0.4	0.6	4	280	168	4	0
H	0.3	0.7	1	300	210	1	0
I	0.2	0.8	1	300	240	1	0
J	0.1	0.9	–	–	–	–	–
K	0	1	1	500	500	1	0

In contrast, in the primed treatment, this percentage is 66 percent (20 out of 30). This is significantly higher than that of the baseline treatment. In the same manner, the average amount of offer in the BL treatment is 184 EMU in contrast to the average offer of 270 EMU in the primed treatment. This shows that the participants in the primed treatment do not exploit information asymmetry for private gains as compared to the participants in the BL treatment.

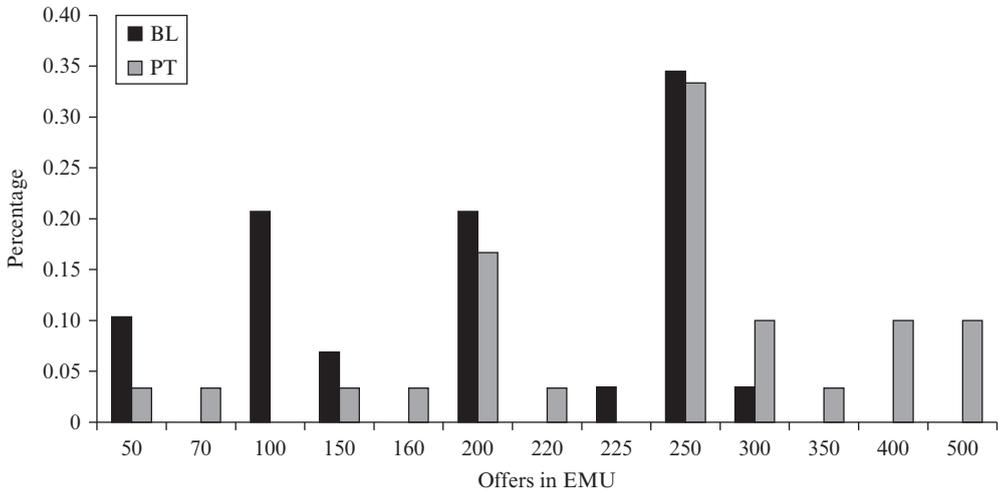


Figure 1.1 *Distribution of the offers across the primed and BL treatments*

5.2 Proposers' Behaviors

Figure 1.1, shows the distribution of the offers in EMU. It is clear from the figure that the modal offer is 250 EMU in both the primed and baseline treatments. These results are significantly different from the commonly observed results in a typical ultimatum game (UG) with complete information. However, the offers of EMU in the primed treatment are significantly different from those in the baseline treatment ($p < 0.01$, Mann–Whitney U test). These results are even in sharp contrast to earlier studies which were conducted under conditions of asymmetric information. For instance, Kagel et al. (1996) show that when the proposers know the payoffs and receive three times higher exchange rates, the mean offer always remains below the level of a fair offer. However, in our case, we find an average offer of 270 EMU in the primed treatment, which is a significant indication of fairness on the part of the proposers.¹⁵ Nevertheless, the mean offer of 184 EMU in our BL treatment is almost in line with the findings of Kagel et al. (1996).

As stated previously, the ultimate payoffs of the game are not only functions of the level of offer; they are also functions of the exchange rates. In other words, a fair offer does not necessarily mean an equitable distribution of payoffs. In this study, the proposers actually make two decisions, that is, a decision regarding the offer and a decision regarding the selection of a combination of exchange rates. Alternatively, the combination of exchange rates is determined endogenously. Our analysis also deviates from Kagel et al. (1996) in this respect, that is, the selection of their exchange rate combination was exogenous. Figure 1.2 shows the selection of the combination of exchange rates in our case. The modal or fair exchange rate combination is F, in both the BL and the primed treatments. However, the frequency of exchange rate combination equal to or more than F is 66 percent (20 out of 30) in the primed treatment as compared to 37 percent (11 out of 29) in the BL treatment. This is significant at 5 percent level of significance ($p < 0.05$, Mann–Whitney U test). The findings show that priming the Islamic identity of an individual makes him/her more egalitarian.

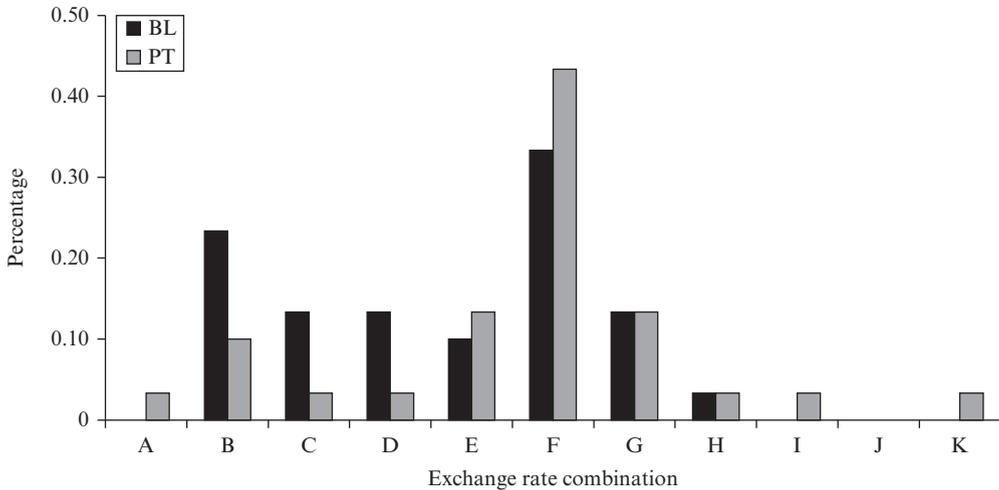


Figure 1.2 Distribution of the exchange rate combinations across the primed and BL treatments

We also need to discuss whether proposers who make a fair offer in EMU also make a fair combination of exchange rates. If this is the case, then the offers of 250 EMU should be associated with the exchange rate combination F. In Figures 1.3 and 1.4, we show this aspect. The figures show simultaneously the distribution of offers in EMU and the exchange rate combination. As can be observed from the figures, offers of 250 EMU are associated with exchange rate combination F in the primed treatment. For instance, 13 proposers choose exchange rate combination F, and the average offer of the same 13 proposers is 277 EMU. This finding supports our hypothesis 2A. If we further analyse the behavior of these 13 proposers, it shows that ten out of these 13 proposers offer 250 EMU while the remaining three offer 200, 400 and 500. In contrast, in the baseline treatment, ten proposers choose the exchange rate combination F while the average offer of the same ten proposers is 225 EMU. A further decomposition of these ten proposers shows that eight of them offer 250 EMU and the other two's offers are 50 and 200. Likewise, the number of participants in the primed treatment who choose the exchange rate combination higher than F is seven while the number who choose an exchange rate combination less than F is ten. The interesting finding is that the proposers who choose an exchange rate combination higher than F also make an average offer of more than 250 EMU.¹⁶ Similarly, proposers who choose an exchange rate combination less than F on average offer 224 EMU, which is less than the fair offer of 250 EMU. In contrast, in the BL treatment, the number of participants who choose an exchange rate combination higher than F is only one, while the rest all choose an exchange rate combination less than F.

In the primed treatment, the monetary earnings on average remain the same for both the proposer and the responder. For instance, it is 164 rupees for the proposer and 176 rupees for the responder. Statistically, based on the Mann–Whitney U test, we do not find any significant difference between the earnings of the proposers and the responders

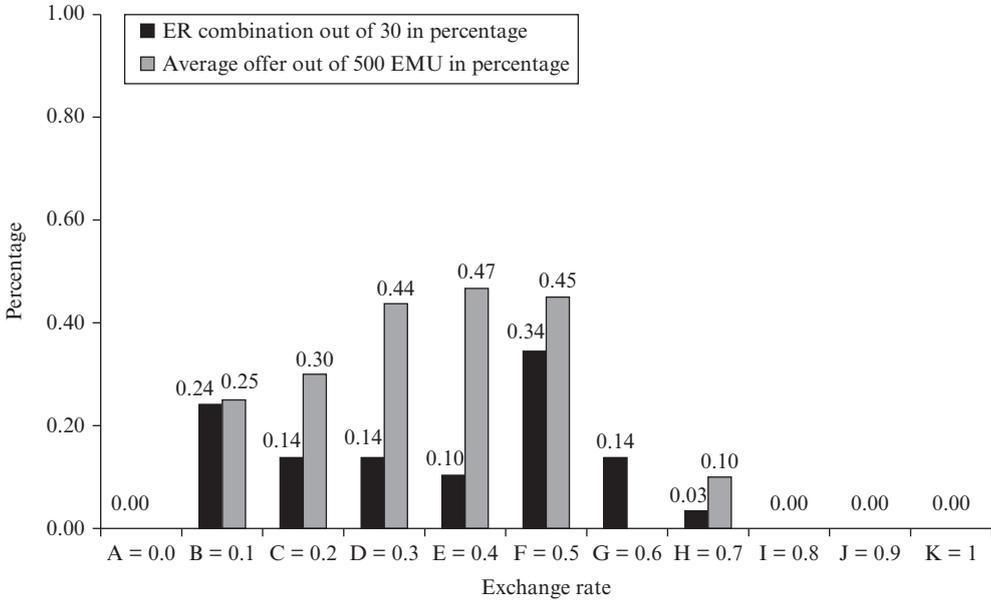


Figure 1.3 *The simultaneous distribution of offers and exchange rate combinations in the BL treatment*

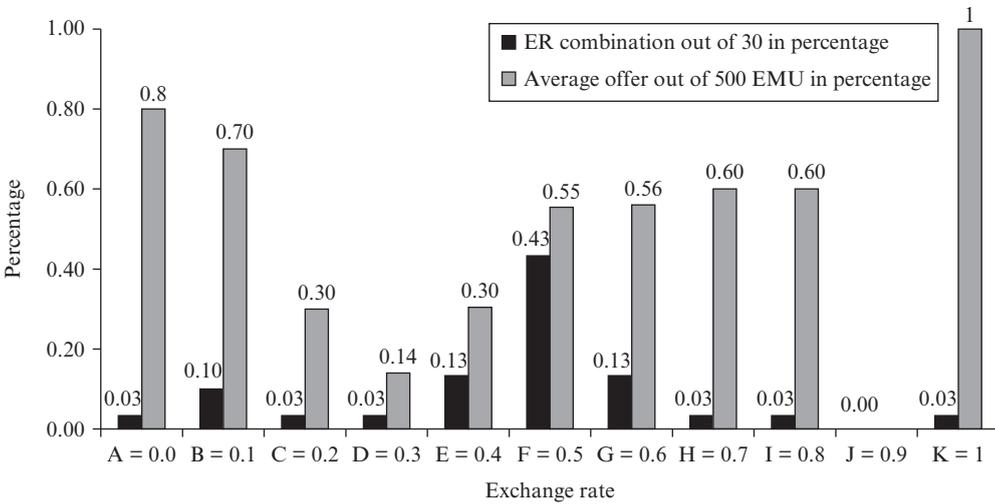


Figure 1.4 *The simultaneous distribution of offers and exchange rate combinations in the primed treatment*

($p = 0.84$). In contrast, in the BL treatment, the proposers on average earn 211 rupees while the responders on average earn 80 rupees. Thus, in the BL treatment, the payoffs of the proposers and the responders are statistically different from each other ($p < 0.01$, for Mann–Whitney U test). The results of our BL treatment and those of the Kagel et al. (1996) show that individuals seem to be fair while actually they are not. In fact, they are trying to maximize their selfish gains. However, the relatively equal distribution of monetary payoffs in our primed treatment is due to the priming effect. Hence, in our primed treatment, the proposers are showing true fairness instead of trying to be fair only to themselves.

To summarize, the analysis of the behaviors of religiously primed proposers does not show any similarity with the findings of our BL treatment, with the results of Kagel et al. (1996) or with the outcome of the sub-game perfect Nash equilibrium. Alternatively, the proposers' behaviors are more in line with the religious teachings when they are primed.

5.3 Responders' Behaviors

In Figures 1.5 and 1.6, we show the acceptance rates in the game. In terms of the acceptance rates, both of the treatments are similar. It is to be noted that the average offer in the BL treatment is 184 EMU while the average offer in the primed treatment is 255 EMU. Statistically, based on the Mann–Whitney U test, there is no difference in the acceptance rate across both the treatments ($p = 0.21$, Mann–Whitney U test). We observe 5 rejections in the BL treatment compared to the only 2 rejections in the primed treatment. It appears that the responders are satisfied from the proposed offers; hence, the acceptance rate is 82 percent in the BL treatment and 93 percent in the primed treatment. In this study, the acceptance rate in the primed treatment is to some extent similar to the findings of Kagel et al. (1996) where they find only 8 percent rejections. However, our rejection rate of 18 percent in the BL treatment appears to be higher than Kagel et al. (1996) find.

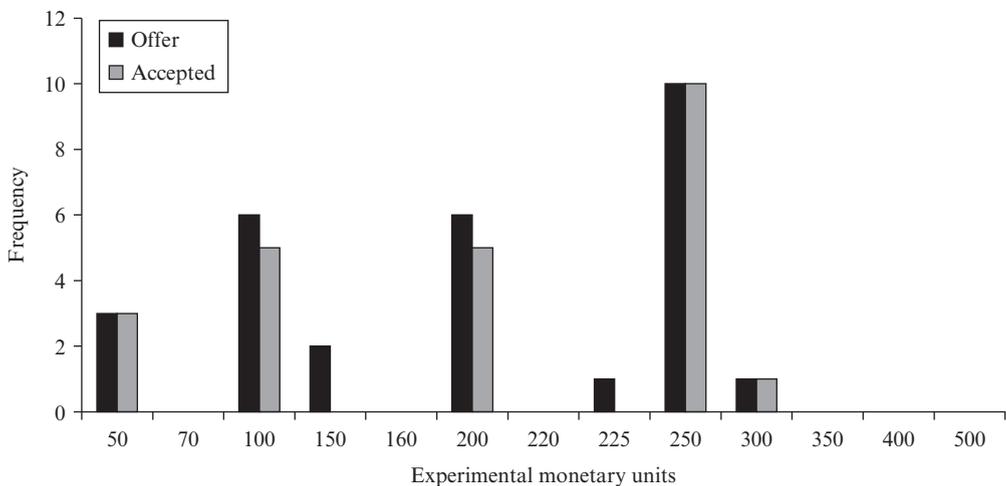


Figure 1.5 The frequency of acceptance of the offers in the baseline treatment

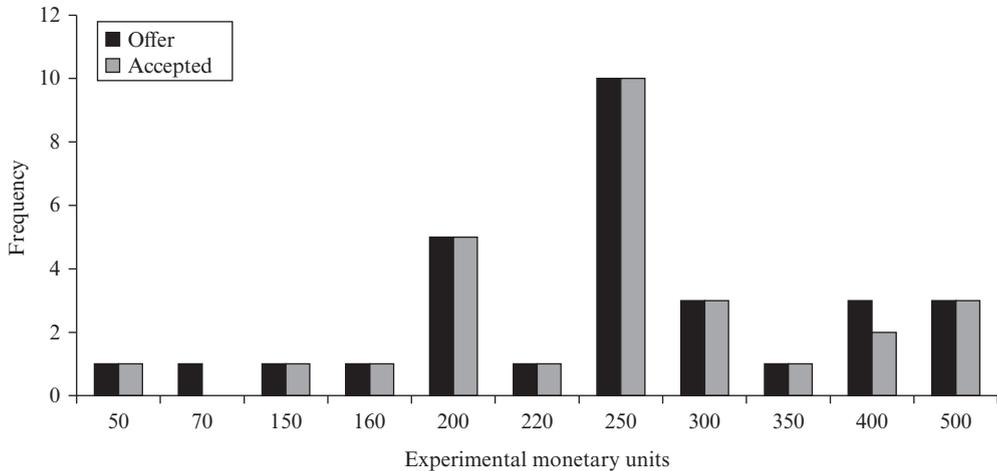


Figure 1.6 The frequency of the acceptance of the offers in the primed treatment

Finally, it can be observed that the rejection rates in the primed treatment are lower than the rejection rates that are commonly reported in the ultimatum games with full information. For example, Roth et al. (1991) in their data for the USA report average rejection rates of 28 percent in ultimatum games where the stakes are \$10 and \$30. As in our game, the offers in terms of EMU are mostly fair. This might be the reason that with the unknown monetary payoffs, the responders are willing to give the proposers some benefit of the doubt regarding the equity of the underlying money payoffs.

6 CONCLUSION

This study is motivated by recent research on the implications of asymmetric information and values for economic behavior. In particular, we examine whether the religiously primed individuals use information asymmetry for their selfish gains. In order to report the data, we use a modified version of the ultimatum game designed by Kagel et al. (1996). In the game, proposers have superior information relative to responders, that is, complete information about the exchange rates of experimental monetary units is only known to them. Beyond this information asymmetry, proposers also set the exchange rates both for themselves and for responders. Responders only know about the amount of offers and their exchange rates for converting those offers into monetary terms.

There are many studies that examine the role of religion on behavior. However, most of them analyze this role in different games with different focuses, such as altruism, cooperation, trust and trustworthiness. With the exception of Tan (2006), there is no study that explores its impact on the offers in the ultimatum game. Similarly, Kagel et al. (1996) and Bicchieri and Chavez (2010) find significant effects of information asymmetry on the offers in the ultimatum game for the general subjects. In this study, we focus on whether religiosity neutralizes selfish gains from information asymmetry as compared to Kagel et al.'s (1996) findings.

Our findings are in sharp contrast to the findings of Kagel et al. (1996). For instance, Kagel et al. (1996) tell us that the agents exploit information asymmetry for their selfish gains. However, Kagel et al. do not tell us about the level of this selfishness (more versus less). In our study, we address both of these concerns. That is, we inquire whether information asymmetry is used for selfish gains and, if so, how high is the level of that selfishness? In our design of the game, proposers have the power to choose both their own exchange rates (P) and those of responders (R). The further P is from R, the more selfish and less other-regarding the proposers are. From our analysis, we find that priming the religious identity of the proposers decreases the level of their selfishness. Similarly, the religiously primed individuals do not use information asymmetry for their selfish gains. However, our study is based on data from a controlled environment. Therefore, we need to be careful when generalizing the results to subjects of different faiths. Nevertheless, we believe that our findings make a contribution to the faith-based literature both from an academic perspective and from a policy perspective. Given the result that religious individuals are more other-regarding, then religious teachings may be helpful in solving day-to-day economic issues. For instance, encouraging the rich through religious teachings to help the poor may be helpful in reducing the gap between the poor and the rich. Alternatively, promoting values of universal nature may enhance the overall welfare of society. In our study, the proposers do not know about the types of responders. In future research, it would be great contribution if proposers are informed that responders are from a faith other than Islam.

NOTES

1. They gave player 1 (the proposer) 100 chips which he or she had to divide among him/herself and another player (the responder). 'Chips' and 'experimental monetary units (EMU)' are used identically in that study. In addition, chip price or chip conversion rates and exchange rate of EMU convey the same meaning. These chips were converted to dollars at different rates for proposers and responders. In a symmetric form of the game, both players had information about their own payoffs and that of the other (as chips conversion rates is a common knowledge). In an asymmetric form of the game one player (the proposer) knew the conversion rates, and the other player (the responder) only knew about his or her conversion rate. In all cases players knew their own payoff. Their results show that in the case of information asymmetry, the proposer used the information symmetry for his or her personal gain. When only the proposers were fully informed and had relatively higher payoffs (the proposers' chips were converted to dollars at a rate three times that of the responder), they offered roughly an equal split of chips (resulting in unequal money splits). In the other case, they offered very unequal chips (resulting in roughly equal money splits) when the responders had relatively higher payoff (the responders' chips were converted to dollars at a rate three times that of the proposer). They view this behavior of the proposer to be motivated by self-serving notions of fairness while taking strategic considerations. For instance, it 'seeming fair rather than being fair', since lower chip offers are more likely to be rejected.
2. They ran an ultimatum game with three treatments. In their experiment, endowed with \$10, proposers had to offer (5,5) or (8,2) to the responder or let a coin flip decide one of the two offers. In the first treatment, information was a common knowledge as responders knew all the options available to the proposers. In the second treatment, information was private, as responders were unaware of the coin flip option. In the third treatment, information was limited as the responder knew about the coin flip but did not know whether the selected offers were due to a coin flip or otherwise. Perception about what is a fair behavior in each of these treatments was elicited through incentive-compatible questions that measured their normative expectations. The questionnaire asked whether the responder found each of the three treatment options fair. The questionnaire was aimed at assessing whether there was an agreement in the responders' normative expectations, an indicator of the existence of a social norm. Similarly, proposers were informed about the questions being asked from responders and were asked

- to guess the percentage of responders who have indicated the (5,5), (8,2) and coin flip, respectively, as a fair option. The questionnaires were designed to (1) make fairness norms more salient, and (2) test for agreement between the responders' normative expectations and the proposers' beliefs about them. Almost all responders considered the (5,5) split to be fair in all information conditions, and a majority of them also thought that the coin split was fair. A remarkable degree of agreement was found between the responders' and proposers' beliefs about the normative expectations of responders. Their results show that in full information and private information cases agents mostly observed norm compliance and chose either a coin flip or an even split. However, in the limited information case norm evasion was observed, as agents knew what was fair, but 31 (58.5 percent) subjects out of 53 deviated from it by choosing (8,2).
3. Subjects make a series of 12 allocative decisions, dividing endowment 40, 60, 75 and 100 (each token is worth \$0.10) between themselves and a charity, selected from a list of ten. Subjects receive subsidy on positive giving to charity in the form of a rebate or a match. In the 'rebate treatment' tokens allocated to the charities are refunded at the rate of 20, 25 and 50 percent, while in the 'matching treatment' tokens allocated to the charities are matched at the rate of 25, 33 and 100 percent by the experimenter depending on the token size. They estimate charitable contributions as a function of the endowment size (dollar value of the tokens), the price of giving \$1 to a charity and a vector of individual characteristics including age, sex and religiosity.
 4. Belief included belief in God, the Bible, Jesus and so on. Rituals comprised attending services, membership of church, giving tithes etc. Similarly, spirituality included feeling of closeness to God and salvation included the feeling of repentance. Finally, participation implied participating in church related groups or activities.
 5. Information was in the form of cards showing the degree of religiosity ranging from one (weak) to five (strong).
 6. For the details, see the instructions for proposers in Appendix 1A.1.
 7. For example, 'yesterday it finished track he' becomes 'he finished it yesterday' after dropping irrelevant word 'track'.
 8. A corollary to this point is that the responders are also uninformed about the sum of the exchange rates of both EMUs.
 9. Actually, the classrooms were used as laboratory.
 10. Please see Appendix 1A.1 for a complete set of instructions.
 11. It is to be noted that general instructions were the same both for proposers and responders.
 12. After reading, they turned the instructions upside down, which signaled that they had completed reading the instructions and had no queries.
 13. Every responder had put a code on the envelope at the time of decision-taking. This enabled us to recognize the envelope of each proposer.
 14. It extends the horizon from the life in this world, which is finite, to the life in the hereafter, which is infinite. Hence, a believer knows that self-interest may be served in this world by being selfish and not fulfilling the obligations towards others; however, self-interest in the hereafter cannot be served except by fulfilling all these obligations.
 15. It is to be remembered that an offer of 250 EMU ensures equitable distribution of EMU.
 16. For instance, the average for them is 345 EMU.

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APPENDIX 1A.1 GENERAL INSTRUCTIONS

You are now taking part in an economic experiment. The instructions which we have distributed to you are for your private information. Please do not communicate with the other participants during the experiment. Should you have any questions please raise your hand and one of us will come to assist you. The amount of money you earn from this experiment depends on your decisions and of those made by the others. It is therefore important that you take your time to understand the instructions.

During the experiment we shall not speak of PKR (Pakistani Rupees), but of Experimental Monetary Units (EMU). Your earnings will be calculated in EMU and will be exchanged to PKR at the end of the experiment. You will be informed about the exchange rate when the experiment starts.

In addition to your earning from the experiment each participant will receive a one-off lump sum payment of 50 PKR. The show-up fee and your earning from the experiment will be paid to you in private at the end of experiment. None of the other participants will know how much money you earned during the experiment.

The Experiment

There are two roles in this experiment: the Proposer and the Responder. You will be randomly assigned these roles.

The Proposer will be given 500 EMU. He/She will then have to propose a division of these 500 EMU by making an offer to the Responder. The Proposer's offer can be any integer from 0 to 500. That is the Proposer will be able to offer 0, 1, 2, 3 . . . 500.

The Responder will be informed about the Proposer's offer and will have to decide whether or not to accept the offer.

If the offer is accepted, the suggested division will be implemented.

If the Responder rejects the offer, both the Proposer and the Responder will receive 0. Each decision will be made only once.

Your earning from the experiment will be paid to you in private at the end of experiment. None of the other participants will know how much money you earned during the experiment.

If you have any questions please raise your hand to attract the attention of one of the experimenters. Otherwise, please proceed to answer the below questions.

Control Questions for General Instructions

These questions are not meant to test your mathematical ability. They are simply aimed at helping you understand the experiment. Please tick the correct answer only and after finishing raise your hand to attract the attention of the experimenter.

1. What is the role of the Proposer in the experiment?
 - a. Accept/reject the offer
 - b. Make an offer
2. Responder receives an offer of 400 EMU, which he/she accepts. How much his/her experimental earnings in PKR will be if exchange rate is $0.2 = 1$ EMU?

- a. 80 PKR
 - b. 90 PKR
 - c. 100 PKR
3. Let Proposer make an offer of 200 EMU and is accepted by the responder. What will be the experimental earnings in PKR of the proposer and the responder?
 - a. Proposer will get 8 PKR and responder will get 2 PKR
 - b. Proposer will get 2 PKR and responder will get 8 PKR
 - c. Without knowing exchange rate, the earnings of both cannot be calculated
 4. If the Responder rejects the offer, what amount the proposer and the responder will receive at the end of the experiment?
 - a. The proposer and the responder, each will receive show up fee of 50 PKR only
 - b. The proposer and the responder, each will receive zero

Instructions for the Proposer

Please fill in the following brief survey before reading the detailed instructions.

- 1) How old are you? _____
- 2) What main subjects did you study before getting admission in this department?

- 3) Where have you come from? _____

Read the following for answering question 4

عن أنس رضي الله عنه عن النبي صلى الله عليه وسلم قال: 'لا يؤمن أحدكم حتى يحب لأخيه ما يحب لنفسه' (متفق عليه).

Anas (May Allah be pleased with him) reported:

The Prophet (ﷺ) said, 'No one of you becomes a true believer until he likes for his brother what he likes for himself'. (Agreed upon)

- 4) Do you know what does 'agreed upon' (متفق عليه) mean: Just tick (YES/NO)

Details of the Instructions for the Proposer

You have been randomly allocated the role of the proposer. The Responder will not receive this part of the instructions. She/he will only receive the general instructions.

What you have to do as a Proposer: You have to take two decisions.

The First Decision:

You have received an endowment of 500 EMU. Before you decide on how you wish to divide these 500 EMU between you and the Responder, you need to make a decision regarding the exchange rate at which EMU will be exchanged to PKR both for you and the Responder. For this you will have to select one of the exchange rates combinations (A to K) from the following.

P = the exchange rate at which your EMU will be converted to PKR

R = the exchange rate at which the Responder's EMU will be converted to PKR

Note that the Responder does not know that you will be determining the exchange rate. The Responder will be informed about his/her own exchange rate (which is the R selected

	P	R
A	1.0	0.0
B	0.9	0.1
C	0.8	0.2
D	0.7	0.3
E	0.6	0.4
F	0.5	0.5
G	0.4	0.6
H	0.3	0.7
I	0.2	0.8
J	0.1	0.9
K	0.0	1.0
Your earnings	=	P multiplied by the number of EMU you keep for yourself
The Responder's earning	=	R multiplied by the number of EMU you offer to the responder

by you, at the same time he/she will be informed about your offer). He/she will have NO information about your exchange rate, which means he/she will not know about your exact earnings.

Second Decision:

After you decide exchange rate of EMU both for yourself and the responder, you will have to make an offer to the Responder (i.e. how many EMU you want to give to the responder). The offer could be any integer from 0 to 500 EMU

After you make both decisions, the following information will be passed on to the responder

- The exchange rate R (that you selected), and
- The number of EMU that you offer

Remember that if your offer is accepted, the suggested division will be implemented. However, if the responder rejects your offer, both you and the Responder will receive 0. Also note that can make the decision only once.

If you have any questions please raise your hand to attract the attention of one of the experimenters. Otherwise, please proceed to answer the following questions

Control Questions

These questions are not meant to test your mathematical ability. They are simply aimed at helping you understand the experiment. Please give the correct answer and after finishing raise your hand to attract the attention of the experimenter.

1. Calculate proposed earnings for yourself and the Responder, if exchange rate combination is A and offer is 500 EMU.
 - a. Your earning will be _____
 - b. The Responder's earning will be _____
2. If offer is 400 EMU, which the Responder accepts. How much will be the earnings in case exchange rate combination is G.
 - a. Your earnings will be _____
 - b. The Responder earnings will be _____
3. What information is passed on to the Responder?
 - a. Own exchange rate and the offer quantity of EMU
 - b. Proposer's exchange rate and his/her earning
4. What the Responder does not know?
 - a. The information that who determines the exchange rate and that what is the proposer's EMU exchange rate
 - b. Total amount of EMU

Instructions for the Responders

The Experiment

You have been randomly assigned the role of responder.

The Proposer has been given 500 EMU. He/she will then have to propose a division of these 500 EMU by making an offer to you. The Proposer's offer can be any integer from 0 to 500. That is the Proposer will be able to offer 0, 1, 2, 3 . . . 500.

You will be informed about the Proposer's offer and the exchange rate at which your earnings will be exchanged to PKR. You will then decide whether to accept or reject the offer.

If you accept the offer, the suggested division will be implemented.

If you reject the offer, both the Proposer and you will receive 0. Each decision will be made only once.

Your earning from the experiment will be paid to you in private at the end of experiment. None of the other participants will know how much money you earned during the experiment.

If you have any questions please raise your hand to attract the attention of one of the experimenters. Otherwise, please proceed to answer the below questions

Control Questions

These questions are not meant to test your mathematical ability. They are simply aimed at helping you understand the experiment. Please tick the correct answer only and after finishing raise your hand to attract the attention of the experimenter.

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 - a. Proposer will get 8 PKR and you will get 2 PKR
 - b. Proposer will get 2 PKR and you will get 8 PKR
 - c. Without knowing exchange rate, your earning and that of the proposer earnings cannot be calculated
4. If you reject the offer, what amount the proposer and you will receive at the end of the experiment?

- a. The proposer and you, each will receive show up fee of 50 PKR only
- b. The proposer and you will receive zero

Decision Sheet for the Proposer

- 1) I offer to the responder: _____ EMU
- 2) The name of the exchange rate combination is: _____

Decision Sheet for the Responder

Your EMU will be exchanged to PKR at the rate of _____ per EMU

Please tick one:

I accept the proposed offer

I reject the proposed offer