

**What's Yours is Mine, and What's Mine is Mine:
Bargaining Power and Income Concealing between Spouses in India**

Carolina Castilla¹

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Abstract:

Hiding of income has become an increasingly relevant concern when designing development policy as empirical studies continue to observe this behavior. In this paper I develop a model that allows me to derive empirically testable hypotheses to explain whether bargaining power affects income hiding. The model results indicate that there exists a strictly positive threshold change in bargaining power that needs to be overcome in order to induce revelation of unobserved resources. This hypothesis is tested through a field-laboratory experiment in India where individuals in established marriages were asked to play several rounds of a combination of a public goods and ultimatum game where endowments and access to information were experimentally varied. Results indicate spouses hide 25% of the time when given the opportunity. There are no differences by gender on hiding or the response to asymmetric information. However, there are significant differences on the effect of asymmetric information depending on control over money within the marriage.

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¹ Economics Department, Colgate University. *Postal:* 13 Oak Dr., Hamilton, NY 13346. *Email:* ccastilla@colgate.edu.

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1. Introduction

The allocation of resources within the household is often argued to be efficient because families involve long-term, repeated interactions and caring (see Browning et al., (2008) for a review of the literature on the subject). Recent empirical evidence has documented non-cooperative behavior (Udry (1996)) and inefficient allocations among households with migrants (Chen (2013); de Laat (2009); Ambler (2012)). However, the difficulties in finding exogenous variation between spouses living under the same roof to examine efficiency in allocations, to test across intra-household bargaining models, and to analyze the responses to asymmetric information has resulted in an increased interest in using field and laboratory experiments with spouses. These experiments can be classified in three different categories: experiments interested in testing across household models (Kebede et al. (2013); Munro et al. (2008a; 2008b); Munro et al. (2011)); experiments interested in testing across spousal preferences within the household (Bateman & Munro (2005); Cochard et al. (2009); Dasgupta and Mani, (2013); Carlsson et al. (2012); Schaner (2013)), and those interested in information and/or efficiency (Hoel, (2012); Iversen et al. (2010); Mani (2011); Ashraf (2009); Castilla & Walker (2013a; 2013b); Robinson (2011)). Most of these studies find that households do not make efficient choices because either they do not fully insure or they are willing to incur a cost to maintain control over money. Regarding the effect of asymmetric information the results are somewhat mixed. While some studies find evidence of non-cooperative behavior in response to asymmetric information (Ashraf (2009); Castilla & Walker (2013a; 2013b)), Mani (2011) does not

find evidence that information matters. Mani's experiments varied the information given to spouses over the way resources were allocated ex-post. It is my belief that what matters is the pre-allocation information environment and that there is a pre-bargaining stage where spouses decide on the amount of resources that they are going to bargain over. In this paper I model this possibility and test it empirically through a laboratory experiment in the field.

I examine the possibility of partial cooperation, where spouses are cooperative with respect to the allocation of observable income, but not necessarily with respect to unobservable income. For instance, when one spouse receives a monetary transfer that is unobservable to his or her spouse, she faces a trade-off between keeping it, or letting her spouse know about the transfer. If she discloses the unobservable resources, she can increase her bargaining power such that allocations would tend to be more favorable towards her. Depending on the responsiveness of bargaining power to the revelation of additional income, revealing may result in allocations closer to her preferences. If this is the case, and the spouse does not wish to inform her partner about the existence of additional resources, she would have to allocate the unobservable income towards goods that are not easily monitored. Thus, in deciding to reveal or hide income, the spouse with the information advantage faces a trade-off between increasing her own discretionary spending and increasing her bargaining power.

I illustrate this trade-off through a simple model of intra-household allocation. The allocation decision occurs in two stages: first, one spouse receives a monetary transfer and decides whether to hide or reveal it. In this pre-bargaining stage spouses are allowed to first decide whether and/or how much of the unobservable resources they will negotiate over with their partner. In the second stage, spouses bargain over how to allocate the sum of their observable resources between private and public good consumption. The model results show that there is a threshold change in bargaining power that needs to be overcome to induce revelation. In order for bargaining power to

not respond significantly enough there must be other sources of bargaining power that do not respond to monetary incentives, such as gender or cultural norms. When informal institutions overweigh the influence of one spouse's share of total household resources, the incentives to reveal diminish as bargaining power will be less responsive. However, if hiding did not restrict the choice set of goods for purchase to only those who are difficult to monitor both spouses could be made better off.

To examine this hypothesis empirically, I conduct laboratory experiments in the field with established couples in India where both information over money and the share of endowments of each spouse are exogenously varied. I examine the interaction between private information regarding monetary transfers and the distribution of bargaining power between spouses as causes of income-hiding and underinvestment in household public goods. To distinguish between different sources of bargaining power I vary the shares of endowments within the experimental setting (monetary) and use survey questions that capture subjective perceptions of control over money (roles within the household resource management contract).

The field experiment and survey were conducted in Dehradun and Almora districts, in the mountain region of Uttarakhand State, in India among 200 married couples, half from each location. Both Dehradun and Almora are patriarchal societies that at the same time exhibit some variation in the decision making power of women within the household. For instance, in Almora women do not work outside of home. The experiment consisted of a combination of a public goods and an ultimatum game where spouses were taken into separate rooms, not allowed to communicate, and given a significant endowment (equivalent to one day's wage each) to distribute between three alternatives: (i) their private account, (ii) their spouse's account, and (iii) a joint "household" account. The joint account represents the household public good and thus expenditures in children, food, etc. The money contributed to the household account is returned with 50% interest but it is divided 50 -

50, while money allocated towards the individual accounts is returned at parity. Thus, the household earnings maximizing decision is to contribute the entire endowment to the household account.

There were 2 sets of treatments implemented jointly: information and share of endowments. The total household endowment and the distribution of that endowment between spouses varied across 7 rounds. By doing so, variation in the distribution of monetary bargaining power within the experimental environment is allowed. The information treatment was implemented as the possibility to receive some additional resources through a lottery. One randomly chosen spouse received an additional transfer with a 50% probability. There were 3 information treatments: (i) complete information, where the availability and amount of the transfer was informed to both spouses; (ii) private information, where the availability and amount of the transfer was kept private from the non-recipient spouse, (iii) private-with-option-to-disclose treatment, where the recipient of the transfer had the option to disclose or conceal the transfer explicitly from his or her spouse.

In this paper I extend the literature in several ways. The experimental design allows me to directly test for efficiency by comparing intra-household allocations between household and private goods under three different information environments. Further in one of the information treatments I allow one spouse to explicitly choose to conceal income from his or her spouse and I can compare the allocations of hiding spouses with those who are not allowed to share information. The experimental results indicate that 25% of spouses will indeed choose to hide money when given the opportunity and there are no differences by gender. Hiding is explained by the financial decision-making contract between spouses in predictable ways: the spouse handling household money, i.e. doing the budgeting, is 18% more likely to hide, while spouses with a separate spheres contract hide less often. This result is consistent with the model as spouses who manage their finances separately are not subject to a bargaining tax and hiding only restricts their choice set. I further find that asymmetric information causes losses in efficiency on the allocation of resources between spouses as

it decreases contributions towards the household account. While on average allocations do not differ between concealing spouses and those in the private information treatment, the distribution of allocations exhibit significant differences between the two groups. This suggests that by imposing a private information treatment we are restricting the revealing types from making utility maximizing choices. As a result laboratory and field experiments examining the effect of asymmetric information on allocations may be overstating or understating the true underlying effect depending on the ratio of revealers to concealers in their samples.

2. Incentives to Hide Income: Theoretical Framework

Consider a household with two family members, the wife (f) and the husband (m). Both family members have preferences over consumption of one private (or personal) good, denoted x_i , and one household public good, Q . The household resource allocation decision is made in two stages. In the first stage the wife receives two forms of income, Y_f which is common knowledge to both spouses and T which is not observed by her husband, while the husband receives Y_m which is also common knowledge. For simplicity, it is assumed that T and the wife's private consumption choices are observable with probability zero by the husband, he does not invest in monitoring f 's income², and m can infer the presence of additional income through the public good allocation, which is perfectly observable. Therefore, asymmetric information over income is introduced by allowing a portion of spouse f 's income (T) to be unknown by the husband. We can think about this as being a result of the allocation of labor hours towards two different informal work activities which vary in

² This assumption is not trivial, but it can be justified if the opportunity cost of spending time monitoring his wife's activities relative to spending time in productive activities of his own, such as working his own land.

the degree of the husband's ability to monitor earnings. The wife distributes the total number of hours she allocates towards productive activities between working in an activity that can be easily monitored by her husband, such as plots they farm jointly or a jointly own business, and another activity where income is not easily monitored, such as selling food or crafts in the local market.

Both family members face the same price for private goods which is normalized to 1, and p is the price for the household good. Preferences over own consumption are represented by utility function, U_i which is assumed to be separable in x_i and Q :

$$U_i = U(Q, x_i) = u_i(x_i) + v(Q) \quad \text{for } i = f, m \quad (1)$$

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. Both spouses have the same preferences for the household good, though their preferences differ in the private goods they consume and the functional form of $u(\cdot)$. Therefore, the model allows for differences in relative preferences for household and private goods across spouses. The household public goods are assumed to be non-rival in utility, so they are of the Samuelson type. For instance, a investment in children's nutrition provides utility to both members of the household, while clothing provides utility only to the person who wears it.

To derive the equilibrium allocations that result when spouses bargain over household and private consumption, I draw from the Browning and Chiappori (1998) collective bargaining model, where it is assumed they can negotiate binding agreements with zero transaction costs. The cooperative bargaining equilibrium is solved by backwards induction, so first I find the optimal public good and private expenditure shares conditional on the amount of income that is revealed, and then derive the conditions that must be met for spouse f to reveal the transfer. In the second stage, following Browning, Chiappori and Weiss (2011) the objective function of the collective household is the bargaining power weighted sum of each member's utility:

$$C = \mu\{u(x_f) + v(Q)\} + (1 - \mu)\{u(x_m) + v(Q)\} \quad (2)$$

Where $\mu = \mu(Y_f, Y_m, I, z)$ is the bargaining power of spouse f and $(1 - \mu(Y_f, Y_m, I, z))$ is the bargaining power of spouse m . This is the weight given to each spouse's utility in the household welfare function when bargaining, and it is partially determined by each spouse's income (which influences outside options), as well as distribution factors³ (z) such as resources originally brought into the marriage and cultural norms on gender roles. The unobservable income only influences bargaining power when it is disclosed, such that $I = T$ if spouse f reveals, and $I = 0$ if she hides. I do not specify a functional form for μ in order to avoid making further assumptions about the relative influence additional resources would have over other factors that contribute to determine bargaining power, but are unaffected by changes in the quantity of resources. Thus, the bargaining weight is used as a generic way to incorporate the existence of an outside option if spouses fail to reach a bargaining agreement (threat point). Consistent with both non-cooperative equilibria within marriage, as well as divorce threat points, income increases spouse f 's bargaining power.

The household's problem when income is fully revealed is to maximize (2) subject to the aggregate budget constraint $x_f + x_m + pQ \leq Y_f + Y_m + I$. This is solved assuming the participation constraints do not bind, i.e. assuming that both spouses are better off cooperating than under the threat points⁴.

$$\max_{Q, x_f \geq 0} \quad \mu(Y_f, Y_m, T, z)\{u(x_f) + v(Q)\} + (1 - \mu(Y_f, Y_m, T, z))\{u(Y_f + Y_m + T - x_f - pQ) + v(Q)\} \quad (3)$$

The Kuhn-Tucker first-order conditions of the problem in (4) are:

³ Any variable that has an impact on the decision process but affects neither preferences nor budget constraints is termed a distribution factor. In theory, a large number of variables fit this description. Factors influencing divorce, either directly (for example, the legislation governing divorce settlements and alimony payments) or indirectly (for example, the probability of remarriage, which itself depends on the number of available potential mates – what Becker calls marriage market factors (Browning, Chiappori and Weiss, 2011).

⁴ This is not a strong assumption given that spouses are bargaining over all allocations, such that the public good provision will be efficient (at least when all income is revealed).

$$\frac{\partial C}{\partial Q} = v'(Q) - (1 - \mu)pu'(Y_f + Y_m + T - x_f - pQ) \leq 0$$

$$\frac{\partial C}{\partial x_f} = \mu u'(x_f) - (1 - \mu)u'(Y_f + Y_m + T - x_f - pQ) \leq 0$$

$$Q \left[\frac{\partial C}{\partial Q} \right] = 0; x_m \left[\frac{\partial C}{\partial x_f} \right] = 0; Q, x_f \geq 0 \quad (4)$$

Solving this system yields the demand for the household public good and the demand for private consumption. The optimal demands respond to changes in aggregate income (i.e. income pooling feature) and to changes in individual income through its resulting changes in bargaining power.

Proposition 1: *In equilibrium:*

$$\underline{\text{Case (i):}} \text{ If } T \text{ is revealed, } \frac{\partial Q}{\partial Y_f} = \frac{\partial Q}{\partial T} > 0, \frac{\partial Q}{\partial Y_m} > 0, \frac{\partial x_m}{\partial Y_m} \geq 0, \frac{\partial x_m}{\partial Y_f} = \frac{\partial x_m}{\partial T} \leq 0, \frac{\partial x_f}{\partial Y_f} = \frac{\partial x_f}{\partial T} > 0, \frac{\partial x_f}{\partial Y_m} \leq 0$$

$$\underline{\text{Case (ii) If } T \text{ is not revealed, } \frac{\partial Q}{\partial Y_f} > 0, \frac{\partial Q}{\partial Y_m} > 0, \frac{\partial x_m}{\partial Y_f} \leq 0, \frac{\partial x_m}{\partial Y_m} \geq 0, \text{ and } \frac{\partial x_f}{\partial Y_f} \geq 0, \frac{\partial x_f}{\partial Y_m} \leq 0 \text{ and } \frac{\partial Q}{\partial T} =$$

$$\frac{\partial x_m}{\partial T} = 0, \frac{\partial x_f}{\partial T} > 0.$$

When spouse f hides her unobservable income, in order to avoid detection she must allocate it all towards private consumption which is not monitored by the husband. Spouses bargain over household and private consumption given only the resources that are common knowledge, i.e. $Y = Y_f + Y_m$, such that household good consumption and spouse m 's private consumption do not respond to changes in T . In the first stage, the wife must decide whether to reveal the unobservable income or to hide it from her husband. If she hides, he can get more private expenditure relative to the case where he reveals and pools all of her resources. If she reveals, she can increase her household good consumption and bargaining power, but both her private and household good consumption will be effectively taxed by bargaining power.

Proposition 2: *Given Y_f , Y_m and T , there exists a strictly positive threshold change in bargaining power $\overline{\Delta\mu}$ such that for any $\frac{\partial\mu}{\partial T} < \overline{\Delta\mu}$ the marginal utility per unit of T that is hidden exceeds the marginal utility of revealing.*

Corollary 1: *Given Y_f , Y_m and T , as μ approaches zero, the threshold level of bargaining power $\overline{\Delta\mu}$ is strictly negative, whereas when μ tends to 1 it is positive.*

In Proposition 2, the wife compares the change in utility per unit change in T when she reveals and when she hides. In equilibrium, there exists a strictly positive threshold change in bargaining power needed to induce revelation. Corollary 1 indicates that the threshold level of bargaining power is increasing in initial bargaining power, implying that the threshold is more difficult to overcome as initial bargaining power is greater. The result is intuitive because if spouse f 's bargaining power is low, she is less likely to influence household allocations towards her preferences and thus her private consumption is “taxed” more severely, but at the same time, any increase in bargaining power makes her significantly better off. Conversely, when bargaining power is large, the public good allocation is going to be close to what she prefers, thus at the margin the benefit per unit of income of revelation is not as high.

3. Experimental Design and Summary Statistics

The experiment was conducted in Dehradun and Almora districts, in Uttarakhand, India between March and June 2013. The sample consists of 200 established couples, half from Dehradun and the

other half from Ranikhet. Recruiting of subjects was done door-to-door⁵. Thus the sample is most similar to those used in laboratory experiments, and under the assumption that selection is not systematically different across treatments (and locations), internal validity can be attained.

Experimental Protocol and Tasks:

Enumerators knocked on the door, asked if both spouses were home and if they were willing to answer some questions about managing of household finances⁶. Respondents were first asked if they had children aged 3 – 18 years old, and were only interviewed if they met the criteria. No information about potential earnings or that they would receive an LED lamp was provided prior to spouses agreeing to participate. Three types of responses were observed: (1) Negative (including No/not interested/husband not available and is usually back late at night/husband will not be interested), in which case enumerators left; (2) I should consult with my spouse, in which case enumerators waited for spouse, explained the purpose and waited for an answer that could be positive, match (1) or (3); and (3) Husband/wife not available at home right now but will be available on (some particular day). For the last set of respondents, a preferred date and time was recorded when they could participate and enumerators returned at the set date and time.

Upon agreement to participate, each spouse was asked to join an enumerator of his or her own gender in separate rooms. First, spouses were asked to participate in a set of experiments and explained they could earn money depending on their choices. Later they answered a set of survey questions. Each household was randomly assigned to an information treatment: (i) complete, (ii)

⁵ Uttarakhand, and in particular the districts examined have not been subject to research participation previously, thus it is even harder to recruit. In Dehradun 1 in 40 households agreed to participate. In Ranikhet the response rate was similar, except for the first two villages where it was 1 in 4 households.

⁶ Enumerators first knocked on the door/call out someone if the door is open/ look for household members in the nearby fields or in the cowshed. When someone appeared they said the following: “Namastey aunty-ji/uncle-ji! We are members of the S.P.D. (Society of People for Development) that runs the paper factory and the dairy near the dried up river bed (in Shankarpur). [Include description of the kind of work that S.P.D. does in case they don't know] S.P.D. has received a new project on how couples make financial decisions within the household, and we are working on the same. We would like to ask you and your husband/wife a few questions about management of household finances. Do you have children aged between 3-18 years? Is your husband/wife at home right now? Are you willing to spare 30-45 minutes for our study?”

private or (iii) private with the option to disclose. The experimenter outlined the rules of the experiment and the tasks involved. Each spouse played two practice rounds, 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. Participants were presented with seven decisions, one-at-a-time; their decisions were recorded by two independent data entry staff, one per spouse. The order of tasks was randomly chosen to be either ascending or descending in Player A's share of the total household endowment. Each spouse was randomly assigned to a role, either A or B.

Participants' tasks involved playing a modified version of a public goods game. Spouses were first informed of their own (ω_i) and their spouse's (ω_j) endowment. The total household endowment (sum of both spouses' endowments) and the distribution of that endowment between spouses were varied across the 7 decisions. Player A was given the opportunity to play a lottery with 50% chance of winning 75 additional rupees. Depending on the information treatment, the spouse in role B was informed of the outcome of the lottery or not. After being informed of the lottery results, each spouse independently, privately and simultaneously made a proposal for the split of his or her own share of the household endowment between three alternatives: (i) own personal account (x_i); (ii) spouse's account (x_j); and (iii) household account (g). The different accounts were put in context using examples of expenditures we had found through the pilot study (and field workers experience) to be in the personal or household expenditure categories⁷. The resources allocated towards the household account (public good) are paid with 50% interest and divided 50:50, whereas the resources in each spouse's private accounts are paid in parity. The experimenters with each spouse submitted the proposed split to each other and presented the proposed splits one-at-a-time

⁷ First, you can keep something for your personal expenses (like bangles, bindi, lipstick, clothing, etc.). Second, you can keep something for your husband's personal expenditure (for example bidhi, cigarette, tobacco, clothing, etc.). Lastly, you can keep something for the household expenses, which includes expenditure on children. This could include money for buying daily ration, vegetables, paying children's school fees and meeting other household demands.

to the other spouse, who then decided whether to accept or reject them. No feedback was allowed as all offers were made initially by each spouse, without giving the other spouse the opportunity to accept or reject them before the next offer was made. After all decisions were made, each respondent rolled a die to determine which of the 7 decisions was paid⁸. At the end of the session experimental subjects answered a survey and then were informed privately of their own payoffs.

Definition 1:

Players: Player A is eligible to win a lottery prize; Player B.

Actions or Strategies:

Stage 1: Player A's action space is contingent upon the information treatment. If in the Private-with-option-to-Disclose (*POD*) treatment, Player A decides whether to disclose (*D*) or conceal (*C*) the lottery prize in the event that she wins. In the Complete (*CI*) or Private (*PI*) Information treatments, Player A does not have the option to conceal or disclose the lottery prize. Thus Player A's action space is $a_{A,1} \in \{D, C | T, H\}$ where $T \in \{CI, PI, POD\}$ and $H \in \{75, 0\}$ depending on the outcome of the coin toss (Heads = prize, and Tails = no prize). Player B does not make any decisions at this stage.

Stage 2: Player A's action space is $a_{A,2} \in \{x_A, x_B, g | \omega_A, \omega_B, a_{A,1}\}$ and Player B's action space is $a_{B,2} \in \{x_A, x_B, g | \omega_A, \omega_B, a_{A,1}\}$.

Stage 3: Player A's action space is $a_{A,3} \in \{A, R | \omega_A, \omega_B, a_{A,1}, a_{B,2}\}$ and Player B's action space is $a_{B,3} \in \{A, R | \omega_A, \omega_B, a_{A,1}, a_{A,2}\}$.

⁸ If the die roll was equal to 1, the largest payment between decision 1 and 7 was paid.

Payoffs: Were computed according to the following formula in the event of an accepted offer, $\pi_i = x_i + (g) * \frac{1.5}{2}$,⁹ or are equal to each spouse's endowment in the event of a rejected offer.

Steps were taken to minimize the threat of conflict between spouses after the experiment as a result of the concealing of information and/or the offers made. There was no feedback as spouses were proposing splits of their own endowments, such that they could not retaliate as a result of an aggressive, unfair or inconsiderate offer. To avoid spouses being able to trace the money back to a decision that could cause conflict, the outcomes of the different decisions were kept private from both spouses unless they were chosen to be paid and each spouse rolled a different die such that they were not necessarily receiving payment for the same decision. All payments were made in private.

Experimental Treatments:

The experimental design consisted of 2 sets of treatments implemented jointly: (1) the information environment is a between-couple treatment, while (2) bargaining-power is a within-couple treatment. Across all information treatments, Player A (lottery eligible spouse) flipped a coin. If heads, he or she won Rs. 75, if Tails Rs. 0. In all cases Player B knew there was a 50% probability that Player A got a Rs. 75 prize. In the POD treatment, Player A stated what he or she wanted to do (disclose or conceal) in the event of winning the additional rupees after flipping the coin. Player A was informed that if the prize was concealed it would go directly into his or her private account and it was not be eligible to be considered in the allocation offer between the three accounts. If the prize was revealed, it was eligible to be allocated between the three accounts, and his or her spouse would also be

⁹ Where g = amount allocated towards common "household" account, and x_i =amount allocated to spouse's i private account.

informed about it¹⁰. Thus a spouse that wins additional money faces a trade-off between maintaining control over the prize or being able to allocate it among an unrestricted set of options.

The results from the coin toss stage conditional on Player A's decision to disclose or conceal the transfer were informed to the experimenter in Room B. In the Complete Information treatment, the experimenter in Room A, (where Player A was) gave the experimenter in Room B the proposed offer and the results of the lotteries specifying the decisions for which Player A had additional money. In the Private Information treatment no information was given to Player B about the result of the lotteries.

The monetary bargaining power treatment consists of 7 different distributions of endowments between spouses. The total household endowment (sum of both spouses' endowments), the amounts, and the distribution of that endowment between spouses were varied across the 7 decisions. The order of tasks was randomly chosen to be either ascending or descending in Player A's endowment. The different bargaining power treatments allow for a ceteris-paribus comparison of allocations across information treatments that cannot be attributed to income effects. For instance, if the informed spouse chooses to conceal or is in the private information treatment, I can compare her allocations to those of a spouse in the complete information treatment or who chose to reveal as the endowment shares are constructed such that there are spouses in all four categories who have the same share of the household endowment.

¹⁰ In addition, we will give you an opportunity to earn Rs.75 extra for each of the seven rounds. Note that this opportunity is not being given to your spouse. This will be done by a flip of a coin. If the coin-toss results in Heads, we will give you extra Rs.75 for that round. You will then have to make a decision on whether to reveal or conceal the amount from your husband. Revealing the result to your husband will allow you to make decision of a greater total amount (original + Rs.75), however, it also means your spouse will know that you are getting a greater share and he or she may/may not leave less for you in his personal decision. At the same time concealing the extra amount from your husband means that you will keep the entire amount for your personal expenses. You will not be able to allocate it to your husband or to the household. Think of this as some extra money you've earned during the day as bonus and now it is up to you whether you want to tell your spouse about it or hide it from him/her.

Table 1: Distribution of Resources

Endowment (Player B – Player A) ^{1/}	Distribution of Resources ^{2/}				Change (%)	Household Endowment
	Without Lottery Prize		With Lottery Prize, If known or revealed			
	Player B	Player A	Player B	Player A		
255 - 45	85	15	68	32	17	300
150 - 75	67	33	50	50	17	225
195 - 105	65	35	52	48	13	300
150 -150	50	50	40	60	10	300
120 - 180	40	60	32	68	8	300
105 - 195	35	65	28	72	7	300
150 - 225	40	60	33	67	7	375

1/ Amounts in Indian Rupees.

2/ Percentages of total household
endowment

Summary Statistics:

In Table 2 summary statistics of the average amount and share of total endowment allocated towards each account are presented. The top panel corresponds to summary statistics when each spouse has the information advantage (eligible to play the lottery) and the bottom panel when each spouse has the potential to be uninformed depending on the treatment. The share allocated towards the household account is consistently around 50% across genders and information treatments when spouses have no information advantage. However, when spouses have private information the share assigned towards the household account is 15 base points lower for wives and 9 for husbands, while there are no differences between the complete and POD information treatments. This indicates that spouses do not allocate resources efficiently as assigning the entire endowment towards the public good is household-earnings maximizing. Interestingly, from the perspective of the informed spouse the share allocated towards the household account is 36% for wives and 42% for husbands in the private information treatment; in the POD treatment this share is about 50% for both husbands and

wives. This suggests that those in the private information treatment do not compensate for their information advantage by increasing the share allocated towards the household account.

Table 2: Average Allocations by Account Type, Information Treatment, and Gender

Variable	Private-Option (N=924)		Private (N=910)		Public (N=910)	
	Wife	Husband	Wife	Husband	Wife	Husband
<i>Role: Player A (eligible to play lottery)</i>						
Share to	33.680	28.070	45.474	39.103	28.846	27.260
Self	[21.02]	[18.44]	[22.40]	[18.66]	[19.61]	[12.17]
Share to	16.179	20.647	18.260	18.789	20.776	22.502
Spouse	[13.41]	[15.24]	[15.86]	[10.36]	[16.38]	[11.54]
HH Share	50.140	51.281	36.265	42.107	50.376	50.236
	[23.48]	[23.27]	[21.79]	[18.48]	[23.98]	[17.48]
<i>Role: Player B (not eligible to play lottery)</i>						
Share to	29.381	25.331	27.587	24.584	26.772	26.917
Self	[20.59]	[12.21]	[18.65]	[11.90]	[15.28]	[14.47]
Share to	22.959	22.822	20.759	23.484	22.891	25.023
Spouse	[18.34]	[11.64]	[19.51]	[10.79]	[14.76]	[13.02]
HH Share	47.658	51.846	51.652	51.931	50.335	48.059
	[24.81]	[19.54]	[25.03]	[17.84]	[23.14]	[19.27]

Sharing can be done indirectly by contributing money towards the household account (as each spouse gets 50%) which is also efficient because contributions are increased by 50%. However, spouses choose to allocate money towards their partners' account directly, which is likely explained by the framing used by the experimenters. The household account was presented to subjects as money that would be used towards children expenses, food, etc. Regardless of information treatment and gender, the share offered directly to one's spouse is on average between 18 and 22% with some exceptions. Wives who have the choice to conceal or reveal give their husbands the smallest percentage (16%), while husbands in the public information treatment who are not eligible to earn extra money give their wives the largest percentage (25%).

Interestingly, the share towards self is systematically larger on average for spouses in the informed role, regardless of gender or information treatment. However, spouses in the private information treatment keep between 12 and 17 percentage points more relative to those with complete information, while wives in the POD treatment keep 5 percentage points more. This is not driven only by the allocation of the additional money towards the informed spouse's own account as the spouse's own endowment also increases by the same amount. For instance, without taking the lottery prize into account those in the POD treatment allocate on average even more towards themselves (38% for wives and 30% for husbands).

The balance of treatment statistics from the survey are presented in Table C.1 in Appendix C. It is clear that internal validity was attained in most cases, except for households where a single spouse has sole control over how much to save from household income, total individual expenditure of husbands, schooling, and household composition. In the regression results that follow, I control for these differences. Also in Appendix C descriptive statistics on the distribution of allocations by share of endowments are presented (Figure C.1 and C.2).

Charness et al. (2012) highlight the potential issues arising from within-subject experimental designs. The main concern is that identification may be threatened by exposing each subject to multiple treatments as a result of anchoring, framing, demand effects, and so on (Charness et al. (2012)). In the design, the distribution of endowments was randomly assigned to be ascending or descending in Player A's endowment. This allows me to test whether differences in responses are correlated with the order in which endowments were presented. I estimate correlations for the entire sample and by role (A or B) between round and the main experimental outcomes. I also examine correlations by round between outcomes and order of endowments. In Table C.2 I present the results and it is evident that there are no order effects.

4. Empirical Analysis and Results:

There are two main hypotheses of interest: whether hiding occurs when bargaining power is not very responsive to the revelation of additional resources, and whether asymmetric information results in inefficient allocations. I first examine the decision to hide. One of the treatments (POD) consisted on giving one spouse the choice to conceal the lottery outcome from his or her partner. In Table 3 evidence of the explicit choice to conceal information among spouses in the POD treatment is presented. The first notable result is that hiding does not occur on a trivial number of occasions: spouses conceal the lottery outcome in 26% of the decisions where spouses had the opportunity (i.e. won the lottery). The 63 concealing choices are concentrated among 10 husbands and 13 wives in 23 different households. Among the 23 households where hiding occurs (out of 66), they do so on 2.8 decisions (out of 7) on average.

Table 3: Frequency of Hiding when given the Opportunity

Choice	Husband		Wife		Total	
	Freq.	%	Freq.	%	Freq.	%
Reveal	83	74.11	97	74.05	180	74.07
Conceal	29	25.89	34	25.95	63	25.93
Avg. Hiding Decisions p/HH	2.9		2.6			
Private-Option						
Heads	112		131		243	
Tails	112		107		219	
Total Decisions	224		238		462	
HH who Conceal	10	31.25	13	38.24	23	34.85
Total HH	32		34		66	

Explaining the decision to hide:

Spouses in the POD treatment face a trade-off. If they choose to conceal the lottery outcome, they increase the share of the endowment they keep for themselves and thus control over a larger amount of money, but their choice set is limited to prevent their partner from finding out they lied.

However, if they choose to reveal the lottery outcome, spouses can increase household earnings by having the option to allocate some or all of their endowment towards the household account.

One of the hypotheses derived from the model presented in Section 2 was that hiding will occur when the change in bargaining power from the increased resources is not significant enough to compensate for the differences in private expenditure. The own share of endowments is a measure of the relative amount of resources of spouses within the game and it is the fall back option when Player B rejects the split proposed by Player A. I also collected data on a set of indicators of the influence of each spouse over different household financial decisions. These are variables that are both pre-existing to the experiment and subjective. They reflect an individual's perception of the decision-making reality within the household. As Ashraf (2009) explains "what matters is the perception that one's spouse controls the financial decisions and that therefore one will get little or no say in the allocation once one turns over the money."

In what follows, I use a set of financial decision-making power variables to seek an explanation for the choice to hide. These indicators capture different margins of influence over how money is earned and allocated in the household. The bargaining power variables are equal to 1 if: (1) spouses manage their finances separately; (2) the spouse solely handles household money; (3) spouses decide how much to save from household income jointly; and (4) the spouse has some say over the decision to work outside of home. The first indicator I consider households that keep their finances completely separate, as well as households that have different spheres of responsibility and autonomy over how to allocate money. This is in contrast to spouses that make decisions jointly over how to spend household resources. Thus this variable captures differences in the resource management contract between spouses and thus control over different pots of money. The second indicator relates to budgeting rather than control and decision-making autonomy. The third indicator captures an intertemporal margin of control over the amount of resources that are saved.

Finally, the fourth indicator measures autonomy over the choice to earn money independently from one's spouse which should further impact bargaining power. The main issue with this variable is that in order to work outside the home, women need to have substantial bargaining power to begin with.

Let $I_{s,h,r} = 1$ indicate the choice of spouse s to hide the lottery outcome in household h in round r . I estimate a random-effects Linear Probability Model of the choice to conceal as a function of spouse s own share of the household endowment, indicators of control over household resources, and other control variables. For this purpose, the sample is restricted only to spouses in the POD treatment as they were the only ones with the option to conceal or reveal.

$$I_{s,h,r} = \beta \gamma_{s,h,r} + \theta X_{s,h,r} + \sum_{s=1}^n \alpha_s + \sum_{r=1}^7 \sigma_r + \varepsilon_{s,h,r} \quad (5)$$

Where $\gamma_{s,h,r}$ is the share of the household endowment of spouse s ; $X_{s,h,r}$ is a matrix of socio-demographic variables and self-reported bargaining power indicators; $\sum_{r=1}^7 \sigma_r$ are round fixed-effects; and $\sum_{s=1}^n \alpha_s$ are spouse- fixed-effects.

Hypothesis 1:

Hiding occurs when the responsiveness of bargaining power to the presence of additional resources is not large enough to compensate for the loss in discretionary expenditure resulting from revealing.

Results are presented in Table 4. The first notable result is that the choice to conceal is not explained by the relative share of the endowment (or any higher order polynomials), however, self reported indicators of financial management in the household do. The spouse who solely handles household money is 18% more likely to hide, while if spouses do not manage finances jointly the spouse with the information advantage is 13% less likely to hide. At first sight these results seem counterintuitive, however, the questions differ in that handling money does not necessarily imply that spouse decides how the money is spent as much as just budgeting. A spouse that is not happy with they way

household money is spent but handles this money can have the opportunity to use the hidden resources on items of her preference with little to no suspicion from her partner as she is already making other purchases. Contrastingly, the indicator on financial management compares households where spouses make financial decisions jointly, versus those who individually decide on how their own resources are spent. Therefore, spouses with a separate spheres management contract do not face a bargaining tax and hiding only restricts their allocation alternatives.

Table 4: Results on the Choice to Hide

	Dep. Var: Choice to Hide		
	(1)	(2)	(3)
Own Share of Endowment	-0.000 [0.001]	-0.000 [0.001]	-0.000 [0.001]
Separate Spheres (=1 if do not manage finances jointly)		-0.132** [0.062]	-0.172*** [0.060]
Handles HH Finances (=1 if solely handles hh money)		0.180** [0.085]	0.203** [0.086]
Joint Savings HH Income (=1 if jointly decide how much to save)		-0.089 [0.067]	-0.057 [0.064]
Some say in Work (=1 if some say in working outside home)		0.067 [0.063]	0.042 [0.060]
Male (= 1 if Male)	-0.042 [0.055]	0.002 [0.072]	0.033 [0.073]
Coin Flip Outcome	0.256***	0.247***	0.247***
Previous Marriage (=1 if married before current marriage)			0.216*** [0.080]
Includes Game Structure Controls	Y	Y	Y
Includes Controls for Family Composition	N	Y	Y
Includes Controls for Assets	N	Y	Y
Includes Round Fixed-Effects	N	N	Y
Observations	448	434	427

The sample of households in the POD treatment is small already, thus making inferences about gender differences in hiding in response to bargaining power suffer from loss in precision, and

thus are not reported in Table 4. In general, I find no differences by gender on the probability of hiding except for being able to influence the choice to work where husbands who have some influence over the decision to work outside of home are 23% more likely to hide than their female counterparts. Only 20% of women in these households work outside of home and when they do their earnings are 8 times lower than those of their husbands. Therefore, husbands who influence the choice to work are those who actually work outside of home, making them the main earners in the household and those with the most financial decision-making power. In this context and within the framework of the model, it is not surprising to find that men who work are more likely to hide. Finally, no covariates other than having a prior marriage correlate with the choice to hide.

The Effect of Asymmetric Information on Efficiency:

While I have provided evidence of hiding and some factors that influence this choice, the question remains as to whether spouses behave differently when they have complete relative to private information. For instance, spouses could increase allocations towards the household good to compensate for hiding or for being put in a situation where they are unable to share information with their partner. To test for these differences, I use two approaches. First, I present results from the Kolmogorov-Smirnov test for equality of distributions of shares contributed towards each account across information treatments. The distributions show a more complete picture of how efficiently resources are allocated relative to average treatment effects but are unconditional. With regression analysis, I can control for the distribution of endowments, financial decision-making arrangements, and socio-demographic characteristics.

Hypothesis 2:

Case (i): Spouses that disclose the lottery outcome choose allocations that are no different from those under perfect information.

Case (ii): Spouses that conceal the lottery outcome choose allocations that are no different from those under private information.

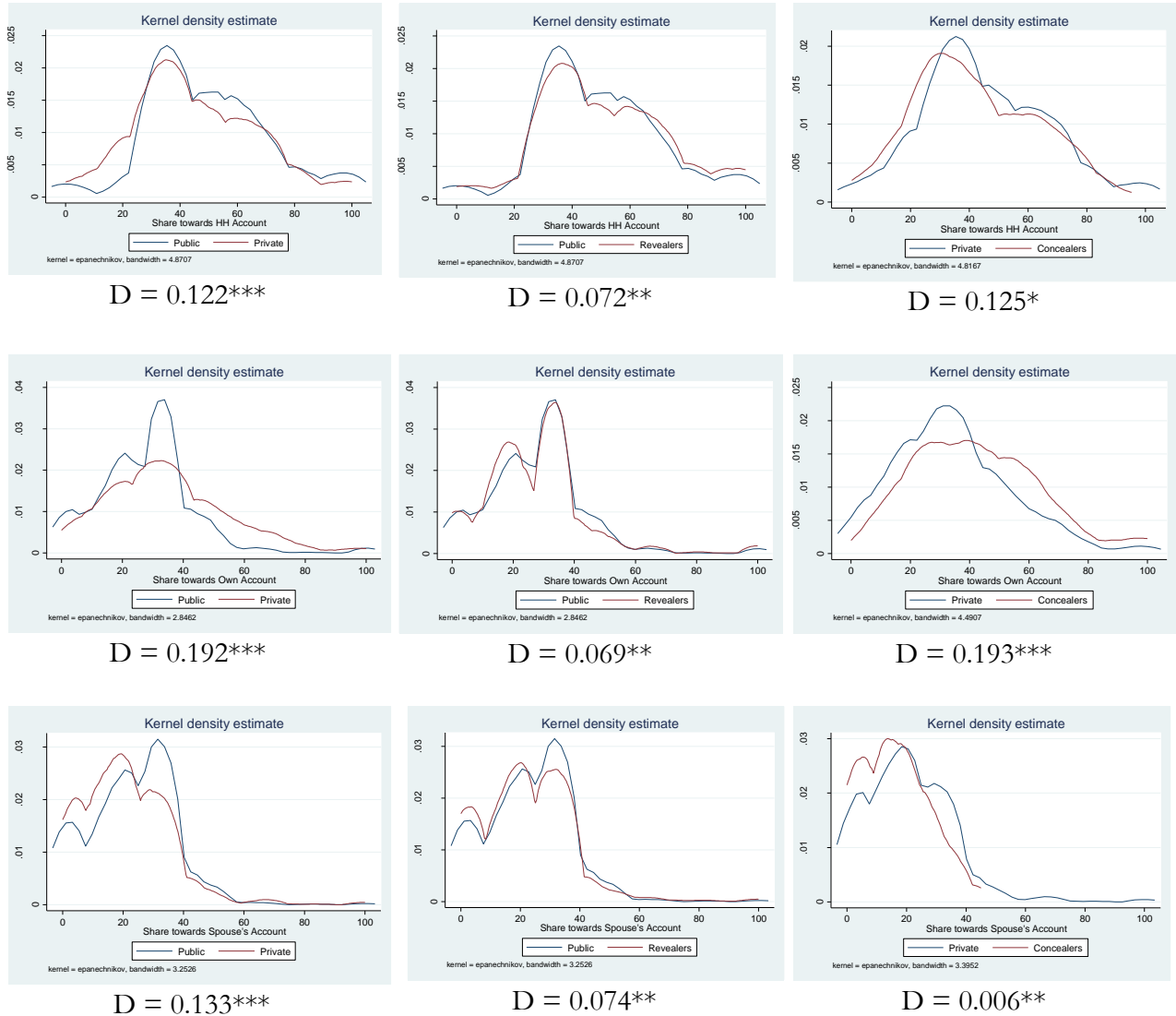
Case (iii): Spouses that conceal the lottery outcome or have private information allocate resources less efficiently than those that reveal or have complete information.

Figure 1 contains the results. In all cases I reject the hypothesis that the distribution of shares allocated towards each account are statistically equal across information treatments at the 95% confidence or above. The comparison of the distributions of shares contributed towards the household good between those in the private information treatment and spouses who choose to conceal is only significantly different at the 90% confidence level. These results suggest that both in the complete and private information treatments there are hiding and revealing types who are not allowed to make that choice, and thus allocate resources differently. With growing interest in conducting laboratory or field experiments to assess the effect of private information on allocations, it is of great importance to take into account that depending on the ratio of concealers to revealers results could be overstating or understating the true effect of asymmetric information.

The kernel densities of shares contributed towards the household account between spouses in the complete information treatment and those who reveal show that even under complete information spouses do not allocate all the money in a way that maximizes household earnings. The household account was framed as money used towards food, children's clothes, education, and household items which both spouses can derive utility from. Thus, even when considering the framing of the accounts it is clear that spouses value maintaining control over some proportion of resources to spend on items that only benefit themselves, even at the cost of decreasing household resources. The distributions of those in the private information treatments and concealers are more

visibly different; concealing spouses allocate a smaller share to both the household account and their partner's account with a larger probability, and keep more to themselves.

Figure 1: Kolmogorov–Smirnov Test of Equality of Distributions)



Next, I estimate reduced-form Engel equations of the amount allocated to each account as a function of spouse S own share of the household endowment, the information treatment indicators, self-reported financial decision-making indicators, and some controls using a random effects model as the information treatment does not vary across rounds.

$$w_{s,h,r}^g = \beta \gamma_{s,h,r} + \sum_{j=1}^3 \theta_j^g T_h^j + \sum_{m=1}^4 \pi_m^g BP_s^m + \sum_{j=1}^3 \sum_{m=1}^4 \delta_{j,m}^g T_h^j \times BP_s^m + \varphi X_{s,h,r} + \sum_{r=1}^7 \sigma_r + \sum_{s=1}^n \alpha_s + \varepsilon_{s,h,r} \quad (6)$$

Where T_h^j is an indicator variable equal to 1 when spouse s is in information treatment j where $j \in \{PI, CI, POD\}$; $\gamma_{s,h,r}$ is the share of the household endowment of spouse s ; BP_s^m is a matrix of self-reported indicators of control over money in the household; $X_{s,h,r}$ is a matrix of socio-demographic variables and household characteristics; $\sum_{r=1}^7 \sigma_r$ are round fixed-effects; and $\sum_{s=1}^n \alpha_s$ are spouse unobservable characteristics. The indicators of bargaining power are the same than in Table 4 with two exceptions: for savings, I consider an indicator of sole decision-maker of how much to say from household income (instead of jointly deciding), and in column (7) the measure of bargaining power is the spouse's own share of endowments. The share of endowments is varied across spouses and rounds allowing me to examine spousal allocation decisions under different levels of relative income. The sample is restricted only to informed spouses (those in role A).

The econometric results are presented in Table 5 and Table 6 for the treatment effects of information on the amount allocated towards the household account and the spouse's own account. As the share of endowments increases, the resources allocated towards the household account decrease and the share towards their own account increases across all specifications. The results in column (1) indicate that the allocations towards both, the household and individual private accounts on average do not differ across those who choose to reveal the lottery outcome and those in the complete information treatment. Likewise, spouses who choose to conceal the additional transfer act no differently than those in the private information treatment as the treatment effects are statistically equal to each other (particularly when restricting the sample only to lottery winners).

The experimental design implies that if spouses choose to conceal or are in the private information treatment, the additional transfer goes towards the lottery eligible spouse's own account, while there are no restrictions on how the rest of the money is allocated between accounts. Thus,

when spouses win the lottery and are in either of the private information treatments, the amount allocated towards their own account increases, but the share can increase or decrease depending on what they do with the rest of their endowment. Further, the endowments are designed such as to isolate the effect of asymmetric information and hiding from income effects. For this reason, the results in Tables 5 and 6 can be interpreted as conditional on the same distribution of endowments, spouses contribute less money towards the household account when there is asymmetric information causing an increase in the inefficiency of the allocation of resources. Column (2) contains the results examining differences in the information treatment effects by gender (instead of bargaining power, gender is the variable interacted with the information treatment indicators). There are no differences in the information treatment effects across genders.

In columns (3) to (7) each indicator of control over money is interacted with the information treatments individually. For spouses who report having no influence over the various household financial decisions, there is no difference on the effect of information between those in the complete information treatment and those who choose to reveal, while having private information (either chosen or exogenously imposed) decreases the share allocated towards the household account. Examining Table 6 where the dependent variable is the share of each spouse's own endowment kept for his or herself, the results are a mirror image of the ones presented for the household account¹¹.

Having influence or control over household financial decisions results in different allocations of resources depending on the information environment and the variable used to capture financial decision-making power. When there is complete information, the indicators of financial control do not influence allocations except for decreasing the share towards the household account when the spouse has control over savings. An individual who handles household money is on

¹¹ (i) Having private information increases the share kept for oneself and so does an increase in the spouse's share of the endowment; (ii) Control over household savings decreases the share kept regardless of the information treatment; and (iii) making decisions jointly or having some say over working outside of home does not influence allocations, nor makes a difference in overcoming asymmetric information.

average more likely to conceal (see Table 4) but conditional on hiding this spouse will allocate a smaller share to the household account and keep more to herself regardless of control over money. In contrast, spouses who reveal and those who are prevented from the choice to share information allocate a greater share towards the household account if they handle household money, while keeping the same share for themselves. This result is consistent with both types of individuals, revealers and concealers, being present in the group with private information. Conditional on being a revealing type, handling money results in more efficient allocations which is not surprising as revealers are also the most cooperative. Interestingly, a spouse with sole control over savings allocates a greater share towards the household account regardless of the information environment. From the statistics in Table C.1 we know that men in the public information treatment are less likely to report they solely decide how much to save from household income, thus the coefficient of the interaction between private information treatment and this variable may be overstating the true magnitude of the differences. Households who manage their finances separately respond no differently than those with other arrangements; the same is true for spouses who have some say over working outside the home.

The response to changes in the share of household endowments is different from that to self-reported bargaining power: revealing spouses decrease the share towards the household account as they control a greater share of the household endowment. Interestingly and consistent with the model, as the share of endowments increases, revealing spouses increase their own share (though statistically significant only at 90% confidence), while hiding spouses significantly decrease it. Spouses who choose to reveal have less control over resources in real life and the change in their share of endowment is an important source of increased bargaining power. In that event one would expect that spouse to allocate resources towards his or her preference regardless of the visibility of

her actions, while hiding spouses already have more bargaining power and allocation of resources reflects their preferences.

Table 5: Effect of Information and Bargaining Power (BP) on Allocations

	<u>Dep. Variable: HH Account</u>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private Information	-11.329*** [2.281]	-13.865*** [2.946]	-9.129*** [2.725]	-12.503*** [2.707]	-13.253*** [2.685]	-12.232*** [4.094]	-8.552 [5.790]
POD - Reveal	1.991 [2.562]	2.000 [3.166]	4.964 [3.147]	2.069 [2.788]	1.213 [2.663]	3.750 [3.794]	16.006** [6.241]
POD - Conceal	-12.597*** [2.753]	-11.669*** [3.770]	-10.152*** [3.434]	-10.697*** [3.134]	-14.077*** [3.428]	-12.075** [5.491]	-25.320*** [7.660]
Private Information X Bargaining Power	-	5.492 [4.629]	-6.219 [5.480]	11.635* [6.007]	15.329** [6.899]	2.218 [5.384]	-0.043 [0.097]
POD - Reveal X Bargaining Power	-	0.193 [5.126]	-3.067 [5.819]	12.603** [5.724]	19.076** [7.825]	0.190 [5.119]	-0.238** [0.105]
POD - Conceal X Bargaining Power	-	-1.618 [5.321]	0.108 [5.540]	1.913 [6.819]	19.683*** [6.028]	1.874 [6.362]	0.254** [0.126]
Separate Spheres (=1 if do not manage finances jointly)	-	-	4.318 [3.856]	1.636 [2.362]	1.448 [2.317]	1.699 [2.575]	1.737 [2.438]
Handles HH Finances (=1 if solely handles hh money)	-	-	1.232 [2.454]	-5.956 [4.472]	2.514 [2.404]	1.312 [2.492]	1.056 [2.463]
Control Savings HH Income (=1 if solely decide how much to save)	-	-	-3.699 [3.474]	-2.264 [3.503]	-12.921*** [3.040]	-3.356 [3.473]	-3.521 [3.457]
Some say in Work (=1 if some say in working outside home)	-	-	-0.173 [2.318]	-0.248 [2.214]	-0.669 [2.218]	-1.071 [3.893]	-0.058 [2.284]
Own Share of Endowment	0.021 [0.040]	0.021 [0.040]	0.016 [0.042]	0.018 [0.043]	0.016 [0.043]	0.016 [0.042]	0.093 [0.071]
Male (= 1 if Male)	-4.851** [1.936]	0.163 [3.412]	2.923 [2.538]	2.097 [2.521]	3.059 [2.469]	2.608 [2.575]	2.427 [2.512]
Previous Marriage (=1 if married before current marriage)	-	-	-7.305* [3.978]	-7.458* [3.846]	-8.442** [3.673]	-6.582* [3.920]	-6.688* [3.772]
Includes Game Structure Controls	Y	Y	Y	Y	Y	Y	Y
Includes Controls for Family Composition	N	N	Y	Y	Y	Y	Y
Includes Controls for Assets	N	N	Y	Y	Y	Y	Y
Includes Round Fixed-Effects	Y	Y	Y	Y	Y	Y	Y
p-value Equality between Conceal & Private	0.6301	0.5524					
Observations	1365	1365	1246	1246	1246	1246	1246

Note: Estimated using a spouse-level random effects, include controls, village and round fixed effects.

Standard errors clustered at household level in brackets. Interaction variable : (2) Gender; (3) Joint Control;

(4) Handles HH Finances; (5) Decides amount of HH Savings; (6) Some say over work; (7) Endowment Share.

*** p-value<0.001, ** p-value<0.05, * p-value<0.10

Table 6: Effect of Information and Bargaining Power (BP) on Allocations

	Dep. Variable: Own Account						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private Information	14.307*** [1.798]	16.677*** [2.631]	13.580*** [2.482]	14.376*** [2.094]	16.031*** [2.380]	13.902*** [3.404]	11.295** [4.666]
POD - Reveal	0.316 [1.959]	1.922 [2.825]	-0.458 [2.411]	-0.112 [1.943]	1.312 [2.090]	1.645 [2.877]	-7.261 [4.492]
POD - Conceal	20.927*** [2.408]	22.282*** [3.609]	20.714*** [3.124]	18.608*** [2.587]	23.090*** [3.132]	20.422*** [4.529]	43.198*** [6.435]
Private Information X Bargaining Power	-	-4.850 [3.571]	1.486 [4.470]	-3.786 [6.364]	-13.625*** [4.487]	-0.199 [4.211]	0.051 [0.076]
POD - Reveal X Bargaining Power	-	-3.305 [3.901]	-0.118 [3.763]	-2.580 [6.028]	-11.398** [5.256]	-3.495 [3.696]	0.134* [0.075]
POD - Conceal X Bargaining Power	-	-2.774 [4.468]	-8.478 [5.703]	4.996 [8.478]	-17.885*** [5.113]	-0.923 [5.445]	-0.412*** [0.100]
Separate Spheres (=1 if do not manage finances jointly)	-	-	-2.310 [2.561]	-2.092 [1.692]	-1.759 [1.614]	-1.821 [1.751]	-2.005 [1.682]
Handles HH Finances (=1 if solely handles hh money)	-	-	-1.017 [2.780]	0.544 [5.393]	-2.197 [2.788]	-1.117 [2.715]	-0.846 [2.742]
Control Savings HH Income (=1 if solely decide how much to save)	-	-	2.058 [2.243]	1.460 [2.512]	9.064*** [2.350]	1.733 [2.262]	1.867 [2.279]
Some say in Work (=1 if some say in working outside home)	-	-	-3.697* [2.138]	-3.706* [2.140]	-3.483 [2.119]	-2.576 [2.940]	-3.892* [2.145]
Own Share of Endowment	-0.103*** [0.032]	-0.103*** [0.033]	-0.096*** [0.035]	-0.098*** [0.035]	-0.095*** [0.035]	-0.096*** [0.035]	-0.139*** [0.051]
Male (= 1 if Male)	2.148 [1.522]	-1.426 [2.509]	-0.764 [2.149]	-0.502 [2.082]	-0.976 [2.061]	-0.718 [2.109]	-0.600 [2.095]
Previous Marriage (=1 if married before current marriage)			8.424** [3.518]	7.998** [3.614]	9.009*** [3.417]	8.014** [3.580]	7.683** [3.378]
Includes Game Structure Controls	Y	Y	Y	Y	Y	Y	Y
Includes Controls for Family Composition	N	N	Y	Y	Y	Y	Y
Includes Controls for Assets	N	N	Y	Y	Y	Y	Y
Includes Round Fixed-Effects	Y	Y	Y	Y	Y	Y	Y
p-value Equality between Conceal & Private	0.0051	0.126					
Observations	1365	1365	1246	1246	1246	1246	1246

Note: Estimated using a spouse-level random effects, include controls, village and round fixed effects.

Standard errors clustered at household level in brackets. Interaction variable : (2) Gender; (3) Joint Control;

(4) Handles HH Finances; (5) Decides amount of HH Savings; (6) Some say over work; (7) Endowment Share.

*** p-value<0.001, ** p-value<0.05, * p-value<0.10

How do the uninformed spouses react?

In Table 7 I examine the responses from the uninformed spouse (player in Role B) to the information treatments. The spouse in Role B knows the information environment, and under the private and POD treatments she also knows her partner has a 50% chance of winning a lottery prize of Rs. 75 and that she will not be informed of the outcome. For this reason and because spouses know and care for each other, it is possible that the uninformed partner will behave strategically in response to what she expects the informed spouse to do. Spouses married to individuals who reveal, and those in the private and public information treatments do not contribute different shares towards the household good or their own accounts. Interestingly, the individuals whose spouse chose to hide respond by contributing a greater share towards the household account, instead of exhibiting equivalent selfish behavior as the information environment does not affect the share of their endowments they keep for themselves. It seems as if these spouses anticipate the losses to household earnings of their partners' non-cooperative behavior and try to compensate via the household good allocation. The intra-household resource management indicators impact allocations in the way predicted by the theory. Individuals who solely decide how much to save from household income and those in households that manage their finances separately keep a significantly larger share of their endowments for themselves. In both cases, these indicators reflect greater autonomy and one would expect individuals with more bargaining power to allocate resources towards the goods they prefer.

Table 7: Effect of Information and Bargaining Power on Allocations of Uninformed Spouses

	Dep. Variable: HH Good Share				Dep. Variable: Own Share			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Private Information	2.843 [2.652]	3.405 [3.059]	1.996 [3.153]	3.639 [3.010]	-1.012 [1.760]	-1.461 [1.960]	0.088 [2.045]	-0.662 [2.047]
POD - Reveal	0.248 [2.583]	0.066 [2.911]	-0.066 [2.878]	1.396 [2.739]	0.279 [1.723]	0.550 [2.009]	0.725 [1.958]	-0.362 [1.958]
POD - Conceal	4.188 [3.759]	8.177** [3.383]	7.100** [3.502]	8.410*** [3.226]	0.194 [2.890]	-2.192 [2.435]	-0.369 [2.313]	-1.196 [2.219]
Separate Spheres (=1 if do not manage finances jointly)	-	-	-4.473* [2.555]	-4.779* [2.480]	-	-	3.151* [1.687]	3.214** [1.631]
Handles HH Finances (=1 if solely handles hh money)	-	-	2.571 [3.095]	4.639 [3.227]	-	-	0.536 [2.161]	-0.513 [2.208]
Control Savings HH Income (=1 if solely decide how much to save)	-	-	-5.225 [3.291]	-4.686 [3.267]	-	-	5.017** [2.266]	4.884** [2.244]
Some say in Work (=1 if some say in working outside home)	-	-	-4.050 [3.106]	-3.440 [3.077]	-	-	3.216 [2.083]	2.948 [2.136]
Own Share of Endowment	-0.036 [0.031]	-0.035 [0.032]	-0.035 [0.032]	-0.027 [0.033]	0.027 [0.024]	0.020 [0.026]	0.018 [0.026]	0.013 [0.027]
Coin Flip Outcome (=1 if Heads)	-0.336 [1.037]	-0.420 [1.045]	-0.382 [1.067]	-0.882 [1.081]	0.192 [0.850]	0.265 [0.892]	0.213 [0.913]	0.445 [0.933]
District (=1 if Almora)	7.925*** [2.114]	8.129** [3.948]	7.730* [4.221]	9.921** [4.088]	-3.758*** [1.412]	-4.969* [2.553]	-4.644* [2.784]	-6.077** [2.700]
Order (=1 if Ascending)	-1.404 [2.093]	-0.424 [2.226]	-0.845 [2.341]	-0.809 [2.230]	-0.010 [1.412]	-0.057 [1.502]	0.253 [1.468]	0.173 [1.455]
Male (= 1 if Male)	0.718 [2.101]	-1.602 [2.881]	1.998 [3.228]	2.028 [3.379]	-2.428* [1.407]	-2.353 [1.937]	-4.994** [2.156]	-4.272* [2.289]
Includes Game Structure Controls	Y	Y	Y	Y	Y	Y	Y	Y
Includes Controls for Family Composition	N	Y	Y	Y	N	Y	Y	Y
Includes Controls for Assets	N	N	Y	Y	N	N	Y	Y
Includes Round Fixed-Effects	N	N	N	Y	N	N	N	Y
Observations	1365	1274	1239	1197	1365	1274	1239	1197

Note: Estimated using a spouse-level random effects, include controls, village and round fixed effects.

Standard errors clustered at household level in brackets.

*** p-value<0.001, ** p-value<0.05, * p-value<0.10

What explains the rejection of offers?

After allocation decisions were made, spouses were presented with their partner's proposal of how to allocate her own share of the endowment between the household account and the individual accounts. The payment scheme of the game implies there is no incentive to reject an offer because

each spouse can only gain access to his or her partner's endowment through accepting the offers. Therefore, any offer containing a non-zero amount in any account other than my partner's own account should be strictly preferred in theory. In practice however, of the 2400 offers, 15.75% were rejected (378). An average of 3.12 offers (out of 7) were rejected, concentrated among 121 households. Interestingly, while the average number of rejected offers by gender is quite similar (2.6 for females and 2.53 for males), there are 100 women that rejected at least one offer and only 45 men.

In Table C.3 I present econometric results on the probability of rejection. The information treatment has no effect on the probability of rejection except for households where one spouse chooses to conceal. Rejections increase by 14 percentage points for both individuals who chose to conceal and their partners. In contrast, an increase in a spouse's endowment relative to her partner's significantly decreases the probability of rejection indicating that an unfair offer does not affect a spouse's wellbeing as much when she is relatively wealthier. The composition of the offer received by the responding spouse does not influence the probability of rejection but the share kept toward oneself does. The potential mechanisms are twofold. On one hand, the share kept is a proxy for selfishness where a spouse sacrifices household earnings for control. To punish this behavior, individuals reject offers reflecting selfish behavior. On the other hand, it is possible that an individual who offered to keep a larger share of her endowment actually wants to keep her entire endowment and the only way to accomplish this is by rejecting the offer she received and making an offer that is likely to be rejected. The latter would require a high level of strategic sophistication, thus it is possible but unlikely. Regarding socio-demographic variables the results indicate that men are 13% less likely to reject an offer. Households with better housing conditions, spouses who own more livestock and those who have no schooling are also less likely to reject. Spouses in Almora are more likely to reject than those in Dehradun.

5. Conclusions

I illustrate the incentives to hide income when household resources are not perfectly observed by both spouses through a simple model. The model can be used as a general way to interpret the differences in the effect of asymmetric information in results from field experiments across countries and cultures. The model indicates that the spouse with the information advantage has incentives to hide the transfer if revealing it does not increase her bargaining power enough to offset the loss in discretionary expenditure. This is consistent with the notion of bargaining power being a function of distribution factors unaffected by the presence of additional resources. For instance, Anderson and Eswaran, (2009) document empirically that in Bangladesh the influence of additional monetary resources on bargaining power of women is small compared to idiosyncratic or cultural sources of bargaining power. Because revelation depends on the responsiveness of bargaining power to the transfer and bargaining power is partially determined by informal norms, hiding will likely be observed in societies where the spouse with the information advantage has greater autonomy. Further, the threshold change in bargaining power needed to induce revelation is increasing in the initial bargaining power. This implies that in societies where the norm is for women to have little autonomy (most of the developing world) women will be more cooperative than men. For instance, giving government transfers to women will not result in inefficient allocations, even when other sources of income may not be easily monitored by the husband. However, in societies that favor women autonomy, such as matrilineal regions in Ghana, women will be more likely to conceal income from their husbands. Interestingly, the result stated in Corollary 1 is consistent with empirical findings in South-East Ghana (Castilla and Walker, 2013).

The experimental results are consistent with the theoretical model. I find that when given the opportunity spouses will conceal money even if it comes at the cost of decreasing household

resources. While there are no differences in the probability of hiding by gender, the choice to conceal responds to the financial management contract between spouses in predictable ways. Spouses who handle household money are significantly more likely to hide, while spouses that manage their finances separately do so less frequently. These indicators capture different margins of control over money, where handling household finances does not imply that spouses decide how the money is allocated. Contrastingly, the indicator on financial management compares households where spouses make financial decisions jointly, versus those who individually decide on how their own resources are spent. Therefore, spouses with a separate spheres management contract do not face a bargaining tax and hiding only restricts their allocation alternatives.

From the experimental literature we know individuals free ride, but with spouses one would expect that trust and caring would result in greater contributions towards the household account. While spouses do allocate a greater proportion of resources in the household account, which is household-earnings maximizing, even under perfect information the average is around 50% of their own endowments. This suggests spouses value maintaining control over some proportion of resources even if it comes at a cost. Not surprisingly, asymmetric information over money decreases the amount contributed towards the household good even more. One could imagine that a spouse that chooses to hide is less cooperative than one that is randomly assigned to a private information treatment. Alternatively, a hiding spouse may experience guilt or try to compensate her non-cooperative behavior by increasing the share of her observable endowment allocated in the household account. The contribution towards the household good decreases in a similar proportion whether the spouse chooses to conceal or does not have the option to share information, suggesting there is no compensation in contributions in response to non-cooperative behavior.

While there are no differences on the effect of asymmetric information by gender on allocations, the response to asymmetric information for different levels of bargaining power does. In

particular, regardless of the information environment, the spouse who decides how much to save from household income allocates a greater proportion towards the household account. For policy, this suggests that giving transfers to the spouse that controls savings can be beneficial for household efficiency.

References

- Ambler, Kate. 2012. Don't Tell on Me: Experimental Evidence of Asymmetric Information in Transnational Households. *Unpublished*.
- Anderson, Siwan and Eswaran, Mukesh. 2009. What Determines Female Autonomy? Evidence from Bangladesh. *Journal of Development Economics*, 90, pp. 179–191.
- Ashraf, Nava. 2009. “Spousal Control and Intra-household Decision Making: An Experimental Study in the Philippines.” *American Economic Review*, 99 (4), 1245–1277.
- Bateman, I. J., Munro, A., 2005. An experiment on risky choice amongst households. *The Economic Journal* 115 (502), C176-C189.
- Browning, M. and Chiappori, P.-A. (1998). “Efficient Intra-Household Allocations: A General Characterization and Empirical Tests.” *Econometrica*, 66 (6), pp. 1241-1278.
- Browning, M., Chiappori, P. and Weiss, Y. 2014. “Economics of the Family.” Cambridge University Press (forthcoming).
- Carlsson, F., He, H., Martinsson, P., Qin, P., Sutter, M., 2012. Household decision making in rural China: Using experiments to estimate the influences of spouses. *Journal of Economic Behavior and Organization*
- Castilla, C., Walker, T., 2013. Is ignorance bliss? the effect of asymmetric information between spouses on intra-household allocation. *American Economic Review* 103 (May).

- Castilla, C., Walker, T., 2013. Gender Roles and Non-Cooperative Behavior. *Unpublished*.
- Charness, Gary, Gneezy, Ury and Michael Kuhn. 2012. Experimental Methods: Between-subject and within-subject design. *Journal of Economic Behavior and Organization* 81, pp. 1 – 8.
- Chen, Joyce. 2013. “Identifying Non-Cooperative Behavior among Spouses: Child Outcomes In Migrant-Sending Households.” *Journal of Development Economics*.
- Cochard, F., Couprie, H., Hopfensitz, A., 2009. Do spouses cooperate? and if not: Why? ThemaWorking Paper n 2009-10 Universite de Cergy Pontoise, France.
- Dasgupta, U., Mani, S., 2013. Altruism in the household. *Economic & Political Weekly* 48 (33), 17.
- de Laat, Joost. 2014. Household allocations and endogenous information: The case of split migrants in Kenya. *Journal of Development Economics* 106: pp. 108–117
- Hoel, J., 2012. Which Spouses Behave Strategically? Laboratory Evidence from Kenya and its Implications for Models of the Household. Doctoral Dissertation University of Michigan.
- Iversen, V., Jackson, C., Kebede, B., Verschoor, A., Munro, A., 2010. Do spouses realize cooperative gains? Experimental evidence from rural Uganda. *World Development*.
- Kebede, B., Munro, A., Tarazona-Gomez, M., Verschoor, A., 2013. Intrahousehold efficiency: An experimental study from Ethiopia. *Journal of African Economies*.
- Mani, A., 2011. Mine, your or ours?: the efficiency of household investment decisions: an experimental approach. *Unpublished*.
- Munro, A., Bateman, Ian J., and McNally, Tara. 2008. The family under the microscope: An experiment testing economic models of household choice. MPRA Working Paper
- Munro, A., McNally, T., Popov, D., 2008. Taking it in turn: An experimental test of theories of the household. MPRA Discussion Paper.
- Munro, A., Kebede, B., Tarazona-Gomez, M., Verschoor, A., 2011. Autonomy or Efficiency. An experiment on household decisions in two regions of India. GRIPS Discussion Papers.

Robinson, J., 2008. Limited insurance within the household: evidence from a field experiment in Kenya. Available at SSRN 1282231.

Schaner, S., 2013. Do opposites detract? Intra-household preference heterogeneity and inefficient strategic savings. *Unpublished*.

Udry, Christopher. 1996. "Gender, Agricultural Production, and the Theory of the Household." *The Journal of Political Economy*, 104:5, pp. 1010-1046.

Appendix A: Proofs

Proof of Proposition 1:

Totally differentiating (3) yields the following system:

$$\begin{bmatrix} v''(Q) + p^2(1-\mu)u''(x_m) & p(1-\mu)u''(x_m) \\ p(1-\mu)u''(x_m) & \mu u''(x_f) + (1-\mu)u''(x_m) \end{bmatrix} \begin{bmatrix} dQ \\ dx_f \end{bmatrix} = \begin{bmatrix} A & A & A \\ B & B & B \end{bmatrix} \begin{bmatrix} dT \\ dY_f \\ dY_m \end{bmatrix}$$

Where due to the income-pooling feature: $A = p(1-\mu)u''(x_m) - pu'(x_m)\mu'(T)$, and $B = (1-\mu)u''(x_m) - u'(x_m)\mu'(T) - u'(x_f)\mu'(T)$.

Where the determinant is given by:

$$D = p^2\mu(1-\mu)u''(x_f)u''(x_m) + \mu v''(Q)u''(x_f) + (1-\mu)v''(Q)u''(x_m) > 0$$

Comparative statics are:

$$\frac{\partial Q}{\partial Y_f} = \frac{\partial Q}{\partial Y_m} = \frac{\partial Q}{\partial T} = \frac{p\mu(1-\mu)u''(x_f)u''(x_m) - p\mu'(T)[\mu u'(x_m)u''(x_f) + (1-\mu)u'(x_f)u''(x_m)]}{D} > 0$$

$$\frac{\partial x_f}{\partial Y_f} = \frac{\partial x_f}{\partial Y_m} = \frac{\partial x_f}{\partial T} = \frac{(1-\mu)v''(Q)u''(x_m) - \mu'(T)v''(Q)[u'(x_f) + u'(x_m)] - p^2(1-\mu)\mu'(T)u'(x_f)u''(x_m)}{D} > 0$$

$$\frac{\partial x_m}{\partial Y_f} = \frac{\partial x_m}{\partial Y_m} = \frac{\partial x_m}{\partial T} = \frac{\mu v''(Q)u''(x_m) + \mu'(T)v''(Q)[u'(x_f) + u'(x_m)] + p^2\mu\mu'(T)u'(x_m)u''(x_f)}{D} < 0$$

$$\text{iff } \mu v''(Q)u''(x_m) < \mu'(T)\{v''(Q)[u'(x_f) + u'(x_m)] + p^2\mu u'(x_f)u''(x_m)\} \quad \blacksquare$$

Proof of Proposition 2:

Spouse f hides the transfer from m if and only if

$$\begin{aligned} \frac{\partial U_f}{\partial T} \Big|_R = & \frac{v'(Q^R)}{D} \{p\mu(1-\mu)u''(x_f^R)u''(x_m^R) + [p(1-\mu)u'(x_f^R)u''(x_m^R) + p\mu u'(x_m^R)u''(x_f^R)]\mu'(T)\} + \\ & \frac{u'(x_f^R)}{D} \{(1-\mu)v''(Q^R)u''(x_m^R) - \\ & [u'(x_f^R)v''(Q^R) + u'(x_m^R)v''(Q^R) + p^2(1-\mu)u'(x_f^R)u''(x_m^R)]\mu'(T)\} < u'(x_f^H) = \frac{\partial U_f}{\partial T} \Big|_H \end{aligned}$$

Where $D = p^2\mu(1-\mu)u''(x_f^R)u''(x_m^R) + \mu v''(Q^R)u''(x_f^R) + (1-\mu)v''(Q^R)u''(x_m^R) > 0$

Simplifying the above expression yields

$$\mu'(T) \equiv \frac{\partial \mu}{\partial T} <$$

$$\frac{1}{M} \{u'(x_f^H) [p\mu v''(Q^R)u''(x_f^R) + p^2\mu(1-\mu)u''(x_f^R)u''(x_m^R) + (1-\mu)v''(Q^R)u''(x_m^R)] \\ - (1-\mu)u'(x_f^R)v''(Q^R)u''(x_m^R) - p\mu^2(1-\mu)u'(x_f^R)u''(x_f^R)u''(x_m^R)\} \equiv \overline{\Delta\mu}$$

where $M > 0$.

Where,
$$M = -u'(x_m^R) \{v''(Q^R) [u'(x_f^R) + u'(x_m^R)] + p^2(1-\mu)u'(x_m^R)u''(x_f^R) + p^2\mu(1-\mu)u'(x_m^R)u''(x_f^R) + p^2\mu^2u'(x_f^R)u''(x_m^R)\} > 0$$

A strictly positive threshold change in bargaining power such that f hides exists iff,

$$\mu u'(x_f^H)v''(Q^R)u''(x_f^R) + p^2\mu(1-\mu)u''(x_f^R)u''(x_m^R)[u'(x_f^H) - \mu u'(x_f^R)] + \\ (1-\mu)v''(Q^R)u''(x_m^R)[u'(x_m^H) - u'(x_m^R)] > 0$$

Proof of Corollary 1:

Taking limit $\mu \rightarrow 0$ approaches zero:

$$\lim_{\mu \rightarrow 0} \overline{\Delta\mu} = \frac{v''(Q^R)u''(x_f^R)[u'(x_f^H) - u'(x_f^R)]}{-v''(Q^R)[u'(x_f^R) + u'(x_m^R)] - p^2u'(x_m^R)u''(x_f^R)} < 0$$

Taking the limit as $\mu \rightarrow 1$:

$$\lim_{\mu \rightarrow 1} \overline{\Delta\mu} = \frac{u'(x_f^H)v''(Q^R)u''(x_f^R)}{-v''(Q^R)[u'(x_f^R) + u'(x_m^R)] - p^2u'(x_m^R)u''(x_f^R)} > 0. \quad \blacksquare$$

Appendix B: Instructions

In this survey, you will have to make decisions on how to split some amount of money into three accounts: a personal account, a spouse's account and a common household account. We will ask the same question to your spouse but with different amount. This procedure will be repeated seven times and at the end, based on your decisions, we would pay you for one of the seven rounds. This game will be followed by a survey about the current socio-economic conditions of your household. The entire procedure, the game plus the survey, will take around 45 minutes to complete and you will have to sit in separate rooms. Apart from the monetary prize that you can win through participation, we will also gift you an LED flashlight at the end of the survey. Do you wish to participate? Please note that we will not reveal your personal decisions or information about the household will not be revealed to anyone and is purely for research purposes. Moreover, you will only be represented by an arbitrary household number since we will not ask you your names.

“Uncle-ji/ Aunty-ji we will begin with the bargaining game. In this game, we will offer you seven different amounts of money and each time you will have to split it into three parts. First, you will keep something for your personal expenses (like bangles, bindi, lipstick, etc.). Second, you will keep something for your husband's personal expenditure (for example bidhi, cigarette, tobacco, etc.). Lastly, you will keep something for the household expenses, which includes expenditure on children. This could include money for buying daily ration, vegetables, paying children's school fees and meeting other household demands. You can divide your share of money in any way you want, keeping zero for some particular account in any round. Note, however, that your husband will also be doing the same exercise in the other room. However, for each round he will have a different total share of income. The idea is to see how you make decisions when you have different bargaining powers. Think of this as you and your husband getting different amounts of money in the house

from a day's work and these amounts can vary. At times your incomes are higher, at other times they are lower. We want to see how you manage your finances in each of the scenarios, good or bad.

In addition, we will give you an opportunity to earn Rs.75 extra for each of the seven rounds. Note that this opportunity is not being given to your husband. This will be done by a flip of a coin. If the coin flip results in a Heads, we will give you extra Rs.75 for that round. You will then have to make a decision on whether to reveal or conceal the coin toss outcome to your husband. In case, your coin lands a Heads then revealing the result to your husband will allow you to make decision of a greater total amount (original + Rs.75). However, revealing to your husband means that your husband now knows that you are getting a greater share and he may/may not leave less for you in his personal decision. At the same time concealing the extra amount from your husband would mean that you have kept the entire amount for your personal expenses. You will not be able to allocate it to your husband or to the household. Think of this as some extra money you've earned during the day as bonus and now it is up to you whether you want to tell about it to your husband or hide it from him.

In order to assist you in the game, we will give you some fake notes that you can put them in these three bowls as you wish. The three bowls represent your personal account, your husband's account and the household account. Distribute the money you have into these three accounts as you wish. Note that the lowest denomination note is Rs. 5 note. In each round, we will also tell you how much decision is in the hands of your husband. Likewise, your husband will be informed about your revealed endowment in each round. When making your decision think about these aspects and how much your husband will potentially keep in the three accounts.

Once this is done, we will present your decisions to your husband (taking care of your reveal/conceal decisions) and ask him whether he likes/accepts or dislikes/rejects your decisions. This will not have any further repercussions as the game will end and we will not tell you about his

accept/reject decisions. However, you will also get the opportunity to tell us whether you like or dislike each of his seven decisions. The game ends after this. We will then simply ask you survey questions about your household. During the survey questionnaire, we will bother you again with a similar game-type question 3. At the end, based on your decisions and a die roll, you will win one of these amounts. Similarly, your husband will win a separate amount based on his decisions. So please be reminded that you are playing for money and your decisions will have an impact on how much you win. Play wisely. There is no set formula for winning this game. We will also give your household one LED flashlight for taking out time for us and participating in the survey.

The following steps were conducted in order for bargaining games:

- (a) Player A and Player B simultaneously observe the seven rounds of resources available to each after the description of the experiment.
- (b) Player A tosses the coin seven times and then decides whether to reveal or conceal the result of the coin toss. In treatments T5 and T6 the spouse will always be informed of the entire amount and the total amount (original share+Rs.75) will be available to Player A. In the treatments T3 and T4 it will be allocated automatically towards the owners private account.
- (c) The experimenter informs Player B the outcome of the transfer stage for all 7 decisions (depending on the treatment). In treatments T5 and T6 Player B is always informed of the entire amount, i.e. win/loss in each of the seven rounds. In the treatments T3 and T4 Player B is never informed about the coin toss outcomes.
- (d) After being informed of the transfer results, each experimental subject privately and simultaneously makes a proposal for the split of its own share of resources that are observed (including the transfer if received if known) for each of the 7 decisions.
- (e) The experimenters submit the proposals to the experimental subjects spouse (i.e. exchange the two experiment sheets), who then decide whether to accept or reject them.

APPENDIX C: Additional Tables and Robustness

Table C.1: Balance of Treatment Statistics

	Husband						Wife					
	N	Option	Public - Option	Private - Option	Public	Private - Public	N	Option	Public - Option	Private - Option	Public	Private - Public
<i>Demographic and HH Composition</i>												
Age	195	39.454 [1.097]	1.1548 [1.563]	1.3300 [1.557]	40.609 [1.114]	0.1752 [1.569]	192	34.593 [1.084]	-0.704 [1.540]	1.2677 [1.528]	33.888 [1.093]	1.9726 [1.534]
Ideal Fertility	195	2.0303 [0.082]	0.1728 [0.116]	0.1850 [0.116]	2.2031 [0.083]	0.0122 [0.117]	192	2.0158 [0.038]	-0.015 [0.054]	-0.031 [0.054]	2.00 [0.038]	-0.015 [0.054]
No. Children	-	-	-	-	-	-	195	2.6969 [0.174]	-0.275 [0.248]	0.1645 [0.247]	2.4218 [0.177]	0.4396* [0.249]
Total HH Members	-	-	-	-	-	-	195	4.7272 [0.219]	-0.680** [0.313]	0.0419 [0.311]	4.0468 [0.223]	0.7223** [0.314]
Father-in-Law lives in HH	-	-	-	-	-	-	195	0.2272 [0.046]	-0.117* [0.065]	-0.058 [0.065]	0.1093 [0.046]	0.0598 [0.065]
Mother-in-Law lives in HH	-	-	-	-	-	-	195	0.3636 [0.057]	-0.144* [0.081]	0.0209 [0.081]	0.2187 [0.058]	0.1658** [0.081]
Other Backwards Castes	195	0.2727 [0.051]	-0.038 [0.072]	-0.118 [0.072]	0.2343 [0.051]	-0.080 [0.073]	192	0.2461 [0.053]	0.0236 [0.075]	-0.043 [0.075]	0.2698 [0.054]	-0.066 [0.076]
Scheduled Caste or Tribe	195	0.0757 [0.039]	0.0492 [0.055]	0.0627 [0.055]	0.125 [0.039]	0.0134 [0.055]	192	0.0461 [0.030]	0.0332 [0.043]	0.0163 [0.042]	0.0793 [0.030]	-0.016 [0.043]
Years of Marriage	192	14.953 [1.137]	0.7805 [1.614]	2.5382 [1.621]	0.2968 [0.053]	-0.050 [0.074]	191	0.2903 [0.058]	-0.040 [0.081]	0.0635 [0.081]	16.050 [1.271]	1.4666 [1.798]
Previously Married	193	0.0757 [0.027]	-0.028 [0.039]	-0.044 [0.039]	0.0476 [0.028]	-0.016 [0.039]	185	0.0317 [0.022]	-0.031 [0.032]	0.0317 [0.031]	0.000 [0.023]	0.0634** [0.032]
Get Along with Spouse	195	0.1969 [0.051]	0.0061 [0.073]	0.0799 [0.073]	0.2031 [0.052]	0.0737 [0.073]	192	0.0781 [0.035]	0.0468 [0.050]	-0.015 [0.050]	0.125 [0.035]	-0.062 [0.050]
High School or Above	193	0.1076 [0.040]	0.0669 [0.057]	-0.030 [0.056]	0.1746 [0.040]	-0.097* [0.057]	192	0.0461 [0.029]	0.0022 [0.041]	0.0307 [0.041]	0.0483 [0.029]	0.0285 [0.041]
Secondary or Below	193	0.7692 [0.052]	-0.070 [0.074]	0.0615 [0.074]	0.6984 [0.053]	0.1323* [0.074]	192	0.5384 [0.059]	0.2034** [0.085]	0.0307 [0.084]	0.7419 [0.061]	-0.172** [0.085]
No Schooling	193	0.1230 [0.036]	-0.027 [0.051]	-0.061 [0.051]	0.0952 [0.036]	-0.033 [0.051]	192	0.3692 [0.056]	-0.159** [0.080]	-0.061 [0.079]	0.2096 [0.057]	0.0980 [0.080]
<i>Assets, Income and Expenditure</i>												
Transportation Assets Index	193	0.6153 [0.096]	-0.028 [0.137]	0.1384 [0.136]	0.5873 [0.097]	0.1665 [0.137]	194	0.5846 [0.094]	-0.178 [0.133]	0.1384 [0.133]	0.4062 [0.094]	0.3168** [0.133]
Livestock Index	190	1.2968 [0.131]	0.0095 [0.186]	-0.078 [0.185]	1.3064 [0.133]	-0.087 [0.186]	187	1.2903 [0.127]	-0.060 [0.181]	-0.165 [0.179]	1.2295 [0.128]	-0.104 [0.180]
Tractor	193	0.0461 [0.027]	0.0173 [0.039]	3.36E- [0.039]	0.0634 [0.028]	-0.017 [0.039]	194	0.0307 [0.021]	0.0004 [0.030]	0.000 [0.030]	0.0312 [0.021]	-0.000 [0.030]
Own Land	188	0.7846 [0.043]	0.0987 [0.062]	0.1201* [0.061]	0.8833 [0.045]	0.0214 [0.063]	189	0.7343 [0.052]	0.0275 [0.073]	0.1043 [0.074]	0.7619 [0.052]	0.0768 [0.074]
Home Assets	195	4.600 [0.161]	0.0031 [0.230]	0.2923 [0.228]	4.6031 [0.164]	0.2891 [0.230]	194	4.3692 [0.187]	0.0526 [0.266]	0.4615* [0.265]	4.4218 [0.189]	0.4088 [0.266]
Housing Quality Index	192	3.7656 [0.159]	0.2185 [0.226]	0.0651 [0.224]	3.9841 [0.160]	-0.153 [0.225]	194	3.7384 [0.168]	0.0740 [0.239]	0.0153 [0.238]	3.8125 [0.169]	-0.058 [0.239]
Own House	195	0.8787 [0.038]	0.0430 [0.054]	-0.001 [0.054]	0.9218 [0.038]	-0.044 [0.054]	195	0.8333 [0.051]	-0.098 [0.072]	-0.064 [0.072]	0.7343 [0.051]	0.0348 [0.073]
Total Individual Expenditure (thousands)	190	66.503 [14.171]	-5.679 [20.042]	36.638* [19.963]	60.823 [14.171]	42.317** [19.963]	187	90.354 [18.119]	-16.280 [25.834]	9.165 [25.625]	74.074 [18.414]	25.445 [25.834]
Household Expenditure (thousands)	-	-	-	-	-	-	182	161.997 [25.994]	-26.130 [36.762]	44.090 [36.464]	135.866 [25.994]	70.221* [36.464]
Income from paid work (thousands)	190	8.322 [1.005]	0.198 [1.427]	-0.136 [1.410]	8.521 [1.013]	-0.335 [1.416]	90	0.753 [1.317]	-0.046 [0.461]	0.729 [0.461]	0.707 [0.334]	0.776 [0.472]
Individual Income (thousands)	187	8.625 [1.111]	-0.449 [1.584]	-0.386 [1.591]	8.176 [1.129]	0.063 [1.603]	173	6.888 [0.970]	-0.163 [1.354]	1.894 [1.378]	6.725 [0.946]	2.057 [1.361]
HH Income (thousands)	-	-	-	-	-	-	166	15.656 [2.003]	-0.644 [2.796]	1.758 [.859]	15.012 [1.950]	2.402 [2.823]
Work	193	0.9384 [0.028]	0.0297 [0.041]	-0.015 [0.040]	0.9682 [0.029]	-0.045 [0.041]	195	0.1818 [0.046]	-0.088 [0.066]	0.0643 [0.065]	0.250 [0.057]	0.1038 [0.080]
<i>Organization of HH Finances</i>												
Joint Control	195	0.6060 [0.059]	0.0033 [0.084]	0.0862 [0.084]	0.6093 [0.060]	0.0829 [0.085]	195	0.7727 [0.055]	-0.100 [0.078]	-0.049 [0.078]	0.6718 [0.056]	0.0512 [0.079]
Control over HH Finances	195	0.1212 [0.035]	-0.011 [0.050]	-0.075 [0.050]	0.1093 [0.036]	-0.063 [0.051]	195	0.1818 [0.051]	0.0213 [0.072]	0.0951 [0.072]	0.2031 [0.051]	0.0737 [0.073]
Control over Savings of HH Income	193	0.1846 [0.048]	0.0810 [0.069]	-0.059 [0.069]	0.2656 [0.049]	-0.140** [0.069]	194	0.0454 [0.024]	0.0170 [0.034]	-0.029 [0.034]	0.0625 [0.024]	-0.046 [0.035]
Some say about work	194	0.8923 [0.043]	-0.001 [0.061]	-0.107* [0.061]	0.8906 [0.043]	-0.106* [0.061]	192	0.3846 [0.060]	0.0280 [0.086]	-0.025 [0.086]	0.4126 [0.061]	-0.053 [0.086]

Table C.2: Order Effects

	Share of Own Endowment			Offer		
	HH Account	Own Account	Spouse's Account	HH Account	Player A	Player B
<i>Correlations between Round and Outcome</i>						
Full Sample	-0.0221	0.0262	0.0004	-0.0304	0.0256	0.0039
Role B	-0.0155	0.0019	0.0207	-0.0177	0.0090	-0.0050
Role A	-0.0287	0.0465	-0.0211	-0.0411	0.0390	0.0123
<i>Correlations between Order and Outcome</i>						
Round 1	0.0003	0.0010	0.0045	0.0000	0.0008	0.0022
Round 2	0.0001	0.0002	0.0013	0.0000	0.0004	0.0032
Round 3	0.0179	0.0045	0.0132	0.0172	0.0168	0.0046
Round 4	0.0042	0.0012	0.0028	0.0050	0.0010	0.0008
Round 5	0.0190	0.0099	0.0090	0.0153	0.0030	0.0198
Round 6	0.0016	0.0007	0.0078	0.0021	0.0001	0.0018
Round 7	0.0108	0.0099	0.0016	0.0102	0.0070	0.0000

Table C.3: Explaining the Probability of Rejection

	Dep. Var: Reject Offer		
	(1)	(2)	(3)
Private Information	-0.004 [0.025]	0.000 [0.026]	-0.006 [0.027]
Reveal	0.024 [0.029]	0.039 [0.030]	0.042 [0.031]
Conceal	0.102** [0.048]	0.118** [0.052]	0.117** [0.051]
Relative Endowments (=Endowi/Endows)	-0.017*** [0.005]	-0.017*** [0.006]	-0.017*** [0.006]
HH Good Share proposed by Spouse	0.000 [0.000]	0.001 [0.000]	0.001 [0.000]
Share kept by Spouse	-0.000 [0.000]	-0.000 [0.001]	0.000 [0.001]
Share kept to Self	0.002** [0.001]	0.002* [0.001]	0.002* [0.001]
HH Good Share offered to Spouse	-0.000 [0.001]	-0.001 [0.001]	-0.001 [0.001]
Coin Flip Outcome (=1 if Heads)	-0.030** [0.014]	-0.033** [0.014]	-0.031** [0.014]
District (=1 if Almora)	0.100*** [0.023]	0.106*** [0.027]	0.116*** [0.037]
Order (=1 if Ascending)	-0.019 [0.023]	-0.021 [0.021]	-0.020 [0.022]
Male (= 1 if Male)		-0.129*** [0.027]	-0.129*** [0.027]
Some School (=1 if up to secondary education)		-0.029 [0.033]	-0.027 [0.033]
No School (=1 if no schooling)		-0.090** [0.042]	-0.092** [0.045]
Observations	2730	2688	2590

Figure C.1: Kernel Density estimates of share towards the HH Account by endowment share.

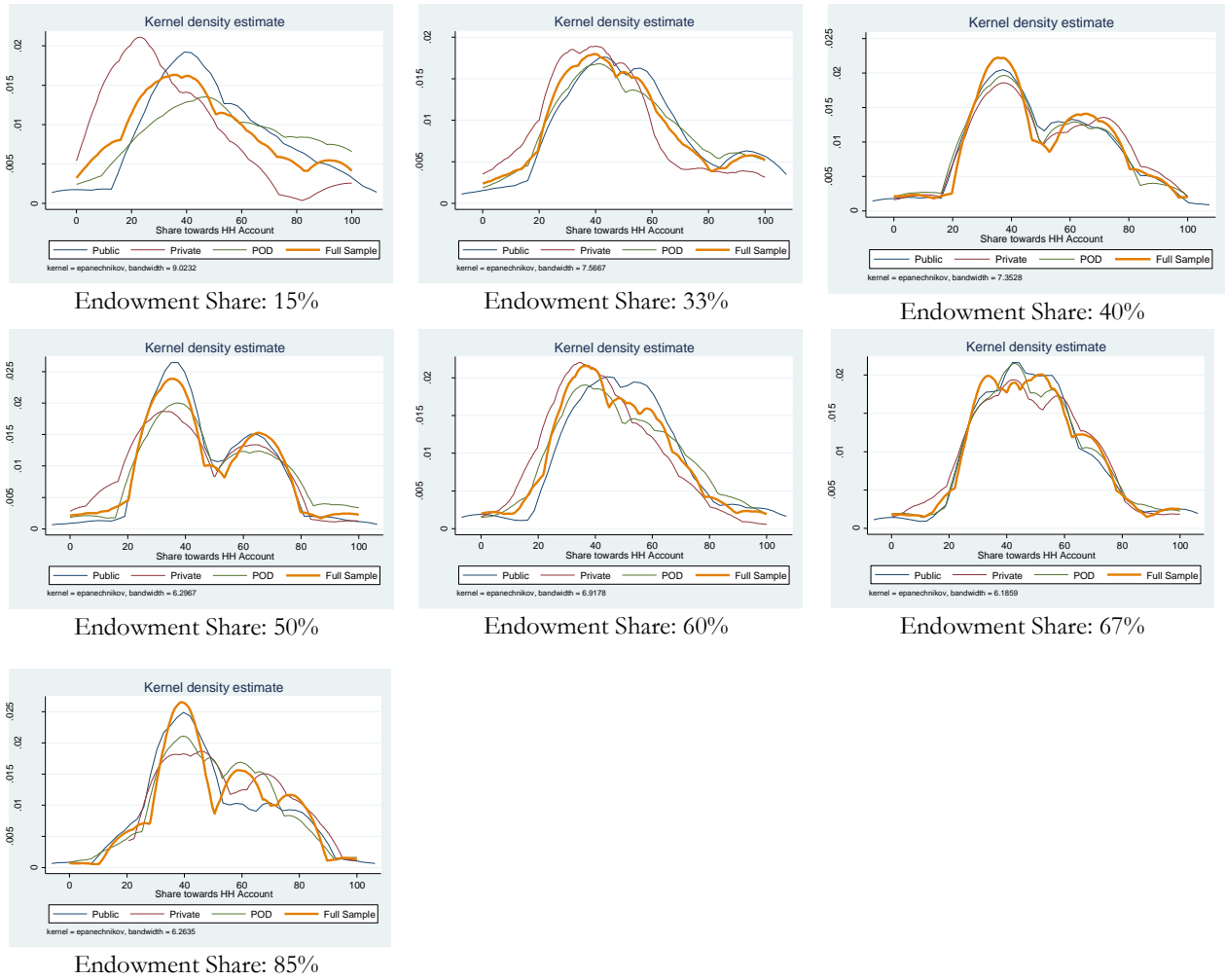


Figure C.2: Kernel Density estimates of Share kept for oneself by endowment share.

