Gender Differences in the Trust Game:

Evidence from a Field Experiment between Spouses 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 investment game where they were randomly assigned to the role of sender or receiver. The sender decides how much of the tripled among to transfer to her spouse, which is then tripled. The receiver then decides how much to keep and send back. The unitary and cooperative household is rejected as only 3% of spouses in the sender role transfer the entire amount, which is the household earnings maximizing strategy. 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. I use survey data to examine the mechanisms and find that prior non-cooperative behavior of husbands predicts less sharing by their wives.

Keywords: trust game experiment, intra-household allocation, India
JEL Classification: D13, O12, J12.

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1. Introduction

In this paper I present experimental results on gender differences from the first trust game conducted between spouses. Established married couples are perhaps the best population to examine whether socially efficient outcomes can be attained because decision-making within the household is characterized by repeated interaction and caring. Nonetheless, even between spouses contracts are incomplete because efficient behavior cannot be enforced formally. Household members then rely on informal contracting enforcement mechanisms to hinder the incentives for non-cooperative behavior that prevail when contracts are incomplete. Under a unitary or cooperative household trust, reciprocity, and altruism would be expected to eliminate the frictions of incomplete contracting. 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 respectively[2] The goal in this paper is to examine whether there are gender differences in the ability to exhaust opportunities for Pareto improvement, and examine the potential mechanisms.

[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 (2013); Castilla (2014); Hoel (2014)). This line of research has found evidence of strategic behavior, inefficient allocations, and hiding of income between spouses.

For this purpose, spouses were asked to play a one-shot BDM trust 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. In contrast, the 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 due to income-pooling (Lundberg and Pollak, 1993; Chiappori & Browning, 1998). Thus, in a household where spouses jointly make decisions over how to allocate resources, there are no motives for the sender to transfer less than the entire amount. In a non-cooperative household contract, however, control over money matters and there can be efficiency losses.

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 to a survey, spouses were asked to play a one-shot investment game. Each spouse was randomly assigned to a role (sender or receiver) and taken to a separate room with an enumerator of the same gender. The sender was given Rs. 75 and informed that he or she could transfer any amount to her 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. In the standard BDM game 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)). In the case of married couples, the experiment is just a snap-shot of a dynamic and more complex game. For this reason, in this paper I refrain from using the terms trust and reciprocity, as it is plausible to assume that spouses have

altruistic preferences (they care for each other), in addition to trusting each other (at least to some extent). Instead, I focus on the efficiency losses, understood as the difference between potential and realized household earnings, as a result of underinvestment by the sender spouse. The response by the returner spouse has no direct effect on household efficiency other than through the distribution of earnings from the experiment.

This paper extends the literature in several ways. There is substantial evidence that individuals do not play the Nash Equilibrium in the trust game (Berg et al. (1995); Cox (2004); Camerer (2003); Ashraf et al. (2006)). 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. While the proportion sent (and returned) is considerably larger than the average observed in experiments between strangers, these results provide strong evidence that the unitary or collective (cooperative) household can be rejected.

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; women send 54% and return 48% versus 60% and 58% by men respectively. In China, Korea, Russia, and South Africa experimental studies with college students found no gender differences in sending behavior (trust), and women being more trustworthy than men (Croson and Buchan (1999); Ashraf (2006)). In contrast, trust experiments in developing countries considering a broad subject pool (instead of college students) find that women send and return less (Schechter (2007); Barr (2007)). One explanation for the observed results could be a 50 – 50 sharing rule between spouses, or differential preferences for inequality by gender. I can reject both of these alternatives. Spouses

are engaged in a repeated game on their daily lives, with the experimental games being just another round. It is also possible that women invest (send) and return less, and receive more in return because their husbands know women are better at managing the limited household resources. Alternatively, women could be less cooperative in developing countries as a result of the prevalent lack of control over money independently of comparative advantages over household resource management (Barr, 2003). In the last section of the paper I present evidence that suggests the results are driven by beliefs of what their spouse will do with the money measured as prior non-cooperative bargaining outcomes.

Finally, this paper contributes to economic development research as the findings allow reconciliation of two literatures that seem to be in direct contrast with each other. On one hand, there is non-experimental evidence that women allocate more resources towards children human capital than their male counterparts (Duflo (2003); Thomas (1990)). This literature greatly influenced policy in targeting women in social transfer programs. However, there is substantial experimental evidence documenting that women are as or less cooperative than men (Ashraf (2009); Iversen et al., (2010); Munro et al. (2014); Mani (2011), Hoel (2012); Jakiela & Ozier, (2014)) even when this behavior is costly for the household. In the trust game, women in the sender role transfer less money, which implies that, on average, the couple is giving up earnings equivalent to about a third of daily household income. The econometric results show a negative and significant relationship between tobacco expenditure and the proportion sent by the wife but not the husband. It is possible that women perceive keeping the money as equally or less costly than transferring it to their husbands when they expect husbands to spend some of the transfer on tobacco. This behavior would imply no loss in allocation efficiency if the costs of tobacco consumption are as large as the interest lost from keeping the money. I examine this hypothesis by looking at returning behavior. Husbands in households where the share of expenditure on tobacco exceeds the 85^{th} percentile return less money to their wives. Therefore, the experimental results showing that women are less

cooperative than men are but an indication of households operating under non-cooperative bargaining contracts. While the sample of spouses who participated in this experiment is not representative of the Indian population, this paper raises the possibility that policy targeting of women may need to examine intra-household decision making more closely.

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 188 established couples, half from Dehradun and the other half from Almora[3]. Recruiting of subjects was done door-to-door[4]. Thus the sample is most similar to those used in laboratory experiments and it is not representative of the population in Uttarakhand and/or India. However, internal validity can be obtained when comparing across genders because randomization was used in the assignment of roles. 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 finances[5]. Respondents were first asked if they

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

[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 Almora 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

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 take an enumerator of his or her same gender to separate rooms in their home. 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 survey. The experimenter outlined the rules of the experiment and the tasks involved. Each 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. Subjects were informed that one round would be chosen at random to be paid for real, and subjects knew that the investment and dictator games had a higher probability of being paid relative to the 7 rounds of the public goods game they played first[6]. In order to minimize concerns of conflict between spouses

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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?"

[6] Subjects played 7 rounds of a public goods game, one round of the trust game, and one round of the dictator game (in that order). The results from the public goods game can be found in Castilla (2014).To decide what round was paid for real, subjects rolled two dice. If the sum of the dice was between 1 and 7, the corresponding round of the public goods game was paid. If the sum of the dice was between 8 and 11 the highest between the trust and dictator game were paid, if sum of the dice was 12 both the trust and dictator games were paid. This was meant to compensate for differences in endowments across games as the public goods games had considerably larger endowments.

after the experiment, each spouse drew a random round to be paid and these did not have to match. Details on the script used by field assistants and enumerators can be found in Appendix A.

Participants' tasks involved playing a BDM trust (or investment) game. In each household, spouses were randomly assigned to the role of sender or receiver. The sender was given Rs 75 in Rs 5 denomination. 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. 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. 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. 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. 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 of the trust game under 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)). In standard trust game between strangers, an individual in the sender role transfers money to her partner if she trusts some of the tripled amount will be

returned (aka. that her kindness will be reciprocated). 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.

In the case of married couples, the experiment is just a snap-shot of a more complex dynamic game. Spouses have prior information on their partners' behavior due to day-to-day interaction (and perhaps conflict) which informs their beliefs not only of their partners' response in the game, but also of what can happen with their earnings after the experiment. For this reason, in this paper I refrain from using the terms trust and reciprocity, as it is plausible to assume that spouses have altruistic preferences (they care for each other), in addition to trusting each other (perhaps not so much on financial matters). Instead, I focus on the efficiency losses, understood as the difference between potential and realized household earnings, as a result of underinvestment by the sender spouse. The response by the returner spouse has no direct effect on household efficiency other than the distribution of the earnings from the experiment and the expectations of how the money will be spent. I then use the dictator game as a baseline to analyze motives for sharing money between couples when there are no strategic concerns.

Summary Statistics:

The sample consists of married couples of different ages, caste, 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. Most households own at least a bicycle, and some even own a car or motorcycle (See Appendix B.1).

Spouses were also asked about their own expenditure over the last 12 months on different categories. Expenditure in assets and ceremonies are quite similar. The total monthly household income from all sources is reported separately by men and women, and there is on average about a one thousand Rs. difference between reports which is not uncommon among households in developing countries. One of the main variables of interest is expenditure on tobacco, which presumably is not an efficient use of the household limited resources, has negative health consequences, and can be a source of conflict between spouses. In Uttarakhand, alcohol consumption is not common due to the state's history on anti-alcohol movements (Pathak, (1985); NIMS, (2009)). Some districts in the state have gone from wet to dry and back to wet over the last 30 years and thus consumption is less common that in other regions of India among both men and women regardless of religion (in addition to more tabooed and thus more likely to be underreported[7]). Men spend on average 3.6% of their own total expenditure on tobacco, while women spend about half of the proportion. While both men and women spend money on tobacco, men are the main consumers, both as reported in the survey and according to the World Health Organization (WHO, 2013). About 47% of men and 22% of women in a total of 107 households in the sample report a non-zero expenditure on tobacco. Among those who reported expenditures on tobacco, 73% of both men and women indicate tobacco was purchased for the husband (and the rest for members of the household other than the wife).

[7] For this reason the survey did not contain questions on alcohol consumption or expenditure.

Table 1: Summary Statistics by Gender

Variable	Husband		Wife		Variable	Husband		Wife	
	N	Mean	N	Mean		N	Mean	N	Mean
Age	186	40.01 (8.760)	185	34.64 (8.765)	Tobacco is for Husband (dummy variable)	84	73.81	41	73.13
Years of Marriage	185	15.87 (9.256)	173	16.55 (9.860)	Share Exp Tobacco	182	3.641 (7.582)	186	1.623 (6.062)
Scheduled Caste (dummy variable)	187	0.106 (0.309)	185	0.059 (0.237)	Share Exp Health	182	18.75 (19.87)	186	21.15 (20.46)
Backwards Caste (dummy variable)	187	0.208 (0.407)	185	0.237 (0.426)	Share Exp. Assets	182	10.00 (16.90)	186	10.25 (16.92)
No Schooling (dummy variable)	186	0.091 (0.288)	184	0.282 (0.451)	Share Exp. Personal Care	182	8.948 (9.786)	186	8.015 (7.101)
Some Schooling (dummy variable)	186	0.758 (0.429)	184	0.619 (0.486)	Share Exp. Home Improvement	182	10.44 (16.80)	186	14.20 (20.52)
High School or Above (dummy variable)	186	0.129 (0.336)	184	0.065 (0.247)	Share Exp. Clothing	182	14.23 (12.78)	186	9.884 (10.49)
Gifts to Spouse (dummy variable)	186	0.532 (0.500)	176	0.727 (0.446)	Share Exp. Home Items	182	1.412 (2.027)	186	1.494 (2.838)
Say over Work (dummy variable)	187	0.850 (0.357)	187	0.395 (0.490)	Share Exp. Ceremonies	182	8.834 (14.92)	186	8.825 (10.61)
Work (dummy variable)	185	0.951 (0.215)	185	0.297 (0.458)	Share Exp Lotteries	182	0.299 (3.660)	186	0.228 (2.624)
Contributes to Pay for Child Schooling (dummy)	185	0.891 (0.311)	187	0.861 (0.346)	Total Expenditure (th)	188	76.46 (114.2)	188	88.00 (144.7)
% of HH with Exp. Tobacco >0	182	0.473 (0.501)	186	0.223 (0.418)	Total HH Income (th)	179	8.488 (8.983)	165	7.704 (7.505)

Note: For continuous variables averages are presented; for dummy variables frequencies. Definition of all variables in Appendix Table B.2.

In Appendix B.3 I present evidence of effective randomization. I test whether the wives (husbands) in the sender role differ from those in the returner role on observables. There are only two variables that are significantly different between husbands in the sender relative to husbands in the receiving role and only at the 10% level. Husbands in the sender role are 1.3 percentage points more likely to report making gifts to their wives, and husbands in the receiver role are 6 percentage points more likely to be in charge of handling household money. There are no significant differences on observables between wives in the sender or receiving roles.

3. Experimental Outcomes

As stated before, 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 because regardless of her choice the outcome is efficient. 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 household individual control over resources matters and there are efficiency losses. 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 on average senders transfer 57% of the endowment[8]. As a result, spouses are giving up Rs. 64 on average, and in 41 households Rs. 100 or more. These results imply that both the unitary and collective household models can be rejected. Table 2 contains the main experimental outcomes.

Women send on average 6 percentage points less than men, and this difference is statistically different from zero at the 94 confidence level. Women in the receiver role return 10 percentage points less money than men, also statistically significant (with 99% confidence). In contrast, there are no gender differences among receivers in how much they share with their spouse in the dictator game. Overall, men in the receiver role share more money with their wives in the investment game than in the dictator game, while women exhibit no differences. What is puzzling, though, is that men transfer more money back in the trust game (relative to women and themselves in the dictator game) even though they are receiving less from their wives. The decision by returners in the investment game and dictator games is the same except for the size of the endowment and the fact that they are

[8] The experimental results on the whole sample, without gender differences, were published in Castilla (2015).

responding to what their wives did in the trust game (strategic interaction). If there are differences in responses to endowments by gender, perhaps that could explain the results. Say men and women have different thresholds in mind of the minimum they need to keep whenever they receive a transfer. If that is the case, then men and women would keep different amounts under the smaller endowment, aka. in the dictator game. However, in the dictator game husbands keep on average Rs. 36.5 and wives keep Rs. 39.1, and differences by gender in the amount or proportion kept in the dictator game are statistically equal to zero (and small in magnitude). Table 3 contains results to test for differences in behavior by gender in the dictator and trust game. Even after controlling for individual (and household) heterogeneity via fixed-effects, a 6.7 percentage point difference remains in men's sharing across games. Thus, it seems that men are being more responsive to strategic interaction than women.

Table 2: Main Experimental Outcomes

	Earnings		Inter-Spousal Transfers		
	Sender	Receiver	Sender [a/]	Receiver [a/]	Dictator [a/]
Amounts transferred to spouse					
Husband	94.631	48.500	45.105	74.000	36.500
	[3.193]	[3.118]	[1.542]	[4.641]	[1.342]
Wife	108.166	70.578	40.833	64.736	39.105
	[3.527]	[4.325]	[1.606]	[3.617]	[1.606]
Proportion transferred to Spouse					
Husband	59.045	30.549	60.140	58.863	51.333
	[2.057]	[1.679]	[2.057]	[2.051]	[1.789]
Wife	69.450	40.954	54.444	48.898	47.859
	[1.679]	[2.057]	[2.141]	[2.268]	[2.142]
Mean Tests for Differences of Husband vs. Wife [b/]					
Husband - Wife	-13.535	-22.078	4.271	9.263	2.605
(Amount)	(0.005)	(0.000)	(0.0565)	(0.115)	(0.2174)
Husband - Wife	-10.405	-	5.695	9.964	3.474
(shares)	(0.000)		(0.0565)	(0.0014)	(0.2174)

a/ Standard error in brackets.

b/ p-values in parentheses.

Table 3: Fixed-effects Results on Gender Differences across Trust and Dictator games

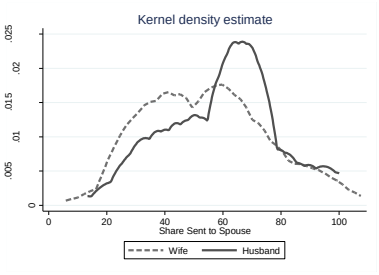
	(1)	(2)	(3)
Dictator	-4.197***	-3.777	0.0528
	[1.476]	[2.295]	[2.825]
Dictator * Male	-	-	-6.723***
			[2.956]
Endowment	-	0.008	0.018
		[0.032]	[0.032]
Observations	370	370	370
R-squared	0.042	0.042	0.069

Note: Fixed Effects results.

In Figure 1, I present the estimated probability density functions by gender. While the distribution of the proportion transferred by the sender seems to have a larger spike in the 60% to 80% range for men, the Epps-Singleton and Mann-Whitney tests show contrasting results. The Epps-Singleton test examines equality of distributions, while the Mann-Whitney test also considers the possibility that one of the distributions is shifted to the left (or right). These results thus indicate that women send less than men as the distribution of the proportion sent by women is shifted leftwards. The kernel density distributions of the proportion returned are also statistically different across genders, with women sending less than their male counterparts. 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. Further, when analyzing the distributions of sharing within couples, the densities of the proportion sent by women in the sender role and the proportion returned by men in the receiver role are statistically equivalent. However, the same distributions when men are in the sending role and women in the receiving role are not.

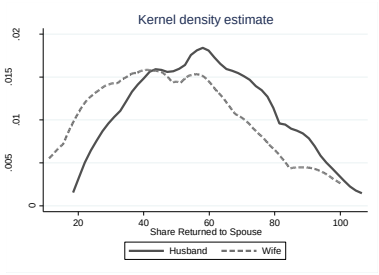
Figure 1: Distribution of Sharing across Genders

Proportion Sent by Sender



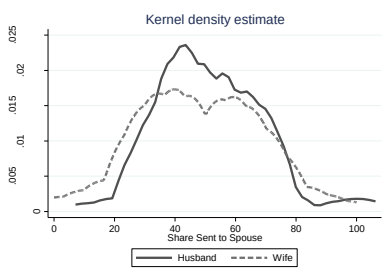
Epps-Singleton: 6.32
(0.176)
Mann-Whitman: 2.117
(0.034)

Proportion Returned



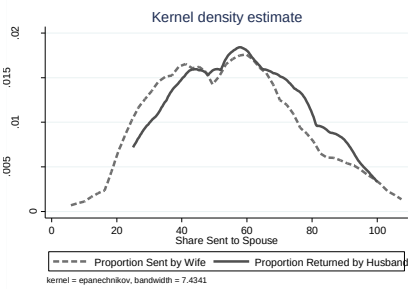
Epps-Singleton: 17.44
(0.001)
Mann-Whitman: 3.161
(0.002)

Proportion Sent by Dictator



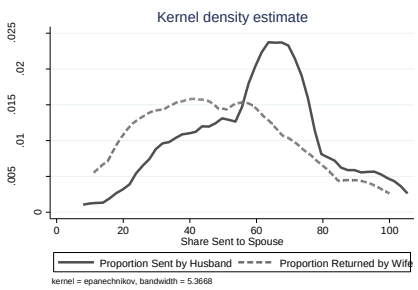
Epps-Singleton: 9.24
(0.055)
Mann-Whitman: 1.149
(0.251)

Wives in Sender Role vs Husbands in Receiver Role



Epps-Singleton: 3.74
(0.441)
Mann-Whitman: 1.47
(0.142)

Husbands in Sender Role vs Wives in Receiver Role



Epps-Singleton: 16.27
(0.003)
Mann-Whitman: -3.71
(0.000)

One potential explanation for the observed behavior between spouses could be exhibiting inequality aversion. However, the average share sent is significantly larger than the share returned and neither proportion (sent or returned) is statistically equal to 50% on average (except for the wife's share returned). Alternatively, spouses could be a 50 – 50 sharing rule which leads them to equate individual final earnings instead of proportions shared. I can also reject a 50-50 sharing rule as the average share of final earnings by sender and receiver are statistically different from each other at the 99% significance level. Table 4 contains the results.

Table 4: Inequality Aversion and 50 – 50 sharing rule Tests

	Share Sent = 50%	Share Returned = 50%	Share Sent Dictator= 50%	50 - 50 Split Earnings
Shares				
Husband	4.930	4.321	0.745	6.219
	(0.000)	(0.000)	(0.458)	(0.000)
Wife	2.075	-0.486	-0.999	16.379
	(0.0408)	(0.6283)	(0.320)	(0.000)

Note: Test statistic is presented. p-value in parentheses..

The experimental evidence on gender is inconclusive but somewhat consistent with my results. In most trust games implemented in a population other than college students women send less and return less (Schechter (2007); Barr (2003); Bellemare and Kroger (2007))[9]. Schechter argues that 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. In the following section I examine the mechanisms driving the observed differences in sharing across genders.

4. Mechanisms for the Observed Gender Differences

Conceptual Framework:

The aforementioned experimental results support the rejection of a unitary or cooperative household and indicate that spouses engage in a non-cooperative household allocation contract. Further, the gender differences in both sending and returning behavior are troubling as in public policy interventions transfers are usually given to women and their choices in the trust game are costly because they reduce total household earnings. There is non-experimental evidence that

[9] Ashraf et al. (2006); Croson and Gneezy (2009); Buchan, Croson, and Solnick (2008); Chaudhuri and Gangadharan, (2007). In all of these papers the samples are drawn from among college students and they find consistent results that women send less and return more in the trust game.

women allocate more resources towards children human capital than their male counterparts (Duflo (2003); Thomas (1990)). However, as mentioned earlier there is growing experimental evidence on women being as or less cooperative than their husbands. It is possible that women want to keep control over money due to their expectations of how their husbands will spend the money. Therefore it is important to understand the mechanisms driving the limited investment behavior because if the counterfactual is that, by sharing more and increasing household earnings, the difference is spent frivolously by husbands, say on tobacco, then the experimental evidence is neither troubling nor inconsistent with the previous non-experimental results.

Consider a standard non-cooperative model of allocation between spouses similar to Chen and Woolley (2001). Spouses have preferences over personal expenditure (x_i), and expenditure on household goods (Q_i) which are of the Samuelson type (non-rival in utility). Preferences over own consumption are represented by a utility function, $U(Q, x_i)_{\text{i}}$, which is assumed to be separable in x_i and Q, where $Q = Q_i + Q_{-i}$. Therefore, each spouse independently decides on his or her contribution towards household goods but both derive utility from the realized investment or expenditure.

In the experiment, one spouse is randomly chosen to receive an endowment and decide whether to keep the money or to send it to her spouse who will receive the money with 300% interest. Let the endowment be ω, the amount sent be κ_s (which is then tripled), and thus the amount kept by the sender is $\omega - \kappa_s$. The returner chooses the amount to return, r_r, from the $\tau\kappa_s$ where τ is the interest earned, in this case $\tau = 3$. Once the payments are made, each spouse chooses his or her private and household expenditure to maximize her individual utility subject to the experimental earnings. There are two main differences of examining transfers in the trust game with couples (relative to strangers): (1) decisions in the game depend on the expectations of what their

spouse will do with the money afterwards, and (2) even in the absence of caring preferences, their utilities are interdependent via household goods.

Before the payoffs of the experiment are realized, the sender solves the following problem:

$$max_{\kappa_s, x_s, Q_s}\ U_s = u_s(x_s) + v_s(Q_s + E(Q_r))^{10} \quad s.t. \quad (\omega - \kappa_s) + E(r_s) \geq x_s + Q_s \qquad (1)$$

The optimum choices of money to send (as well as allocations towards public and personal consumption) result from solving the following system:

$$\kappa_s = \kappa\big(\omega, E(Q_r), E(r_s), \tau\big) \qquad (2)$$

$$Q_s = \kappa\big(\omega, E(Q_r), E(r_s), \tau\big) \qquad (3)$$

The amount (or share) of the endowment that is sent depends on his or her expectation of what the returner spouse will do with the money. In a more general model, altruism, gender roles, and/or bargaining power can also influence the decision. Note that even if a wife cares about her husband, she may limit the proportion of the endowment sent as a result of whether he shares money with her on a day-to-day basis, his prior contribution towards the household goods that she values, and his expenditure on things that she considers selfish or wasteful, for instance, tobacco.

Once the sender has decided on κ_s, the receiver solves:

$$max_{r_r, x_r, Q_r}\ U_r = u_r(x_r) + v_r\big(Q_r + E(Q_s)\big) \quad s.t. \quad \kappa_r \leq x_r + Q_r \ \ and\ \kappa_r = \tau\kappa_s - r_r \qquad (4)$$

The optimum choices for the returner then are:

$$r_r = r\big(\omega, E(Q_s), \kappa_s, \tau\big) \qquad (5)$$

$$Q_r = f\big(\omega, E(Q_s), \kappa_s, \tau\big) \qquad (6)$$

For the individual in the returning role there is only uncertainty about his or her spouse's contribution towards the public good after the experiment. However, given repeated interaction

[10] The functions $u(\cdot)$ and $v(\cdot)$ satisfy the standard assumptions that $u' > 0, v' > 0, u'' < 0, v'' < 0$, and $u'(0) = \infty$. $v'(0) = \infty$, implying x_i and Q are normal goods. The model allows for differences in relative preferences for household and private goods across spouses. This framework can also be extended to include caring preferences as in Chen and Woolley (2001).

over the years they have been married, individuals can form a prediction of future contributions based on previous expenses.

In what follows, I estimate the reduced-form reaction functions, (3) and (5), to examine the mechanisms driving the observed differences in sharing across genders. I cannot however estimate the reaction functions (4) and (6) as I do not observe spousal expenditure after the experiment concluded. I resort to the survey data collected on previously incurred expenditure, control over money, and household characteristics. The survey was conducted privately with each spouse in separate rooms and by enumerators of the same gender. The expenditure reported is pre-existing to the experiment (over the last 12 months) and can be used to proxy the expectations of what the spouse will do with the money after the payoffs from the experiment are realized. I use indicators of an individual spouse's perception of the reality of his/her ability to influence the decision to work outside the home to account for differences in bargaining power. These indicators of decision-making and bargaining power are subjective and thus actually capture what matters in deciding whether to turn over money or not.

Sending Behavior:

There are various channels that can motivate the lack of sending in the trust game among married couples. Expectations about the way earnings from the experiment will be spent are an important factor, not only theoretically but also given evidence from development research. Poor households in developing countries spend a considerable amount of their income on alcohol, tobacco, and/or other indulging goods, instead of better quality calories (Duflo and Banerjee, (2007)). According to a report from the National Institute of Medical Statistics (NIMS) from 2007, in Uttarakhand only 6.6% of women consume tobacco, while 47.7% of men either smoke or chew tobacco (NIMS, (2007)). In my sample, neither women nor men report the tobacco that was purchased was meant

for the wives; 73% of respondents stated it was meant for the husband, and the rest for other members of the household. Further, 47% of men report spending money on tobacco in the last 12 months, thus resulting in a similar proportion of tobacco consumption by men in my sample as the reports by the NIMS. If this is a source of contention between spouses, which was suggested anecdotally during the data collection, it may be one of the reasons women send less money even if it comes at a cost.

It is possible that gender differences in altruistic behavior on a day-to-day basis are driving the results. I use the answer to the question: "Do you buy gifts for your spouse?" as a proxy for day-to-day altruism between spouses. Alternatively, gender differences in sending behavior may be masking differences in control over money inside the household. Barr (2003) suggests that 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. 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 particpation (85%), but only 39% of women do. I also include a variable on the share of wife's total expenditure relative to husband's total expenditure as another measure of women's bargaining power.

In the regression analysis that follows, I estimate reduced-form reaction functions of the share of the endowment that is transferred by the sender of gender g to his or her spouse.

$$\left(\frac{K_s}{\omega}\right)_s^g = \theta_1 \, GS_s^g + \theta_2 \, BP_s^g + \pi \;\; Exp_h \; + \varphi \;\; X_h + \sum_{d=1}^{2} \alpha_d + \varepsilon_s \qquad (7)$$

Where $\left(\frac{K_s}{\omega}\right)_s^g$ is the share of the endowment that the sender of gender g transfers to her spouse in household h; GS_s is an indicator variable equal to 1 if spouse s buys gifts for her partner; Exp_s is a matrix of different expenditure categories over the last 12 months by each spouse in household h; BP_s^g is an indicator of self-reported control over money in the household; X_h is a matrix of

household characteristics; and $\sum_{d=1}^{2} \alpha_d$ are district fixed-effects. Detailed description of all variables can be found in Appendix B.3.

The results on sending behavior are presented in Table 5. I split the sample and estimate variants of equation (7) for men and women separately for ease of interpretation (in Appendix B.5 I present robust results using interactions instead of separate regressions by gender). Column (1) contains the results from regressing the proportion sent on expenditure and district[11]. In Column (5) I add control variables, indicators of altruism, bargaining power, total household expenditure, and in Column (6) I further add education controls[12]. There are systematic differences in the variables that influence sending behavior across genders. For women, the share of total household expenditure on tobacco significantly decreases the proportion sent, but it is not relevant for men. The result is robust to adding a variety of control variables; the point estimate becomes smaller but it continues to be statistically significant, negative, and statistically equal to 1. While both men and women spend money on tobacco, in Uttarakhand men are the ones who consume most of it. However, it is not at the extensive margin that this negative relationship arises, but at the intensive margin. Thus, among those households that purchase tobacco, a greater expenditure is associated with a one-to-one decrease in sharing in the game. Figure B.1a in the Appendix shows there are outliers in the share spent on tobacco out of household expenditure. However, after removing the outliers (see Appendix Figure B.1b) there continues to be a negative relationship between proportion sent by wives and expenditure on tobacco. To further examine whether the results are driven by households where the share spent on tobacco is large, in Columns (1)a, (5)a, and (6)a I present results using a dummy variable equal to 1 if the share spent on tobacco is greater than the 85th percentile (8.1%),

[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.

[12] Appendix B.4 contains columns (2) to (4) where controls are progressively introduced showing the results are robust.

and zero otherwise. It is clear that women in households that spend a share above 8% on tobacco reduce the amount sent by a more than proportional response[13]. These results are intuitive because negligible expenditure in tobacco is unlikely to cause conflict, while a share of expenditure around 8% is 5 times the average share spent on home items. Thus, the results suggest that non-cooperative behavior observed in women in the experiment is motivated by prior non-cooperative behavior from their husbands in the form of large expenditure on tobacco. The husband's expenditure on weddings, dowries and funerals also decreases sending by women, though to a lesser order of magnitude.

Men on the other hand send more if their wives spent money in children's schooling (fees, books, clothes, etc). This result is both robust and becomes stronger as controls are introduced. Among sending spouses, men pay for schooling expenses in 45% of the households, in 43% the wife pays. Further, only 4 of these households do not have a school-going son or daughter, thus variation comes from which member of the household pays for schooling expenses. Interestingly, both men and women pay for schooling, and yet, women's sending behavior is uncorrelated to the husbands' contribution towards children human capital investments. Therefore, wives are compensated for paying for schooling expenses when unanticipated income shocks occur (experimental money), while husbands are not.

[13] A sensitivity analysis was conducted to find the minimum threshold of expenditure on tobacco that yields robust results. The 80th percentile is a share of expenditure on tobacco of 7.3% when considering only the households with non-zero expenditure. Using an indicator equal to 1 if the share of household expenditure on tobacco exceeds 7.3% (and zero otherwise) the results are robust but statistical significance drops to 10% instead of at the 5% level. The results can be requested directly from the author.

Table 5: Reaction Functions on Sending Behavior

	Women						Men					
	(1)	(5)	(6)	(1) a	(5) a	(6) a	(1)	(5)	(6)	(1) a	(5) a	(6) a
Dummy Expenditure in Tobacco	1.590	-1.043	-0.723	0.240	-1.228	-0.798	2.412	-0.931	-1.712	0.496	-3.372	-4.371
(= 1 if Expenditure in Tobacco>0)	[4.693]	[5.088]	[5.405]	[4.610]	[5.004]	[5.299]	[4.924]	[5.241]	[5.343]	[4.330]	[4.986]	[5.115]
HH Expenditure in Tobacco	-1.029***	-0.669**	-0.690*	-15.613***	-12.599**	-13.172**	-0.223	-0.351	-0.303	8.700	7.933	9.303
(= share relative to total HH exp, 0 o/w)	[0.306]	[0.311]	[0.351]	[5.216]	[6.387]	[6.640]	[0.592]	[0.458]	[0.406]	[10.456]	[10.933]	[10.168]
Own Expenditure in Assets	-	-0.229	-0.331	-	8.259	9.488	-	0.168	0.182	-	4.075	4.215
(= share relative to total Own Exp)		[0.211]	[0.239]		[6.436]	[6.733]		[0.167]	[0.168]		[7.434]	[7.177]
Own Expenditure in Ceremonies	-	0.247	0.290	-	-0.249	-0.358	-	-0.203	-0.234	-	0.166	0.176
(= share relative to total Own Exp)		[0.199]	[0.191]		[0.210]	[0.238]		[0.156]	[0.160]		[0.165]	[0.166]
Spouse Expenditure in Assets	-0.040	0.156	0.156	-0.033	0.170	0.172	-0.205*	-0.276*	-0.285*	-0.191*	-0.251*	-0.260*
(= share relative to total Spouse Exp)	[0.110]	[0.157]	[0.172]	[0.110]	[0.157]	[0.172]	[0.115]	[0.148]	[0.148]	[0.114]	[0.145]	[0.146]
Spouse Expenditure in Ceremonies	-0.233*	-0.267*	-0.207	-0.203*	-0.236	-0.171	-0.020	-0.003	-0.028	-0.050	-0.030	-0.053
(= share relative to total Spouse Exp)	[0.119]	[0.152]	[0.183]	[0.119]	[0.153]	[0.184]	[0.223]	[0.217]	[0.220]	[0.236]	[0.213]	[0.216]
Wife Share of Total HH Expenditure	0.037	-0.034	-0.031	0.057	-0.013	-0.010	0.203*	0.074	0.064	0.220*	0.111	0.093
(= Wife tot Exp / Tot HH Exp)	[0.110]	[0.157]	[0.156]	[0.109]	[0.156]	[0.153]	[0.118]	[0.139]	[0.142]	[0.120]	[0.137]	[0.138]
Spouse Exp. Child Schooling	0.253	0.175	2.216	2.194	1.376	3.573	9.679*	12.766**	13.890**	9.998*	12.952**	14.164**
(= 1 if spent $ in children's schooling)	[7.273]	[10.275]	[11.843]	[7.533]	[10.021]	[11.577]	[5.711]	[5.416]	[5.483]	[5.836]	[5.411]	[5.424]
N	87	80	78	87	80	78	93	90	89	93	90	89
R-squared	0.209	0.336	0.353	0.202	0.342	0.360	0.094	0.219	0.248	0.101	0.221	0.255
Controls												
Demographic & HH Composition	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Bargaining Power & Altruism	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Total Expenditure	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Education	N	N	Y	N	N	Y	N	N	Y	N	N	Y

Note: Robust standard errors in brackets. Results with control variables in Appendix Table B.4.
*** p-value<0.01; ** p-value<0.05; * p-value<0.1.
a/ Instead of Share of household Expenditure on Tobacco using Dummy =1 if share of hh expenditure on tobacco >8, and 0 otherwise. The p-value on this coefficient in columns (5)a and (6)a is 0.052 and 0.053 respectively, thus the **.

Expenditure on assets by the wife is negatively associated with transfers by men; however, result is not robust to the inclusion of control variables for own and total household expenditure. Appendix Table B.4 contains the results for the control variables, some of which provide interesting insights. Having an additional daughter is associated with men sending around 5 percentage points less to their wives. This can indicate a preference towards sons for men (they can spend the money earned on their sons) or anticipation by the husband of his wife's preference towards daughters.

Receiver Behavior:

The channels that influence receiver behavior can be somewhat different from senders. While senders experience uncertainty about how much they will get in return, receivers know the actions

chosen by the first mover. Further, there is no need for strategic behavior in the returner role (because there is no response by the sender) other than through the cost benefit analysis between expectations of how their spouse will spend the money and the returner's own preferences. Finally, returners face no direct cost of keeping the money, as there is no interest to be made by sharing. To examine the mechanisms motivating returner behavior between spouses I estimate the following reaction function:

$$\left(\frac{r_s}{\tau(\omega-\kappa_s)}\right)_s^g = \theta_1\ GS_s^g + \theta_2\ BP_s^g + \pi\ \ Exp_h\ + \varphi\ \ X_h + \sum_{d=1}^{2}\alpha_d + \varepsilon_s \qquad (8)$$

Where $\left(\frac{r_s}{\tau(\omega-\kappa_s)}\right)_s^g$ is the share of the sent amount plus interest that the receiver of gender g in household *h* returns to her spouse; GS_s^g is an indicator variable equal to 1 if spouse *s* buys gifts for her partner; Exp_h is a matrix of different expenditure categories over the last 12 months; BP_s^g is an indicator of self-reported control over money in the household by spouse *s*; X_h is a matrix of household characteristics; and $\sum_{d=1}^{2}\alpha_d$ are district fixed-effects.

Table 6 contains the results on returning behavior by gender. As before, I present results for variations of equation (8) separate for husbands and wives but include full sample estimations with interactions by gender in Appendix B.7. I do not include a variable on the proportion of the endowment transferred by the sender in Table 5 but results are unchanged when I do. The first notable result is that most of the correlates that significantly influence returner behavior differ from those that influence the proportion sent, or the response goes in opposite directions. An exception is women's response to the share of household expenditure on tobacco. Women in households with non-zero expenditure on tobacco return less money to their husbands, which is consistent with the result on sending behavior by women (on the intensive instead of extensive margins). Overall, it seems that prior non-cooperative behavior of the husband (in the form of tobacco expenditure) plays an important role in wives sharing decisions.

There are systematic differences in the correlates that significantly influence returner behavior by gender except for the indicator on relative spousal expenditure, which is a measure of relative access to resources and bargaining power in the household. As the wife's share of expenditure relative to her husband's increases, both men and women return less money. Regardless of gender, individuals when given the opportunity will try to increase their share of control over money as long as there is no direct cost of doing so (recall it did not influence sending behavior). Further, when the returner's spouse pays for schooling returners send a larger proportion of their money back regardless of gender.

Husbands' expenditure on ceremonies significantly increases the proportion returned by women, while it decreases the proportion transferred by female senders. This suggests that women are unwilling to incur a cost of sharing money with their spouse when they expect the money to go towards social capital investments, but compensate their husbands if they have incurred such expenses when it is not costly. These women are on different households from those in the sender role, however, due to random assignment of spouses to roles, it is unlikely that these differences are explained by household unobserved heterogeneity. Interestingly, while own personal expenditure is uncorrelated with sending behavior (see Appendix Table B.4), it is negatively associated with the share returned. The share of expenditure on personal items can be an indicator of both bargaining power and/or selfish preferences. A greater share spent on personal items can result from increased influence over how money is spent, and it can also reflect a preference for items that only benefit oneself. Returners can unilaterally decide how much to keep, thus somewhat removing differences in bargaining power from the decision. Nonetheless, the sender will know how much the receiver kept and in the event of low bargaining power, this can be a cause of conflict.

Table 6: Reaction Function on Returning Behavior

	Women						Men					
	(1)	(5)	(6)	(1) a	(5) a	(6) a	(1)	(5)	(6)	(1) a	(5) a	(6) a
Dummy Expenditure in Tobacco	-5.786	-9.724**	-9.689**	-5.234	-7.888*	-7.975*	9.189**	9.482*	11.094**	9.756**	9.609*	11.456**
(= 1 if Expenditure in Tobacco>0)	[4.693]	[4.873]	[4.632]	[4.390]	[4.477]	[4.263]	[4.486]	[5.367]	[5.166]	[4.393]	[5.210]	[4.996]
HH Expenditure in Tobacco	0.147	0.580	0.568	1.047	9.429	9.909	-0.414	-0.693	-0.681	-11.172*	-15.278*	-15.943*
(= share relative to total HH exp, 0 o/w)	[0.491]	[0.478]	[0.443]	[10.785]	[11.036]	[10.857]	[0.292]	[0.491]	[0.506]	[5.782]	[8.895]	[8.914]
Spouse Expenditure on Assets	-	-0.010	-0.072	-	-0.017	-0.080	-	0.020	0.046	-	0.014	0.040
(=share relative to total spouse exp)		[0.202]	[0.204]		[0.203]	[0.204]		[0.152]	[0.158]		[0.152]	[0.158]
Spouse Expenditure on Ceremonies	-	0.216*	0.168	-	0.204*	0.158	-	0.033	0.131	-	0.018	0.115
(=share relative to total spouse exp)		[0.118]	[0.127]		[0.119]	[0.129]		[0.200]	[0.202]		[0.185]	[0.182]
Spouse Personal Expenditure	-	0.608*	0.594*	-	0.625*	0.610*	-	-0.226	-0.217	-	-0.187	-0.188
(=share relative to total spouse exp)		[0.346]	[0.340]		[0.334]	[0.326]		[0.576]	[0.560]		[0.591]	[0.586]
Own Expenditure in Assets	-0.221	-0.185	-0.216	-0.223	-0.187	-0.218	-0.313***	-0.180	-0.120	-0.316***	-0.171	-0.109
(= share relative to total Own Exp)	[0.177]	[0.190]	[0.174]	[0.176]	[0.189]	[0.173]	[0.111]	[0.164]	[0.155]	[0.110]	[0.162]	[0.151]
Own Expenditure in Ceremonies	0.175	0.140	0.144	0.182	0.152	0.155	-0.114	-0.124	-0.066	-0.119	-0.104	-0.048
(= share relative to total own Exp)	[0.200]	[0.246]	[0.254]	[0.204]	[0.248]	[0.254]	[0.104]	[0.158]	[0.164]	[0.099]	[0.157]	[0.164]
Own Personal Expenditure	-1.333***	-1.507***	-1.579***	-1.323***	-1.487***	-1.564***	-0.077	-0.179	-0.027	-0.100	-0.228	-0.080
(= share relative to total Own Exp)	[0.406]	[0.532]	[0.554]	[0.403]	[0.528]	[0.552]	[0.171]	[0.194]	[0.182]	[0.168]	[0.188]	[0.174]
Wife Share of Total HH Expenditure	-0.289***	-0.238**	-0.274**	-0.292***	-0.246**	-0.282**	-0.093	-0.128	-0.201	-0.090	-0.105	-0.181
(= Wife tot Exp / Tot HH Exp)	[0.086]	[0.105]	[0.109]	[0.087]	[0.102]	[0.107]	[0.116]	[0.149]	[0.133]	[0.116]	[0.151]	[0.134]
Spouse Exp. Child Schooling	10.319*	19.505***	20.047***	10.144*	19.126***	19.731***	12.891***	9.853	6.220	11.468**	7.776	3.915
(= 1 if spent $ in children's schooling)	[5.572]	[5.636]	[6.514]	[5.457]	[5.497]	[6.351]	[4.790]	[6.105]	[6.586]	[5.138]	[6.890]	[7.257]
Receive Gifts for Spouse	-	0.215	3.203	-	0.914	3.983	-	11.981**	7.723	-	11.046**	6.527
(=1 if Yes)		[5.223]	[5.129]		[5.311]	[5.193]		[5.179]	[5.127]		[5.344]	[5.264]
Controls												
Demographic & HH Composition	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Bargaining Power & Altruism	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Total Expenditure	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Spouse Expenditure	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Education	N	N	Y	N	N	Y	N	N	Y	N	N	Y
N	93	89	88	93	89	88	87	81	81	87	81	81
R-squared	0.233	0.429	0.463	0.232	0.425	0.460	0.203	0.367	0.434	0.221	0.386	0.457

Note: Robust standard errors in brackets. Results on control variables in Appendix Table B.6.
*** p-value<0.001; ** p-value<0.05; * p-value<0.1.

a/ Instead of Share of Household Expenditure on Tobacco using Dummy =1 if share of hh expenditure on tobacco >8, and 0 otherwise.

Men in households that spend money on tobacco return a large, though weakly statistically significant, share to their wives. It is worth noting that the point estimate is quite stable as controls are introduced. As in the results on sending behavior, I use a dummy variable equal to 1 if the share of household expenditure on tobacco is greater than the 85% percentile (8%) and zero otherwise to examine whether the results are only driven by the outliers. Columns (1)a, (5)a, and (6)a provide even stronger evidence that expenditure on tobacco influences returning behavior by husbands. Men in households where the household expenditure share on tobacco exceeds 8% return significantly less money to their partners, while those in households with smaller shares of tobacco expenditure

return more. Husbands where the household expenditure share on tobacco is large have presumably more bargaining power, which explains the decreased sharing. Alternatively, expenditure on tobacco indicates lack of elf-control (among other things). Therefore, husbands where the share of expenditure on tobacco is moderate could be returning the money to their wives as a commitment device.

5. Conclusions

In this paper I presented results from the first investment (trust) game conducted among established couples. Between March and July 2013, I conducted laboratory experiments among a sample of 185 established couples in Dehradun and Almora districts, in Uttarakhand, India. Couples were recruited door-to-door, taken into separate rooms, not allowed to communicate, and given a significant endowment. The experiment consisted of a BDM investment and dictator games where spouses were randomly assigned to the role of sender or receiver. 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.

The unitary and cooperative models of the household are rejected as only 3% of spouses send the entire endowment and maximize household earnings. On average, only 57% of the endowment is transferred, which evaluated at the mean costs the household Rs. 96, equivalent to one fourth of average daily household income. I examine alternative explanations such as a 50-50 sharing rule between spouses or inequality aversion which are also rejected. However, while the empirical evidence is indicative of non-cooperative behavior between spouses, the survey responses (and experimental results) suggest spouses have not reverted to separate spheres, where each decides

individually on their contributions towards household public goods and there are no intra-household transfers. Consistent with mixed models of the household by Munro (2014), Malapit (2012), and Castilla (2011) the results provide further evidence that households operate under contracts where some outcomes can be contracted, while others cannot, yielding efficiency losses.

This paper's results reconcile the findings on development research where women allocate more resources towards children human capital investments (Duflo, (2000); Thomas, (1990)) and the experimental research in developing countries that finds that women are as or less cooperative than men ((Ashraf (2009); Iversen et al., (2010); Munro et al. (2014); Mani (2011), Hoel (2012); Jakiela & Ozier, (2014)); Castilla, (2014)). 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 share less money with their husbands on either role. This finding is consistent with the previous experimental results using samples from developing countries that do not consist of college students. However, between spouses it would be expected to find higher levels of cooperation. The lack of sharing by women seems to be motivated by prior non-cooperative behavior on the part of their husbands in the form of expenditure on tobacco, which is neither preferred by women nor welfare improving.

The examination of the mechanisms driving observed behavior in the trust game suggest that perhaps women perceive keeping the money as equally or less costly than transferring it to their husbands who will spend some of the money they keep on tobacco. The unitary elasticity is strong evidence of this. If the perceived costs of tobacco consumption are as large as the interest lost from keeping the money, there would be no loss in household efficiency. Results on returning behavior show that husbands in households where the share of expenditure on tobacco exceeds the 85th percentile keep a larger share in the trust game, thus supporting the choices by women to keep the money even if it comes at a cost. On the other hand, women underestimate their husbands' reciprocity to some degree because men return more money when their wives pay for child

schooling expenses (conditional on expenditure on tobacco), which plausibly improves efficiency in intra-household allocation.

The results presented in this paper should be taken with caution. While random assignment of husbands and wives to roles ensures internal validity, the sample is not necessarily representative of the population in Uttarakhand, or other regions of India. Nonetheless, the differences in sharing by gender, the implications on household efficiency, and the mechanisms found in this paper suggest the need for further research on intra-household decision making and the role of prior bargaining outcomes as these are important predictors of non-cooperative behavior by women.

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Appendix A: Experiment 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

Figure B.1: Scatter plot of Proportion Sent by Wife and HH Expenditure on Tobacco

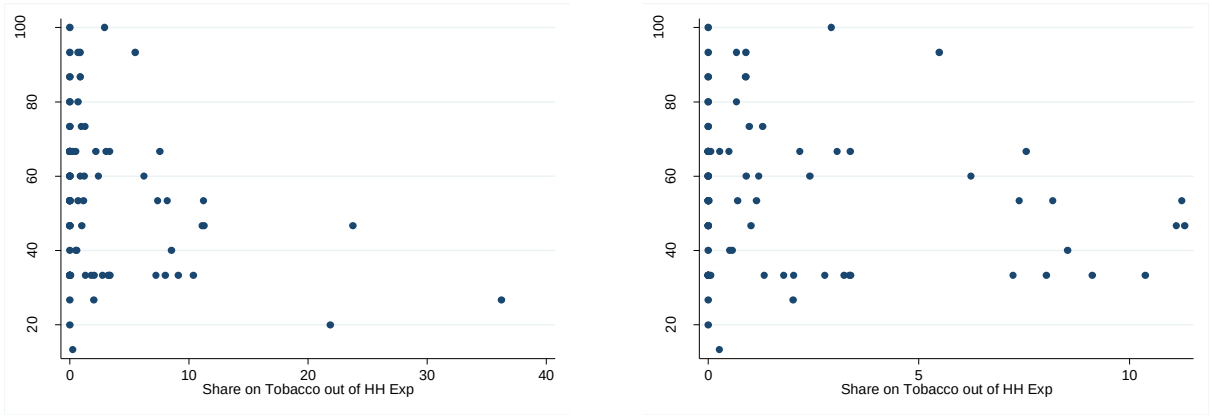

Table B.1: Summary Statistics of Indicators of Control, Caring and Altruism from the Survey

Variable	Husband		Wife		Household Total	
	N	Mean	N	Mean	N	Mean
Contributes to Pay for Child Schooling	185	0.891 (0.311)	187	0.861 (0.346)		
Share Exp Tobacco	182	3.641 (7.582)	186	1.623 (6.062)	187	2.795 (5.597)
Share Exp Health	182	18.75 (19.87)	186	21.15 (20.46)	187	20.10 (19.14)
Share Exp. Clothing	182	14.23 (12.78)	186	9.884 (10.49)	187	11.17 (7.901)
Share Exp. Personal Care	182	8.948 (9.786)	186	8.015 (7.101)	187	7.869 (6.002)
Share Exp. Home Improvement	182	10.44 (16.80)	186	14.20 (20.52)	187	13.25 (19.10)
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)
Exp Tobacco for Husband	84	73.81	41	73.13		
Exp Tobacco for Wife	84	0	41	0		
School Going Son	187	79.68				
School Going Daughter	184	67.39				
Wife Share of Total HH Expenditure					188	49.608 (21.220)
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)
Cow					188	0.510 (0.501)
Bullock					188	0.191 (0.394)
Buffalo					188	0.276 (0.448)
Goat					188	0.170 (0.376)

Table B.2: Tests of Balance of Treatment (effective randomization)

Variable	Husband	Wife	Variable	Husband	Wife
Age	0.560	0.078	Contributes to Pay for Child	0.035	0.056
	(0.664)	(0.951)	Schooling	(0.442)	(0.262)
Years of Marriage	-0.020	0.134	Share Exp. Tobacco	-1.345	0.760
	(0.988)	(0.928)		(0.232)	(0.393)
Scheduled Caste	-0.037	0.014	Share Exp. Ceremonies	3.140	-0.982
	(0.412)	(0.687)		(0.156)	(0.529)
Other Backwards castes	0.021	-0.030	Share Exp Assets	1.744	-1.334
	(0.713)	(0.627)		(0.488)	(0.592)
Illiterate	-0.037	-0.027	Share Exp. Personal Items	2.991	1.541
	(0.303)	(0.576)		(0.227)	(0.453)
No Schooling	-0.006	-0.025	Share Exp. Clothing	-0.116	1.956
	(0.872)	(0.706)		(0.951)	(0.204)
Some Schooling	0.043	-0.003	Share Exp. Personal Care	3.107	-0.414
	(0.49)	(0.966)		(0.031)	(0.691)
High School or above	-0.058	0.004	Total Expenditure	-20.68	31.40
	(0.23)	(0.907)	(thousands Rs)	(0.215)	(0.137)
Give gifts to Spouse	-0.127*	-0.103	HH Income	-0.639	-1.434
	(0.083)	(0.124)	(monthly, thousand Rs.)	(0.636)	(0.221)
Separate Spheres	-0.078	-0.035	Say over Work	-0.050	-0.021
	(0.25)	(0.507)		(0.33)	(0.762)
Handles HH Money	0.067*	0.012	Works for Pay	-0.014	-0.066
	(0.057)	(0.826)		(0.647)	(0.326)

Household Level Variables			
No. Sons	0.067	Share HH Exp Health	-4.222
	(0.64)		(0.132)
No. Daughters	0.291	Share Exp. Ceremonies	1.777
	(0.089)		(0.346)
Mother in Law	-0.021	Share Exp Assets	0.340
	(0.755)		(0.871)
Father in Law	-0.084	Share Exp Home	0.527
	(0.128)		(0.849)
% HH with Son of School Age	0.031	Share Exp Personal Items	1.167
	(0.587)		(0.492)
% HH with Daughter of School Age	0.109	Share Exp Transportation	-0.332
	(0.114)		(0.838)
% HH from Almora	0.033	Share Exp Utilities	-0.328
	(0.641)		(0.686)
Transportation Assets Index	-0.133	Share Exp Jewelry	1.464
	(0.236)		(0.134)
House Quality Index	0.042	Share Exp Entertainment	-0.030
	(0.827)		(0.873)
% of HH with Exp Tobacco >0	-0.038	Share Exp Other items	1.040
	(0.597)		(0.110)
% HH where Tobacco for Husband	0.040	Total HH Expenditure	10.719
	(0.597)		(0.717)
Share Exp. Tobacco	-0.211	Total HH Income	-1.831
	(0.796)		(0.158)

Table B.1: Description of Variables from the Survey

Variable	Description	Unit
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
Expenditure	In the last 12 months, did you spend on these items and services? And what was the value?	Thousands of Indian Rupees
Share of Expenditure	Expenditure on category X divided by total expenditure. This is done at HH, and individual level	Thousands of Indian Rupees
Expenditure on Ceremonies	In the last 12 months, how much did you spend on gifts or dowries for others' weddings or funerals?	Dichotomous
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
Say to Work	Equal to 1 if the respondent solely or jointly with her (his) spouse decide whether she (he) can work	Dichotomous
Handles HH money	Equal to 1 if the respondent handles the household money.	Dichotomous
Work	Equal to 1 if the respondent works for income	Dichotomous

Table B.4: Results on Sending behavior, robustness

	Women										Men									
	(1)	(2)	(3)	(4)	(5)	(6)	(6)	(1) a	(5) a	(6) a	(1)	(2)	(3)	(4)	(5)	(6)	7	(1) a	(5) a	(6) a
Dummy Expenditure in Tobacco	1.590	1.218	-0.335	-0.958	-1.043	-0.723	-0.868	0.240	-1.228	-0.798	2.412	1.268	-1.501	-1.388	-0.931	-1.712	-0.741	0.496	-3.372	-4.371
(= 1 if Expenditure in Tobacco>0)	[4.693]	[4.891]	[5.029]	[4.976]	[5.088]	[5.405]	[5.486]	[4.610]	[5.004]	[5.299]	[4.924]	[4.946]	[5.061]	[5.136]	[5.241]	[5.343]	[5.360]	[4.330]	[4.986]	[5.115]
HH Expenditure in Tobacco	-1.029***	-0.922**	-0.747***	-0.681**	-0.669**	-0.690*	-0.730**	-15.613***	-12.599*	-13.172*	-0.223	-0.192	-0.132	-0.237	-0.351	-0.303	-0.394	8.700	7.933	9.303
(= share relative to total HH exp, 0 o/w)	[0.306]	[0.357]	[0.268]	[0.290]	[0.311]	[0.351]	[0.364]	[5.216]	[6.387]	[6.640]	[0.592]	[0.573]	[0.471]	[0.484]	[0.458]	[0.406]	[0.401]	[10.456]	[10.933]	[10.168]
Own Expenditure in Assets	-	-	-	-0.236	-0.229	-0.331	-0.306	-	8.259	9.488	-	-	-	0.173	0.168	0.182	0.163	-	4.075	4.215
(= share relative to total Own Exp)				[0.224]	[0.211]	[0.239]	[0.266]		[6.436]	[6.733]				[0.163]	[0.167]	[0.168]	[0.168]		[7.434]	[7.177]
Own Expenditure in Ceremonies	-	-	-	0.244	0.247	0.290	0.282	-	-0.249	-0.358	-	-	-	-0.205	-0.203	-0.234	-0.282*	-	0.166	0.176
(= share relative to total Own Exp)				[0.196]	[0.199]	[0.191]	[0.199]		[0.210]	[0.238]				[0.155]	[0.156]	[0.160]	[0.157]		[0.165]	[0.166]
Spouse Expenditure in Assets	-0.040	-0.015	0.071	0.165	0.156	0.156	0.135	-0.033	0.170	0.172	-0.205*	-0.191	-0.160	-0.286*	-0.276*	-0.285*	-0.254*	-0.191*	-0.251*	-0.260*
(= share relative to total Spouse Exp)	[0.110]	[0.116]	[0.135]	[0.168]	[0.157]	[0.172]	[0.191]	[0.110]	[0.157]	[0.172]	[0.115]	[0.116]	[0.113]	[0.146]	[0.148]	[0.148]	[0.151]	[0.114]	[0.145]	[0.146]
Spouse Expenditure in Ceremonies	-0.233*	-0.209	-0.269*	-0.261*	-0.267*	-0.207	-0.226	-0.203*	-0.236	-0.171	-0.020	-0.016	0.022	-0.009	-0.003	-0.028	-0.067	-0.050	-0.030	-0.053
(= share relative to total Spouse Exp)	[0.119]	[0.127]	[0.136]	[0.138]	[0.152]	[0.183]	[0.185]	[0.119]	[0.153]	[0.184]	[0.223]	[0.222]	[0.201]	[0.207]	[0.217]	[0.220]	[0.223]	[0.236]	[0.213]	[0.216]
Wife Share of Total HH Expenditure	0.037	0.028	-0.044	-0.028	-0.034	-0.031	-0.013	0.057	-0.013	-0.010	0.203*	0.164	0.162	0.082	0.074	0.064	0.088	0.220*	0.111	0.093
(= Wife tot Exp / Tot HH Exp)	[0.110]	[0.109]	[0.131]	[0.144]	[0.157]	[0.156]	[0.181]	[0.109]	[0.156]	[0.153]	[0.118]	[0.112]	[0.113]	[0.135]	[0.139]	[0.142]	[0.139]	[0.120]	[0.137]	[0.138]
Spouse Exp. Child Schooling	0.253	0.129	-1.826	0.487	0.175	2.216	2.138	2.194	1.376	3.573	9.679*	9.722	11.567*	12.551**	12.766**	13.890**	13.561**	9.998*	12.952**	14.164**
(= 1 if spent $ in children's schooling)	[7.273]	[8.850]	[9.590]	[9.608]	[10.275]	[11.843]	[11.912]	[7.533]	[10.021]	[11.577]	[5.711]	[5.907]	[5.934]	[5.506]	[5.416]	[5.483]	[5.274]	[5.836]	[5.411]	[5.424]
District	-12.625***	-13.691***	-12.551	-15.714*	-15.382*	-16.254*	-15.913*	-12.302**	-15.612*	-16.531*	-4.656	-4.592	-0.449	-1.076	-4.037	-4.214	-6.551	-5.577	-3.476	-3.900
(=1 if Almora)	[4.641]	[5.063]	[7.902]	[8.274]	[8.635]	[8.956]	[9.198]	[4.664]	[8.437]	[8.781]	[5.052]	[5.566]	[6.295]	[6.318]	[7.870]	[8.268]	[8.286]	[5.018]	[7.401]	[7.782]
Age		-1.279	-1.172	-1.947	-1.988	-2.896	-2.682		-2.644	-3.582		-1.397	-1.543	-0.804	-0.210	-0.680	-0.785		-0.545	-1.000
		[2.276]	[2.293]	[2.357]	[2.421]	[2.674]	[2.886]		[2.453]	[2.675]		[1.823]	[1.931]	[1.975]	[2.088]	[2.091]	[2.088]		[1.998]	[2.010]
Age Squared		0.022	0.020	0.030	0.030	0.044	0.041		0.040	0.054		0.018	0.018	0.009	0.003	0.007	0.009		0.006	0.010
		[0.030]	[0.030]	[0.031]	[0.031]	[0.035]	[0.037]		[0.032]	[0.035]		[0.020]	[0.021]	[0.021]	[0.022]	[0.022]	[0.022]		[0.021]	[0.022]
No. of Sons		-2.486	-0.937	0.156	0.086	1.571	1.399		0.092	1.647		-3.106	-3.405	-2.617	-2.675	-2.616	-2.164		-2.884	-3.025
		[1.754]	[2.475]	[2.538]	[2.517]	[2.724]	[2.957]		[2.447]	[2.651]		[3.304]	[3.375]	[3.598]	[3.681]	[3.898]	[3.974]		[3.566]	[3.797]
No. of Daughters		1.467	3.259	3.808	3.708	4.268	4.234		4.142	4.811*		-4.055**	-4.929**	-4.835**	-4.632**	-4.680**	-4.818**		-4.866**	-4.964**
		[1.941]	[2.524]	[2.458]	[2.420]	[2.590]	[2.707]		[2.494]	[2.681]		[1.968]	[2.093]	[2.220]	[2.300]	[2.337]	[2.299]		[2.252]	[2.308]
Scheduled Caste			-14.913*	-12.601	-12.514	-6.567	-7.199		-11.209	-5.029			3.345	3.214	2.217	0.909	1.839		2.041	0.497
			[8.626]	[8.518]	[8.677]	[11.741]	[11.979]		[9.196]	[12.294]			[6.511]	[6.108]	[6.122]	[6.100]	[6.439]		[5.851]	[5.764]
Other Backwards Caste			-6.980	-11.039	-10.933	-8.051	-7.948		-11.556	-8.688			5.937	5.292	4.211	1.858	2.507		5.385	3.277
			[7.471]	[8.799]	[8.773]	[9.388]	[9.361]		[8.688]	[9.260]			[5.260]	[5.217]	[5.445]	[6.117]	[5.967]		[5.441]	[6.298]
Buy Gifts for Spouse			6.289	9.517**	9.209*	11.677*	11.103		8.799	11.367*			-7.651	-8.233	-7.810	-5.125	-5.991		-7.686	-4.743
(=1 if Yes)			[5.398]	[4.730]	[5.424]	[6.519]	[7.064]		[5.398]	[6.480]			[4.983]	[5.290]	[5.390]	[6.092]	[6.263]		[5.392]	[5.985]
Say over Work			5.626	8.073	8.260	9.488	9.534		0.249	0.292			4.027	3.585	2.306	2.423	1.047		-0.154	-0.189
(dummy variable)			[5.861]	[6.209]	[6.672]	[6.939]	[7.326]		[0.197]	[0.190]			[6.238]	[6.804]	[7.131]	[7.128]	[7.346]		[0.155]	[0.157]
Total HH Expenditure (log)					0.507	-0.416	-1.186		0.016	-1.043					-3.291	-2.865	-0.320		-1.900	-1.466
					[3.953]	[4.366]	[4.884]		[4.086]	[4.511]					[3.693]	[3.835]	[4.365]		[3.741]	[3.811]
Some Schooling						6.237	6.258			6.533						-2.112	-0.498			-0.758
						[6.511]	[6.647]			[6.453]						[4.898]	[5.269]			[5.036]
High School or Above						11.103	11.482			11.494						-11.506	-9.007			-11.598
						[12.631]	[13.099]			[12.853]						[9.248]	[9.995]			[9.490]
Own Expenditure in Personal Care							-0.039										0.184			
(= share relative to total Own Exp)							[0.268]										[0.361]			
Spouse's Expenditure in Personal Care							-0.123										0.668			
(= share relative to total Spouse Exp)							[0.262]										[0.490]			
N	87	86	80	80	80	78	78	87	80	78	93	93	92	90	90	89	89	93	90	89
R-squared	0.209	0.240	0.302	0.336	0.336	0.353	0.357	0.202	0.342	0.360	0.094	0.152	0.199	0.209	0.219	0.248	0.269	0.101	0.221	0.255

Table B.5: Results on Sending behavior with Interactions by Gender instead of Split Sample

	Women								Coefficients on Interaction with Male Dummy							
	(1)	(2)	(3)	(5)	(6)	(1) a	(5) a	(6) a	(1)	(2)	(3)	(5)	(6)	(1) a	(5) a	(6) a
Dummy Male	-	-	-	-	-	-	-	-	-7.448	-7.173	-11.507	-10.923	-9.068	-5.765	-10.118	-8.191
(= 1 if Sender is Male)									[8.650]	[9.685]	[11.474]	[11.736]	[12.148]	[8.771]	[11.500]	[11.994]
Dummy Expenditure in Tobacco	2.002	1.866	1.307	1.496	1.292	0.218	-0.293	-0.617	-	-	-	-	-	-	-	-
(= 1 if Expenditure in Tobacco>0)	[3.395]	[3.400]	[3.516]	[3.614]	[3.674]	[3.161]	[3.391]	[3.469]								
HH Expenditure in Tobacco	-1.029***	-0.941***	-0.941***	-0.967***	-0.958***	-15.715***	-14.806***	-14.192**	0.727	0.611	0.655	0.657	0.668	23.429**	23.539**	23.821**
(= share relative to total HH exp, 0 o/w)	[0.284]	[0.300]	[0.298]	[0.320]	[0.325]	[4.672]	[5.426]	[5.706]	[0.588]	[0.593]	[0.564]	[0.556]	[0.518]	[11.605]	[11.621]	[11.004]
Own Expenditure in Assets	-0.056	-0.036	-0.085	-0.092	-0.113	-0.082	-0.109	-0.125	0.200	0.195	0.240	0.244	0.270	0.234	0.268	0.288
(= share relative to total Own Exp)	[0.165]	[0.172]	[0.190]	[0.186]	[0.205]	[0.163]	[0.183]	[0.203]	[0.216]	[0.223]	[0.238]	[0.238]	[0.252]	[0.214]	[0.236]	[0.250]
Own Expenditure in Ceremonies	0.123	0.149	0.193	0.188	0.177	0.131	0.207	0.194	-0.340	-0.372	-0.429*	-0.422	-0.444	-0.304	-0.395	-0.415
(= share relative to total Own Exp)	[0.169]	[0.185]	[0.192]	[0.196]	[0.210]	[0.164]	[0.187]	[0.201]	[0.236]	[0.247]	[0.259]	[0.263]	[0.274]	[0.235]	[0.257]	[0.268]
Spouse Expenditure in Assets	0.018	0.018	0.024	0.037	-0.005	0.027	0.036	-0.006	-0.396**	-0.410**	-0.396*	-0.403*	-0.374*	-0.380**	-0.376*	-0.345
(= share relative to total Spouse Exp)	[0.129]	[0.132]	[0.147]	[0.142]	[0.152]	[0.130]	[0.144]	[0.154]	[0.188]	[0.193]	[0.214]	[0.213]	[0.220]	[0.186]	[0.214]	[0.221]
Spouse Expenditure in Ceremonies	-0.229**	-0.259**	-0.292***	-0.286**	-0.308**	-0.195*	-0.259**	-0.283**	0.190	0.242	0.290	0.282	0.295	0.122	0.219	0.238
(= share relative to total Spouse Exp)	[0.103]	[0.103]	[0.110]	[0.115]	[0.127]	[0.104]	[0.115]	[0.126]	[0.249]	[0.264]	[0.274]	[0.283]	[0.295]	[0.259]	[0.290]	[0.298]
Spouse Exp. Child Schooling	-0.863	0.572	0.153	0.586	3.285	0.083	0.058	0.055	15.147*	14.007	14.438	14.010	12.327	12.581	12.126	10.448
(= 1 if spent $ in children's schooling)	[7.142]	[8.444]	[9.913]	[10.203]	[10.544]	[0.084]	[0.096]	[0.097]	[8.791]	[9.783]	[11.065]	[11.204]	[11.640]	[9.017]	[11.044]	[11.494]
Wife Share of Total HH Expenditure	0.056	0.040	0.031	0.035	0.031	1.409	2.252	5.015	-	-	-	-	-	-	-	-
(= Wife tot Exp / Tot HH Exp)	[0.085]	[0.087]	[0.095]	[0.096]	[0.098]	[7.432]	[10.019]	[10.385]								
District	-10.187***	-11.070***	-9.252*	-9.858*	-10.599*	-10.541***	-9.673*	-10.482**	-	-	-	-	-	-	-	-
(=1 if Almora)	[3.447]	[3.592]	[4.682]	[5.173]	[5.389]	[3.415]	[5.014]	[5.214]								
Age	-	-0.053	-0.324	-0.234	-0.122		-0.325	-0.204	-	-	-	-	-	-	-	-
		[1.168]	[1.189]	[1.211]	[1.255]		[1.191]	[1.225]								
Age Squared	-	0.002	0.005	0.004	0.002		0.005	0.003	-	-	-	-	-	-	-	-
		[0.014]	[0.014]	[0.014]	[0.015]		[0.014]	[0.014]								
No. of Sons	-	-2.039	-1.698	-1.648	-1.898		-1.922	-2.277	-	-	-	-	-	-	-	-
		[1.752]	[2.014]	[2.020]	[2.123]		[1.970]	[2.065]								
No. of Daughters	-	-1.434	-1.339	-1.213	-1.521		-1.321	-1.674	-	-	-	-	-	-	-	-
		[1.361]	[1.556]	[1.615]	[1.688]		[1.626]	[1.709]								
Scheduled Caste	-	-	1.386	1.138	0.674		1.153	0.524	-	-	-	-	-	-	-	-
			[5.373]	[5.429]	[5.459]		[5.337]	[5.404]								
Other Backwards Caste	-	-	1.884	1.717	1.461		2.151	1.797	-	-	-	-	-	-	-	-
			[4.809]	[4.848]	[5.239]		[4.827]	[5.243]								
Buy Gifts for Spouse	-	-	0.178	0.453	2.625		0.390	2.585	-	-	-	-	-	-	-	-
(=1 if Yes)			[3.661]	[3.765]	[4.272]		[3.747]	[4.196]								
Say over Work	-	-	6.368	6.018	6.060		6.326	6.305	-	-	-	-	-	-	-	-
(dummy variable)			[4.288]	[4.490]	[4.583]		[4.551]	[4.585]								
Total HH Expenditure (log)	-			-0.843	-0.822		-0.320	-0.202	-	-	-	-	-	-	-	-
				[2.499]	[2.570]		[2.554]	[2.625]								
Some Schooling	-	-	-	-	0.784			0.733	-	-	-	-	-	-	-	-
					[4.111]			[4.051]								
High School or Above	-	-	-	-	-7.083			-7.734	-	-	-	-	-	-	-	-
					[7.043]			[7.150]								
N	178	177	170	170	167	178	170	167	-	-	-	-	-	-	-	-
R-squared	0.171	0.178	0.188	0.189	0.208	0.160	0.182	0.201								

Table B.6: Results on Returning behavior, robustness

	Women										Men									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1) a	(5) a	(6) a	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1) a	(5) a	(6) a
Dummy Expenditure in Tobacco	-5.786	-5.928	-4.813	-9.611**	-9.724**	-9.689**	-8.701*	-5.234	-7.888*	-7.975*	9.189**	8.537*	8.923*	8.869	9.482*	11.094**	11.423**	9.756**	9.609*	11.456**
(= 1 if Expenditure in Tobacco>0)	[4.693]	[4.899]	[4.957]	[4.805]	[4.873]	[4.632]	[4.661]	[4.390]	[4.477]	[4.263]	[4.486]	[4.602]	[4.807]	[5.428]	[5.367]	[5.166]	[4.982]	[4.393]	[5.210]	[4.996]
HH Expenditure in Tobacco	0.147	0.151	0.111	0.548	0.580	0.568	0.470	1.047	9.429	9.909	-0.414	-0.456	-0.589*	-0.494	-0.693	-0.681	-0.695	-11.172*	-15.278*	-15.943*
(= share relative to total HH exp, 0 o/w)	[0.491]	[0.543]	[0.585]	[0.502]	[0.478]	[0.443]	[0.396]	[10.785]	[11.036]	[10.857]	[0.292]	[0.289]	[0.352]	[0.369]	[0.491]	[0.506]	[0.503]	[5.782]	[8.895]	[8.914]
Spouse Expenditure on Assets	-	-0.049	-0.058	-0.007	-0.010	-0.072	-	-	-0.017	-0.080	-	0.205*	0.211*	0.062	0.020	0.046	-	-	0.014	0.040
(=share relative to total spouse exp)		[0.272]	[0.261]	[0.202]	[0.202]	[0.204]			[0.203]	[0.204]		[0.120]	[0.125]	[0.157]	[0.152]	[0.158]			[0.152]	[0.158]
Spouse Expenditure on Ceremonies	-	0.065	0.047	0.231*	0.216*	0.168	-	-	0.204*	0.158	-	0.101	0.031	0.076	0.033	0.131	-	-	0.018	0.115
(=share relative to total spouse exp)		[0.096]	[0.102]	[0.121]	[0.118]	[0.127]			[0.119]	[0.129]		[0.138]	[0.144]	[0.187]	[0.200]	[0.202]			[0.185]	[0.182]
Spouse Personal Expenditure	-	0.232	0.262	0.540	0.608*	0.594*	-	-	0.625*	0.610*	-	-0.260	-0.231	0.030	-0.226	-0.217	-	-	-0.187	-0.188
(=share relative to total spouse exp)		[0.323]	[0.332]	[0.341]	[0.346]	[0.340]			[0.334]	[0.326]		[0.256]	[0.442]	[0.529]	[0.576]	[0.560]			[0.591]	[0.586]
Own Expenditure in Assets	-0.221	-0.172	-0.185	-0.184	-0.185	-0.216	-0.296**	-0.223	-0.187	-0.218	-0.313***	-0.364***	-0.370***	-0.235	-0.180	-0.120	-0.109	-0.316***	-0.171	-0.109
(= share relative to total Own Exp)	[0.177]	[0.243]	[0.232]	[0.185]	[0.190]	[0.174]	[0.143]	[0.176]	[0.189]	[0.173]	[0.111]	[0.121]	[0.131]	[0.170]	[0.164]	[0.155]	[0.132]	[0.110]	[0.162]	[0.151]
Own Expenditure in Ceremonies	0.175	0.202	0.187	0.135	0.140	0.144	0.125	0.182	0.152	0.155	-0.114	-0.160	-0.177	-0.159	-0.124	-0.066	-0.040	-0.119	-0.104	-0.048
(= share relative to total own Exp)	[0.200]	[0.214]	[0.219]	[0.236]	[0.246]	[0.254]	[0.239]	[0.204]	[0.248]	[0.254]	[0.104]	[0.098]	[0.120]	[0.146]	[0.158]	[0.164]	[0.148]	[0.099]	[0.157]	[0.164]
Own Personal Expenditure	-1.333***	-1.333***	-1.263***	-1.664***	-1.507***	-1.579***	-1.534***	-1.323***	-1.487***	-1.564***	-0.077	-0.119	-0.135	-0.068	-0.179	-0.027	-0.025	-0.100	-0.228	-0.080
(= share relative to total Own Exp)	[0.406]	[0.433]	[0.453]	[0.405]	[0.532]	[0.554]	[0.547]	[0.403]	[0.528]	[0.552]	[0.171]	[0.196]	[0.205]	[0.216]	[0.194]	[0.182]	[0.171]	[0.168]	[0.188]	[0.174]
Wife Share of Total HH Expenditure	-0.289***	-0.266***	-0.257**	-0.249**	-0.238**	-0.274**	-0.307***	-0.292***	-0.246**	-0.282**	-0.093	-0.148	-0.147	-0.194	-0.128	-0.201	-0.173	-0.090	-0.105	-0.181
(= Wife tot Exp / Tot HH Exp)	[0.086]	[0.096]	[0.105]	[0.106]	[0.105]	[0.109]	[0.090]	[0.087]	[0.102]	[0.107]	[0.116]	[0.125]	[0.125]	[0.136]	[0.149]	[0.133]	[0.124]	[0.116]	[0.151]	[0.134]
Spouse Exp. Child Schooling	10.319*	10.188*	7.188	19.254***	19.505***	20.047***	18.215***	10.144*	19.126***	19.731***	12.891***	10.486**	10.015*	8.143	9.853	6.220	6.015	11.468**	7.776	3.915
(= 1 if spent $ in children's schooling)	[5.572]	[5.739]	[6.655]	[5.700]	[5.636]	[6.514]	[6.488]	[5.457]	[5.497]	[6.351]	[4.790]	[4.832]	[5.239]	[6.316]	[6.105]	[6.586]	[6.602]	[5.138]	[6.890]	[7.257]
District	-7.228	-8.418	-9.021	-1.785	-1.253	-2.337	-1.453	-7.137	-1.302	-2.395	-12.896***	-10.546**	-10.311**	-13.454**	-14.921**	-16.026***	-16.764***	-12.082***	-14.607**	-15.694***
(=1 if Almora)	[5.818]	[6.134]	[6.616]	[8.100]	[8.187]	[8.269]	[7.820]	[5.783]	[8.213]	[8.295]	[4.400]	[4.093]	[4.604]	[5.607]	[5.789]	[5.543]	[4.973]	[4.444]	[5.678]	[5.396]
Age			0.829	0.459	0.319	0.770	1.274*		0.185	0.645			0.310	0.252	0.670	-1.031	-0.793		0.635	-1.132
			[0.952]	[0.789]	[0.829]	[0.856]	[0.718]		[0.803]	[0.834]			[2.053]	[2.269]	[2.227]	[2.166]	[2.161]		[2.250]	[2.188]
Age Squared			-0.012	-0.007	-0.005	-0.013	-0.020**		-0.003	-0.011			0.002	0.002	-0.003	0.017	0.015		-0.002	0.018
			[0.013]	[0.011]	[0.012]	[0.012]	[0.009]		[0.011]	[0.012]			[0.024]	[0.027]	[0.026]	[0.026]	[0.026]		[0.026]	[0.026]
No. of Sons			4.840*	4.235*	4.151	2.462	2.480		3.890	2.136			-0.601	2.991	3.623	3.786	4.107		3.847	4.037
			[2.865]	[2.505]	[2.524]	[2.539]	[2.422]		[2.576]	[2.628]			[2.884]	[3.113]	[3.198]	[3.169]	[2.726]		[3.161]	[3.095]
No. of Daughters			2.332	-0.541	-0.833	-1.653	-0.997		-0.771	-1.637			0.592	1.904	2.782	2.708	3.190*		3.238	3.175
			[2.354]	[2.457]	[2.408]	[2.382]	[2.102]		[2.436]	[2.407]			[1.633]	[2.294]	[2.347]	[2.210]	[1.875]		[2.278]	[2.119]
Scheduled Caste				-14.944	-12.766	-14.349	-11.385		-12.592	-14.291				-9.181*	-9.173	-7.990	-6.995		-8.347	-6.870
				[9.981]	[10.085]	[10.526]	[12.039]		[10.291]	[10.784]				[5.471]	[5.682]	[5.426]	[6.048]		[5.551]	[5.369]
Other Backwards Caste				24.377***	24.829***	20.925***	17.451***		24.814***	20.917***				-5.012	-6.481	-4.146	-5.489		-7.643	-5.365
				[5.706]	[5.733]	[6.304]	[5.222]		[5.887]	[6.393]				[8.266]	[7.932]	[7.999]	[6.876]		[7.979]	[8.034]
Receive Gifts for Spouse				0.475	0.215	3.203	3.940		0.914	3.983				10.805**	11.981**	7.723	8.715**		11.046**	6.527
(=1 if Yes)				[5.121]	[5.223]	[5.129]	[5.047]		[5.311]	[5.193]				[4.907]	[5.179]	[5.127]	[3.900]		[5.344]	[5.264]
Say over Work				0.656	0.782	2.984	2.945		0.776	3.044				-0.441	-0.408	1.689	1.168		-0.199	1.984
(dummy variable)				[5.216]	[5.217]	[5.283]	[5.308]		[5.177]	[5.231]				[5.695]	[5.769]	[5.815]	[5.232]		[5.849]	[5.830]
Total HH Expenditure (log)					2.627	3.209	1.552		2.701	3.312					-5.755	-5.400	-5.071		-6.375	-6.184
					[4.508]	[4.560]	[4.196]		[4.546]	[4.590]					[4.587]	[4.101]	[3.561]		[4.682]	[4.135]
Some Schooling						-6.089	-6.319			-6.247						5.553	6.051			5.410
						[6.265]	[5.843]			[6.294]						[5.680]	[5.080]			[5.725]
High School or Above						-22.615**	-23.801***			-23.001**						26.229**	25.608**			26.893**
						[9.132]	[8.285]			[8.971]						[10.498]	[9.897]			[10.379]
Controls																				
Demographic & HH Composition	N	N	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y
Bargaining Power & Altruism	N	N	N	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	Y	Y	Y	N	Y	Y
Total Expenditure	N	N	N	N	Y	Y	Y	N	Y	Y	N	N	N	N	Y	Y	Y	N	Y	Y
Spouse Expenditure	N	N	N	N	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y	N	N	Y	Y
Education	N	Y	Y	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N	Y	N	N	N	Y
N	93	91	91	89	89	88	90	93	89	88	87	87	86	81	81	81	81	87	81	81
R-squared	0.233	0.215	0.252	0.425	0.429	0.463	0.451	0.232	0.425	0.460	0.203	0.239	0.266	0.345	0.367	0.434	0.428	0.221	0.386	0.457

Table B.7: Results on Returning behavior using Interactions with Gender instead of Split Sample

	Women								Coefficient of Interactions with Men Dummy							
	(1)	(2)	(4)	(5)	(6)	(1) a	(5) a	(6) a	(1)	(2)	(4)	(5)	(6)	(1) a	(5) a	(6) a
Male	-	-	-	-	-	-	-	-	8.677	5.355	7.631	7.454	5.663	10.383	8.418	6.746
(= 1 if receiver spouse is Male)									[8.739]	[9.851]	[10.707]	[11.141]	[11.494]	[8.754]	[11.003]	[11.330]
Dummy Expenditure in Tobacco	1.470	1.791	0.290	0.326	0.144	1.654	0.606	0.401	-	-	-	-	-	-	-	-
(= 1 if Expenditure in Tobacco>0)	[3.413]	[3.453]	[3.768]	[3.886]	[3.901]	[3.249]	[3.638]	[3.648]								
HH Expenditure in Tobacco	-0.119	-0.183	0.080	0.075	0.042	-1.359	2.406	1.843	-0.094	-0.140	-0.278	-0.286	-0.230	-6.358	-9.102	-8.334
(= share relative to total HH exp, 0 o/w)	[0.581]	[0.654]	[0.551]	[0.564]	[0.598]	[11.386]	[11.346]	[11.713]	[0.601]	[0.657]	[0.592]	[0.595]	[0.621]	[12.627]	[12.799]	[13.141]
Spouse Expenditure on Assets	-0.104	-0.085	-0.058	-0.058	-0.062	-0.103	-0.058	-0.062	0.320	0.283	0.253	0.251	0.246	0.320	0.249	0.244
(=share relative to total spouse exp)	[0.260]	[0.247]	[0.215]	[0.215]	[0.217]	[0.259]	[0.215]	[0.217]	[0.284]	[0.273]	[0.264]	[0.265]	[0.265]	[0.283]	[0.265]	[0.265]
Spouse Expenditure on Ceremonies	0.048	0.025	0.115	0.117	0.115	0.050	0.120	0.119	0.073	0.050	0.116	0.113	0.129	0.075	0.109	0.124
(=share relative to total spouse exp)	[0.095]	[0.093]	[0.108]	[0.109]	[0.113]	[0.095]	[0.106]	[0.110]	[0.175]	[0.176]	[0.216]	[0.216]	[0.223]	[0.169]	[0.210]	[0.216]
Spouse Personal Expenditure	0.245	0.249	0.377	0.365	0.352	0.233	0.352	0.337	-0.605	-0.603	-0.632	-0.640	-0.662	-0.583	-0.603	-0.624
(=share relative to total spouse exp)	[0.344]	[0.350]	[0.333]	[0.349]	[0.351]	[0.342]	[0.345]	[0.348]	[0.429]	[0.559]	[0.624]	[0.625]	[0.628]	[0.427]	[0.629]	[0.633]
Own Expenditure in Assets	-0.136	-0.153	-0.163	-0.162	-0.180	-0.133	-0.158	-0.176	-0.204	-0.188	-0.156	-0.152	-0.121	-0.218	-0.156	-0.125
(= share relative to total Own Exp)	[0.232]	[0.223]	[0.187]	[0.188]	[0.195]	[0.231]	[0.187]	[0.195]	[0.259]	[0.255]	[0.242]	[0.247]	[0.250]	[0.257]	[0.245]	[0.248]
Own Expenditure in Ceremonies	0.257	0.239	0.185	0.185	0.198	0.252	0.181	0.194	-0.418*	-0.378	-0.389	-0.387	-0.411	-0.421*	-0.386	-0.409
(= share relative to total own Exp)	[0.224]	[0.221]	[0.216]	[0.215]	[0.222]	[0.227]	[0.218]	[0.225]	[0.238]	[0.251]	[0.260]	[0.262]	[0.267]	[0.242]	[0.263]	[0.269]
Own Personal Expenditure	-1.199***	-1.168***	-1.486***	-1.505***	-1.502***	-1.215***	-1.515***	-1.515***	1.081**	1.074**	1.457***	1.470***	1.449***	1.074**	1.462***	1.445***
(= share relative to total Own Exp)	[0.400]	[0.416]	[0.383]	[0.440]	[0.443]	[0.401]	[0.442]	[0.445]	[0.434]	[0.451]	[0.430]	[0.467]	[0.467]	[0.434]	[0.467]	[0.466]
Wife Share of Total HH Expenditure	-0.197**	-0.190**	-0.214**	-0.213**	-0.217**	-0.195**	-0.210**	-0.214**	-	-	-	-	-	-	-	-
(= Wife tot Exp / Tot HH Exp)	[0.080]	[0.082]	[0.083]	[0.085]	[0.086]	[0.080]	[0.085]	[0.085]								
Spouse Exp. Child Schooling	10.757*	8.015	13.653**	13.602**	11.925*	10.819*	13.433**	11.770*	0.046	1.725	-2.704	-2.546	-0.497	-1.032	-3.474	-1.524
(= 1 if spent $ in children's schooling)	[5.622]	[6.120]	[6.094]	[6.181]	[6.885]	[5.497]	[6.155]	[6.843]	[7.236]	[7.809]	[7.345]	[7.399]	[7.888]	[7.323]	[7.565]	[8.012]
Receive Gifts for Spouse			6.030*	6.086	6.116		-1.106	-0.432	-	-	-	-	-			
(=1 if Yes)			[3.599]	[3.743]	[3.918]		[3.767]	[3.891]								
District	-9.297**	-8.990**	-5.544	-5.622	-5.874	-8.969**	-5.387	-5.634	-	-	-	-	-	-	-	-
(=1 if Almora)	[3.717]	[4.006]	[4.406]	[4.425]	[4.563]	[3.742]	[4.456]	[4.588]								
Age		0.529	0.543	0.556	0.555		0.504	0.510								
		[0.930]	[0.787]	[0.783]	[0.785]		[0.774]	[0.778]								
Age Squared		-0.004	-0.005	-0.005	-0.005		-0.004	-0.005								
		[0.012]	[0.010]	[0.010]	[0.011]		[0.010]	[0.010]								
No. of Sons		1.767	2.695	2.723	2.722		2.823	2.847								
		[1.928]	[1.961]	[2.031]	[2.073]		[2.058]	[2.103]								
No. of Daughters		1.191	0.532	0.586	0.577		0.705	0.702								
		[1.375]	[1.724]	[1.845]	[1.824]		[1.867]	[1.854]								
Scheduled Caste			-10.014*	-10.152*	-10.219*		-9.936*	-9.988*								
			[5.478]	[5.602]	[5.723]		[5.631]	[5.748]								
Other Backwards Caste			13.371***	13.298**	12.533**		13.160**	12.442**								
			[4.930]	[5.112]	[5.367]		[5.207]	[5.450]								
Say over Work			-1.170	-1.191	-0.489		5.952	5.945								
(dummy variable)			[3.776]	[3.779]	[3.902]		[3.749]	[3.927]								
Total HH Expenditure (log)				-0.372	-0.856		-0.541	-1.042								
				[3.274]	[3.385]		[3.283]	[3.393]								
Some Schooling					-2.036			-1.872								
					[4.623]			[4.616]								
High School or Above					1.162			1.429								
					[7.809]			[7.793]								
N	178	177	170	170	169	178	170	169								
R-squared	0.239	0.257	0.344	0.344	0.344	0.244	0.348	0.347								