Spousal and Nonspousal Trust and Reciprocity: Evidence from a Field Experiment

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Preface

The Centre for Research in Economics and Business (CREB) was established in 2007 to conduct policy-oriented research with a rigorous academic perspective on key development issues facing Pakistan. In addition, CREB (i) facilitates and coordinates research by faculty at the Lahore School of Economics, (ii) hosts visiting international scholars undertaking research on Pakistan, and (iii) administers the Lahore School's postgraduate program leading to the MPhil and PhD degrees.

An important goal of CREB is to promote public debate on policy issues through conferences, seminars, and publications. In this connection, CREB organizes the Lahore School's Annual Conference on the Management of the Pakistan Economy, the proceedings of which are published in a special issue of the Lahore Journal of Economics.

The CREB Working Paper Series was initiated in 2008 to bring to a wider audience the research being carried out at the Centre. It is hoped that these papers will promote discussion on the subject and contribute to a better understanding of economic and business processes and development issues in Pakistan. Comments and feedback on these papers are welcome.

Abstract

At the heart of economic theory lies the motive of self-interest. However, a behavioral tendency to trust others can sometimes overpower the motive of self-interest and cause the individual to act in a manner that does not maximize his or her self-interest. We attempt to analyze this trust dynamic between spouses, strangers of the same gender and strangers of the opposite gender by carrying out a trust game (BDM game) with a sample of 41 couples in Lahore, Pakistan. We also attempt to ascertain whether any spouses choose the efficiency-maximizing strategy. Finally, the study explores the determinants of trust and trustworthiness. The results of the trust game show that wives are more trusting than husbands. Overall, however, women score lower on both trust and trustworthiness.

Spousal and Nonspousal Trust and Reciprocity: Evidence from a Field Experiment

1. Introduction

Given that households form a large and significant segment of the economy, there is a need for behavioral economic models to include intrahousehold behavior. Researchers use experiments to examine the fundamental principles of interaction between individuals. Since most such experiments consist of participants who are strangers to one another, the results differ significantly from those obtained through experiments involving friends, family members or couples. This paper studies the trust dynamic between spouses as well as strangers, and whether a trust game between spouses results in a socially efficient outcome in which household earnings are maximized. Since the evidence from Pakistan on this subject is very limited, we aim to contribute to the experimental evidence on trust and reciprocity from field experiments.

In most economic theories and models – and at the heart of economic theory – lies the motive of self-interest. The concept of *homo economicus* portrays humans as invariably rational, self-interested beings. While this view of the selfish human being is widespread, it has also been challenged by behavioral economics in recent years, which suggests that the motive of self-interest may not always be applicable. Behavioral tendencies to trust others can sometimes override self-interest and lead the individual to act in a manner that does not maximize his or her self-interest. Interestingly, while individuals are often cynical and distrustful of society and the modern human being, they may display high levels of trust in their counterparts when participating in a trust game (Fetchenhauer & Dunning, 2009), thus leading to a trust paradox. The use of behavioral trust games helps measure trust more effectively and accurately.

Trust and trustworthiness are vital features of everyday life. Trust is an indispensable component of virtually all daily interactions, ranging from the workplace to the household. At an aggregate level, its significance

extends to the whole economy. Several studies associate higher levels of trust and trustworthiness with better economic outcomes (see Putnam, 1993; Fukuyama, 1995; Arrow, 1972). Knack and Keefer's (1997) cross-country study examining trust levels shows a relationship between greater trust and higher GDP per capita. Higher trust levels are associated with higher GDP growth rates, lower poverty, less inequality and lower unemployment. Other studies have also linked greater trust to less corruption, more efficient judiciaries, better developed financial systems and better government bureaucracies (see La Porta et al., 1997; Guiso et al., 2004).

At an individual level, trust acts as a positive externality and reduces the cost of transactions in economic interactions. In the presence of incomplete contracts, trust plays a very significant role in reducing the risk and uncertainty associated with such exchanges. This role is especially relevant given the wide use of technology and rapid growth of online transactions or e-commerce. Trust plays a key role in facilitating such interactions in the absence of complete contracts.

Measuring spousal trust allows one to study the dynamics of this interpersonal trust. Higher trust levels indicate sustainable long-term relationships, with marital harmony being an important underlying ingredient of this dynamic. A marriage is essentially an incomplete contract in which one individual's motives and earnings may be hidden from his or her partner, leading to incomplete information. Investing in the future of the marriage requires the belief that one's spouse will be cooperative in the future – something that cannot be enforced by any contract. Trust, therefore, serves to facilitate interactions and increase efficiency between spouses.

The literature establishes that women are seen to be less trusting, but also more trustworthy. The latter may very well be due to women's adeptness at managing household finances. On the other hand, women may be less trusting – particularly in developing countries – because they have less bargaining power and control over finances and/or due to lower labor force participation.

In this paper, we attempt to ascertain whether any spouses adopt an efficiency maximizing strategy, that is, choose to send their entire endowment to their spouse and maximize their joint earnings. One

would expect couples to favor this strategy since their spouse would assume the receiving role. Our results provide some insight into the complexities of trusting and reciprocative marital behavior and how it differs between husbands and wives in the context of Pakistan. Moreover, as the literature review highlights, while trust and cooperation can exist among strangers, the mechanisms are substantially different among known partners with strong ties – in this case, spouses. Gauging whether trust levels are higher between spouses relative to strangers of the same or opposite gender enables one to better understand the trust dynamics underlying interactions between different genders as well as spousal interactions.

In recent years, a large body of literature has emerged on this subject, but with little quantitative analysis in Pakistan's context. We aim to fill this gap in the literature by carrying out an experimental trust game that allows us to test for differences across gender. The rest of the paper is structured as follows. Section 2 reviews the literature. Section 3 presents the study's methodological framework. Section 4 describes the fieldwork and data collection. Section 5 gives a detailed analysis of the results. Section 6 concludes the study.

2.   Literature Review

In the original game developed by Berg, Dickhaut and McCabe (BDM) in 1995, 30 out of a total of 32 first movers decided to reject the subgame perfect Nash equilibrium and sent some amount to the second mover. Out of 28 second movers, 24 chose to send back some amount to the first mover, thus rejecting the equilibrium. Endowments of $5 yielded an average payback of $7.17, while $10 endowments had an average payback rate of $10.20. When a sender passes any positive amount to an anonymous receiver, this is considered a demonstration of trust. However, this trust is not entirely without expectation: it is based on the expectation of reciprocity or trustworthiness whereby the receiver will pass some proportion of the total amount back to the sender. This reciprocity is unlike altruism since the receiver is rewarding the sender's trust in him or her.

Johnson and Mislin (2011) use data from 162 replications of the BDM game to carry out a meta-analysis of trust games to identify the factors affecting trust and trustworthiness. They measure trust as the amount of

money passed on by the sender to the receiver, divided by the total endowment. Trustworthiness is measured as the amount sent back to the sender, divided by the total amount available to be returned. Trust and trustworthiness are measured on a scale of 0 to 1. The authors apply ordinary least squares (OLS) and logit transformations to their dataset, which comprises 35 countries across North America, Europe, Asia, Africa and Latin America. The findings suggest that participants send less money if they are paid randomly than if they have earned it and if their counterpart is simulated rather than a real person. Additionally, receivers return less if they are students and if the rate of return – the rate by which the amount is multiplied before being passed on to the receiver – is lower. An interesting result is the high level of mistrust in African countries, which the study explains as an outcome of the slave trade having left a lingering cultural mistrust (see also Nunn & Wantchekon, 2009; Boyd & Richerson, 1995).

Some studies replicating the BDM design assign both sender and receiver roles to each participant in an attempt to collect and test more observations from fewer subjects. However, such studies are criticized for ignoring the possibility of systematic bias resulting from such an experimental design. Burks et al. (2003), for instance, develop an interesting treatment to test the 'golden rule' and 'reduced responsibility' hypotheses, in which participants are made to play both roles: sender and receiver. In one treatment, they are told after having made a sending decision that they will play the role of receiver. In the second treatment, they are told before starting that they will play both roles. If players exhibit greater trust and reciprocity in this game because of the 'do unto others as you would have them do unto you' principle, then the golden rule hypothesis is in effect. If it reduces trust and reciprocity because the player feels less responsible for the other's wellbeing or less guilty for having played selfishly, then the reduced responsibility hypothesis is in effect. The study finds that subjects who know they will be playing both roles before the experiment has started, send less money than those who play only the role of sender. Playing both roles reduces trust and trustworthiness. This suggests that players who have an opportunity to play more than one role act more selfishly and feel less guilty about their choices.

A small number of studies have looked at the dynamics of trust in Pakistan. Chaudhry and Saleem (2011), for instance, conduct four games

– the ultimatum game, prisoner's dilemma game, trust game and dictator game – with a sample of economics students. The games are played online in the classroom as part of an experiment without using real money.[1] Pairings are anonymous and randomized. In the trust game, first movers sent 35 percent of their endowment, while second movers sent around 25 percent of the tripled transfer they had received. Females displayed lower levels of trust and trustworthiness. In the dictator game, participants sent 20 percent on average.

Razzaque (2009) conducts an ultimatum game that takes gender differences into account and finds male offers to be more generous than female offers. The rationale for this result is that Pakistani culture encourages chivalry and, by implication, greater generosity. This result differs from international studies such as Eckel and Grossman (1996), who find females to be more generous. It will be interesting to see if the same rationale applies to our trust game and whether males prove to be more cooperative than females.

To our knowledge, Delavande and Zafar (2011) is the only other study involving a trust game in Pakistan. The authors investigate gender discrimination and its relation to social status, carrying out an experiment in four seminaries, an Islamic university and two secular universities. They find greater discrimination against females at the Islamic university than at the secular universities, although this may have more to do with socioeconomic background than religious reasons. Of the overall sample, 43 percent transferred at least some amount in the dictator game. The trust game they conduct is a modified version to which they refer as a 'binary game' in which participants can transfer either the entire amount or nothing. The results show that at least 75 percent of the sample transferred some positive amount.

Where trust games between couples are concerned, Castilla (2015) shows that only 3 percent of the couples in the study's sample chose an efficiency maximizing strategy by transferring the entire amount to their spouses in the role of second movers. Of an endowment of PKR75, first movers transferred PKR45 on average, or about 60 percent of the total endowment. Relative to transfers between strangers in other studies, we

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[1] The results may be biased, given that actual money was not used and the game was played with economics students.

see a benchmark of 50 percent being transferred by first movers. These results do not show a wide disparity, as one would expect spouses to share larger amounts than strangers. Second movers reciprocate with an average of PKR69, which is almost 54 percent of the total amount they received.

Camerer (2003) reports second movers transferring around a third of the amount they received to their partners (in this case, strangers). Thus, the amount being reciprocated between spouses is still higher than that between strangers. Women in the first-mover role send about 55 percent while men send 60 percent. As second movers, women send 49 percent while men send 59 percent. In Castilla's (2015) sample, wives were less trusting and less reciprocative, whereas other studies find women to be less trusting but more trustworthy.

As far as gender differences are concerned, males are seen to be more trusting than women. Studies show that women tend to pass on smaller amounts to their counterparts. Chaudhuri and Gangadharan (2007) find that, out of $10, men kept $4.7 on average and sent $5.3 to their counterparts, while women kept $6.53 and sent $3.47 to their counterparts. These results are similar to those obtained by Burks et al. (2003) (see also Eckel & Wilson, 2000). However, Schechter (2005) suggests that this finding is due to greater risk aversion among women than men. Once the study controls for risk-averse attitudes, it does not find much difference in trust levels between males and females.

A review of the gender-related literature reveals some interesting details. Ultimatum games, such as those carried out by Eckel and Grossman (1998), indicate that men accept lower offers from women more readily than from other men, arguably out of chivalry. On the other hand, women display greater solidarity with other women and choose to accept lower amounts from them more readily than they would from men. Buchan et al. (2006) find no significant gender difference in the amounts sent by first movers. However, as second movers, women are seen to reciprocate more than men. Thus, the study finds no gender differences in trust – only in trustworthiness. One explanation is that women are more altruistic and thus reciprocate more. However, were that the case, it should also hold in the case of trust – where no gender difference is apparent. The other explanation is that women are behaviorally more inclined to reciprocate than men. This is in line with Eckel and Grossman's (1998) results, which show that women are more likely to punish (reward) unfair (fair) behavior than men.

There are notable differences in trust levels between students and nonstudents. Ashraf et al. (2006), Carter and Castillo (2011), Fehr and List (2004), and Holm and Danielson (2005) find that students send less to their counterparts and display lower levels of both trust and trustworthiness.

Many studies attempt to control for altruistic tendencies influencing trust decisions. Cox (2004) devises the following method to control for altruism. After the trust game has been played, a dictator game is introduced in which the participants are anonymous – so that there is no social desirability or reputation effect – and the second mover is a passive receiver. The 'dictators' are given a sum of money that they can choose to keep entirely for themselves or share with another participant. Since there is no possibility of reciprocity by the second mover, the amount trustors choose to send will be influenced only by their altruistic tendencies. Having compiled the data, the author regresses trust and trustworthiness on the transfer amounts in the dictator game to obtain a measure of 'true trust'. This controls for altruism in the trust game. Holm and Danielson (2005), Ashraf et al. (2006), Carter and Castillo (2011), and Burns (2006) have also used this method to control for altruism.

Another point concerns the overlap between risk-taking behavior and trust attitudes. It could be argued that willingness to trust is influenced by risk-taking tendencies: trusting someone is a risky endeavor. A risk-averse individual is less likely to display trust or trustworthiness. However, a study carried out by Dohmen et al. (2012) uses data on risk preferences and trust attitudes, and regresses willingness to trust on risk attitudes. The results are similar to those obtained earlier without controlling for risk. The study indicates that trust attitudes and risk attitudes are two distinct components that do not significantly influence one another. Using this implication, that trust behavior is not determined by risk attitudes, we have chosen not to control for risk in our study.

Ermisch et al. (2009) apply a test to a population sample in the UK and find evidence to prove their hypothesis that individuals with stronger family relationships are less likely to trust strangers, while those with weaker family ties are more likely to trust strangers. They explain this correlation as follows: people with strong family or group ties have less opportunity for external contact and tend to be more committed to family members, relatives or other close-knit groups. In line with this

explanation, the authors also find that divorced or separated people are more likely to trust family and friends, as well as more likely to reciprocate.

3.   Methodology

This paper aims to test differences in trust levels and reciprocity between spouses. We also test whether trust is higher between spouses, strangers of the same gender and strangers of the opposite gender. In measuring trust levels within spousal relationships relative to trust levels with random partners, we predict that trust will be higher between couples as opposed to strangers. We also test whether the number of years of marriage, education and income are good predictors of trust and reciprocity.

3.1.   Experimental Design

The experiment is based on the original investment game designed by Berg et al. (1995). Trust is measured as the amount *x* sent by the first mover as a proportion of the total endowment s/he received. Trustworthiness is measured as the amount *y* returned by the second mover to the first mover as a proportion of the entire amount that can be returned. Trust and trustworthiness are both measured as numbers ranging between 0 and 1:

$$\text{Trust} = \frac{x}{1,000} \text{ (denoted by T)}$$

$$\text{Reciprocity} = \frac{y}{3x} \text{ (denoted by R)}$$

The experiment was conducted over four rounds, with 82 individuals participating in each round. Half were allocated to Rooms A and B while the other half were allocated to Rooms C and D. The participants in Rooms A and C were first movers; those in Rooms B and D were second movers. The four rounds are discussed below. It should be emphasized that no player was able to guess any other participant's decisions or choices from the latter's earnings because they could only take home earnings from one of the rounds, which was randomized. Thus, they were assured that their partner could not determine what decisions they had made in any of the rounds.

To examine the determinants of trust and reciprocity, we estimate the following OLS equations:

$$T_i, R_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

where X_i is a vector of control variables and *i* refers to each individual participant.

3.2. Rounds

The trust or BDM game process was the same across all rounds. The only difference was the identity of the partner with whom a given participant was paired.

Round 1: Spousal Pairing

- 20 husbands (Room A, first mover) paired with 20 wives (Room B, second mover)

- 21 wives (Room C, first mover) paired with 21 husbands (Room D, second mover)

Round 2: Same-Gender Pairing

- 20 males (Room A, first mover) paired with 20 random males (Room B, second mover)

- 21 females (Room C, first mover) paired with 21 random females (Room D, second mover)

Round 3: Opposite-Gender Pairing

- 20 males (Room A, first movers) paired with 20 females (Room B, second movers)

- 21 females (Room C, first movers) paired with 21 males (Room D, second movers)

Round 4: Dictator Game

All 82 individuals were paired with a passive second mover and assigned the role of 'dictator' (first mover). They were endowed with PKR1,000 and asked whether they wanted to transfer any amount to a

passive receiver who could not reciprocate anything. They could keep the entire amount for themselves or transfer a proportion to their partner. Thus, any amount transferred in the dictator game would be for altruistic reasons alone.

3.3.   Game Dynamics

Each first mover was given an endowment of PKR1,000. A minimum earning amount of PKR300 was paid to every individual earning PKR0 at the end of the games. During the experiment, participants were aware of their counterpart's gender, implying that they had information on the dynamics of pairing with different partners. Each participant was also asked a series of questions about their personal and financial details. This survey was administered before the trust game starts to avoid any systematic bias resulting from participating in the experiment and then answering the survey questions.

Participants were allocated randomly to either the role of trustor or trustee and seated in separate rooms. This randomization enabled internal validity in the experiment. They were given verbal and written instructions in Urdu and the interviewer answered any questions they had before the game started.

First movers were given envelopes containing their endowment of PKR1,000. They were instructed to keep whatever amount they wanted for themselves while the interviewer collected their envelopes containing the amount they had chosen to pass on to the second mover. The interviewer took the envelopes outside, noted down the amounts sent and tripled each before sending these on to the second movers. The second movers received the envelopes randomly and were instructed to keep whatever amount they wished and to return the remaining amount to the trustor. The interviewer then collected the envelopes from the second movers and took them outside, where the amounts returned (if any) were recorded and the envelopes sent back to the first movers.

Since the trust game is essentially an extension of repeated daily interactions between spouses, one might consider altruism or 'other-regarding' behavior to influence these interactions. This could occur between strangers as well, but the effect is magnified between couples who care for each other. In this experiment, first movers transfer an

amount to second movers only if they trust that some of the transferred amount will be returned to them. The concept of 'other regarding preferences' is ignored in this exchange. Participants may choose to transfer money even if there is no possibility of it being returned by their partner. The BDM model cannot distinguish trust and reciprocity from altruistic tendencies.

To control for altruism, therefore, we played a dictator game with participants after the original trust game, as designed by Cox (2004). First movers were assigned a 'dictator' role in which they were given a PKR1,000 endowment they could send their partner, who was allocated a second-mover role. The second mover was a passive receiver unable to reciprocate any amount back to the first mover. Hence, any amount transferred by the first mover would reflect only altruistic tendencies. The difference between the dictator game transfers and original trust game transfers allows us to control for altruism. The results will show conclusively whether the sample exhibits any significant trusting behavior.

4. Fieldwork and Data Collection

We conducted the BDM game field experiment with a sample of 41 couples at a private school in Lahore, Pakistan (see Appendix for descriptive statistics). Since our target population comprised married couples, our sample consisted of a group of 41 couples from urban, medium-income and lower-income households. It helped to target lower-income participants since the amount of money given in this experiment likely held greater significance for them. As such, this sample was representative of a typical household in Pakistan. The sample allowed us to conduct spousal experiments as well as study the trust dynamics between strangers of the same and opposite genders.

Participants were given a survey to complete before the experiment began. The survey results show that, generally, people do not trust strangers (39.02 percent), although spousal trust is quite high (89.02 percent) (see Appendix). The gender breakup shows women to be trusting than men and wives to be more trusting than husbands.

5.   Results

This section describes the outcomes of the trust game and the determinants of trust and trustworthiness.

5.1.   Trust Game Outcomes

Under the Nash equilibrium for this game, as mentioned in the introduction, no first mover will send any amount. However, this dominant strategy is rejected in our sample, as most first movers did transfer some amount to their partners, displaying some level of trust.

The amounts sent in the first stage of the game display trust attitudes. A larger amount sent reflects greater trust. For example, out of a PKR1,000 endowment, sending the entire amount to a counterpart displays an extremely high level of trust. On the other hand, sending PKR100 reflects very weak trust. Any amount sent by the first mover is tripled before being passed on to the second mover. The amounts sent in the second stage of the game represent trustworthiness or reciprocity attitudes. Larger amounts sent in this stage indicate higher levels of trustworthiness and vice versa.

Round 1: Spousal Pairing

As Table 1 shows, the average amount sent by first movers was PKR712, which is substantially higher than the average amount they kept (PKR288). This displays a high level of trust between spouses. Sixteen first movers transferred their entire endowment to their spouses while 11 first movers transferred PKR500 (half the endowment) to their spouses. This points to a 50-50 sharing rule among spouses. Looking at a breakdown of the sent amounts by gender, we find that wives were more likely to send the entire amount to their husbands. Of 21 first-mover females, 10 transferred the whole endowment to their spouses. On the other hand, of 20 first-mover males, only six transferred the entire amount to their wives. Moreover, in only one instance was PKR0 sent in the first stage – in this case, by a male. This implies that females are more trusting than males.

Table 1: Amounts sent by first movers

Round	Mean in PKR		
	Female	**Male**	**Total**
Round 1: Spousal pairing	776.19	645.00	712.20
Round 2: Same-gender pairing	420.00	471.43	446.34
Round 3: Opposite-gender pairing	295.24	540.00	414.63
Round 4: Dictator game	287.80	487.80	387.80

Note: These are the actual amounts transferred by participants, not the trust proportions, which are calculated at a later stage for the regression analysis.
Source: Authors' calculations.

A comparison of the mean amounts sent by males and females in Round 1 reveals that, on average, first-mover wives sent more to their spouses than first-mover husbands: wives sent PKR776 on average while husbands sent PKR645 on average. On average, second movers sent PKR1,095 to their spouses, which is also higher than the average amount they kept for themselves – PKR1,066. The results in Table 2 suggest that spouses display high levels of trust and trustworthiness. Eight second movers returned PKR0 to their partners. The gender breakdown reveals that five of these were female and three were male. Four second movers returned the maximum amount, PKR3,000, to their partners: one was female, the other three were male. This implies that females appear to be less trustworthy or reciprocative than males.

Table 2: Amounts returned by second movers

Round	Mean in PKR		
	Female	**Male**	**Total**
Round 1: Spousal pairing	925.00	1,257.14	1,095.12
Round 2: Same-gender pairing	419.05	762.50	586.59
Round 3: Opposite-gender pairing	625.00	404.76	512.20

Note: These are the actual amounts transferred by participants, not the reciprocity proportions, which are calculated at a later stage for the regression analysis.
Source: Authors' calculations.

A gender comparison reveals that, on average, husbands returned more to their spouses compared to wives. The results suggest that wives are more trusting but less reciprocative than husbands. However, it is worth noting that, in the second stage, the amounts returned by second movers depended on the amount they had received from their partners in the

first stage. Thus, any given individual could be receiving different amounts and any comparison between returned amounts at this stage could be biased.

Round 2: Same-Gender Pairing

In the first stage, we find that the average amount sent decreased to PKR446, while the average amount kept by participants increased to PKR554. These figures suggest that trust levels decreased once participants were no longer paired with their spouses. The average amount kept was also larger than the average amount sent in the first stage. Out of 41 first movers, five did not send anything to their counterpart, of which four were female and one was male. Additionally, 25 individuals transferred half their endowment, PKR500, to their partners. Of these, 12 were female and 13 were male. These figures suggest that females are slightly less trusting of same-gender partners compared to males.

A Round 2 gender comparison reveals that, on average, males send more than females when paired with a same-gender partner. When males were paired with males, they sent PKR471 on average, and when females were paired with females, they sent PKR420 on average. In the second stage, the average amount returned was PKR587, while the average amount kept by the second mover was PKR699. Of 41 second movers, 11 returned PKR0, of which eight were female and three were male. However, as noted above, this could be because they were sent a zero amount by their counterparts in the first stage and thus could not return anything.

Males returned more on average than females when paired with a same-gender partner. Females returned PKR419 on average, while males returned PKR762 on average when paired with a same-gender partner (Table 2). Therefore, the data shows that both trust and trustworthiness decreased when participants were no longer paired with their spouses. However, both trust and trustworthiness appear to be lower for females than for males.

Round 3: Opposite-Gender Pairing

The average amount sent by first movers is PKR415 – lower than in the previous two rounds – while the average amount they kept is slightly higher at PKR576. Of 41 first movers, nine (all female) chose not to send anything. Eighteen individuals sent PKR500, of which seven were female and 11 male. Females thus appear to display lower levels of trust when paired with an opposite-gender partner. In this round, only one female and two males transferred the entire endowment to their partner.

A gender comparison in Round 3 reveals that females send a substantially lower amount on average compared to males when paired with a partner of the opposite gender. When females were paired with males, they sent an average amount of PKR295. On the other hand, when males were paired with females, they sent a substantially higher average amount of PKR540.

Examining the second-stage statistics, we observe that the average amount returned is PKR512, while the average amount kept is PKR600 – the lowest in all three rounds. This would imply that trustworthiness was lowest when individuals were paired with opposite-gender partners. Of 41 second movers, 15 chose not to return any amount, out of which three were female and 12 were male. Three females returned PKR300 while five females returned PKR400. Most males chose not to return any amount.

Additionally, females returned a larger amount on average than males when paired with a partner of the opposite gender. Therefore, in this round, females displayed less trust but more trustworthiness compared to males. On the other hand, males displayed greater trust but less trustworthiness compared to females.

Round 4: Dictator Game

In this round, the average amount sent dropped to PKR387 – the lowest of all previous rounds. This reflects very low levels of trust toward an anonymous, passive partner. It also provides a pure measure of altruism, which can be used as a control to filter out altruistic tendencies in regressions for determinants of trust and trustworthiness. The mean values show that males appear to be more altruistic than females.

5.2.   Two Sample T-Tests

In this section, trust proportions are calculated as trust (T) $= \frac{x}{1,000}$, where x is the amount sent by each first mover to his/her paired partner (second mover). Trustworthiness proportions are calculated as trustworthiness (R) $= \frac{y}{3x}$, where y is the amount returned by each second mover to his/her paired partner (first mover) and $3x$ is the total endowment they received (triple the amount received from the first mover, that is, PKRx).

The results in Table 3 show that the difference in mean amounts sent in Round 1 of the spousal trust game is statistically significant, implying that wives displayed higher levels of trust than husbands. As first movers, they sent larger amounts to their spouses compared to what husbands sent. This result is supported by the descriptive data results from Round 1, where wives were seen to transfer a larger share of their endowment compared to husbands. In Round 2, looking at same-gender trust, we find that there is no significant difference in the amounts sent by males or females as first movers.

Table 3: T-test of two sample means

Mean (female) – mean (male)	
Round 1: Spousal trust	Difference > 0
Round 2: Same-gender trust	Difference insignificant
Round 3: Opposite-gender trust	Difference < 0
Round 4: Dictator (altruism)	Difference < 0
Round 1: Spousal reciprocity	Difference insignificant
Round 2: Same-gender reciprocity	Difference < 0
Round 3: Opposite-gender reciprocity	Difference insignificant

Source: Authors' calculations.

In Round 3, involving opposite-gender pairs, the difference between the mean amounts sent is significantly less than 0. This implies that females were less likely to display trust when paired with an unknown male partner. Females sent less than males who were paired with female partners. Thus, males are likely to be more trusting than females when paired with an unknown opposite-gender partner. In Round 4, the dictator game measuring altruistic behavior, the difference in mean amounts sent is significantly less than zero. Males sent larger amounts as

first movers even when they knew there was no possibility of reciprocation. This implies that males are more altruistic than females.

In Round 1, involving spousal reciprocity, the difference between the mean amounts is not significant. Therefore, we cannot conclusively reject the null hypothesis that there is no difference between the mean amounts returned by spouses. In Round 2, involving same-gender reciprocity, the difference in the mean amounts sent is significantly less than 0. Females displayed significantly less trustworthiness than males when paired with a same-gender partner. In Round 3, the opposite-gender reciprocity game, females appeared to display higher trustworthiness when paired with a male partner, compared to males paired with a female partner: the difference in the mean amounts sent is not statistically significant.

5.3.   Determinants of Trust and Reciprocity

In this section, we examine the determinants of trust and trustworthiness. Gender is the main independent variable since we are looking at the impact of being in spousal, same-gender and opposite-gender partnerships on trust and reciprocity. We estimate the following OLS equations for three rounds each:

$$T_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

$$R_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

where X_i is a vector of control variables.

Examining the regression results for spousal trust in Round 1 (Tr1) in Table 4, we find that husbands are 19 percent less likely to trust their spouses compared to the wives in our sample when paired with their spouses, all else being equal. This result could be driven by the fact that, in Pakistani households, where husbands tend to be responsible for all financial decisions, males are less likely to transfer or share resources with their wives. The husbands in our sample were the primary decision makers, which meant that wives were more likely to transfer a large proportion of their income to their husbands.

Table 4: Determinants of trust and reciprocity

Variable	(1) Spousal trust	(2) Same-gender trust	(3) Opposite-gender trust	(4) Spousal reciprocity	(5) Same-gender reciprocity	(6) Opposite-gender reciprocity
	Tr1	Tr2	Tr3	Rr1	Rr2	Rr3
Male	-0.199*	-0.0777*	0.316***	-0.138	-0.0103	-0.0741**
	(0.100)	(0.0412)	(0.0476)	(0.139)	(0.151)	(0.0333)
Age	0.00376	0.0110***	-0.00460	-0.00309	0.0180	0.00911**
	(0.00788)	(0.00361)	(0.00355)	(0.0107)	(0.0131)	(0.00420)
Low income	0.0595	0.0429	0.158***	0.109	-0.159	-0.140***
	(0.104)	(0.0445)	(0.0499)	(0.152)	(0.174)	(0.0376)
Middle income	–	–	–	–	–	–
High income	0.0516	0.117**	0.213***	-0.116	0.0241	-0.375***
	(0.129)	(0.0552)	(0.0591)	(0.159)	(0.172)	(0.0469)
Yom<1	–	–	–	–	–	–
Yom1–10	0.284*	-0.0345	-0.166**	-0.116	0.527	0.423***
	(0.143)	(0.0581)	(0.0667)	(0.228)	(0.311)	(0.0680)
Yom11–20	-0.160	-0.0221	-0.0760	0.101	0.494**	0.229***
	(0.132)	(0.0601)	(0.0596)	(0.192)	(0.237)	(0.0541)
No education	–	–	–	–	–	–
Primary education	0.320	0.0142	0.0166	0.597**	0.0625	0.136
	(0.192)	(0.0749)	(0.0685)	(0.216)	(0.266)	(0.0839)
Secondary education	0.0378	-0.0792	0.359***	0.0511	-0.181	0.800***
	(0.212)	(0.129)	(0.0871)	(0.344)	(0.278)	(0.102)
Higher education	-0.0183	0.0176	-0.0528	0.242	-0.258	0.167**
	(0.140)	(0.0625)	(0.0520)	(0.185)	(0.192)	(0.0719)
Number of children	0.0674**	-0.0235	-0.0510***	-0.0348	0.00935	-0.0112
	(0.0285)	(0.0176)	(0.0163)	(0.0445)	(0.0449)	(0.0138)
Risk taker	-0.0795	-0.120**	0.0572	-0.0532	0.0257	0.0582
	(0.0916)	(0.0441)	(0.0423)	(0.118)	(0.127)	(0.0348)
Husband finance decision	-0.105	-0.0379	-0.0406	-0.198*	-0.0927	0.116***
	(0.0943)	(0.0454)	(0.0394)	(0.106)	(0.139)	(0.0333)
Altruism	0.157	-0.0858	0.499***	0.652**	0.321	0.311***
	(0.154)	(0.0794)	(0.0728)	(0.238)	(0.252)	(0.0645)
Constant	0.420	0.235	0.268*	0.581	-0.620	-0.723***
	(0.425)	(0.157)	(0.148)	(0.451)	(0.723)	(0.228)
Observations	41	41	41	41	41	41
R2	0.583	0.671	0.919	0.582	0.425	0.958

Note: *** = statistically significant at 1 percent level, ** = statistically significant at 5 percent level, * = statistically significant at 10 percent level. Robust standard errors given in parentheses.
Variables. Male: dummy = 1 for male, 0 for female. Age: participant's age. Low income: dummy = 1 if household income is less than PKR10,000 and 0 otherwise. High income: dummy = 1 if household income is greater than PKR40,000 and 0 otherwise. Yom<1: dummy = 1 if participant has been married less than a year and 0 otherwise. Yom1–10: dummy = 1 if participant has been married 1–10 years and 0 otherwise. Yom11–20: dummy = 1 if participant has been married 10–20 years and 0 otherwise. No education: dummy = 1 if participant has no education and 0 otherwise. Primary education: dummy = 1 if participant has primary schooling and 0 otherwise. Secondary education: dummy = 1 if participant has secondary schooling and 0 otherwise. Higher education: dummy = 1 if participant has higher education and 0 otherwise. Number of children: participant's number of children. Risk taker: dummy = 1 if participant is a risk taker and 0 otherwise. Husband financial decision: dummy = 1 if husband makes most household financial decisions and 0 if wife does. Altruism: as measured by amounts sent in dictator game.
Source: Authors' calculations.

Individuals married for 1–10 years display greater trust in the spousal trust and opposite-gender reciprocity rounds, but less trust in the trust game played with opposite-gender partners, compared to individuals who have been married for less than a year. Those married for 11–20 years show more trust in the same-gender and opposite-gender reciprocity rounds compared to those married for less than a year. Individuals with children are 6 percent more likely to trust their spouses. The literature suggests that having children strengthens marital bonds, leading spouses to display greater trust in one another.

The results for the trust game involving same-gender pairs (Tr2) show that females display 7.7 percent more trust when paired with other females, compared to males paired with other males. This could be due to greater identification and empathy with female partners. Moreover, older people are 1.10 percent more likely to trust partners of the same gender. Various studies suggest that, as people grow older, they are less likely to make selfish decisions or display self-maximizing behavior. Instead, they are more motivated to give back to others.

Individuals from a higher-income background (with a monthly household income of PKR40,000 and above) are found to be 11.7 percent more likely to trust strangers of the same gender, compared to individuals from a middle-income background. As mentioned in the introduction, individuals with higher incomes are less reluctant to share resources with others and thus display higher trust levels. Finally, risk takers are less likely to trust strangers of the same gender.

In round 3, involving an opposite-gender trust game (Tr3), we find that males are 31 percent more likely to trust than females when paired with opposite-gender partners, all else being equal. This could be explained by cultural norms that encourage chivalry among men and caution among women toward male strangers. Income appears to have a positive association with trust levels. Secondary education is positive and significant, suggesting that individuals who have completed secondary school are 35.9 percent more likely to trust strangers of the opposite gender: higher levels of education are more likely to broaden an individual's horizons and instill greater confidence in handling risk. Finally, more altruistic individuals are more likely to display trust in opposite-gender partners.

For reciprocity in the spousal pairing round (Rr1), we find that education has a positive impact on reciprocity levels, possibly because individuals are more likely to be aware of the consequences of their decisions. The coefficient for 'husband finance decision' is negative, indicating that, in households where husbands are reluctant to share resources with their wives, spouses show less trustworthiness.

In the same-gender reciprocity round (Rr2), individuals who have been married for 10–20 years are 49.4 percent more likely to display reciprocity with strangers of the same gender, compared to participants married for less than a year. Individuals who have been married longer than 10 years develop a greater sense of belonging to their community.

The opposite-gender trustworthiness regression results (Rr3) show that males are 7.4 percent less likely to reciprocate than females when paired with opposite-gender partners, all else being equal. One explanation for this result is derived from Eckel and Grossman (1998), who argue that females are more likely to reward good behavior and punish bad behavior. Here, too, females returned larger amounts than males as a reward for receiving larger amounts from males in the first stage. Older people are 9.1 percent more likely to reciprocate with partners of the opposite gender. At all income levels, individuals are less likely to reciprocate with partners of the opposite gender. Finally, years of marriage, education, the husband's financial decision-making power and altruism are all positively and significantly correlated with reciprocity toward the opposite gender.

6.   Conclusion

For our sample, trust appears to be greatest in the spousal round, followed by the same-gender pairing round and opposite-gender pairing round. Trustworthiness follows the same pattern. Overall, comparing the total averages of proportions transferred for males and females, we find that the males in our sample display greater trust as well as higher reciprocity than females. With respect to the optimum and efficiency maximizing strategy, 16 first movers sent their entire endowment to their spouses. Ten of these were female and six were male. Thus, 39 percent of the sample chose to display efficiency maximizing behavior.

Our study was carried out with an urban sample from Lahore, Pakistan. Most participants had received some level of education and thus exhibited a greater, more comprehensive understanding of the trust game and welfare maximizing strategy. This came across in the fact that individuals appeared to evaluate their choices thoughtfully in the spousal round, as none of the first movers transferred their entire endowment in the second round and only three first movers sent their entire endowment in the third round.

The efficiency maximizing results are interesting because females in developing countries are expected to share fewer resources with their husbands, as they tend to have little control over resources in their daily lives. However, 24 percent of the first-mover females in our sample chose an efficiency maximizing strategy and transferred their entire endowment to their husbands. Similarly, since husbands in developing countries tend to be household heads, they are less likely to share resources with their wives. However, in our sample, 14.6 percent of first-mover husbands transferred their entire endowment to their wives. This departure from the norm is interesting because it raises questions that could be addressed in future research.

Some of the important determinants of trust appear to be age, education and years of marriage. Older people are more likely to display trust than younger individuals. Better educated individuals are also more likely to trust their spouses as well as strangers. Individuals who have been married for 10 years or more are less likely to display trust in strangers of the same or opposite gender, and are more likely to trust their spouses.

For reciprocity, age, education and income appear to be important determinants. Older individuals and those with secondary education are more likely to be reciprocative. Income has a negative association with trustworthiness: at low as well as high incomes, there appears to be a lower level of trustworthiness. Overall, females appear to be less trusting than males.

Finally, even though experimental approaches offer the benefit of observing actual behavior as opposed to stated or hypothetical behavior, the results obtained from real-world interactions may still differ from our findings in this study. We cannot therefore state to what extent these findings can be generalized to real-world settings. This working paper

has attempted to shed further light on trust dynamics with different gender pairings in the context of Pakistan. Many more avenues of research remain, particularly involving larger and more representative samples from different regions to gain deeper insight into gender-based trust dynamics in Pakistan.

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Appendix

Descriptive statistics

Variable	(1) N	(2) Total %	(3) Females %	(4) Males %	(5) Category
Age	82				40 years (min: 20, max: 67)
Education	82	14.63	14.60	14.60	No education
			14.60	14.60	Primary education
Salary	82	26.83	14.60	39.02	10,000–20,000
Years of marriage	82	39.02	41.46	41.46	Less than 10 years
Number of children	82	34.15	34.15	34.15	3
Status before current marriage	82	97.56	97.60	97.60	Single
Household monthly income	82	32.93	36.60	29.30	10,000–20,000
Spouse has a job	82	60.98	75.60	46.30	Yes
Spousal salary	82	32.93	14.63	51.20	10,000–20,000
Financial budgeting	82	47.56	44.00	51.20	Husband
Hands over salary to spouse	82	62.20	56.00	68.30	No
Saving decisions	82	32.92	26.90	39.02	Wife
Major decisions	82	57.32	65.90	48.80	Husband
Argues over financial decisions	82	40.24	39.02	39.02	5 times
Type of marriage	82	84.15	85.30	82.92	Arranged
Gifts for spouse	82	67.07	75.60	58.50	Yes
Religious	82	50.00	41.50	58.50	1
Praying frequency	82	52.44	51.20	53.70	Everyday
Number of siblings	82	52.44	51.20	53.70	More than 5
Number of close friends	82	37.80	37.83	41.40	2 to 4
Gifts in last 12 months	82	84.15	85.40	83.90	Yes
Charity	82	46.34	48.80	43.90	Often
Political activity	82	92.68	92.70	92.70	None
Risk attitudes	82	60.98	53.70	68.30	Own business
GSS trust	82	59.76	73.00	45.30	Can't be too careful
GSS helpful	82	68.29	75.60	60.98	Selfish
GSS fair	82	59.76	53.70	65.90	Takes advantage
General trust	82	31.71	31.70	31.70	5
Relies on people	82	25.61	26.80	24.40	1
Cautious about trusting strangers	82	59.76	63.40	56.10	1
Trusts spouse	82	89.02	90.20	87.80	A lot
Trusts strangers	82	39.02	41.50	36.6	No
			34.00	43.9	Quite a lot
A little at stake	82	45.12	41.50	48.80	Quite a lot
A lot at stake	82	37.80	53.70	21.95	No
Lends money	82	52.44	58.60	46.30	Seldom
Lends possessions	82	35.37	46.30	24.40	Seldom
Leaves door unlocked	82	76.83	82.90	70.70	Never
Motivation	82	58.54	65.85	51.20	Need

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