

**Trust, Reciprocity and Trustworthiness between Spouses:
Evidence from a Field Experiment in India**

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Abstract:

I present results from the first trust game conducted among married couples. The experiment consisted of a trust game where spouses were taken into separate rooms, not allowed to communicate, and given a significant endowment. Spouses played a one-shot trust game where they were randomly assigned to the role of sender or receiver. The first notable result is that only 3% of spouses in the sender role transfer the entire amount, which is costly as the transferred amount is tripled. Women send significantly less money than their male counterparts, 54% versus 60% of the total endowment respectively. Men return significantly more money than women, 58% versus 48% respectively. In these households, women are less trusting and less trustworthy than men because they receive more money and send less in return. I use self-reported indicators of bargaining power, control over money, and altruism to examine the mechanisms motivating differences in sending behavior across genders. The results suggest that lack of control over money and prior non-cooperative behavior between spouses in their daily lives contribute to explain the motives for inefficient allocations in the household.

Keywords: trust, intra-household allocation, India

JEL Classification: D03, D13, O12.

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1. Introduction

Fundamental questions about the family such as whether spouses can eliminate the frictions we observe in contracting in other contexts remain unresolved. Even between spouses contracts are incomplete because efficient behavior cannot be enforced formally. In particular, among households in developing countries the variability of farm income, the prevalence of informal work (sometimes in multiple activities), and the binding budget constraints create opportunities to behave strategically. Household members then rely on informal contracting enforcement mechanisms such as trust, altruism and reciprocity to hinder the incentives for non-cooperative behavior that prevail when contracts are incomplete. However, the empirical evidence of efficiency in intra-household allocation in developing countries is mixed. Bobonis (2009) in Mexico and LaFave & Thomas (2013) in Indonesia fail to reject efficient intra-household allocation across different margins of expenditure. In contrast, Udry (1996), Duflo and Udry (2004), and Robinson (2012) provide evidence of non-cooperative behavior, inefficient response to shocks to farm income, and limited insurance within households in Burkina Faso, Cote d'Ivoire, and Kenya respectively². The goal of this research is to examine whether trust and reciprocity between spouses can eliminate the frictions we observe when contracts are incomplete and whether spouses can exhaust opportunities for Pareto improvement.

² There is also a growing literature on the prevalence and consequences of asymmetric information between spouses living under the same roof (see Ashraf (2009); Iversen et al. (2010); Mani (2011); Castilla & Walker (2013a, 2013b); Castilla (2014); Hoel (2014)). This line of research has found evidence of strategic behavior, inefficient allocations, and hiding of income between spouses.

In this paper, I present results from the first trust experiment conducted between spouses. Established married couples are the best population to examine whether trust can result in socially efficient outcomes because decision-making within the household is characterized by repeated interaction and caring. For this purpose, spouses were asked to play a one-shot Berg, Dickhaout and McCabe (BDM) trust (or investment) game for the opportunity to earn up to 80% of daily household income. One spouse was randomly chosen to play the role of sender and the other of receiver. The Nash Equilibrium of this game between individuals with egotistic preferences is for the receiver to keep it all and thus in anticipation the sender transfers nothing. However, the socially optimum, household-earnings maximizing, strategy is for the sender to transfer the entire amount as it earns a 300% interest. This strategy, while not a Nash Equilibrium, could be observed under a unitary and/or cooperative household as transfers between spouses do not change the equilibrium allocations which are also efficient due to income-pooling (Lundberg & Pollack (1993)).

The field experiment and survey were conducted in Dehradun and Almora districts, in the mountain region of Uttarakhand State, India among 185 married couples, half from each location. Prior to responding a survey, spouses were asked to play a one-shot trust game and a dictator game. Each spouse was randomly assigned to a role and taken to a separate room with an enumerator of the same gender. The sender was given Rs. 75 and informed that they could transfer any amount to their spouse and keep the remainder. The amount transferred was tripled prior to reaching the spouse in the receiving role. Each receiver spouse was then given the opportunity to return any amount of the transfer. The proportion transferred by the sender is an indicator of trust that the receiver will share some of the earnings, while the proportion that is returned measures reciprocity (Camerer (2003)). Because it is possible that returning behavior is motivated by reciprocity and/or altruism, the spouse in the receiver role also played a dictator game after the trust game. The

differences in the proportions shared with his/her spouse indicate reciprocity net of pure altruism (Cox (2004)).

This paper extends the literature in several ways. There is substantial evidence that individuals do not play the Nash Equilibrium in the trust game, and allocations reported in the literature seem to favor equality over selfish behavior (Berg et al. (1995); Cox (2004); Camerer (2003); Ashraf et al. (2006)). Between spouses, one would expect individuals in households where spouses are cooperative for the sender to transfer the entire endowment because their spouse is in the receiving role and they can walk away with more joint earnings. However, only 3% of these couples choose that strategy. Spouses in the sender role transfer 57% of their endowment, while receivers return on average 53.7% of the amount they receive. The equivalent proportional response would be to return 30%, thus on average the sender is earning interest on her investment. While the proportion sent (and returned) is considerably larger than the average observed in experiments between strangers, these results indicate that, even between individuals who we can safely assume have altruistic preferences, the socially optimum outcome is not attained. This is concerning as trust is one of the basic pillars of social capital formation, which fosters economic development.

The results from this research also contribute to the literature on gender differences in cooperative behavior. The random assignment of spouses to roles allows me to test directly for differences across genders. In this sample, women send and return on average a smaller share than men. This suggests that among these couples wives are less trusting and reciprocate less than their husbands. In the laboratory experimental literature women have been consistently found to be less trusting than men, however, women return more than men (Ashraf et al. (2006); Croson and Gneezy (2004)). Then a question remains, why do women reciprocate more with strangers than their husbands? Experiments on trust in developing countries considering a broad subject pool (instead of college students) have found similar result (Schechter (2007); Barr (2007)). Schechter (2007)

attributes the differences to dissimilar risk attitudes across genders. On their daily lives spouses are engaged in a repeated game, with the experimental games being just another round. It is possible that women are both less trusting and reciprocal, as well as more trusted because their husbands know women are better at managing the limited household resources. Alternatively, it is possible that women are less cooperative in developing countries as a result of the prevalent lack of control over money, and limited labor force participation independently of comparative advantages over household resource management.

I use questions from the survey to seek the mechanisms driving transfers in the game. I find that sending behavior is driven by women and it is negatively correlated with expenditure in tobacco suggesting that women are less trusting as a result of prior non-cooperative behavior by their husbands. Individuals who have a say on whether they work outside the house, and those who work outside the house transfer more money in the sender role. Returning behavior is motivated by both pure altruism and reciprocity particularly in men, and does not correlate with influence on labor force participation. However, the proportion that is returned negatively correlates with spouses making financial decisions jointly because spouses face a bargaining tax. The results on transfers in the trust game indicate that lack of control over money is an important cause of inefficient allocations within the household.

2. Experimental Procedures and Survey

The experiment was conducted in Dehradun and Almora districts, in Uttarakhand, India between March and June 2013. The sample consists of 185 established couples, half from Dehradun and the other half from Ranikhet³. Recruiting of subjects was done door-to-door⁴. Thus the sample is most

³ Out of the original 188 households, 3 had to be withdrawn due to data inputting mistakes.

similar to those used in laboratory experiments, and because randomization was used in the assignment of roles, internal validity can be obtained. After the experiment had concluded, subjects were surveyed individually by an enumerator of their same gender and in separate rooms for privacy.

Experimental Protocol and Tasks:

The enumerators knocked on the door, asked if both spouses were home and if they were willing to answer some questions about managing of household finances⁵. Respondents were first asked if they had children aged 3 – 18 years old, and were only interviewed if they met the criteria. No information about potential earnings was provided prior to spouses agreeing to participate. Three types of responses were observed: (1) Negative (including No/not interested/husband not available and he is usually back late at night/husband will not be interested), in which case enumerators left; (2) I should consult with my spouse, in which case enumerators waited for spouse, explained the purpose and waited for an answer that could be positive, match (1) or (3); and (3) Husband/wife not available at home right now but will be available on (some particular day). For the last set of respondents, a preferred date and time was recorded when they could participate and enumerators returned at the set date and time.

Upon agreement to participate, each spouse was asked to join an enumerator of his or her same gender in separate rooms. First, spouses were asked to participate in a set of experiments and explained they could earn money depending on their choices. Later they answered a set of survey questions. The experimenter outlined the rules of the experiment and the tasks involved. Each

⁴ Uttarakhand, and in particular the districts examined have not been subject to research participation previously, thus it is even harder to recruit. In Dehradun 1 in 40 households agreed to participate. In Ranikhet the response rate was similar, except for the first two villages where it was 1 in 4 households.

⁵ Enumerators first knocked on the door/call out someone if the door is open/ look for household members in the nearby fields or in the cowshed. When someone appeared they said the following: “Namastey aunty-ji/uncle-ji! We are members of the S.P.D. (Society of People for Development) that runs the paper factory and the dairy near the dried up river bed (in Shankarpur). [Include description of the kind of work that S.P.D. does in case they don't know] S.P.D. has received a new project on how couples make financial decisions within the household, and we are working on the same. We would like to ask you and your husband/wife a few questions about management of household finances. Do you have children aged between 3-18 years? Is your husband/wife at home right now? Are you willing to spare 30-45 minutes for our study?”

spouse played one practice round, was encouraged to ask clarifying questions and experimenters verified the tasks were understood. In spontaneously offered feedback immediately after the practice rounds and after the game, no respondent said they had found the game unclear or confusing. Details on the script used by field assistants and enumerators can be found in Appendix A.

Participants' tasks involved playing a BDM investment game. In each household, spouses were randomly assigned to the role of sender or receiver. The sender was given Rs 75 in notes worth Rs 5 each. The initial endowment and the interest rate on the amount that is sent was common knowledge. Each individual in this role was informed that she could transfer any amount to her spouse in the other room and keep the remainder. The amount transferred was tripled prior to reaching the spouse in the receiving role. Then an enumerator took the tripled transfer amount in an envelope to the other room. Each receiver spouse was given the opportunity to return part, all or none of the tripled amount of the transfer she received from her spouse. To minimize demand effects the enumerators turned around while each individual made her decision of how much to send or return. Further, spouses were given blank notes to give the impression of a full envelope if they felt embarrassed that the enumerator would think they sent too little. At the end of the experimental session and after completion of the survey, subjects were informed of their own pay-offs. The amount was handed to them privately either immediately after the session or at the end of the day.

The Nash Equilibrium if subjects have self-regarding preferences is for the receiver to keep the entire amount and in anticipation of this behavior the sender does not transfer anything. However, even between strangers the usual average share sent is around 50% of the endowment, and the amount returned is between 25% and 30% of the tripled amount (Berg et al. (1995); Cox (2004); Camerer (2003); Ashraf et al. (2006)). An individual in the sender role transfers money to her partner if she trusts some of the tripled amount will be returned. Likewise, an individual in the receiver role returns a non-zero amount if she is motivated by positive reciprocity. Cox (2004)

suggests other reasons to transfer a non-zero amount on either case, such as other-regarding preferences, pure altruism, or inequality aversion. The trust game does not provide enough information to distinguish between the two alternative mechanisms. Further, in the case of married couples we can plausibly assume they care for each other and thus they will exhibit other-regarding (altruistic) preferences.

To distinguish between trust and reciprocity from altruism I take two different approaches. First, I use the survey data to argue that the motivation to make positive transfers by senders is trust. Following Cox (2004), I will use a second treatment on spouses in the receiver role to differentiate between reciprocity and altruistic preferences. After making the decision on how much to return, individuals in the receiver role played a one-shot dictator game. They were given Rs. 75 and asked to decide how much to keep and how much to share with their spouse. They were informed their spouse would not be able to respond to the proposed split. The difference in the amount transferred in the investment game and the dictator game indicates positive (or negative) reciprocity.

Summary Statistics:

The sample consists of married couples of different ages, castes, and socio-economic backgrounds. Households have on average around 4.5 members (excluding the respondent), including at least one son and one daughter. In many cases the husband's parents also live with them. The couples have been married for 16 years on average but there is considerable variation; the youngest couple has been married for 3 years while the oldest for 49. Women tend to have less schooling than men and in general less than 15% of men have completed high school. Men are the main breadwinners in the household as less than 30% of women work outside the home. Nonetheless, households in the sample are not among the poorest in India; the average monthly income is equivalent to 140 dollars. About 50% of the households own a cow or some chickens; buffalos, bullocks, and goats are less

common. The transportation and house quality indices are constructed by adding indicator variables of whether spouses own certain transportation assets and characteristics of better housing (see definition of all indicators used in Appendix A). The average of 0.6 on the transportation index indicates households own on average less than one transportation asset, though most own at least a bicycle, and some even own a car or motorcycle.

Table 1: Summary Statistics by Gender

Variable	Husband		Wife	
	N	Mean	N	Mean
Gifts to Spouse	186	0.532 (0.500)	176	0.727 (0.446)
Say over Work	187	0.850 (0.357)	187	0.395 (0.490)
Separate Spheres	187	0.326 (0.470)	181	0.154 (0.362)
Work	185	0.951 (0.215)	185	0.297 (0.458)
Age	186	40.01 (8.760)	185	34.64 (8.765)
Years of Marriage	185	15.87 (9.256)	173	16.55 (9.860)
Scheduled Caste	187	0.106 (0.309)	185	0.059 (0.237)
Backwards Caste	187	0.208 (0.407)	185	0.237 (0.426)
Illiterate	160	0.056 (0.231)	175	0.12 (0.325)
Some Schooling	186	0.758 (0.429)	184	0.619 (0.486)
No Schooling	186	0.091 (0.288)	184	0.282 (0.451)
Higher Education	186	0.129 (0.336)	184	0.065 (0.247)
Handles HH Money	188	0.063 (0.245)	188	0.202 (0.402)
Own Income	182	8.096 (8.039)	85	0.907 (1.777)

Table 2: Summary Statistics on Expenditure, Income and Assets by Gender

Variable	Husband		Wife		Household Total	
	N	Mean	N	Mean	N	Mean
Share Exp Tobacco	182	3.641 (7.582)	186	1.623 (6.062)	187	2.795 (5.597)
Share Exp. Assets	182	10.00 (16.90)	186	10.25 (16.92)	187	9.743 (14.32)
Share Exp. Ceremonies	182	8.834 (14.92)	186	8.825 (10.61)	187	9.609 (12.87)
Total Expenditure (th)	188	76.46 (114.2)	188	88.00 (144.7)	188	164.4 (201.9)
Total HH Income (th)	179	8.488 (8.983)	165	7.704 (7.505)	174	7.956 (8.521)

3. Experimental Outcomes

The household earnings maximizing strategy in the trust game is for the sender to transfer her entire endowment as it will be tripled. The receiver's response is then trivial. This strategy, while not a Nash Equilibrium with egotistic preferences, could be observed under a unitary or cooperative (collective) household as transfers between spouses do not change the equilibrium allocations due to income pooling. In contrast, in a non-cooperative individual control over resources matters and there are efficiency losses. Table 3 contains the main experimental outcomes. The first notable result is that spouses do not attain the efficient, household earnings maximizing outcome. While there are no spouses who choose not to transfer any money in either role, only 3% send their entire endowment, and 2.7% return the entire amount they receive.

Senders transfer on average Rs 45, equivalent to 57% of their Rs 75 endowment. While I cannot directly compare spousal behavior relative to strangers, I can use previous findings from laboratory experiments where subjects played with strangers to put this result in context. Camerer (2003), in his survey of experimental results, finds that senders in the investment game transfer on average 50% of their endowment. Interestingly, the result on trust is similar to experiments where strangers are provided with the other players' social history in which case senders transfer on average 53.6% (Berg et al. (1995)). While the proportion sent is considerably larger than the average observed in experiments between strangers (see discussion below), one would expect a greater proportion of spouses sending the entire endowment or making larger transfers as a result of repeated interaction (outside of the laboratory) and caring.

Table 3: Main Experimental Outcomes

	Send ^{a/} Mean	Return ^{a/} Mean	Dictator Send ^{a/} Mean	Means Tests ^{b/}	Epps- Singleton ^{c/}	Mann - Whitney ^{c/}
Amounts	43.027 [15.243]	69.243 [39.928]	37.162 [14.330]			
Proportion	57.369 [20.324]	53.746 [21.395]	50.450 [19.106]			
% Send -				3.623	4.067	1.709
% Return				(0.0479)	(0.3970)	(0.0874)
% Return -				4.196	13.804	1.742
% Dictator				(0.0473)	(0.0079)	(0.0814)

Note: Author's estimates.

a/ Standard deviations in brackets.

b/ Difference is presented, p-values in parentheses.

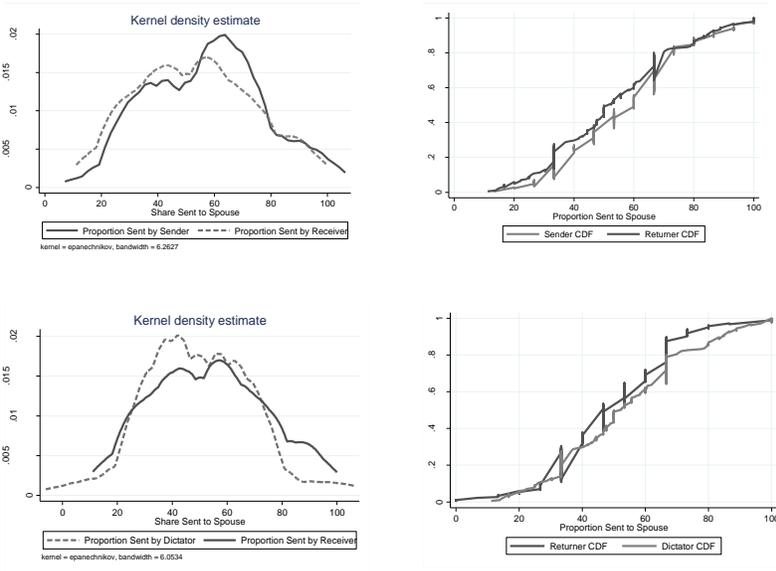
c/ Test statistic is presented. p-value in parentheses.

Receivers return on average Rs. 69 which is equivalent to 53.7% of the amount they receive. The equivalent proportional response would be to return one third, thus on average the sender is earning interest on her investment. Camerer (2003) reports that receivers return about one third of their transfer. Contrastingly with senders, the proportion returned is still considerably larger among spouses even relative to the 40% returned in social-history experiments (Berg et al. (1995)). Those subjects who play the role of receivers subsequently play a dictator game. In contrast to the 20 to 30% sent among strangers in the dictator game, spouses share 49.5% of the Rs. 75 endowment with their partner. The average responses of the spouses in the receiver role in the dictator and trust game are significantly different to each other at the 95% confidence level, as are the cumulative and probability density functions.

One potential explanation for the observed behavior between spouses could be a 50 – 50 sharing rule. However, the average share sent is significantly larger than the share returned and neither proportion (sent or returned) is statistically equal to 50%. Further, the results from the Epps-Singleton and Mann-Whitney distribution tests indicate that the CDF (and pdf) of the share sent is to the right of the distribution of the share returned. Alternatively, spouses could be exhibiting inequality aversion which leads them to equate individual final earnings instead of proportions share.

I can also reject inequality aversion as the averages kept by sender and receiver are statistically different to each other at the 99% significance level.

Figure 1: Density Distribution Estimations and Tests



It can be argued that because most of the experiments on trust have been conducted in high-income countries, the differences may be related to wealth differentials or misunderstanding of the game. Spouses played one practice round, were asked questions to verify they understood the game, and were encouraged to ask questions as the practice round progressed. Field assistants made sure all clarifying questions were answered prior to playing for real money. It is therefore unlikely that misunderstanding of the game explains the results. Ashraf et al. (2006) conduct experiments with college students from 3 different countries: United States, Russia, and South Africa. They find senders in the United States send on average a similar proportion of their endowment than South Africans (41.5% relative to 42.8% respectively). Likewise, students in South Africa playing the dictator game send on average a similar proportion as American students (25%). South Africans seem to be somewhat more reciprocal as they return 27% relative to 23.3% for American students.

It is also possible that responses on average will differ when experiments are conducted in samples taken from the general population relative to college students who are a somewhat homogenous group. In Paraguay, Schechter (2007) finds that senders transfer 46.8% of their endowment and receivers return 43.4% while Barr (2003) finds that in Zimbabwe trustors send 43%⁶. The results suggest individuals in developing countries tend to be less trusting and more reciprocal relative to students in higher-income countries⁷. Alternatively, spouses in my sample could have felt pressure to send a non-zero amount relative to samples of subjects in other developing countries (usually 7% to 9% do not send anything)⁸, however, if the differences were driven by demand effects a similar pattern would be observed in the dictator game and the proportion shared is even lower than in Hoel (2013) in Kenya⁹.

Gender Differences:

The experimental evidence on gender is inconclusive but in most trust games, women tend to send less and return more than men (Ashraf et al. (2006); Croson and Gneezy (2004))¹⁰. Among married couples I find consistent results with this literature on trust but not on trustworthiness. In the sender role, women transfer on average 54.4% relative to 60.1% sent by men and these differences are significant at the 94% confidence level. Interestingly, women return only 48.8% while men return

⁶ Barr (2003) does not provide results on returner behavior or reciprocity.

⁷ Further, Barr (2003) and Schechter (2007) draw their samples from the general population instead of college students, finding on average that subjects are more trusting and even more reciprocal than Ashraf et al. (2007) South Africa results, but still less trusting than students in developed countries.

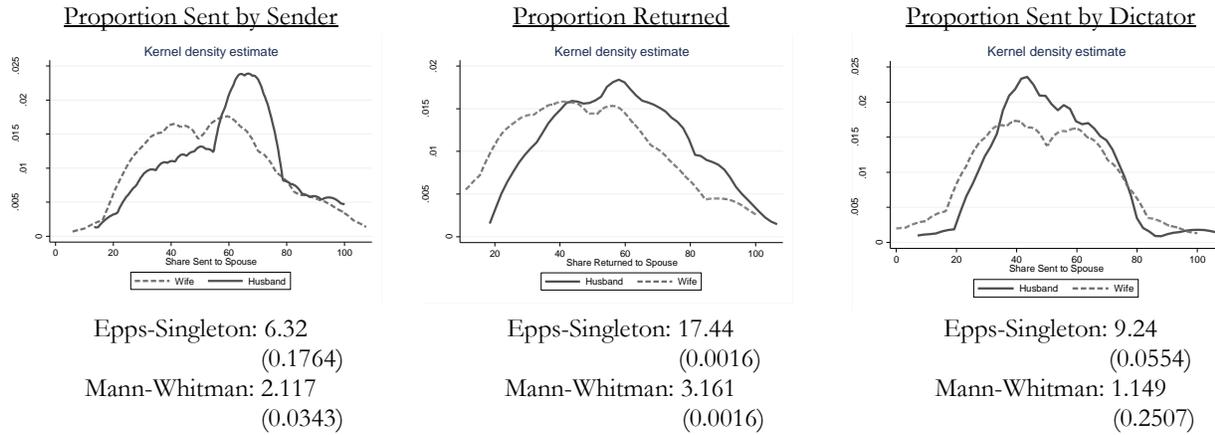
⁸ There are also some experimental methodology differences: these authors use a within-subject design where each subject plays different games and/or different treatments, and the strategy method (only Ashraf et al. (2007) and Schechter (2007))

⁹ Subjects played one practice round and field assistants made sure all clarifying questions were answered prior to playing for real money

¹⁰ Exceptions: Both in Schechter (2007) and Barr (2003) women are less trusting (send less) and return less. Schechter argues the gender differences are driven by women being more risk averse than men. Barr presents anecdotal evidence that women in Zimbabwe have both less access to money and less control within the household and thus have a harder time letting go of the money. Bellemare and Kroger (2007) drawing a random sample from the Dutch population find that women are also less trusting than men.

58.8% and these differences are significant at the 99% level. Among couples in this sample wives are less trusting and less trustworthy than husbands because they receive more money and return less.

Figure 2: Distribution of Sharing across Genders



In Figure 2, I present the estimated cumulative and probability density functions by gender. While the distribution of the proportion transferred by the sender seems to have a larger spike around the 60% mark for men, the Epps-Singleton and Mann-Whitney tests show contrasting results. The Epps-Singleton fails to reject the equality of distributions across genders, however, the Mann-Whitney does. These differences indicate that women send less than men as the distribution of the proportion sent by women is shifted leftwards.

The kernel density of the proportion returned clearly shows that the distribution for women is shifted leftwards. Both the Epps-Singleton and the Mann-Whitney tests confirm the distributions of the proportion returned are statistically different across genders. Interestingly, the average shared by the spouse in the receiving role in the dictator game is statistically equivalent between genders, and so are the distributions. This suggests that the differences in returning behavior between women and men are not driven by differences in altruism or caring for each other.

Table 4: Main Experimental Outcomes

	Send ^{a/} Mean	Return ^{a/} Mean	Dictator Send ^{a/} Mean	Means Tests ^{b/}
<i>Amounts</i>				
Husband	45.105 [15.035]	74.00 [44.032]	38.50 [12.729]	
Wife	40.833 [15.236]	64.736 [35.252]	35.894 [15.658]	
<i>Shares</i>				
Husband	60.140 [20.046]	58.863 [19.459]	51.333 [16.973]	
Wife	54.444 [20.315]	48.898 [22.106]	47.859 [20.878]	
<i>Mean Tests for Differences of Husband vs. Wife ^{b/}</i>				
Husband - Wife (Amount)	4.271 (0.0565)	9.263 (0.115)	2.605 (0.2174)	
Husband - Wife (shares)	5.695 (0.0565)	9.964 (0.0014)	3.474 (0.2174)	
<i>Return - Dictator</i>				
Husband				7.529 (0.0063)
Wife				1.038 (0.7395)

Note: Author's estimates.

a/ Standard deviations in brackets.

b/ p-values in parentheses.

4. Mechanisms: Trust, Reciprocity and Altruism

Sending Behavior: Trust, Altruism and Caring

The mechanisms motivating sending behavior in the trust game can be trust, altruism, and reciprocity if we consider spouses have been playing rounds of non-cooperative games over years. When the game is played between married couples the motives for sending money can be pure altruism, as well as altruism towards one spouse or caring. Ideally, spouses in the sender role would have played a dictator game after the trust game. However, since it was not the case, I resort to survey data and regression analysis to disentangle trust from altruism and caring.

The survey was conducted privately with each spouse in separate rooms and by enumerators of the same gender. Each spouse was asked separately and in private to rate how much they trust their spouse on a scale of 1 (completely) to 5 (not at all). There is not enough variation in the answer

to this question to be used as a correlate in the regression but it still provides some interesting information. All but 8 spouses in the role of senders stated that they trust their spouse completely and they are evenly split between husbands and wives. Out of the 8 individuals that rated their trust at 2 or 3, 7 of them are men and only 1 female. While this suggests individuals in these couples trust each other, the behavior in the trust game is inconsistent with their answers. I would expect that an individual that trusts her spouse completely will send all of the money, however, only 3% of spouses sent the entire amount.

In the regression analysis that follows, I use the answer to the question: “Do you buy gifts for your spouse?” as a proxy for caring between spouses. Individuals were asked “In the last 12 months, did you spend money on gifts or dowries for others’ weddings, and if so how much?” which will be used as an indicator of altruism towards individuals other than their spouse. In developing countries it may be harder for women to let go of money in the experiments because on their day-to-day lives they have less control over household resources (Barr (2003)). The observed lack of trust measured as sending behavior can be driven by control over money inside the household. For this purpose, I use an indicator equal to 1 if the respondent can influence his/her the choice to work outside the house. Most men can influence their labor force participation (85%), but only 39% of women do. I also use a variable equal to 1 if spouses make financial decisions unilaterally to examine different dimensions of bargaining power. These variables are both pre-existing to the experiment and subjective. They reflect an individual’s perception of the reality of his/her bargaining power and control over money within the household which is what matters in deciding whether to turn over money or not. The following regression will be estimated:

$$\omega_h = \theta_1 GS_s + \theta_2 GO_s + \pi BP_s + \delta_0 M_h + \delta_1 M_h \times C_s + \varphi X_h + \sum_{v=1}^{15} \alpha_v + \varepsilon_h \quad (1)$$

Where ω_h is the share of the endowment that the sender transfers to her spouse; GS_s is an indicator variable equal to 1 if spouse s buys gifts for her partner; GO_s is expenditure on gifts or dowries for

others' weddings in the last 12 months; BP_s is an indicator of self-reported control over money in the household; M_h indicates the spouse is male; $X_{s,h,r}$ is a matrix of household characteristics; and $\sum_{v=1}^{15} \alpha_v$ are village fixed-effects. Summary statistics of the indicators of caring, altruism and control over money are presented in Table B.2 in Appendix B.

The results from the regressions on variants of equation (1) are presented in Table 5. Column (1) contains the results from regressing the proportion sent on gender and district. In Columns (2) to (4) I use the indicator of influence over the decision to work outside the house as a measure of bargaining power, and in Columns (5) to (7) I use a measure of the self-reported resource management contract between spouses instead¹¹. The gender differences disappear once controls for bargaining power and demographics are included. Gifts to spouse, the proxy for altruism towards their partner (caring), does not correlate with the proportion sent even after allowing for differences across genders. Pure altruism implies the individual derives utility from providing gifts and transfers to others. The proportion sent in the trust game negatively correlates with the share of expenditure on gifts and dowries for others' weddings by the husband. This result is driven by wives whose husbands spend a large share on gifts to people outside the household.

The proportion of the endowment transferred by the spouse in the sending role is significantly correlated with bargaining power. This relationship seems to be driven by women who are able to influence their labor force participation. In the Appendix I show the results are robust to using an indicator of whether the individual works outside the home. In contrast, there are no differences in sending behavior for households that report making financial decisions jointly relative to those who make these decisions unilaterally. Women transfer less money when they are in the sender role suggesting women are less trusting than men. However, while this behavior is costly, it is

¹¹ Ten observations are lost due to missing values in the variables on bargaining power and gifts to/from spouse, 6 more are lost due to missing values on expenditure, and 4 more are lost due to missing values on schooling indicators. Only women were asked the household composition questions, thus when there are mistakes in data entry or non-responses, it affects both spouses.

possible that sending the money to their husbands could be more costly depending on what they will do with it. Interestingly, sending behavior is significantly and negatively correlated with the share of expenditure in tobacco. In general only men consume or purchase tobacco. In households where the husband spends a larger share of total household expenditure on tobacco women send less money. This result suggests that non-cooperative behavior observed in women is motivated by prior non-cooperative behavior by their husbands.

Table 5: Trust Regressions including proxies for caring and altruism

Variable	Baseline	BP = 1 if Some say over Work			BP = 1 if Separate Spheres		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sender's Gender (=1 if Male)	5.512* [2.956]	0.483 [4.105]	-1.730 [4.110]	7.131 [6.584]	2.186 [3.927]	0.563 [3.904]	5.71 [5.128]
Buy Gifts for Spouse (=1 if Yes)	-	-0.378 [3.806]	-0.335 [3.722]	5.140 [5.134]	-0.122 [3.915]	0.021 [3.830]	5.187 [5.510]
Gender X Gifts for Spouse	-	-	-	-10.564 [6.718]	-	-	-9.976 [6.998]
Bargaining Power (BP) (dummy variable)	-	5.913 [4.217]	8.054* [4.154]	9.731* [5.381]	3.197 [3.860]	4.353 [3.941]	6.754 [7.410]
Gender X Bargaining Power	-	-	-	-5.989 [7.591]	-	-	-4.323 [8.634]
HH Expenditure in Tobacco (= share relative to total HH exp)	-	-	-0.456* [0.235]	-0.471** [0.234]	-	-0.497* [0.266]	-0.523* [0.268]
Wife Expenditure in Ceremonies (= share relative to total Wife Exp)	-	-	0.162 [0.158]	0.166 [0.163]	-	0.090 [0.168]	0.124 [0.167]
Husband Expenditure in Ceremonies (= share relative to total Husband Exp)	-	-	-0.228** [0.102]	-0.227** [0.103]	-	-0.220** [0.099]	-0.220** [0.102]
Relative Spousal Expenditure (= Wife tot Exp / Husband tot Exp)	-	-	0.002 [0.004]	0.001 [0.005]	-	0.002 [0.004]	0.002 [0.005]
District (=1 if Almora)	-6.301** [2.971]	-5.902 [5.587]	-6.695 [5.785]	-4.808 [5.816]	-7.933 [5.674]	-8.888 [5.949]	-7.895 [5.866]
Observations	185	175	169	169	174	168	168
R-squared	0.044	0.097	0.134	0.151	0.088	0.120	0.134

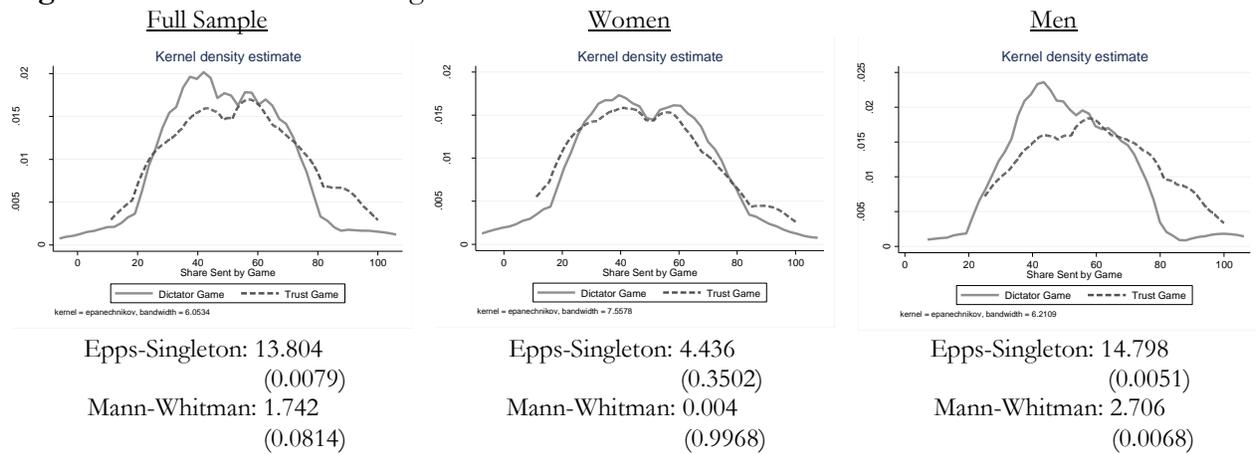
Note: Robust standard errors in brackets. P-values of t-tests in parentheses.

*** p-value<0.01; ** p-value<0.05; * p-value<0.1.

Receiver Behavior: Trustworthiness, Reciprocity, and Altruism

When a receiver returns money to her partner it may be motivated by reciprocity or by other-regarding preferences, namely altruism, caring, or inequality aversion. Following Cox (2004), I compare the proportion returned in the trust game and the proportion sent in the dictator game within spouses in the receiver role. Overall, spouses send 49.5% of their endowment in the dictator game, which is somewhat lower than results on dictator games between spouses conducted in Kenya (53%, Hoel (2014)). Recipients transfer 4.2 percentage points more in the trust game relative to the dictator game, and this difference is statistically significant at the 95% level. This result indicates that at least some of the sharing between spouses is motivated by reciprocity.

Figure 3: Distribution of Sharing across Genders between the Trust and Dictator Games



To test for differences across genders, I split the sample between husbands and wives, and compare the behavior in the trust and dictator games for each gender. On average, women return 48.8% and send 47.8% in the dictator game. The mean difference among women is statistically insignificant and equal to 1.04 percentage points. Men return 58.8% and send 51.3% in the dictator game. The average difference among husbands is 7.5 percentage points which is statistically significant at the 99% level. It seems then that wives' sharing is motivated by altruism, while for

men, sharing is motivated by both altruism and reciprocity¹². The kernel density estimates and tests in Figure 3 further support these results.

Because the aforementioned results are unconditional, it is possible that they are driven by differences in socio-demographic characteristics, wealth or control over money within the household. In Table 6, I present the results of fixed-effects regressions to test for differences within receivers between the proportion shared in trust game and the dictator game. Controlling for unobserved characteristics at the spouse (and/or household) level and the endowment amount (Column (2)), individuals send on average 4.197 percentage points less in the dictator relative to the trust game and this result is driven by men; women do not send significantly different amounts across games.

Table 6: Differences in Sharing between Dictator and Trust Games, fixed-effects

	(1)	(2)	(3)
Dictator	-4.197*** [1.476]	-3.777 [2.295]	0.0528 [2.825]
Dictator * Male	-	-	-6.723 [2.956]
Endowment	-	0.008 [0.032]	0.018 [0.032]
Observations	370	370	370
R-squared	0.042	0.042	0.069

Note: Robust standard errors in brackets.
*** p-value<0.01; ** p-value<0.05; * p-value<0.1.

To examine the mechanisms motivating returner behavior between spouses I estimate the following regression:

$$\gamma_{s,h} = \beta \epsilon_{-s} + \theta_1 GS_{-s} + \theta_2 GO_s + \pi BP_s + \delta_0 M_{s,h} + \delta_1 M_{s,h} \times C_{-s} + \varphi X_h + \sum_{v=1}^{15} \alpha_v + \epsilon_{s,h} \quad (2)$$

¹² This result conflicts with existing evidence where men are less trustworthy than women, and thus less reciprocal (see survey of results in Croson and Gneezy, 2006). There is one exception. Bellemare and Kroger (2007) find that men reciprocate more among a random sample drawn from the Dutch population. However, they find that men are also less trusting in that they invest less than women.

Where $\gamma_{s,h}$ is the share returned and ϵ_{-s} is the amount received from the sender (other spouse, -s) to account for “experimental income-effects”; GS_s is an indicator variable equal to 1 if spouse -s buys gifts for spouse s; GO_s is the share of expenditure on gifts or dowries for others’ weddings in the last 12 months by spouse s; BP_s is an indicator of self-reported control over money in the household by spouse s; $M_{s,h}$ indicates the spouse in the receiver role is male; $X_{s,h,r}$ is a matrix of household characteristics; and $\sum_{v=1}^{15} \alpha_v$ are village fixed-effects.

Table 7 contains the results on returning behavior. Variation in the proportion of the transferred amount that is returned by the receiver is correlated with altruism, reciprocity and control over money. Pure altruism is measured through the share of the endowment sent in the dictator game, and it is positively and significantly correlated with the share returned by the spouse in the receiver role.

I use the proportion transferred by the spouse in the sending role and an indicator of receiving gifts from ones’ spouse to determine whether the share returned indicates reciprocity. Returning behavior is not correlated with the proportion received from their spouse. The indicator of gifts received from their spouse appears also to not be significantly correlated with the share returned, however, this is due to differences in behavior across genders (with is not the case for the proportion transferred by the sending spouse). The results on columns (4) and (7) include interactions between gender and the proxies for reciprocity and control over money. The results suggest the motivations for returning money in the trust game are different for men and women. When husbands receive gifts from their wives, they return a greater share suggesting reciprocity is one of the motivations for sharing. For women, obtaining gifts from their spouse does not influence sending behavior. This result is also consistent with women in the receiving role exhibiting similar behavior in the dictator and the trust game

Table 7: Reciprocity Regressions including proxies for caring and altruism

Variable	Baseline	BP = 1 if Some say over Work		BP = 1 if Separate Spheres			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Percentage Received from Sender	-	0.042	0.063	0.008	0.060	0.085	0.030
		[0.085]	[0.086]	[0.070]	[0.082]	[0.083]	[0.071]
Share sent in Dictator Game	-	-	-	0.506***	-	-	0.475***
				[0.090]			[0.092]
Receiver's Gender (=1 if Male)	10.254***	10.387***	9.892***	7.231	7.919**	7.940**	4.681
	[2.979]	[3.678]	[3.706]	[7.856]	[3.369]	[3.497]	[4.657]
Received Gifts from Spouse (=1 if Yes)	-	5.668*	6.612*	-4.033	6.355*	7.296**	-2.604
		[3.393]	[3.405]	[4.184]	[3.262]	[3.278]	[4.263]
Gender X Gifts from Spouse	-	-	-	12.600**	-	-	12.233**
				[6.098]			[5.871]
Bargaining Power (=1 if say over work)	-	-2.785	-2.492	-3.630	7.542**	6.946*	3.797
		[3.788]	[3.939]	[4.126]	[3.499]	[3.585]	[4.826]
Gender X Bargaining Power	-	-	-	-1.540	-	-	-1.564
				[7.607]			[6.250]
HH Expenditure in Tobacco (= share relative to total HH exp)	-	-	-0.090	-0.136	-	-0.078	-0.104
			[0.353]	[0.250]		[0.347]	[0.259]
Wife Expenditure in Ceremonies (= share relative to total Wife Exp)	-	-	0.117	0.153	-	0.147	0.168
			[0.152]	[0.141]		[0.157]	[0.144]
Husband Expenditure in Ceremonies (= share relative to total Husband Exp)	-	-	0.021	0.012	-	0.043	0.017
			[0.084]	[0.083]		[0.081]	[0.079]
Relative Spousal Expenditure (= Wife tot Exp / Husband tot Exp)	-	-	-0.007***	-0.004*	-	-0.007*	-0.005
			[0.003]	[0.003]		[0.004]	[0.003]
District (=1 if Almora)	-9.898***	-8.628*	-8.898*	-4.759	-6.790	-7.317	-3.795
	[3.013]	[4.592]	[4.964]	[3.995]	[4.742]	[5.184]	[4.275]
Observations	185	172	169	169	171	168	168
R-squared	0.108	0.216	0.232	0.398	0.234	0.247	0.389

Note: Robust standard errors in brackets. P-values of t-tests in parentheses.

*** p-value<0.001; ** p-value<0.05; * p-value<0.1.

Having influence over the choice to work outside the house does not correlate with returning behavior. However, the resource management contract between spouses does. Individuals in households where spouses make financial decisions unilaterally return a greater share relative to households that make decisions jointly and there are no differences across genders (see Appendix).

This suggests that spouses' decisions in experiments correlate with the way they manage resources on a day-to-day basis. When spouses make financial decisions jointly, each individual faces a bargaining tax, and thus has a greater incentive to maintain control over money in the game.

5. Conclusions

In this paper I presented results from the first trust game conducted among married couples. Between March and July 2013, I conducted laboratory experiments in the field among a sample of 185 established couples in Dehradun and Almora districts, in Uttarakhand, India. The experiment consisted of trust and dictator games where spouses were randomly assigned to the role of sender or receiver. Couples were recruited door-to-door, taken into separate rooms, not allowed to communicate, and given a significant endowment. The socially optimum strategy is in direct contrast with the self-interest optimum; the household earnings maximizing strategy is to send the entire amount (as it is tripled), while the Nash Equilibrium of the game is to not send anything because the receiver has incentives to keep the entire amount.

Established married couples are in principle the best population to examine whether trust can result in socially efficient outcomes. A unitary or cooperative household contract would result in an efficient outcome because transfers between spouses do not change the equilibrium allocations. Thus, under a cooperative household the sender would transfer the entire amount. Contrastingly, in a non-cooperative household control over resources matters and there are efficiency losses. In this sample efficiency is rejected as only 3% of the senders transfer their entire endowment.

While the proportion sent (and returned) is considerably larger than the average observed in experiments between strangers (50% and 30% respectively), one would expect individuals in married couples to attain the household earnings maximizing strategy as a result of trust, interaction on a

day-to-day basis, and caring (Camerer, (2003)). Spouses in the sender role transfer 57% of their endowment, while receivers return on average 53.7%. Therefore, trust does pay when spouses play with each other because senders earn positive interest on their investment as the equivalent proportional response would be to return 33%.

Data was also collected on spousal attitudes, household financial management, trust and some proxies for generosity and caring. Through the combination of experimental and survey data I was able to identify some of the mechanisms driving inefficient intra-household allocations. Results indicate that sharing between spouses responds to control over money and the gender differences are a reflection of roles within the marital contract. Both men and women alike send more money to their spouse if they have a say on the decision to participate in the labor force. Likewise, individuals in households where spouses make financial decisions jointly return a smaller share relative to households that make decisions unilaterally. The result is intuitive because when spouses make financial decisions jointly, each individual faces a bargaining tax, and thus has a greater incentive to maintain control over money in the game.

The experimental setting allowed me to test for differences across genders due to random assignment of subjects to the role of sender or receiver. Women are less trusting and less trustworthy than their husbands. Therefore men are more cooperative than what their wives anticipate as they send more money back. However, while the wives' behavior is costly, it is possible that sending the money to their husbands could be more costly depending on what they will do with it. In households where the husband spends a larger share of total household expenditure on tobacco, women send less money. This result suggests that non-cooperative behavior observed by women in experimental settings in the field is motivated by prior non-cooperative behavior by their husbands.

References

- Ashraf, Nava. 2009. "Spousal Control and Intra-household Decision Making: An Experimental Study in the Philippines." *American Economic Review*, 99 (4), 1245–1277.
- Ashraf, Nava, Bohnet, Iris and Nikita Piankov. 2006. Decomposing Trust and Trustworthiness. *Experimental Economics* 9: 193-208.
- Barr, Abigail. 2003. Trust and Expected Trustworthiness: Experimental evidence from Zimbabwean villages. *The Economic Journal*, 113 (July), 614–630.
- Bellemare, Charles and Sabine Kröger. 2007. On Representative Social Capital. *European Economic Review*, Volume 51(1): pp. 1-246.
- Berg, J., Dickhaut, J., and McCabe, K.A. (1995), "Trust, Reciprocity, and Social History." *Games and Economic Behavior*. 10, 290-307.
- Bobonis, Gustavo J. (2009) Is the Allocation of Resources within the Household Efficient? New Evidence from a Randomized Experiment. *Journal of Political Economy*, 117(3), 453-503.
- Camerer, C.F. (2003). *Behavioral Game Theory*. Princeton: Princeton University Press.
- Castilla, Carolina and Thomas Walker. 2013a. "Is Ignorance Bliss? The Effect of Asymmetric Information between Spouses on Intra-Household Allocations." *American Economic Review*, 103 (5), pp. 263 – 268.
- Castilla, Carolina and Thomas Walker. 2013b. "Gender Roles and Asymmetric Information: Non-Cooperative Behavior on Intra-Household Allocation." *Unpublished*.
- Castilla, Carolina. 2014. What's Yours is Mine, and What's Mine is Mine: Bargaining Power and Income Concealing between Spouses in India. *Unpublished*.
- Cox, J.C. (2004) "How To Identify Trust and Reciprocity." *Games and Economic Behavior*. 46, 260-281.

- Croson, Rachel and Uri Gneezy. 2009. Gender Differences in Preferences. *Journal of Economic Literature*, 47:2, 448–474
- Dufló, Esther, and Udry, Christopher. 2004. Intra-household Resource Allocation in Cote d'Ivoire: Social Norms, Separate Accounts and Consumption Choices. *NBER Working Paper 10498*.
- Glaeser, E.L., Laibson, D.I., Scheinkman, J.A. and Soutter, C.L. (2000) "Measuring Trust." *Quarterly Journal of Economics*. CXV, 811-46.
- Hoel, J., 2012. Which Spouses Behave Strategically? Laboratory Evidence from Kenya and its Implications for Models of the Household. Doctoral Dissertation University of Michigan.
- Iversen, V., Jackson, C., Kebede, B., Verschoor, A., Munro, A., 2010. Do spouses realize cooperative gains? Experimental evidence from rural Uganda. *World Development*.
- LaFave, Daniel and Thomas, Duncan. 2013. Extended Families and Child Well-being. Unpublished.
- Lundberg, Shelly and Robert Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market." *Journal of Political Economy*. 101 (6), 988-1010.
- Mani, Anandi., 2011. Mine, your or ours?: the efficiency of household investment decisions: an experimental approach. *Unpublished*.
- Robinson, Jonathan. 2012. "Limited Insurance Within the Household: Evidence from a Field Experiment in Kenya." *American Economic Journal: Applied Economics*. 4 (4): 140–164.
- Schechter, Laura. 2007. Traditional Trust Measurement and the Risk Confound: An Experiment in Rural Paraguay. *Journal of Economic Behavior and Organization*, 62(2): 272-292.
- Udry, Christopher. 1996. "Gender, Agricultural Production, and the Theory of the Household." *The Journal of Political Economy*, 104:5, pp. 1010-1046.

Appendix A: Instructions

Instructions to Sender:

\Aunty-i/Uncle-ji, we have kept Rs.75 worth fake notes in this envelope and we are giving you some blank papers. You have to now decide how much to keep for yourself and how much to give to your spouse. However, whatever amount you give to your spouse will be tripled before reaching him/her. Then it will be your spouse's decision on how much to give you back from the tripled amount. Therefore, if you decide to give Rs.30 to your spouse and keep the rest for yourself, then your spouse will receive Rs. $(30 * 3 = 90)$. Then, your spouse can return to you something less than Rs. 30, exactly Rs. 30 or something more than that. Take out the amount that you want to keep for yourself from the envelope and leave the amount that you wish to be sent to your spouse. Again, note that your spouse will receive three times the amount you left in the envelope. Please take this decision freely as we will not be seeing them. We will turn our heads around while you take this decision. Only the Research Assistant will open the envelope and triple the amount in it. You can stuff the envelope with the blank papers provided to you when you feel you are sending too little. The game ends for you once you've handed the envelope to us."

Instructions to Receiver:

Aunty-ji/Uncle-ji, we had asked your husband/wife to divide Rs.75 into two parts, something for you and the remainder for self. But he/she was told that whatever amount he/she sends you will be tripled and then you will have to make a decision about how much of the tripled amount to return. Now, this envelope contains the tripled amount of what he/she had originally sent you. You must open this envelope, count how much money it contains, make an estimate of how much your spouse must have sent you originally (that is if you want to), and then place whatever amount you want to return to your spouse back in the envelope. It is purely a personal decision and we will not

take this envelope back to your spouse. For instance, if you and Rs.90 in the envelope, your spouse must have originally sent Rs.30 out of the Rs.75 given to him. Now it's your decision whether you want to return something less than Rs.30, more than that or exactly the same amount. We will turn our heads around while you make this decision. You can also stuff up the envelope with the blank papers provided in case you feel that you are sending too little.

Dictator Game Instructions:

Aunty-ji/Uncle-ji, we would also like you to make a similar decision as your spouse did. You have to divide Rs.75 into two parts, something for yourself and the remainder for your spouse. However, the game ends with your split decision. Your spouse will receive the exact amount you send, NOT the tripled amount. Further, your spouse will have no further decisions to take. This envelope contains Rs.75 worth fake notes (with the lowest denomination of Rs.5). Take out the money you want to keep for yourself and leave what you want to for your spouse in the envelope. We will not see your personal decision. We will turn our heads around while you make this decision. You can also stuff up the envelope with the blank papers provided in case you feel that you are sending too little."

APPENDIX B: Additional Tables and Robustness

Table B.1: Description of Variables from the Survey

<u>Variable</u>	<u>Description</u>	<u>Unit</u>
Education	What level of schooling have you attained? (1) No schooling; (2) Elementary; (2) Middle School; (3) High School; (5) College or higher.	Categorical
Literacy	Are you able to read and write your name in any language?	Dichotomous
Household Composition	Number of sons Number of Daughters Total number of individuals living in the household	Only asked to wife
Age	How old were you in your last birthday?	In years
Caste	Do you belong to: Scheduled Caste, Scheduled Tribe, Other Backward Caste, None	Categorical
Owns House	Who owns the house you live in?	Categorical
Livestock	Do you and your wife own any animals? If yes, what kind of animals do you own?	Categorical
Income (amount)	During the past month, how much income did you get from: (1) wages, salaries, or other cash income; (2) In kind payment for working for others or self-employment; (3) Farming; (4) Livestock; (5) Other family run business; (6) Remittances or payments from people living outside the house; (7) Pensions or government transfers; (8) Other	Thousands of Indian Rupees.
Assets	Which of these assets/items do you own?	Categorical
House Quality Index	Add 1 for each of the following: (1) Kuchcha House; (2) Electricity connection; (3) Water connection; (4) Toilet facility; (5) Gas stove	Scale of 1 to 6
Transportation Assets Index	Add 1 for each of the following: (1) Motorcycle; (2) Cycle; (3) Car	Scale of 1 to 3
Tractor	If respondent or spouse own a tractor	Dichotomous
Expenditure	In the last 12 months, did you spend on these items and services? And what was the value?	Thousands of Indian Rupees
Gifts and Dowries to others	In the last 12 months, did you spend on gifts or dowries for others' weddings?	Dichotomous
Gifts to Spouse	Do you buy gifts for your spouse?	Dichotomous
Years Married	How long have you been married to your current wife/husband?	Years
Trust	On a scale of one to five, how much do you trust your husband/wife? (1) Completely; (2) A lot; (3) Some; (4) A little; (5) Not at all.	Scale of 1 to 3 in reality
Handles HH money	Who handles the household money? (1) Respondent; (2) Spouse; (3) various combinations of household members.	Dichotomous
Work	Do you work for income?	Dichotomous

Figure B.1: CDF of Sharing across Genders

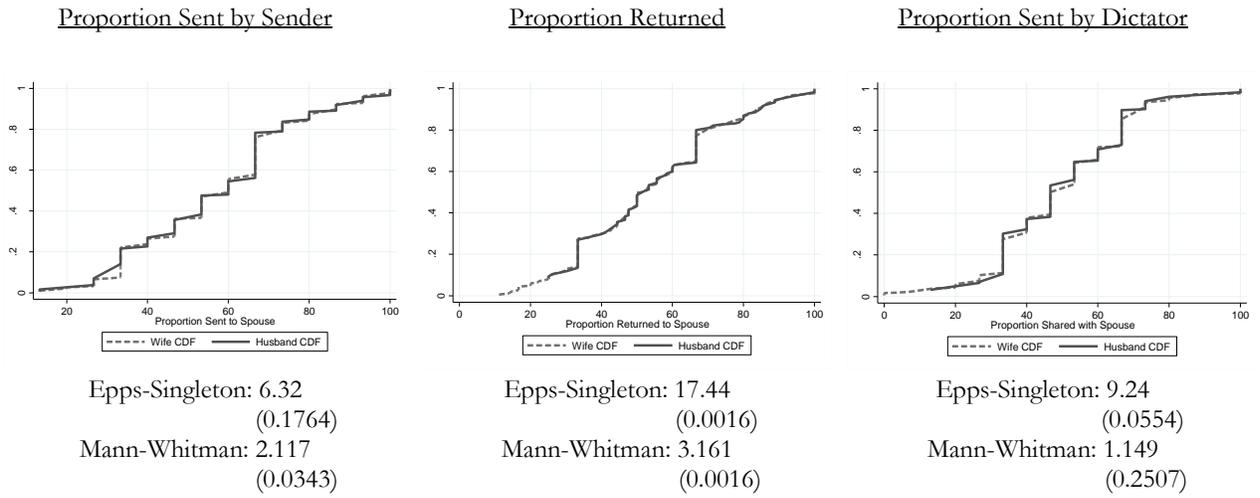


Table B.2: Summary Statistics of Indicators of Control, Caring and Altruism from the Survey

Variable	Husband		Wife		Household Total	
	N	Mean	N	Mean	N	Mean
Gifts to Spouse	186	0.532 (0.500)	176	0.727 (0.446)		
Say over Work	187	0.850 (0.357)	187	0.395 (0.490)		
Separate Spheres	187	0.326 (0.470)	181	0.154 (0.362)		
Work	185	0.951 (0.215)	185	0.297 (0.458)		
Age	186	40.01 (8.760)	185	34.64 (8.765)		
Years of Marriage	185	15.87 (9.256)	173	16.55 (9.860)		
Scheduled Caste	187	0.106 (0.309)	185	0.059 (0.237)		
Backwards Caste	187	0.208 (0.407)	185	0.237 (0.426)		
Illiterate	160	0.056 (0.231)	175	0.12 (0.325)		
Some Schooling	186	0.758 (0.429)	184	0.619 (0.486)		
No Schooling	186	0.091 (0.288)	184	0.282 (0.451)		
Higher Education	186	0.129 (0.336)	184	0.065 (0.247)		
Handles HH Money	188	0.063 (0.245)	188	0.202 (0.402)		
Own Income	182	8.096 (8.039)	85	0.907 (1.777)		
Variable	Husband		Wife		Household Total	
	N	Mean	N	Mean	N	Mean
Share Exp Tobacco	182	3.641 (7.582)	186	1.623 (6.062)	187	2.795 (5.597)
Share Exp. Assets	182	10.00 (16.90)	186	10.25 (16.92)	187	9.743 (14.32)
Share Exp. Ceremonies	182	8.834 (14.92)	186	8.825 (10.61)	187	9.609 (12.87)
Total Expenditure (th)	188	76.46 (114.2)	188	88.00 (144.7)	188	164.4 (201.9)
Total HH Income (th)	179	8.488 (8.983)	165	7.704 (7.505)	174	7.956 (8.521)
No. Sons					188	1.393 (0.988)
No. Daughters					188	1.223 (1.176)
Husband's Father					188	0.175 (0.381)
Husband's Mother					188	0.329 (0.471)
Total HH Members					188	4.510 (1.865)
Transportation Assets Index					186	0.602 (0.766)
House Quality Index					187	3.802 (1.339)
Tractor					186	0.053 (0.226)

Table B.3: Results on Sending behavior with Control Variables

Variable	Baseline	Bargaining Power = 1 if Some say over Work				Bargaining Power = 1 if Separate Spheres				Bargaining Power = 1 if Works for Pay			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sender's Gender (=1 if Male)	5.512* [2.956]	0.483 [4.105]	-1.730 [4.110]	7.131 [6.584]	7.212 [7.971]	2.186 [3.927]	0.563 [3.904]	5.71 [5.128]	4.328 [5.677]	-2.516 [5.456]	-3.197 [5.865]	15.475 [12.032]	14.69 [12.791]
Buy Gifts for Spouse (=1 if Yes)	-	-0.378 [3.806]	-0.335 [3.722]	5.140 [5.134]	5.249 [5.131]	-0.122 [3.915]	0.021 [3.830]	5.187 [5.510]	5.208 [5.490]	-0.029 [3.856]	0.301 [3.804]	7.298 [5.112]	7.421 [5.104]
Gender X Gifts for Spouse	-	-	-	-10.564 [6.718]	-11.099 [6.749]	-	-	-9.976 [6.998]	-10.430 [7.012]	-	-	-12.820* [6.593]	-13.288** [6.619]
Bargaining Power (dummy variable)	-	5.913 [4.217]	8.054* [4.154]	9.731* [5.381]	10.413* [5.631]	3.197 [3.860]	4.353 [3.941]	6.754 [7.410]	6.936 [7.387]	8.432 [5.871]	7.356 [6.223]	11.610* [6.440]	11.605* [6.546]
Gender X Bargaining Power	-	-	-	-5.989 [7.591]	-7.260 [8.007]	-	-	-4.323 [8.634]	-4.668 [8.778]	-	-	-17.010 [12.673]	-17.110 [12.972]
HH Expenditure in Tobacco (= share relative to total HH exp)	-	-	-0.456* [0.235]	-0.471** [0.234]	-0.471** [0.234]	-	-0.497* [0.266]	-0.523* [0.268]	-0.532* [0.272]	-	-0.467* [0.259]	-0.426* [0.257]	-0.427* [0.257]
Wife Expenditure in Ceremonies (= share relative to total Wife Exp)	-	-	0.162 [0.158]	0.166 [0.163]	0.218 [0.236]	-	0.090 [0.168]	0.124 [0.167]	0.126 [0.246]	-	0.092 [0.148]	0.104 [0.143]	0.131 [0.197]
Gender X Wife Exp Ceremonies	-	-	-	-	-0.091 [0.314]	-	-	-	0.010 [0.326]	-	-	-	-0.042 [0.279]
Husband Expenditure in Ceremonies (= share relative to total Husband Exp)	-	-	-0.228** [0.102]	-0.227** [0.103]	-0.322*** [0.112]	-	-0.220** [0.099]	-0.220** [0.102]	-0.300** [0.117]	-	-0.220** [0.099]	-0.209** [0.097]	-0.284*** [0.095]
Gender X Husband Exp Ceremonies	-	-	-	-	0.194 [0.198]	-	-	-	0.163 [0.196]	-	-	-	0.155 [0.185]
Relative Spousal Expenditure (= Wife tot Exp / Husband tot Exp)	-	-	0.002 [0.004]	0.001 [0.005]	0.001 [0.004]	-	0.002 [0.004]	0.002 [0.005]	0.001 [0.004]	-	0.001 [0.004]	0.001 [0.004]	0.000 [0.004]
Age		0.422 [1.254]	0.450 [1.198]	0.527 [1.209]	0.434 [1.230]	0.626 [1.272]	0.659 [1.215]	0.840 [1.222]	0.892 [1.253]	0.259 [1.235]	0.369 [1.187]	0.596 [1.178]	0.586 [1.200]
Age Squared		-0.001 [0.015]	-0.003 [0.014]	-0.004 [0.014]	-0.003 [0.015]	-0.002 [0.015]	-0.004 [0.014]	-0.007 [0.015]	-0.008 [0.015]	0.001 [0.015]	-0.002 [0.014]	-0.005 [0.014]	-0.005 [0.014]
Scheduled Caste		0.475 [5.029]	-0.550 [5.130]	-1.816 [5.037]	-2.539 [5.128]	-0.338 [5.246]	-1.619 [5.343]	-2.843 [5.349]	-3.445 [5.473]	-0.711 [5.059]	-1.884 [5.227]	-3.210 [5.235]	-3.790 [5.351]
Other Backwards Caste		1.735 [4.975]	0.853 [5.056]	0.979 [5.035]	0.872 [5.079]	1.409 [4.871]	0.523 [4.969]	-0.063 [5.015]	-0.316 [5.053]	1.669 [4.840]	1.071 [4.987]	0.962 [4.853]	0.789 [4.864]
No. of Sons		-2.870 [1.979]	-2.005 [1.952]	-1.519 [2.015]	-1.676 [2.044]	-3.007 [1.945]	-2.101 [1.958]	-1.554 [2.022]	-1.721 [2.042]	-3.187 [1.973]	-2.358 [2.019]	-1.901 [2.089]	-2.035 [2.107]
No. of Daughters		-1.327 [1.614]	-1.439 [1.608]	-1.391 [1.653]	-1.515 [1.655]	-1.715 [1.565]	-1.840 [1.536]	-1.870 [1.586]	-2.014 [1.601]	-1.756 [1.595]	-1.851 [1.614]	-1.745 [1.678]	-1.864 [1.687]
Husband's Father in HH		1.271 [5.576]	3.536 [5.489]	3.152 [5.460]	3.295 [5.627]	2.047 [5.686]	4.256 [5.597]	3.455 [5.565]	3.785 [5.692]	1.248 [5.682]	3.158 [5.653]	3.120 [5.560]	3.304 [5.689]
Husband's Mother in HH		6.776 [4.236]	4.343 [4.343]	4.118 [4.257]	4.008 [4.318]	5.647 [4.253]	2.945 [4.388]	2.861 [4.335]	2.679 [4.382]	5.482 [4.387]	3.122 [4.529]	2.309 [4.335]	2.164 [4.386]
Transportation Assets Index		-0.464 [3.741]	-2.102 [3.787]	-1.511 [3.693]	-0.989 [3.739]	-0.956 [3.775]	-2.690 [3.856]	-2.197 [3.761]	-1.897 [3.875]	-0.827 [3.740]	-2.520 [3.812]	-1.484 [3.638]	-1.114 [3.736]
House Quality Index		-0.155 [1.520]	-0.031 [1.485]	-0.101 [1.489]	-0.269 [1.510]	-0.235 [1.541]	-0.176 [1.552]	-0.186 [1.554]	-0.326 [1.575]	-0.470 [1.516]	-0.348 [1.533]	-0.417 [1.517]	-0.551 [1.540]
Tractor (=1 if HH owns tractor)		-9.218 [7.722]	-7.766 [7.440]	-7.752 [7.470]	-8.182 [7.509]	-8.080 [7.749]	-6.054 [7.405]	-5.961 [7.281]	-6.365 [7.307]	-8.891 [7.663]	-6.964 [7.264]	-7.354 [7.249]	-7.687 [7.307]
District (=1 if Almora)	-6.301** [2.971]	-5.902 [5.587]	-6.695 [5.785]	-4.808 [5.816]	-4.406 [5.837]	-7.933 [5.674]	-8.888 [5.949]	-7.895 [5.866]	-7.919 [5.953]	-5.767 [5.701]	-7.046 [5.997]	-4.758 [5.749]	-4.671 [5.822]
Observations	185	175	169	169	169	174	168	168	168	176	170	170	170
R-squared	0.044	0.097	0.134	0.151	0.156	0.088	0.120	0.134	0.137	0.100	0.126	0.154	0.157

Table B.4: Results on Returning behavior with Control Variables

Variable	Baseline	BP = 1 if Some say over Work					BP = 1 if Separate Spheres					Bargaining Power = 1 if Works for Pay				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Percentage Received from Sender	0.042 [0.085]	0.063 [0.086]	0.043 [0.086]	0.008 [0.070]	0.010 [0.070]	0.060 [0.082]	0.085 [0.083]	0.069 [0.085]	0.030 [0.071]	0.031 [0.072]	0.078 [0.083]	0.092 [0.085]	0.077 [0.085]	0.042 [0.070]	0.046 [0.071]	
Share sent in Dictator Game				0.506*** [0.090]	0.505*** [0.090]				0.475*** [0.092]	0.476*** [0.093]				0.495*** [0.092]	0.490*** [0.091]	
Receiver's Gender (=1 if Male)	10.254*** [2.979]	10.387*** [3.678]	9.892*** [3.706]	6.189 [8.189]	7.231 [7.856]	8.43 [7.815]	7.919** [3.369]	7.940** [3.497]	4.896 [5.021]	4.681 [4.657]	4.767 [4.694]	7.176* [4.291]	6.903 [4.219]	9.466 [8.684]	6.87 [5.552]	7.235 [5.275]
Received Gifts from Spouse (=1 if Yes)	5.668* [3.393]	6.612* [3.405]	1.462 [4.898]	-4.033 [4.184]	-3.660 [4.158]	6.355* [3.262]	7.296** [3.278]	2.630 [4.809]	-2.604 [4.263]	-2.312 [4.249]	5.935* [3.294]	6.450* [3.281]	1.412 [4.686]	-2.412 [4.197]	-2.283 [4.168]	
Gender X Gifts from Spouse			11.218 [6.855]	12.600** [6.098]	11.747* [6.049]			10.292 [6.458]	12.233** [5.871]	11.638** [5.873]			11.466* [6.474]	11.780** [5.889]	11.382* [5.917]	
Bargaining Power (=1 if say over work)	-2.785 [3.788]	-2.492 [3.939]	-2.030 [4.930]	-3.630 [4.126]	-3.323 [4.132]	7.542** [3.499]	6.946* [3.585]	8.405 [5.671]	3.797 [4.826]	3.570 [4.783]	3.884 [4.130]	3.899 [4.200]	4.641 [4.803]	5.521 [4.604]	5.168 [4.539]	
Gender X Bargaining Power			-0.735 [8.218]	-1.540 [7.607]	-2.966 [7.355]			-2.799 [7.253]	-1.564 [6.250]	-1.735 [6.200]			-7.507 [9.249]	-5.740 [6.641]	-5.853 [6.499]	
HH Expenditure in Tobacco (= share relative to total HH exp)	-0.090 [0.353]	-0.102 [0.367]	-0.136 [0.250]	-0.145 [0.263]			-0.078 [0.347]	-0.074 [0.364]	-0.104 [0.259]	-0.117 [0.276]			-0.480 [0.350]	-0.506 [0.364]	-0.367 [0.272]	-0.400 [0.274]
Wife Expenditure in Ceremonies (= share relative to total Wife Exp)		0.117 [0.152]	0.139 [0.164]	0.153 [0.141]			0.147 [0.157]	0.166 [0.162]	0.168 [0.144]			0.083 [0.148]	0.099 [0.156]	0.146 [0.143]		
Husband Expenditure in Ceremonies (= share relative to total Husband Exp)		0.021 [0.084]	0.018 [0.088]	0.012 [0.083]			0.043 [0.081]	0.035 [0.084]	0.017 [0.079]			0.010 [0.087]	0.004 [0.091]	0.005 [0.085]		
Relative Spousal Expenditure (= Wife tot Exp / Husband tot Exp)		-0.007*** [0.003]	-0.008*** [0.003]	-0.004* [0.003]	-0.004 [0.003]		-0.007* [0.004]	-0.007** [0.003]	-0.005 [0.003]	-0.005 [0.004]			-0.007** [0.003]	-0.009*** [0.003]	-0.006* [0.003]	-0.006* [0.003]
Age	1.262 [0.779]	0.970 [0.734]	0.880 [0.771]	0.493 [0.659]	0.367 [0.682]	1.529* [0.783]	1.233* [0.702]	1.122 [0.716]	0.747 [0.614]	0.596 [0.648]	1.484* [0.772]	1.003 [0.712]	0.888 [0.757]	0.692 [0.624]	0.561 [0.653]	
Age Squared	-0.015 [0.010]	-0.009 [0.009]	-0.009 [0.010]	-0.006 [0.008]	-0.005 [0.008]	-0.018* [0.010]	-0.013 [0.009]	-0.012 [0.009]	-0.009 [0.008]	-0.007 [0.008]	-0.017* [0.010]	-0.008 [0.009]	-0.008 [0.010]	-0.008 [0.008]	-0.006 [0.008]	
Scheduled Caste	-7.075 [5.171]	-6.207 [5.454]	-7.477 [5.503]	-2.949 [5.830]	-2.620 [6.015]	-9.114 [5.529]	-8.155 [5.731]	-9.231 [5.747]	-3.450 [6.161]	-2.911 [6.557]	-6.350 [5.496]	-4.506 [5.844]	-5.348 [5.923]	-1.184 [6.390]	-0.835 [6.676]	
Other Backwards Caste	6.822 [4.559]	8.205* [4.590]	8.001* [4.566]	4.876 [3.819]	4.883 [3.787]	7.281 [4.657]	8.541* [4.745]	8.074* [4.653]	4.798 [4.123]	4.790 [4.081]	7.277 [4.645]	8.381* [4.568]	8.330* [4.506]	4.910 [3.951]	4.867 [3.931]	
No. of Sons	5.216*** [1.938]	4.374** [2.013]	5.099** [2.005]	4.771*** [1.776]	4.860*** [1.756]	4.930** [1.955]	4.118** [2.026]	4.875** [2.016]	4.642** [1.801]	4.774*** [1.799]	5.217*** [1.918]	4.519** [1.937]	5.478*** [1.942]	5.011*** [1.749]	5.136*** [1.742]	
No. of Daughters	2.556* [1.420]	2.595* [1.501]	2.692* [1.488]	1.157 [1.355]	1.353 [1.297]	2.512* [1.439]	2.394 [1.484]	2.557* [1.489]	1.214 [1.377]	1.445 [1.354]	2.061 [1.417]	2.127 [1.491]	2.316 [1.493]	0.887 [1.387]	1.105 [1.329]	
Husband's Father in HH	5.795 [5.755]	6.677 [5.813]	6.374 [5.829]	7.528 [5.708]	7.351 [5.664]	5.568 [5.696]	6.547 [5.739]	6.426 [5.790]	7.387 [5.804]	7.160 [5.759]	5.512 [5.828]	6.804 [5.882]	6.563 [5.889]	6.992 [5.866]	6.903 [5.817]	
Husband's Mother in HH	-4.642 [4.343]	-4.153 [4.409]	-4.357 [4.399]	-2.668 [4.631]	-2.954 [4.556]	-4.084 [4.471]	-3.576 [4.610]	-3.753 [4.586]	-2.061 [4.842]	-2.435 [4.755]	-3.529 [4.535]	-3.427 [4.525]	-3.601 [4.538]	-1.013 [4.879]	-1.331 [4.788]	
Transportation Assets Index	-2.459 [3.178]	-2.690 [3.143]	-2.308 [3.145]	-0.528 [2.585]	-0.456 [2.581]	-2.552 [3.145]	-2.789 [3.123]	-2.327 [3.174]	-0.785 [2.661]	-0.753 [2.663]	-2.834 [3.205]	-3.253 [3.094]	-2.799 [3.109]	-1.070 [2.583]	-1.094 [2.589]	
House Quality Index	1.203 [1.263]	1.293 [1.346]	1.239 [1.354]	-0.355 [1.240]	-0.382 [1.237]	1.243 [1.207]	1.292 [1.299]	1.241 [1.302]	-0.122 [1.221]	-0.151 [1.214]	0.815 [1.225]	0.439 [1.289]	0.403 [1.296]	-0.957 [1.212]	-0.977 [1.204]	
Tractor (=1 if HH owns tractor)	-3.992 [15.442]	-5.428 [15.572]	-5.389 [14.833]	-4.499 [13.839]	-5.093 [13.930]	-1.574 [14.948]	-2.665 [15.097]	-2.874 [14.505]	-2.146 [13.672]	-2.746 [13.659]	-2.002 [15.414]	-3.867 [15.386]	-4.068 [14.670]	-2.118 [13.672]	-2.608 [13.649]	
District (=1 if Almora)	-9.898*** [3.013]	-8.628* [4.592]	-8.898* [4.964]	-7.762 [5.136]	-4.759 [3.995]	-3.638 [3.787]	-6.790 [4.742]	-7.317 [5.184]	-6.217 [5.389]	-3.795 [4.275]	-2.718 [4.089]	-7.628 [4.866]	-7.836 [5.183]	-6.629 [5.351]	-3.299 [4.168]	-2.521 [4.023]
Observations	185	172	169	169	169	171	168	168	168	168	171	168	168	168	168	
R-squared	0.108	0.216	0.232	0.247	0.398	0.393	0.234	0.247	0.260	0.389	0.383	0.225	0.250	0.267	0.407	0.402