

**What's Yours is Mine, and What's Mine is Mine:
Bargaining Power and Income Concealing between Spouses in India¹**

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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 present results from 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. The endowments and access to information were experimentally varied. Results indicate spouses conceal money 25% of the time when given the opportunity, and spouses who hide do so frequently. The strategic exploitation of information advantages results in efficiency losses that amount up to 24% of average maximum potential earnings. The analysis suggests the mechanism driving the results is an income-hiding motive, and not alternative explanations such as mental accounting or alternative strategic behaviors.

Keywords: income hiding; non-cooperative household bargaining; India; intra-household bargaining; asymmetric information; experiments.

JEL Classification: D13, D82, J12.

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1. Introduction

Models of intra-household decision making often classify behavior within families as either cooperative or non-cooperative. Cooperation implies that information is shared within households, and that couples pool all of their resources to then jointly decide how the money is allocated, resulting in Pareto efficient outcomes (Manser and Brown, 1980; McElroy and Horney, 1981; Browning and Chiappori, 1998). However, the empirical evidence in developing countries is mixed. Rangel and Thomas (2005) in West Africa, Bobonis (2009) and Attanasio and Lechene (2014) in Mexico, and LaFave and Thomas (2014) in Indonesia find evidence in support of a collective (cooperative) household. In contrast, if cooperation breaks down and binding contracts are not enforceable or if monitoring costs under asymmetric information overwhelm potential gains from cooperation, individuals retreat to a non-cooperative equilibrium within marriage (for example, see Lundberg and Pollak, 1993; Carter and Katz, 1997; Chen and Wooley, 2001).

Non-cooperative behavior implies that individuals allocate their own resources to maximize (own) individual wellbeing. In this case, preferences are still interdependent through household public goods (and caring), and their individual budgets can be interdependent if intra-household transfers occur such as housekeeping allowances or gifts. Nonetheless, there are efficiency losses whether the non-cooperative equilibrium within marriage occurs on separate spheres or whether there are intra-spousal transfers. Udry (1996), Duflo and Udry (2004), and Robinson (2012) (as well as Kebede et al. 2013; Munro et al. (2008a; 2008b); Munro et al. 2011; Castilla, 2015; Cochard et al. 2009), find evidence consistent with inefficient allocation within families in a context with perfect information. Unlike the separate spheres within marriage versus cooperative theoretical divide, the empirical findings indicate that spouses share resources via intra-household transfers while being unable to attain efficient outcomes, suggesting that mixed models of intra-household allocation may be more appropriate.

A burgeoning empirical literature has documented that asymmetric information over money exists within households even when family members live under the same roof (Vogler and Pahl, 1994; Pahl, 1983; Pahl, 1990; Chen and Collins, 2015; Castilla, 2011). The difficulties in finding exogenous variation between spouses living under the same roof to examine efficiency in allocations, 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. If spouses are cooperative, asymmetric information is inconsequential as they can either directly or through the expenditure process let each other know about the presence of additional resources. However, recent field experiments in developing countries have found evidence that household members take advantage of opportunities to exploit asymmetric information and this results in efficiency losses (Ashraf, 2009; Ashraf, Field and Lee, 2010; Schaner, 2012; Hoel, 2012; Iversen et al., 2010; Castilla & Walker, (2013a; 2013b)). An exception who found that asymmetric information does not affect allocation decisions between spouses is Mani (2011). Mani's experiments varied the information given to spouses over the way resources were allocated ex-post, in contrast with the rest of the literature with ex-ante asymmetric information. In this paper I show 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 are common knowledge. I test it empirically through a laboratory experiment between established married couples in India.

The field experiment and survey were conducted in Dehradun and Almora districts, in the mountain region of Uttarakhand State, in India among 183 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. 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 daily household income 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 evenly among spouses, while money allocated towards the individual accounts is returned at parity. Thus, the household earnings maximizing strategy is to contribute the entire endowment to the household account.

There were 2 sets of treatments implemented jointly: information and share of endowments controlled by the informed spouse. The total household endowment and the distribution of that endowment between spouses varied across 7 rounds. The information treatment was implemented through a lottery. One randomly chosen spouse was given the opportunity to win 75 additional rupees with 50% probability. Therefore, by varying the share and amount of the household endowment controlled by each spouse, I am also varying the relative size of the lottery prize. There were 3 information treatments: (i) complete information (CI), where the lottery prize in each round is eligible to be allocated towards either of the 3 accounts and the lottery outcome was informed to the uninformed partner; (ii) private information (PI), the outcome of the lottery in each round was kept private from the uninformed partner and thus is placed in the informed spouse's personal account, (iii) private-with-option-to-disclose (POD) treatment, where the recipient of the transfer had the option to disclose or conceal the lottery outcome explicitly from his or her spouse on a round-by-round basis. In the POD treatment, the informed spouse faces a trade-off. If he or she chooses to conceal, the lottery price goes straight into the informed spouse's personal account. If he or she chooses to disclose then the lottery price is eligible to be allocated towards the household account and thus earn interest. Finally, the uninformed spouse was presented with the proposed split and had to decide whether to accept or reject the offer. If rejected, each spouse would earn their individual endowments. In the experiment the lottery generates plausible deniability for individuals that want/have to keep the lottery transfer private.

To ease understanding of the experimental procedure, the accounts were framed in terms of everyday expenses, using examples obtained from the focus group discussions that were conducted prior to the implementation of the experiments. For this reason, I present evidence indicating that choices in the experiment correlate to everyday behavior. For instance, the allocation towards the household account correlates positively and significantly to contributing to pay for children's schooling, and expenditure in utilities. In everyday decisions investment in children is Pareto improving. Likewise, allocations towards the individuals' own accounts correlate with expenditure in personal care and indicators of say over household allocation decisions in the expected directions.

In this paper I extend the literature in several ways. The experimental design allows testing for efficiency explicitly by comparing intra-household allocations between household and

private accounts under three different information environments. The household earnings maximizing strategy is to allocate the entire endowment towards the household account as it earns 50% interest. If households are cooperative this outcome could be attained as they can later negotiate how to allocate a larger amount of resources. The results suggest these households are not cooperative even under perfect information as only 6% allocate their entire endowment towards the household account. Asymmetric information then causes further losses in efficiency as it decreases contributions towards the household account (household public good).

The experimental design allows testing for the partial cooperation hypothesis, where spouses are cooperative with respect to the allocation of observable income, but not necessarily with respect to unobservable income. The empirical evidence, however, suggests households are not fully cooperative with respect to observable resources either, resulting in efficiency losses even under perfect information. Ashraf (2009) suggests that there exists a pre-bargaining stage when spousal earnings are realized. Resources at this stage may or may not be observable by all household members. I show that in the presence of asymmetric information the pre-bargaining stage is not trivial, as individuals may choose to keep unobservable resources hidden. In one of the information treatments the informed spouse is allowed to choose to conceal the lottery transfer from his or her partner. Twenty-five percent of individuals in this treatment choose to keep the transfer private and they do so 77% of the time on average. The econometric results indicate that spouses who win the lottery and choose to conceal behave no different than when they do not win (and asymmetric information is not binding) providing strong evidence of not only the relevance of the pre-bargaining stage, but an income-hiding motive. The experimental treatments also allow the comparison of the allocations of hiding spouses with those who are not allowed to share information. Those in the private information treatment behave no different than those who choose to conceal, suggesting that in the presence of asymmetric information, spouses exploit their strategic advantage to maximize their personal earnings.

Asymmetric information over income and/or allocations between household members has important policy implications. When spouses choose to exploit their information advantages by hiding income, they must allocate resources away from goods that can easily be monitored, which can result in underinvestment in household goods. Child human capital investments, such as education and nutrition, tend to be easily monitored. These investments have important spillover effects in a household's ability to step out of poverty because they increase child

productivity later in life, providing further sources of income diversification to the household (Duflo, (2001); Rosenzweig, (1990)). Further, the rationale for the collection of financial information at the household level in household surveys rests on families sharing information and/or being cooperative. However, when imperfect information flows exist between household members over resources, reporting of expenditures other than one's own is unreliable. Finally, cash transfers are commonly used as policy alleviation instruments. While policy makers can make sure cash transfers are common knowledge, these may loosen constraints over other income sources that are not easily monitored.

2. Experimental Design

The experiment was conducted in Dehradun and Almora districts, in Uttarakhand, India between March and June 2013. The sample consists of 183 established couples, half from Dehradun and the other half from Almora³. Recruiting of subjects was done door-to-door Enumerators knocked, asked if both spouses were home and if they were willing to answer some questions about managing of household finances⁴. In the event that both spouses were home, enumerators allowed them to consult with each other to decide whether they wanted to participate. When only one of them was home, enumerators made an appointment to come back at a time that was convenient for the respondent and his or her spouse. 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. After the experiment had concluded, subjects were surveyed individually by an enumerator of their same gender and in separate rooms for privacy.

Table 1 contains summary statistics on household characteristics for the experimental sample, as well as the India Human Development Survey (IHDS) Uttarakhand subsample and for

³ Out of the original 193 households, 10 had to be withdrawn due to data inputting abnormalities.

⁴ 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 45 minutes for our study?”

India as a whole. The IHDS 2011 – 2013 was conducted around the same time that the experiment data was collected. The experimental sample was recruited door-to-door, thus the IHDS provides a source to examine the representativeness of the sample and to assess the external validity of the findings. The sample⁵ consists of married couples of different ages, caste, and socio-economic backgrounds. Households have on average around 5.5 members (including the respondent), at least one son and one daughter. In many cases the husband’s parents also live with them, which is not uncommon in India.

Table 1: Summary Statistics, Household Characteristics

Variable	Experiment Data	IHDS Uttarakhand	IHDS India	Variable	Experiment Data	IHDS Uttarakhand	IHDS India
	N = a/	N=468	N=42,127		N = a/	N=468	N=42,118
No. HH Members	4.535 (1.833)	5.605 (2.559)	5.453 (2.466)				
No. Boys	1.300 (1.08)	1.100 (1.045)	0.993 (1.006)	Share Exp. Tobacco	2.716 (5.50)	2.100 (2.996)	1.927 (3.138)
No. Girls	1.360 (1.11)	1.057 (1.179)	0.941 (1.075)	Share Exp. Adult Clothes	11.17 (7.97)	3.176 (2.862)	4.402 (2.951)
Scheduled Caste or Tribe (dummy variable)	0.098 (0.29)	0.363 (0.297)	0.295 (0.342)	Share Exp. Personal Care	7.734 (5.91)	5.791 (4.750)	4.740 (4.013)
Other Backwards Caste (dummy variable)	0.208 (0.40)	0.275 (0.447)	0.406 (0.491)	Share Exp. Home Items	1.426 (1.87)	1.632 (4.348)	2.207 (6.135)
Hindu (dummy variable)	0.825 (0.38)	0.839 (0.367)	0.817 (0.385)	Exp. Tobacco b/	2.359 (6.00)	1.872 (3.236)	1.718 (3.485)
Muslim (dummy variable)	0.120 (0.32)	0.139 (0.347)	0.120 (0.325)	Exp. Adult Clothes b/	11.48 (9.31)	3.092 (3.898)	4.701 (8.968)
Own a Bicycle (dummy variable)	0.196 (0.39)	0.405 (0.491)	0.542 (0.498)	Exp. Personal Care b/	7.044 (4.16)	6.819 (14.64)	5.714 (17.76)
Own Motorcycle / scooter (dummy variable)	0.300 (0.45)	0.288 (0.453)	0.287 (0.452)	Exp. Home Items b/	2.035 (8.55)	2.771 (9.416)	4.055 (25.58)
Own Livestock (dummy variable)	1.235 (1.01)	0.527 (0.499)	0.417 (0.493)	Exp. Utilities b/	3.301 (6.51)	8.995 (8.957)	11.21 (18.88)
Own or cultivate land (dummy variable)	0.837 (0.37)	0.575 (0.494)	0.463 (0.498)	Exp. Jewelry b/	5.090 (27.0)	3.259 (16.90)	3.051 (30.69)
Electricity Connection (dummy variable)	0.939 (0.23)	0.950 (0.216)	0.873 (0.332)	Total Expenditure b/	167.627 (203.774)	109.2 (100.1)	127.9 (126.2)

Note: Averages presented, and standard deviations in parentheses. IHDS data obtained from India Human Development Survey 2011-2013.

a/ The number of observations in the experimental sample varies across variables.

b/ Thousands of Indian Rupees, expenditure over the 12 previous months.

The experimental sample is similar to the IHDS sample in the proportion of Hindu and Muslim households, though scheduled castes or tribes are considerably underrepresented. The experiment was conducted among rural households, so it is expected to find that the households

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 Almora the response rate was similar, except for the first two villages where it was 1 in 4 households.

in the sample are more likely to own or cultivate land, as well as to own livestock, relative to the population in Uttarakhand and the national average. Households in the sample are not among the poorest in India; with an average yearly household expenditure of 167 thousand rupees, which is considerably higher than the IHDS. Around 50% of households own a bicycle, motorcycle, or scooter, and most households have access to electricity. Other than the likelihood of owning a bike, the experimental sample is consistent with IHDS.

Table 2 contains summary statistics on individual characteristics, including decision making power of women. In IHDS the household head answered the survey, except for the women's questionnaire, where at least one woman per household, preferably the wife of the household head, was interviewed. Therefore, for information at the individual level, I can only compare the women in my sample to the IHDS women. The average age of women in the experimental sample is roughly the same as in the IHDS data. Men are on average 6 years older than their wives. The couples have been married for 16 years on average, though there is a year difference on average between the answer of husbands relative to wives. There is considerable variation in length of marriage: the youngest couple has been married for 3 years while the oldest for 49. Women tend to have less schooling than men.

Table 2: Summary Statistics by Gender

	Men		Women Only			Men		Women Only	
	Experimental Data	Experimental Data	IHDS Uttarakhand	IHDS India		Experimental Data	Experimental Data	IHDS Uttarakhand	IHDS India
	N = a/	N = a/	N=436	N=42,127		N = a/	N = a/	N=436	N=42,127
Age	40.05 (8.78)	34.75 (8.81)	35.85 (9.715)	36.33 (9.866)	Say over				
					<i>(dummy variables)</i>				
Age 1st marriage	23.41 (4.08)	18.78 (3.40)	18.40 (3.197)	17.83 (3.676)	Work outside the home	0.818 (0.38)	0.390 (0.48)	0.406 (0.491)	0.457 (0.498)
Years Married	15.98 (9.27)	16.70 (9.87)	17.42 (10.95)	18.40 (10.81)	Food to prepare	0.549 (0.49)	0.801 (0.40)	0.880 (0.324)	0.928 (0.257)
Literacy	0.942 (0.23)	0.872 (0.33)	0.628 (0.484)	0.609 (0.487)	How many children to have	0.977 (0.14)	0.939 (0.23)	0.947 (0.222)	0.923 (0.265)
<i>(dummy variable)</i>									
No School	0.093 (0.29)	0.288 (0.45)	0.371 (0.483)	0.383 (0.486)	What do do when sick	0.840 (0.36)	0.791 (0.40)	0.834 (0.371)	0.923 (0.265)
<i>(dummy variable)</i>									
Some School	0.758 (0.42)	0.616 (0.48)	0.525 (0.499)	0.550 (0.497)	What to do when kids sick	0.950 (0.21)	0.885 (0.31)	0.894 (0.307)	0.906 (0.291)
<i>(dummy variable)</i>									
High school or above	0.126 (0.33)	0.061 (0.24)	0.103 (0.304)	0.066 (0.248)	Who children should marry	0.983 (0.12)	0.934 (0.24)	0.873 (0.333)	0.882 (0.322)
<i>(dummy variable)</i>									
Ideal No. Kids	2.136 (0.66)	1.988 (0.29)	2.462 (0.809)	2.406 (0.940)	Purchase major HH good	0.961 (0.19)	0.825 (0.38)	0.773 (0.418)	0.773 (0.418)
Works for Income	0.795 (0.40)	0.158 (0.36)	0.503 (0.501)	0.623 (0.484)	Purchase or sell land	0.950 (0.21)	0.836 (0.37)	0.731 (0.443)	0.746 (0.435)
<i>(dummy variable)</i>									

Note: Averages presented, and standard deviations in parentheses. IHDS data obtained from India Human Development Survey 2011-2013.
a/ The number of observations in the experimental sample varies across variables.

Women in my sample are more likely to be literate than the IHDS women, however, the proportion of women within each education level category is not that different. Men are the main breadwinners in the household as less than 20% of women work outside the home, which is lower than the Uttarakhand and the national average in IHDS. However, in decision-making power, women in the sample are very similar to the IHDS women. For instance, responses to indicators on say over the ability to work outside the home, how many children to have, purchasing major household goods, and land seem to be in line with IHDS. Further, women's age at first marriage is also the same as in the IHDS sample. Overall, the experimental sample is not different from the Uttarakhand or national averages in observable characteristics other than having a higher purchasing power and the underrepresentation of scheduled castes and tribes (which are likely highly correlated).

Experimental Protocol and Tasks:

Upon agreement to participate, each spouse was asked to join an enumerator of his or her own gender in separate rooms⁶. 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. Details on the script used by enumerators are in Appendix A. Each household was randomly assigned to an information treatment: (i) complete (CI), (ii) private (PI) or (iii) private-with-the-option to disclose (POD)⁷. The experimenter outlined the rules of the experiment and the tasks involved. Each spouse played one practice round, was encouraged to ask clarifying questions, and experimenters verified the tasks were understood through specific questions. 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 informed (A) or uninformed (B).

⁶ The households interviewed are poor and whenever there was only one room in the house enumerators took the wife inside and the husband outside to conduct the experiment and survey.

⁷ The information treatments in the design are most similar to Jakiela and Ozier, 2015, though the strategies are different.

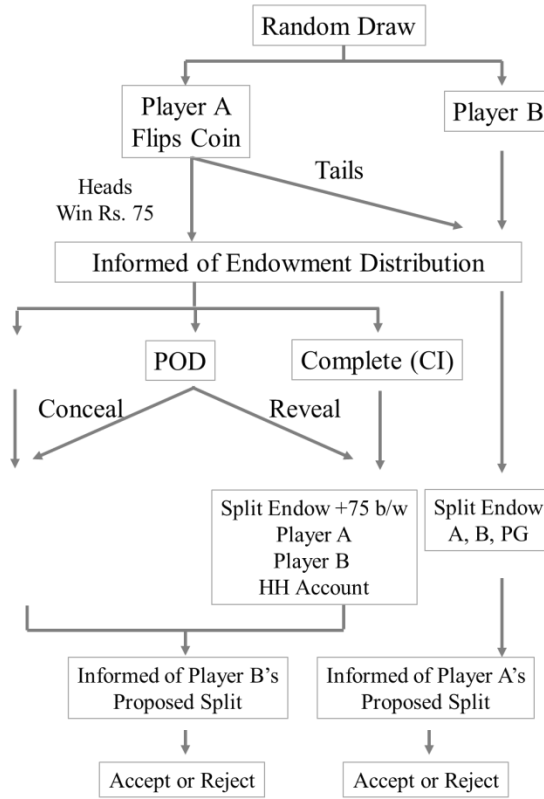
Participants' tasks involved playing a modified version of a public goods game. Spouses were first informed of their own (ω_i) and their spouse's (ω_j) endowment. The total household endowment (sum of both spouses' endowments) and the distribution of that endowment between spouses were varied across the 7 decisions (rounds). The informed spouse (player A) was given the opportunity to play a lottery with 50% chance of winning 75 additional rupees. The uninformed spouse (player B) was told the outcome of the lottery only in the complete information treatment and when their partners chose to reveal, otherwise the outcome was kept private. After the lottery, 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_k); (ii) spouse's account (x_j); and (iii) household account (q). The different accounts were put in context using examples of expenditures we had found through the focus group discussions (and field workers experience) to be in the personal or household expenditure categories⁸.

The resources allocated towards the household account (public good) earned 50% interest and divided 50:50, whereas the resources in each spouse's private accounts were paid at parity. The experimenters with each spouse submitted the proposed split to each other and presented the proposed splits one-at-a-time to the other spouse, who then decided whether to accept or reject them. If the offer was accepted, one round was chosen at random for each spouse to be paid; if the offer was rejected, each spouse walked away with his or her individual endowment from a randomly chosen round⁹. No feedback was allowed as all offers were made initially by each individual, without giving the other spouse the opportunity to accept or reject them before the next offer was made. At the end of the session subjects answered a survey and then were paid.

⁸ 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.

⁹ If the die roll was equal to 1, the largest payment between decision 1 and 7 was paid. In the remaining cases, the roll of the die indicated the round to be paid.

Figure 1: Timeline of Experiment



Experimental Treatments:

The experimental design consisted of 2 sets of treatments implemented jointly: (1) the information environment is a between-couple treatment, while (2) endowment distribution is a within-couple treatment. Across all information treatments, the informed spouse (player A) flipped a coin. If heads, he or she won Rs. 75, if Tails Rs. 0. In all cases the uninformed spouse (player B) knew there was a 50% probability that her partner got a Rs. 75 prize. In the POD treatment, the informed player stated what he or she wanted to do (reveal or conceal) after observing whether she won the additional transfer (flipping the coin). The informed player was told that if the prize was concealed it would go directly into his or her private account and it was not 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 informed about the lottery outcomes¹⁰. Thus a spouse that wins additional money faces a

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

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 CI 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 and the proposed split excluded the additional Rs. 75 in rounds where Player A won the lottery. In the POD treatment, if the individual chose to reveal the lottery outcome, experimenters would proceed as in the CI treatment, and if they chose to conceal they proceeded as in the PI treatment.

Experimental subjects played 7 rounds where the total household endowment (sum of both spouses' endowments), the amounts and the share controlled of that endowment by each spouse were varied across rounds. The game implied high stakes as the household had the opportunity to win up to Rs. 562 (when not winning the lottery) and up to Rs. 675 when winning the lottery) if they allocated their entire endowment to the household account (excluding lottery transfers), equivalent to 6.6% and 7.9% of average household income in the month prior to the experiment respectively. The order of tasks was randomly chosen to be either ascending or descending in Player A's share of the household endowment.

Winning the lottery increases the share controlled by the informed spouse (player A) by 7 to 17 percentage points. The distribution of endowments between spouses across rounds were set such that, combined with the lottery, a ceteris-paribus comparison of allocations across information treatments is allowed which could not 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 amounts and shares are constructed such that there are spouses in all

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.

four categories who have the same (within 3 percentage points) share of the household endowment. Table 3 contains the endowment distributions.

Table 3: Distribution of Endowments

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

^{1/} Amounts in Indian Rupees.

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. Spouses proposed splits of their own endowments and there was no feedback, 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 final 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.

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 B.1 in Appendix B I present the results and it is evident that there are no order effects.

Further, the main treatment of interest is the information environment and that was implemented as a between-couple design.

Balance of Treatment:

The balance of treatment statistics from the survey are presented in Tables B.2 and B.3 in Appendix B. It is clear that internal validity was attained in most cases, except for those with less than high school education; overrepresentation of 13% of men in the PI treatment and underrepresentation of women in both PI and POD relative to CI treatment. The indicators of influence over decisions to work, what to wear, etc, are balanced among women across treatments. For men there are some differences, but in general men influence all decisions at a proportion of 88% or above, implying very little variation anyway. In the regression results that follow, I control for these differences through individual fixed-effects.

3. Experimental Outcomes

The experiment is a combination of a public goods and an ultimatum games where each individual chooses how much to contribute towards the household account, how much to keep for herself, and how much to transfer directly to her partner. The proposed splits were then informed to the respondent's partner and he or she decided whether to accept or reject the offer. The Subgame Perfect Nash Equilibrium is for the proposer to allocate her entire endowment to her own account and for respondent to reject any offer that contains a zero allocation towards the HH account (and/or the respondent's own account), and as a result spouses earn their outside option (aka. their endowments). In contrast, the household earnings maximizing strategy is for both spouses to allocate the entire endowment towards the household account because it earns interest, and then figure out how to split the money between them and/or how to spend the money after the experiment is over.

The first notable result is that spouses allocate their entire endowment to the household account only in 3.75% (uninformed) and in 6.56% (informed) of decisions, implying the couple earned less than the maximum possible earnings. Under complete information, when spouses reveal, and when asymmetric information is not binding (PI and conceal without winning the

lottery) households fail to earn on average about Rs. 75 out of the Rs. 450¹¹ average maximum potential earnings (equivalent to 16%). When spouses in the informed role win the lottery, household allocative inefficiency increases across all information treatments, particularly among households where spouses conceal who earn Rs. 107 equivalent to 24% of the average maximum potential earnings. Interestingly, even when spouses could indirectly share money with their partners through the household account which earns interest (and is earnings maximizing) and is split evenly, in about 6.17% (uninformed) and 15.77% (informed) of decisions spouses allocate money towards their partner's account directly. The results are presented in Table 4.

Table 4: Summary of Sharing between Spouses

Information Treatment	Decisions Allocating 0% to Spouse					Decisions allocating 100% to HH			
	Total	Uninformed Spouse		Informed Spouse		Uninformed Spouse		Informed Spouse	
		N	%	N	%	N	%	N	%
CI	420	27	6.43	64	15.24	14	3.33	22	5.24
PI	427	23	5.39	54	12.65	16	3.75	25	5.85
POD	434	29	6.68	84	19.35	18	4.15	37	8.53
Total	1,281	79	6.17	202	15.77	48	3.75	84	6.56

Note: Frequencies and percent frequencies presented.

One third of the couples were randomly given the option to reveal when they win the lottery or to conceal the outcome. Spouses in this treatment (POD) 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. Concealing is costly because the lottery transfer is not eligible to be allocated towards the household account and thus cannot earn interest. Overall, 25% of all eligible decisions made by individuals in the POD treatment were concealed. Concealing was concentrated in 20 different households, 12 of which had women in the informed role. On average, each individual chose to hide on 2.8 out of the 3 to 4 (out of a total of 7) decisions when they won the lottery, resulting in an average propensity to hide of 77%. In summary, when given the opportunity to hide money from their spouses, a non-trivial percentage of individuals choose to do so at a non-trivial rate given the high propensity to hide.

¹¹ The maximum earnings differ across rounds due to differences in the total household endowment.

Table 5: Concealing Frequency

	Husband		Wife		Total	
	Freq.	%	Freq.	%	Freq.	%
<i>Private with Option to Disclose (# of decisions)</i>						
# Win Lottery	105	50.00	124	55.36	229	52.76
Total	210		224		434	
<i>Choice when Win Lottery</i>						
Reveal	81	77.14	91	73.39	172	75.11
Conceal	24	22.86	33	26.61	57	24.89
Avg. Concealing Decisions p/HH	3.00		2.75		2.85	
HH who Conceal	8	26.67	12	37.50	20	32.26
Total HH in POD Treatment	30		32		62	
Propensity to Conceal	85.71		70.97		77.16	

Table 6 contains a summary of the amounts and shares of each spouse's endowment that was placed into each account by information status (role), information treatment, and lottery outcome. To construct the placebo sample of concealers and revealers when individuals do not win the lottery I use the following criteria: an individual in the POD treatment is coded as concealer if he or she chose to conceal in at least one round when winning the lottery. Revealing spouses overcompensate when they do not win the lottery by allocating a larger share towards the household account and less to their own account (and their partners' account) on average relative to when they do. Concealers, in contrast, adjust the amount of resources net-of-the-lottery-transfer they keep for themselves upwards. When revealing spouses win, they distribute the lottery transfer proportionally towards each account, while concealing spouses do not. Actually, when winning the lottery concealers allocate resources very similarly on average to those who are forced to keep the lottery transfer private.

Concealing spouses are expected to keep more money for themselves as they are explicitly choosing to hide their winnings from their partner. Those in the private information treatment are randomly put in a situation where they are forced to keep the lottery earnings for themselves and are not able to inform their partners. Note that subjects make allocation decisions after finding out the lottery outcome, thus it is possible for them to reduce the amount kept for themselves out of the original endowment knowing they have additional Rs. 75 going into their own account. Thus, knowing they have Rs. 75 in their own account already could allow them to shift resources towards larger contribution towards the household account out of the endowment. Nonetheless, concealers and individuals in the private information treatment do not adjust the amounts net-of-the-transfer (and therefore shares) they keep in their own accounts downwards

when they win relative to when they do not win. This result is robust even when restricting the results to decisions where the endowment of the spouse in the informed role is at least equal to Rs. 75, aka. the amount of the transfer¹².

Table 6: Summary statistics of Intra-Household allocation by Information treatment

	Uninformed Spouse			Informed Spouse							
				Do not Win				Win			
	CI	PI	POD	CI	PI	POD-Reveal	POD-Conceal	CI	PI	POD-Reveal	POD-Conceal
Offer to Self (excluding hidden transfer)	-	-	-	-	-	-	-	-	34.721 (31.962)	-	48.896 (41.601)
Amount to Own Account	43.047 (26.920)	41.393 (26.772)	43.076 (28.950)	36.328 (30.522)	39.716 (32.599)	33.415 (27.684)	45.317 (35.603)	61.951 (36.853)	109.72 (31.962)	56.546 (35.032)	104.415 (45.954)
Amount to Spouse's Account	38.166 (26.091)	36.007 (26.360)	36.474 (28.364)	27.500 (26.378)	31.932 (25.747)	27.684 (27.821)	25.238 (20.760)	46.776 (31.251)	33.648 (27.570)	44.901 (36.227)	33.441 (29.326)
Amount to HH Account	79.500 (40.763)	83.313 (42.843)	81.163 (42.705)	69.140 (45.420)	65.824 (43.015)	79.260 (47.043)	68.968 (42.947)	110.87 (52.384)	72.424 (46.039)	112.105 (55.210)	76.233 (47.490)
Share to Self (Amount Own Acc./Own Endow)	26.728 (15.140)	25.754 (14.998)	26.846 (16.907)	28.134 (19.525)	28.741 (18.932)	23.838 (16.792)	31.216 (20.344)	27.848 (14.200)	53.472 (14.988)	26.379 (14.722)	50.423 (20.142)
Share to Spouse (Amount Sp Acc./Own Endow)	23.438 (13.978)	22.522 (15.933)	22.525 (15.396)	20.018 (14.995)	23.221 (15.443)	18.768 (16.162)	18.035 (12.899)	21.648 (13.898)	14.576 (10.278)	20.429 (14.528)	14.873 (12.576)
HH Good Share (Amount HH Acc./Own Endow)	49.832 (21.611)	51.722 (21.426)	50.627 (22.470)	51.847 (23.546)	48.036 (22.092)	57.393 (24.687)	50.748 (23.304)	50.502 (19.258)	31.950 (15.444)	53.191 (21.649)	34.703 (18.136)
Rejected Offers (%)	15.24	12.41	14.17	12.5	15.46	16.9	17.46	9.21	12.45	12.5	16.88
N	420	427	434	192	194	142	63	228	233	152	77

Note: Averages presented, and standard deviations in parentheses.

There are no statistically significant differences on the proportions allocated towards each account between spouses in the uninformed role and their partners in the informed role when they do not win except for the POD condition. There is also evidence that the information condition does not result in differences on average in the shares allocated towards each account when asymmetric information is not binding (when spouses are in the uninformed role or those on the informed role do not win the lottery) except for those in the POD condition who choose to reveal. Among uninformed spouses and informed spouses who do not win in the PI and CI conditions, the proportion of the endowment placed into the household account is statistically equal to 50%¹³. It seems as if spouses in the uninformed role split the other half of their endowments evenly between their own account and their partner's account, which suggests that spouses may be seeking a 50 – 50 split of household earnings. If this was the case, the most efficient way to achieve an equal split while maximizing household earnings would be to place

¹² Results available upon request.

¹³ For uninformed spouses: Test statistic = 1.2 (p-value = 0.2306); for informed spouses: test statistic = 1.087 (p-value = 0.278) for CI treatment, and Test Statistic = -1.238 (p-value = 0.217) for PI treatment.

the entire endowment into the household account which we know was not the case. Nonetheless, the null hypothesis of equal split of resources (and thus earnings) between spouses is rejected at the 1% significance level¹⁴. On average, about 15% of offers are rejected. In Almora, subjects were asked for the reason to reject and the most frequent response was “reject because household expenditure should be higher”. Appendix B contains descriptive statistics on the distribution of allocations by share of endowments (Figure B.1 and B.2 for informed spouses, and Figure B.3 for uninformed spouses).

Spousal-Pairs behavior

In this section, I examine whether the behavior of spouses in the same couple is similar across roles and information treatments. Given that spouses in different roles are endowed with different amounts of money, for this analysis I present tests of differences in median shares of the endowments allocated towards each account and their distributions. Additionally, I conducted tests of differences in shares allocated towards each account within couples. The behavior of couples in the complete information treatment is statistically identical with regards to the shares kept for the decision-maker and the contribution towards the household account, both at the median and over the entire distribution. Furthermore, shares allocated towards both the household and the decision-maker’s accounts within couples are statistically identical regardless of whether the informed spouse won or did not win the lottery transfer. Among households where the informed spouse chose to reveal in all decisions, the median shares allocated towards all accounts and spousal-pairs are statistically equivalent when comparing spouses in the uninformed and informed roles whether they win the lottery or not (except for the share towards each partner’s accounts). However, the distributions of the share towards the household and the decision-maker’s accounts differ. Table 7 contains the p-values of the tests, and the kernel density estimates are presented in Appendix B, Figure B.4.

Interestingly, when informed spouses do not win the lottery and are in the private information treatment or conceal, the spousal-pairs and median shares allocated towards all accounts are statistically equal to those chosen by the uninformed spouse. The distributions, particularly the share kept in their own accounts differ, even when asymmetric information is not binding. As expected,

¹⁴ Test statistic = 2.225 (p-value = 0.027) for CI treatment, and Test Statistic = 2.753 (p-value = 0.006) for PI treatment.

when asymmetric information is binding, I reject the hypotheses that medians, spousal-pairs, and the distributions of the shares allocated towards all accounts are equal. In this case, uninformed spouses are more cooperative making larger contributions towards the household account and keeping a smaller share for themselves. These results suggest that the observed non-cooperative behavior is not driven by baseline differences in the quality of the marital matches, but indeed to responses to asymmetric information. In summary, when given the opportunity, individuals even in married couples will seek to exploit information advantages to maximize individual earnings, even when it is costly.

Table 7: Tests of Differences in Median and Distributions across Spousal Pairs

Treatment	Difference in Medians (Mann-Whitney Test)			Difference in Distributions (Epps-Singleton Test)			Difference in Distributions (Wilcoxon Rank Test)		
	Share	Share	Share	Share	Share	Share	Share	Share	Share
	HH	Self	Spouse	HH	Self	Spouse	HH	Self	Spouse
<i>Complete Information - Uninformed vs ...</i>									
Informed who Win	0.776	0.121	0.026	0.764	0.447	0.064	0.621	0.387	0.169
Informed who do not Win	0.413	0.646	0.002	0.401	0.238	0.029	0.345	0.346	0.007
<i>Revealers - Uninformed vs ...</i>									
Informed who Win	0.868	0.191	0.784	0.001	0.043	0.261	0.192	0.326	0.005
Informed who do not Win	0.365	0.707	0.402	0.010	0.218	0.159	0.120	0.480	0.352
<i>Private Information - Uninformed vs ...</i>									
Informed who Win	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Informed who do not Win	0.098	0.397	0.931	0.120	0.016	0.852	0.120	0.334	0.782
<i>Concealers - Uninformed vs ...</i>									
Informed who Win	0.001	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.002
Informed who do not Win	0.144	0.931	0.004	0.011	0.032	0.030	0.159	0.810	0.001

Note: *P-values* presented. Mann-Whitney Test: Ho. Medians are equal; Epps-Singleton: Ho. Distributions are equal; Wilcoxon Sign Rank Test: Ho. Differences within a spousal pair are equal to zero.

Correlation to Everyday Behavior

Had the accounts not been framed in the context of goods that could be purchased with the allotted money, this would be sufficient evidence of non-cooperative behavior and inefficient intra-household allocation. However, in the experiment the accounts were framed in the context of goods participants consume on a regular basis to ease understanding. For instance, the women's own account was framed as personal expenses such as *bindi*, bangles, lipstick, clothing, etc. while the husband's account was framed as expenditures such as *bidhi*, cigarette, tobacco, clothing, etc. The public good account was framed as household expenses such as daily food ration, vegetables, children expenditures, and/or school fees. In Table 8, I present correlations

between answers from the survey and the experimental outcomes for the full sample and splitting it by gender.

The share allocated towards the household account positively correlates with variables that constitute household public goods such as contributing to pay for children’s schooling and the share of total household expenditure on utilities. Expenditure in lottery tickets is an indicator of the inefficient allocation of household resources. Households that spend money on lottery tickets allocate a significantly smaller proportion of endowments towards the household account, and a larger proportion to the individual’s own account, which translates into more inefficient allocations.

Table 8: Correlation between Experimental Outcomes and Responses from Survey

<i>Dependent Variable:</i> Share of Own Endowment into ...	Full Sample			Husbands			Wives		
	N	HH Account	Own Account	N	HH Account	Own Account	N	HH Account	Own Account
Child Schooling (=1 if pays for child schooling)	2548	6.138*** [2.277]	-3.996** [1.852]	1267	4.841 [3.023]	-5.311** [2.583]	1281	6.963** [3.319]	-2.406 [2.375]
Expenditure Share on Utilities (=Exp. Utilities / Total HH Exp)	2562	0.339*** [0.119]	-0.345*** [0.079]	1281	0.140 [0.188]	-0.307** [0.147]	1281	0.518*** [0.148]	-0.375*** [0.098]
Expenditure Share on Assets (=Exp. Assets / Total HH Exp)	2562	-0.003 [0.054]	0.059 [0.048]	1281	0.018 [0.083]	0.064 [0.074]	1281	-0.040 [0.063]	0.066 [0.065]
Expenditure Share on Personal Care (=Exp. Pers Care / Total Own Exp)	2562	0.330*** [0.080]	-0.178*** [0.060]	1281	0.221** [0.099]	-0.106* [0.063]	1281	0.631*** [0.175]	-0.354** [0.149]
Expenditure Share on Jewelry (=Exp. Jewelry / Total Own Exp)	2562	0.066 [0.066]	-0.067 [0.054]	1281	0.187** [0.083]	-0.149*** [0.047]	1281	-0.047 [0.071]	-0.030 [0.078]
Expenditure Share on Lottery Tickets (=Exp. Lott Tickets / Total Own Exp)	2562	-0.262*** [0.083]	0.177** [0.074]	1281	-0.166*** [0.056]	0.109*** [0.035]	1281	-0.411*** [0.078]	0.305*** [0.060]
Decision to Work for Income (=1 if influences decision)	-	-	-	1274	-0.906 [3.045]	0.151 [2.621]	1274	-6.054*** [2.227]	1.899 [1.845]
Own Fertility Decisions (=1 if influences decision)	-	-	-	1267	-5.670 [4.627]	3.139 [3.567]	1281	3.007 [3.215]	-5.449** [2.640]
Decision over what Clothes to Wear (=1 if influences decision)	-	-	-	1274	3.468 [4.000]	-2.550 [3.808]	1281	9.680*** [3.540]	-7.063*** [2.521]
Decision on Major HH Purchases (=1 if influences decision)	-	-	-	1267	2.261 [3.889]	-1.827 [2.689]	1281	5.423** [2.668]	-1.093 [2.321]
Decision to Purchase/Sell Land (=1 if influences decision)	-	-	-	1267	3.952 [4.677]	-3.507 [3.307]	1239	5.839* [3.072]	-1.729 [2.598]
Joint Control over HH Finances (= dummy variable)	-	-	-	1281	-0.431 [2.475]	1.380 [1.739]	1239	3.237 [2.527]	-1.966 [1.993]
Husband Controls HH Finances (= dummy variable)	-	-	-	1281	-1.635 [2.703]	-0.845 [1.870]	1239	-5.113 [3.833]	3.196 [3.004]
Wife Controls HH Finances (= dummy variable)	-	-	-	1281	-0.234 [2.617]	-1.640 [1.817]	1239	3.295 [2.915]	-5.852*** [1.926]

Note: Results from OLS regressions on each variable individually controlling for number of daughters, sons, round fixed-effects, total household endowment, own share of household endowment, role, indicator of ascending or descending amounts, and treatment. Clustered standard errors at the household level in parenthesis. *** p-value<0.01, ** p-value<0.05, * p-value<0.10

As mentioned earlier, there is almost no variation on the indicators on say over decisions among men, so it is not surprising to find no correlation between the experimental outcomes and these indicators. For women, however, there are interesting results. Women who influence whether they can work for income allocate 6 percentage points less of their endowments towards the household account. This likely reflects these women already contribute resources towards the household. When women have more bargaining power, such as being able to decide what clothes to wear, how many children to have, and who control household finances, contribute less towards their own account. The share of individual expenditure on personal care is an indicator of bargaining power and increased control over resources, thus it is not surprising to find that it correlates positively with allocations towards the household account and negatively with the share of endowments kept in the individual's own account. Increased bargaining power is consistent with the experimental results as women do not have to incur efficiency losses in order to maintain control over household resources and the way they are spent. It is clear from the results presented in Table 8 that individual spouses not only understood the game but made allocation decisions in the experiment that are consistent with everyday behavior. In the following section I provide further evidence on the mechanisms behind the observed allocations which suggest non-cooperative behavior in the form of income-hiding.

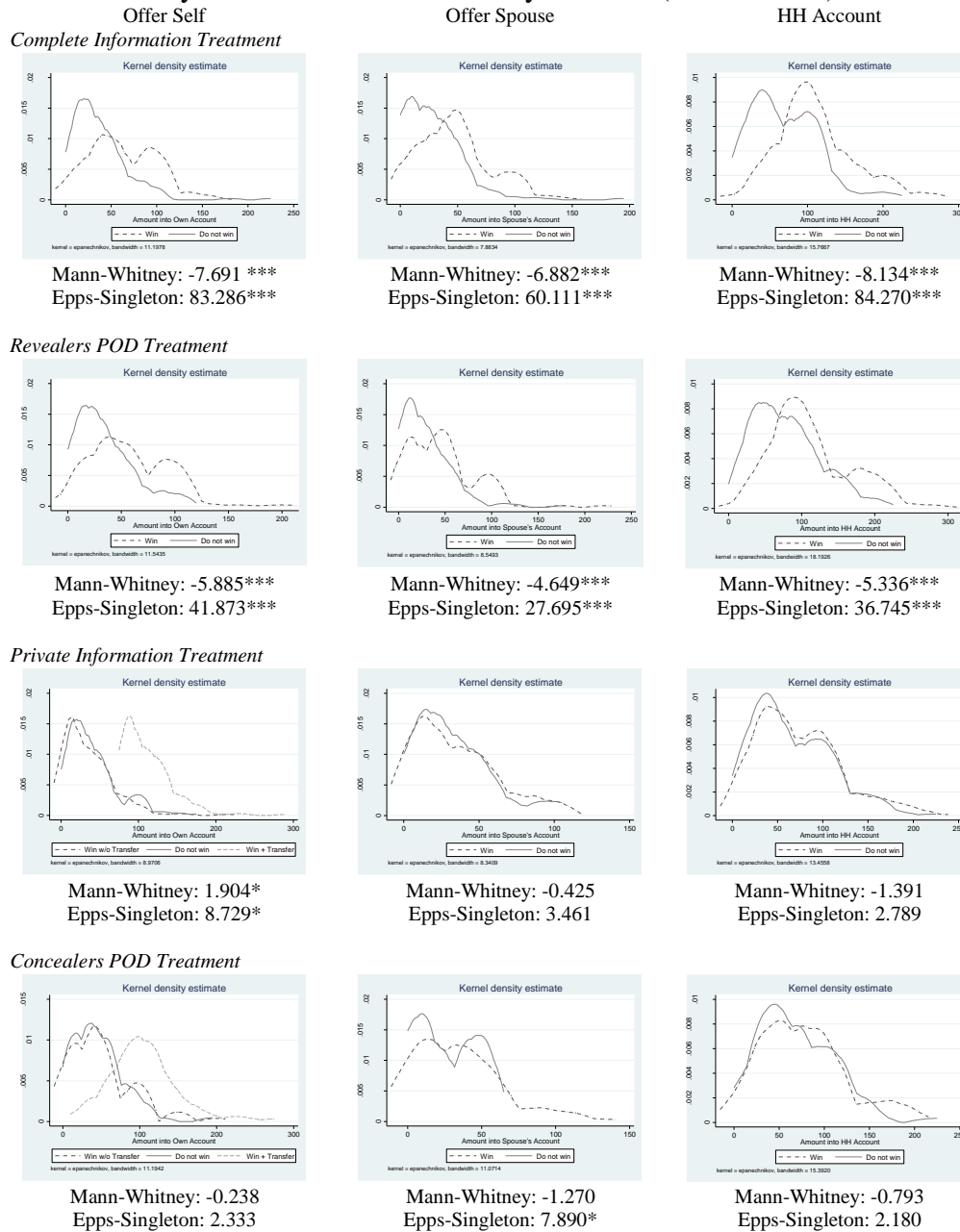
4. Income-Hiding between Spouses

In order for income hiding to be feasible there must be some money and at least one allocation alternative that are unobserved by the hiding spouse's partner to avoid detection. In the experiment the lottery generates plausible deniability for individuals that want/have to keep the lottery transfer private. Further, it provides an allocation that is not perfectly observed by the uninformed partner as only the amount placed in the informed spouse's own account net of the lottery transfer is presented to her partner to decide whether to accept or reject the offers. In deciding to reveal or hide money, the informed spouse faces a trade-off between increasing her private earnings (own account) and maximizing household earnings where she would have to negotiate with her partner over how to spend the money after the experiment.

Figure 2 contains kernel density estimates of the amounts allocated by the informed spouse to each account across information treatments. Recall, to construct the placebo sample of concealers and revealers when individuals do not win the lottery I use once more the following criteria: an individual in the POD treatment is coded as concealer if he or she chose to conceal in at least one round when winning the lottery. The first two panels illustrate the amounts allocated towards each account when the informed spouse wins versus when she does not win the lottery under perfect information (either by random assignment or choice). As it would be expected when the household receives a monetary transfer, the distribution of allocations towards the household account and her own account shift right when the individual wins and these differences are statistically significant.

The next two panels illustrate the distribution of allocations towards each account when the informed spouse wins and does not win the lottery under private information (either chosen or exogenously imposed), with the addition of the allocation towards her own account net of the lottery transfer. The purpose of adding this variable is to examine whether individuals in the private information treatment and those who conceal adjust allocations towards their own account downwards knowing that if they won the lottery they already have Rs. 75 in their own account. In both information treatments where the lottery transfer is kept private from the uninformed spouse there are no differences in the distribution of money allocated towards the informed spouse's account net of the lottery transfer. This behavior is interesting because the amount net of the transfer is the offer that the uninformed spouse will receive to decide to accept or reject. The informed spouse behaves as if the transfer had not occurred, thus deterring suspicion that additional resources were available to her. Even more interesting is the behavior by spouses in the private information treatment who 90% of the time behave as if they had not won the lottery even though, unlike the concealing spouses, they did not choose the information environment. Therefore, even when individuals do not explicitly choose to conceal money, they will behave non-cooperatively when given the opportunity, for instance, when a monetary transfer is unobserved by their partner.

Figure 2: Kernel Density estimates of Allocations by Account (test statistics).



It is possible that winning the lottery gives the winner a sense of merit, in which case in their mental account the lottery transfer is labeled as “my own” and thus not to be shared, and the endowments are to be allocated between different accounts. The rightward shift in the kernel density estimates of the amounts allocated towards the informed spouse’s and household accounts when there is perfect information is inconsistent with the mental accounting explanation; individuals distribute the transfer between the three alternatives. Additionally, it is

implausible that mental accounting varies across different information treatments. Nonetheless, the variation in the endowments allows testing for equality of allocations of the informed spouse conditional on having in hand the same amount of money in a subset of cases: when the informed spouse wins the lottery and has Rs. 75 as endowment compared to when the informed spouse has an endowment of Rs. 150; when the informed spouse wins the lottery and is endowed with Rs. 105 compared to when the informed spouse has an endowment of Rs. 180; and when the informed spouse wins the lottery and is endowed with Rs. 150 compared to when the informed spouse is endowed with Rs. 225. I tested the mean, median, and distributions of the allocations towards the household, own, and spouse's account when the informed spouses have the same amount of money in hand. In all cases, the allocations under perfect information are statistically equal across winning, versus not winning the lottery, while they can sometimes differ under the private information and concealing conditions. The kernel density estimates and tests are presented in Appendix B, Figure B.5.

It is also possible that spouses in the private information treatment and those who choose to conceal choose similar allocations when they win and do not win the lottery to avoid seeming ungenerous when they do not win and risking the proposed split being rejected by their spouse. The results in Figure 1 also allow discarding this alternative explanation. When spouses win the lottery and choose to reveal, the distribution of the amounts allocated towards their own account shifts downwards, and the distribution of amounts towards the household account shifts upwards. If the risk of looking ungenerous is driving allocation decisions, then spouses in the POD treatment who choose to reveal (and those in the CI condition) would not go out of their way to signal that they won at the risk of generating doubt about the truthful revelation in the rounds were they do not win.

The kernel densities in Figure 1 are unconditional, thus it is possible that the observed differences under complete information, and lack of differences under private information, are driven by income effects or any other source of unobserved individual heterogeneity. In what follows, I use regression analysis to quantify the causal effect of asymmetric information on allocations, and to examine income-hiding. The empirical strategy is a difference-in-difference estimation. The first difference is across rounds were the individual won the lottery (Rs. 75 transfer) or not which was randomly determined through a coin toss. The second difference is across information treatments. The random draw allows testing for differences in allocations of

the same individual within an information treatment, when asymmetric information is not binding (did not win lottery transfer) relative to when it is (when winning lottery transfer). The endowment amounts and shares were carefully chosen to allow for ceteris paribus comparisons across information treatments and to ensure the differences in behavior cannot be attributed to endowment (income) effects.

$$\left(\frac{q_{k,i,r}}{\omega_{i,r}}\right) = \beta_{1,k}\Delta s_{i,r} + \beta_{2,k}s_{i,r} + \beta_{3,k}\omega_{h,r} + \rho_k I_{i,r} + \sum_{j=1}^3 \delta_{j,k}^g T_h^j + \sum_{j=1}^3 [\delta_{1,j,k} T_h^j \times I_{i,r} + \delta_{0,j,k} T_h^j \times (1 - I_{i,r})] + \sum_{r=1}^7 \sigma_r + \sum_{i=1}^n \tau_i + \varepsilon_{k,i,r} \quad (1)$$

where $q_{k,i,r}$ is the share of spouse i 's endowment allocated towards good/account k in round r ; $\Delta s_{i,r}^A$ = the change in the informed spouse's (role A) share of the household endowment if she wins the lottery; $s_{i,r}^A$ = the share of the household endowment controlled by the informed spouse (role A); $\omega_{h,r}$ is the total household endowment in round r ; $I_{i,r}$ is an indicator variable equal to 1 if spouse i wins the Rs. 75 in round r ; T_h^j is an indicator variable equal to 1 when household h is in information treatment j where $j \in \{PI, CI, POD\}$; $\sum_{r=1}^7 \sigma_r$ are round fixed-effects. To further control for unobserved individual characteristics that individual spouses bring into the experiment, individual fixed-effects $\sum_{i=1}^n \tau_i$ are also included in the estimation.

Table 9 contains the results of estimating equation (1) on all allocations by the informed spouse using fixed effects. Specification (1) is estimated using a subsample that excludes individuals in the POD treatment, specification (2) includes individuals in all three information treatments, and specification (3) allows for identification of revealers and concealers within the POD treatment. Specification (2) and (3) provide different information as the choice to conceal is endogenous, and the effect of the POD treatment averages the behavior of revealers and concealers in specification (2). Private information increases the share allocated towards the individual's own account, and decreases the shares towards the household account and her partner's account. Providing individuals with the option to reveal or conceal the lottery outcome causes a statistically significant decrease in the share allocated towards the household account, an increase in the share placed into the individual's own account, and no effect on the share towards her spouse's account. The magnitudes of the effect of the POD treatment are significantly smaller in absolute value than the effect of private information. This is not surprising as the effect of the POD treatment includes the behavior of revealers which is more likely to parallel the average behavior of individuals in the complete information treatment.

In specification (3), once I allow for differentiation of concealing and/or revealing spouse-rounds, it is clear that the decrease in the allocation towards the household account in the POD treatment is driven by concealers (likewise for the increase in the share placed in the informed spouse's own account). I fail to reject that the average effect of private information on the household good and the informed spouse's personal accounts are statistically equal to the effect of choosing to conceal. The proportion of resources placed into the informed spouse's partner's account is adjusted downwards when individuals in the private information and/or concealers win the lottery, with concealers showing a smaller decrease. Concealers seem to exhibit guilt which translates into a smaller decrease in the share of resources given to their spouse¹⁵. Table B.4 in Appendix B contains the results on Tables 8 and 9 using amounts instead of shares of own endowment which yield consistent results.

Table 9: Effect of Information Treatments on Intra-Household Allocation

	Share to HH Good			Share to Self			Share to Spouse		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Win Coin Toss (=1 if won Rs 75)	9.617** [3.794]	8.056** [3.476]	8.286** [3.484]	-11.657*** [3.609]	-9.700*** [3.104]	-9.996*** [3.123]	2.041 [2.532]	1.644 [2.289]	1.711 [2.292]
PI X Win (PI=1 if private treatment)	-15.183*** [2.609]	-15.136*** [2.620]	-15.142*** [2.622]	26.302*** [2.284]	26.280*** [2.287]	26.289*** [2.291]	-11.119*** [1.609]	-11.144*** [1.627]	-11.146*** [1.628]
POD X Win (POD=1 if private-option-disclose treatment)	-	-7.274** [2.872]	-	-	8.408*** [2.654]	-	-	-1.134 [1.549]	-
Reveal X Win (Reveal = 1 if POD and Reveal)	-	-	-2.063 [3.180]	-	-	1.694 [2.580]	-	-	0.369 [1.706]
Conceal X Win (Conceal= 1 if POD and Conceal)	-	-	-18.567*** [3.152]	-	-	22.957*** [2.972]	-	-	-4.390** [2.063]
Own Share of HH Endowment	-0.122* [0.070]	-0.170*** [0.061]	-0.174*** [0.061]	0.080 [0.058]	0.092* [0.049]	0.096** [0.048]	0.042 [0.058]	0.078* [0.045]	0.077* [0.045]
Change in Share of Endowment if Win	-0.784** [0.304]	-0.611** [0.265]	-0.628** [0.264]	0.833*** [0.286]	0.650*** [0.228]	0.672*** [0.228]	-0.049 [0.205]	-0.040 [0.178]	-0.045 [0.179]
Household Endowment (initial, without lottery)	0.057* [0.032]	0.060* [0.031]	0.061* [0.031]	-0.068* [0.035]	-0.063** [0.028]	-0.064** [0.028]	0.011 [0.030]	0.003 [0.025]	0.003 [0.025]
Observations	847	1281	1281	847	1281	1281	847	1281	1281
R-squared	0.145	0.106	0.122	0.335	0.252	0.282	0.097	0.079	0.082

Note: Clustered standard errors at the individual level in brackets. All estimates include round and individual fixed-effects. *** p-value<0.01, ** p-value<0.05, * p-value<0.10

¹⁵ There are no differences by gender on allocations or on the effect of asymmetric information. The results by gender and tests for gender differences can be requested directly from the author.

While the results on Table 9 are interesting, they do not provide information on the mechanism driving the effects of private information. It is possible that the decrease in the share allocated towards the household account is driven by the structure of the game which implied the lottery transfer, if kept private, was placed into the informed spouse's account. Alternatively, the behavior in the game could be a result of conscious choices that are consistent with income-hiding. In Table 10, I present results on the effect of the information treatments on the allocations of the informed spouse as they were received by the uninformed spouse. The amounts allocated towards each account were presented to the uninformed spouse, along with the endowments and lottery outcomes, when deciding to accept or reject the split. Recall that the offers presented to the uninformed spouse included the lottery transfer only under complete information. In constructing the shares observed by the uninformed spouse, the endowment of the informed spouse and the amount allocated into her own account excludes the lottery transfer for concealers and those in the PI treatment. Likewise, while the amounts in the household and the informed spouse partner's accounts were kept unchanged, the individual endowment, and thus the shares excluded the lottery. For households in the complete information treatment and those who chose to reveal, the amounts and shares are the same as the ones used in Table 9. Using the modified endowment shares, equation (1) was estimated.

The results in Table 10 are strong evidence of income-hiding given that the informed spouse behaves as if she or he had not won the lottery. In contrast with the large and statistically significant effects presented in Table 9, there are no differences on the observed shares allocated towards the informed spouse's own account and the share placed into her partner's account between individuals in the CI treatment, revealers, and/or concealers. There is a small increase of 5 percentage points on the share allocated towards the household account among individuals in the private information treatment, though it is statistically significant only at the 10% level. The results in Table 10 combined with the kernel density estimates in Figure 2 support the income-hiding explanation for the results, and suggest the effects of asymmetric information are not driven by the structure of the experimental design, but by conscious choices to deceive their partners into thinking they had not won the lottery.

Table 10: Effect of Information Treatments on Intra-Household Allocation, Observed shares

	Share to HH Good			Share to Self			Share to Spouse		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Win Coin Toss (=1 if won Rs 75)	0.348 [4.071]	0.252 [3.618]	0.255 [3.619]	0.871 [3.647]	0.611 [3.054]	0.627 [3.058]	-1.219 [2.659]	-0.864 [2.340]	-0.881 [2.342]
PI X Win (PI=1 if private treatment)	4.976* [2.847]	5.042* [2.848]	5.042* [2.850]	-2.629 [2.349]	-2.680 [2.356]	-2.680 [2.357]	-2.347 [1.762]	-2.362 [1.776]	-2.362 [1.776]
POD X Win (POD=1 if private-option-disclose treatment)	-	-2.694 [2.746]	-	-	2.027 [2.374]	-	-	0.668 [1.540]	-
Reveal X Win (Reveal = 1 if POD and Reveal)	-	-	-2.647 [3.168]	-	-	2.381 [2.556]	-	-	0.266 [1.709]
Conceal X Win (Conceal= 1 if POD and Conceal)	-	-	-2.798 [3.485]	-	-	1.260 [3.335]	-	-	1.538 [2.235]
Own Share of HH Endowment	-0.114 [0.072]	-0.173*** [0.064]	-0.174*** [0.064]	0.085 [0.062]	0.110** [0.052]	0.109** [0.051]	0.029 [0.063]	0.064 [0.049]	0.064 [0.049]
Change in Share of Endowment if Win	0.071 [0.336]	0.120 [0.283]	0.119 [0.283]	-0.331 [0.294]	-0.321 [0.225]	-0.323 [0.226]	0.260 [0.221]	0.202 [0.186]	0.203 [0.186]
Household Endowment (initial, without lottery)	0.046 [0.034]	0.056 [0.034]	0.056 [0.034]	-0.066* [0.038]	-0.067** [0.030]	-0.067** [0.030]	0.019 [0.032]	0.011 [0.027]	0.011 [0.027]
Observations	847	1281	1281	847	1281	1281	847	1281	1281
R-squared	0.027	0.023	0.023	0.039	0.027	0.027	0.016	0.020	0.021

Note: Clustered standard errors at the individual level in brackets. All estimates include round and individual fixed-effects. *** p-value<0.01, ** p-value<0.05, * p-value<0.10

Robustness:

The asymmetric information treatments are not binding in rounds when the informed spouse does not win the lottery because there is no source of asymmetric information without the lottery transfer. This provides a placebo test and also allows to determine whether there were differences “at baseline” across households in each information treatment. Table 6 contained the average contributions in both amounts and shares to each account by the informed spouse when she does not win, but these were unconditional. Table 11 contains results estimating shares towards each account as a function of the information treatments (Estimates on the amounts in Appendix B Table B.4). Columns (1) to (3) are estimated using random effects as the treatments do not change across rounds. Columns (4) to (6) present results of equation (1) with the addition of interactions between the information treatments and the share of endowments controlled by the informed spouse which allow the use fixed effects and thus controlling for unobserved

individual heterogeneity that could influence the response to the information treatments. As expected, there are no differences in allocations on average across information treatments when the informed spouse does not win, with the exception of a weakly significantly larger share placed in the uninformed spouse's account among individuals in the private information treatment.

Table 11: Information Treatment Effects on allocations by Informed Spouse, not winning lottery

	Dependent Variable: Shares of Informed Spouse's Endowment ...					
	Share to HH Good	Share to Self	Share to Spouse	Share to HH Good	Share to Self	Share to Spouse
	(1)	(2)	(3)	(4)	(5)	(6)
PI (=1 if private treatment)	-3.638 [3.164]	0.350 [2.516]	3.346* [1.933]	-	-	-
POD (=1 if private-option-disclose treatment)	4.010 [3.322]	-1.758 [2.514]	-2.096 [2.058]	-	-	-
PI X Share of Endowment	-	-	-	0.028 [0.136]	0.012 [0.103]	-0.040 [0.095]
POD X Share of Endowment	-	-	-	-0.068 [0.156]	0.046 [0.117]	0.022 [0.102]
Share of Endowment	-0.321*** [0.100]	0.238*** [0.088]	0.086 [0.079]	-0.292** [0.128]	0.187* [0.113]	0.105 [0.102]
Household Endowment	0.161*** [0.055]	-0.157*** [0.054]	-0.006 [0.048]	0.157*** [0.057]	-0.150*** [0.057]	-0.007 [0.052]
Observations	591	591	591	591	591	591

Note: Clustered standard errors at the individual level in brackets. Columns (1) – (3) include individual random-effects; Columns (4) – (6) include individual fixed-effects. *** p-value<0.01, ** p-value<0.05, * p-value<0.10

Do uninformed spouses behave strategically?

In Table 12 I present the responses of the uninformed spouse (player in Role B) to the information treatments (Figure B.3 in Appendix B contains the kernel density estimates). 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 unless Player A chooses to reveal (POD treatment only). For this reason and because spouses know each other, it is possible that the uninformed partner will behave strategically in response to what she expects the informed spouse to do. Nonetheless, there is no differential response on allocation choices by the uninformed spouse across information treatments with one exception. Individuals in the uninformed role who are in the private information treatment decrease

the share placed into their partner's account by a small but statistically significant amount. Allocations of the uninformed spouse do not respond to the share of the endowment controlled by the informed spouse or the total household endowment either.

Table 12: Information Treatment Effects on allocations by Uninformed Spouse

	Dependent Variable: Share of Uninformed Spouse's Endowment to ...								
	Share to	Share to	Share to	Share to	Share to	Share to	Share to	Share to	Share to
	HH Good	Self	Spouse	HH Good	Self	Spouse	HH Good	Self	Spouse
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PI (=1 if private treatment)	2.104 [2.701]	-1.036 [1.781]	-1.068 [1.798]	2.104 [2.702]	-1.032 [1.781]	-1.071 [1.800]	-	-	-
POD (=1 if private-option-disclose treatment)	0.937 [2.673]	0.068 [1.779]	-1.005 [1.765]	-	-	-	-	-	-
Reveal (= 1 if POD and Reveal)	-	-	-	1.067 [3.069]	-0.583 [2.077]	-0.484 [2.047]	-	-	-
Conceal (= 1 if POD and Conceal)	-	-	-	0.662 [3.380]	1.445 [2.132]	-2.107 [2.240]	-	-	-
PI X Endow Share	-	-	-	-	-	-	0.112 [0.068]	-0.012 [0.048]	-0.100** [0.051]
POD X Endow Share	-	-	-	-	-	-	0.048 [0.072]	-0.010 [0.052]	-0.038 [0.053]
Share of Endowment (initial, without lottery)	0.053 [0.063]	0.023 [0.047]	-0.076 [0.050]	0.053 [0.063]	0.023 [0.047]	-0.076 [0.050]	-0.000 [0.081]	0.030 [0.053]	-0.030 [0.060]
Household Endowment (initial, without lottery)	0.052 [0.038]	0.009 [0.027]	-0.060** [0.028]	0.052 [0.038]	0.009 [0.027]	-0.060** [0.028]	0.052 [0.038]	0.009 [0.027]	-0.060** [0.028]
Observations	1281	1281	1281	1281	1281	1281	1281	1281	1281

Note: Clustered standard errors at the individual level in brackets. Columns (1) – (6) use individual random-effects; Columns (7) – (9) use individual fixed-effects. *** p-value<0.01, ** p-value<0.05, * p-value<0.10

5. Conclusions

When an individual receives a monetary transfer that is unobservable to his or her spouse (in this case the lottery prize), 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. Depending on cultural norms and the responsiveness of bargaining power to the revelation of additional income, revealing may result in allocations closer to her preferences but they will be taxed. If this is not 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 earnings and increasing the set of possible allocations.

I conducted laboratory experiments with established married couples in Uttarakhand, India to test whether spouses would choose to hide money from their partners when given the opportunity, and to evaluate the efficiency losses. For this purpose, spouses played a combination of a public goods and ultimatum game where each of them was given a significant endowment and was asked to allocate it between his own personal account, his or her spouse's account, and a household account. The money invested into the household account earned 50% interest and was divided evenly between the couple, while the other two accounts were paid at parity. Spouses made decisions individually, without communication, over 7 rounds varying the distribution of the household endowment between spouses.

One of the spouses was randomly chosen to play a lottery for the opportunity to win 75 additional rupees in each round. The information treatments were applied only to the lottery outcome and not to the endowments or allocations of the endowments. The purpose of this aspect of the design was to test for the relevance of a pre-bargaining stage where spouses decide on the amounts to be bargained over. One third of the sample was randomly assigned to a complete information treatment, where all strategies and choices were public information. Another third was assigned to a private information treatment in which the lottery outcome was kept private from the uninformed spouse by being deposited directly into the informed spouse's personal account. The last third was given the option to conceal or reveal the lottery outcome in each round; if revealed the prize was eligible to be allocated towards all 3 accounts, while if concealed it went directly into the individual's own personal account. Therefore, the informed spouse in the last treatment faced a trade-off between keeping control of the lottery prize without his or her partner knowing about it but facing a restricted set of choices of what to do with it, and the cost of not being eligible to earn interest by allocating it into the household account, or revealing and being eligible to be distributed among all three accounts. Finally, the uninformed spouse was presented with the proposed split and had to decide whether to accept or reject the offer. If rejected, each spouse would earn their individual endowments. Therefore, the informed spouse had an incentive to keep the transfer private, propose a split that the uninformed spouse would accept, and still earn more money.

The household earnings maximizing strategy in the game was to allocate all the resources into the household account and negotiate over how to spend the money after the experiment was over. Under a unitary or collective household the earnings maximizing strategy for the game should be observed. However, even under perfect information the average share allocated towards the household account is around 50%. This suggests individuals value maintaining control over some proportion of resources even if it comes at a cost. Because the accounts were framed in terms of goods the household members usually consume, I presented evidence that the experimental outcomes correlate with actual everyday behavior and expenditures, as well as with indicators of bargaining power in the expected direction.

When given the opportunity, 25% of individuals choose to hide the lottery outcome from their spouse which causes further efficiency losses as the prize is thus ineligible to earn interest. Further, 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. A set of placebo and robustness tests are conducted supporting the income-hiding hypothesis. Interestingly, uninformed spouses do not behave strategically in anticipation of their partners exploiting their information advantage, even among those who are married to concealing spouses.

The growing evidence of the presence of asymmetric information within the household and the results supporting individuals exploiting their information advantage has important implications for development economics and intra-household theory. It is important to collect survey information directly from each household member as continuing the practice of one person responding for the entire household is likely to contain non-random reporting error due to asymmetric information. When conducting interventions that involve cash transfers, it is important to examine the information environment regarding the rest of the household resources because in the presence of asymmetric information, the additional transfer may relax budget constraints such that revelation of unobserved resources from other sources is crowded out. The

evidence of the non-cooperative household is large and growing, particularly in developing countries, suggesting the need for more complex intra-household models.

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SUPPLEMENTARY APPENDICES: FOR ONLINE PUBLICATION

Appendix A: 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. However, the money you place into the household account earns 50% interest and will be divided evenly between you and your spouse. 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.

APPENDIX B: Additional Tables and Robustness

Table B.1: 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 B.2: Balance of Treatment Statistics by Gender

	Husbands					Wives				
	CI	CI-PI Diff	CI - POD Diff	PI	PI - POD	CI	CI-PI Diff	CI - POD Diff	PI	PI - POD
Age	40.467 [1.125]	0.042 [1.584]	-1.257 [1.674]	40.508 [1.083]	-1.299 [1.526]	34.083 [1.103]	1.605 [1.554]	0.400 [1.703]	34.483 [1.113]	1.205 [1.568]
Years of Marriage	15.683 [1.206]	1.706 [1.713]	-0.732 [1.673]	14.952 [1.171]	2.438 [1.677]	16.625 [1.340]	0.732 [1.895]	-0.485 [1.936]	16.140 [1.251]	1.217 [1.777]
Scheduled Caste or Tribe	0.117 [0.044]	0.031 [0.062]	-0.052 [0.052]	0.148 [0.039]	-0.083 [0.055]	0.083 [0.034]	-0.017 [0.048]	-0.051 [0.043]	0.033 [0.028]	0.034 [0.040]
Other Backwards Caste	0.200 [0.049]	-0.052 [0.069]	0.074 [0.077]	0.148 [0.052]	0.127* [0.073]	0.250 [0.054]	-0.050 [0.077]	0.012 [0.080]	0.262 [0.054]	-0.062 [0.077]
No Schooling	0.100 [0.036]	-0.034 [0.050]	0.013 [0.056]	0.066 [0.037]	0.047 [0.052]	0.186 [0.056]	0.125 [0.079]	0.168** [0.080]	0.311 [0.061]	0.043 [0.086]
Less than High School	0.683 [0.056]	0.136* [0.078]	0.075 [0.082]	0.820 [0.053]	-0.062 [0.074]	0.746 [0.061]	-0.188** [0.086]	-0.214** [0.086]	0.557 [0.064]	-0.025 [0.091]
High School or Beyond	0.183 [0.044]	-0.101 [0.061]	-0.054 [0.066]	0.082 [0.040]	0.047 [0.056]	0.068 [0.035]	0.014 [0.048]	-0.003 [0.046]	0.082 [0.034]	-0.017 [0.047]
<i>Say over ...</i>										
Decision to Work	0.883 [0.050]	-0.146** [0.071]	-0.031 [0.062]	0.852 [0.052]	-0.115 [0.073]	0.417 [0.063]	-0.056 [0.089]	-0.023 [0.090]	0.393 [0.063]	-0.033 [0.088]
Own Fertility	0.967 [0.023]	0.001 [0.033]	0.033 [0.023]	1.000 [0.016]	-0.033 [0.023]	0.950 [0.030]	-0.016 [0.043]	-0.015 [0.042]	0.934 [0.032]	0.001 [0.045]
Who Children should Marry	0.983 [0.020]	-0.016 [0.028]	0.017 [0.017]	1.000 [0.016]	-0.033 [0.023]	0.967 [0.032]	-0.065 [0.045]	-0.031 [0.039]	0.902 [0.035]	0.034 [0.050]
What to wear	0.983 [0.032]	-0.098** [0.045]	-0.016 [0.028]	0.967 [0.033]	-0.082* [0.047]	0.950 [0.030]	-0.016 [0.043]	-0.015 [0.042]	0.934 [0.032]	0.001 [0.045]
Major HH Purchases	0.933 [0.023]	0.067** [0.032]	0.017 [0.043]	0.950 [0.020]	0.050* [0.028]	0.817 [0.049]	0.019 [0.069]	0.006 [0.070]	0.836 [0.049]	-0.013 [0.068]
Purchase/ Sell Land	0.966 [0.024]	0.001 [0.033]	-0.048 [0.043]	0.918 [0.030]	0.049 [0.042]	0.860 [0.047]	-0.010 [0.066]	-0.060 [0.070]	0.800 [0.049]	0.050 [0.070]
Works for Income	0.983 [0.026]	-0.049 [0.037]	-0.049 [0.037]	0.934 [0.032]	0.000 [0.045]	0.233 [0.059]	0.127 [0.083]	0.033 [0.080]	0.267 [0.060]	0.094 [0.085]
Husband Controls HH Finances	0.233 [0.053]	-0.037 [0.075]	-0.056 [0.074]	0.197 [0.050]	-0.019 [0.071]	0.121 [0.037]	-0.069 [0.052]	-0.039 [0.056]	0.082 [0.032]	-0.030 [0.046]
Wife Controls HH Finances	0.283 [0.057]	-0.037 [0.081]	-0.122 [0.075]	0.246 [0.052]	-0.085 [0.073]	0.103 [0.035]	-0.052 [0.050]	-0.054 [0.049]	0.049 [0.028]	0.003 [0.040]
Joint Control	0.633 [0.062]	0.055 [0.087]	-0.020 [0.088]	0.689 [0.061]	-0.076 [0.086]	0.724 [0.057]	0.052 [0.081]	0.079 [0.078]	0.803 [0.053]	-0.027 [0.075]
Pays for Child Schooling	0.847 [0.043]	0.054 [0.061]	0.071 [0.059]	0.918 [0.037]	-0.016 [0.052]	0.833 [0.045]	0.052 [0.064]	0.038 [0.065]	0.885 [0.042]	-0.014 [0.059]
HH Income (previous month, th. Rs.)	8.513 [1.184]	-0.223 [1.689]	0.271 [1.755]	8.290 [1.131]	0.494 [1.579]	7.043 [1.040]	1.971 [1.498]	0.029 [1.263]	7.073 [1.056]	1.941 [1.500]
Total Expenditure (last 12 months, th. Rs.)	60.557 [16.830]	42.509 [23.704]	9.107 [12.449]	103.066 [17.025]	-33.401 [23.980]	76.751 [17.597]	22.813 [24.784]	16.112 [25.895]	99.564 [20.456]	-6.700 [28.812]
<i>Share of ...</i>										
Exp. Health	19.872 [2.615]	-1.859 [3.682]	-2.178 [3.724]	18.012 [2.481]	-0.318 [3.495]	22.876 [2.495]	-4.852 [3.514]	0.177 [4.057]	18.023 [2.546]	5.029 [3.586]
Exp. Adult Clothing	14.728 [1.644]	-0.306 [2.316]	-2.151 [2.510]	14.422 [1.561]	-1.845 [2.199]	9.487* [1.493]	1.246 [2.102]	-0.403 [1.717]	10.734 [1.346]	-1.650 [1.896]
Exp. Personal Care	8.961 [1.063]	-0.119 [1.497]	-0.913 [1.898]	8.843 [1.285]	-0.795 [1.809]	7.341 [0.766]	0.207 [1.079]	0.870 [1.150]	7.548 [0.810]	0.663 [1.141]
Exp. Assets	6.266 [1.845]	5.249** [2.599]	4.627 [2.983]	11.51 [2.404]	-0.622 [3.385]	10.35 [2.232]	0.876 [3.144]	-0.722 [3.060]	11.23 [2.193]	-1.598 [3.089]
Exp. Utilities	3.649 [0.696]	-0.783 [0.980]	-1.244 [0.851]	2.865 [0.607]	-0.461 [0.854]	4.106 [0.932]	-0.308 [1.313]	-0.441 [1.453]	3.798 [0.813]	-0.133 [1.144]
Exp. Jewelry	1.632 [1.029]	-0.057 [1.450]	-1.283 [1.019]	1.575 [0.735]	-1.225 [1.035]	2.503 [1.275]	0.708 [1.795]	-1.565 [1.275]	3.211 [0.975]	-2.273 [1.374]
Exp. Lotteries	0.000 [0.578]	0.820 [0.814]	0.017 [0.018]	0.820 [0.569]	-0.80 [0.801]	0.592 [0.420]	-0.49 [0.592]	-0.57 [0.582]	0.097 [0.054]	-0.08 [0.076]
Exp. Tobacco	3.136 [0.701]	-1.17 [0.987]	-0.07 [1.122]	1.957 [0.618]	1.101 [0.871]	3.136 [0.701]	-1.17 [0.987]	-0.07 [1.122]	1.957 [0.618]	1.101 [0.871]

Table B.3: Balance of Treatment Statistics, Household Level

	CI	CI-PI Diff	CI - POD Diff	PI	PI - POD
No. Children	1.133 [0.208]	0.326 [0.294]	0.254 [0.271]	1.459 [0.208]	-0.072 [0.292]
Daughters	0.533 [0.126]	0.024 [0.178]	0.160 [0.184]	0.557 [0.128]	0.136 [0.180]
Sons	0.600 [0.141]	0.302 [0.198]	0.094 [0.168]	0.902 [0.138]	-0.208 [0.194]
Total HH Members	2.100 [0.331]	0.310 [0.466]	0.368 [0.471]	2.410 [0.343]	0.058 [0.483]
Total Expenditure	137.308 [27.350]	65.322 [38.520]	25.220 [29.955]	202.631 [29.046]	-40.102 [40.912]
Shares of ...					
Exp. Health	21.786 [2.308]	-3.652 [3.250]	-0.530 [3.758]	18.133 [2.451]	3.122 [3.453]
Exp. Adult Clothing	11.104 [1.040]	0.671 [1.465]	-0.451 [1.414]	11.776 [1.045]	-1.122 [1.471]
Exp. Personal Care	7.372 [0.769]	0.763 [1.083]	0.318 [1.008]	8.135 [0.805]	-0.445 [1.133]
Exp. Home Improvement	12.701 [2.540]	1.267 [3.578]	0.231 [3.389]	13.968 [2.420]	-1.036 [3.408]
Exp. Farm	4.591 [1.651]	-0.198 [2.326]	-1.636 [1.598]	4.393 [1.541]	-1.438 [2.170]
Exp. Assets	8.172 [1.584]	1.845 [2.231]	2.727 [2.738]	10.01 [1.991]	0.882 [2.804]
Exp. Transportation	8.903 [1.606]	0.733 [2.262]	0.511 [2.188]	9.635 [1.133]	-0.221 [1.596]
Exp. Utilities	3.929 [0.749]	-0.808 [1.054]	-0.870 [1.161]	3.122 [0.540]	-0.062 [0.761]
Exp. HH Items	1.597 [0.247]	-0.014 [0.348]	-0.489 [0.308]	1.583 [0.252]	-0.475 [0.355]
Exp. Jewelry	2.247 [1.049]	0.179 [1.478]	-1.590 [1.114]	2.425 [0.727]	-1.768* [1.024]
Exp. Entertainment	0.723 [0.156]	0.017 [0.220]	-0.012 [0.249]	0.740 [0.177]	-0.030 [0.249]
Exp. Weddings & Funerals	8.488 [1.495]	0.905 [2.106]	2.606 [2.402]	9.393 [1.799]	1.701 [2.534]
Exp. Lotteries	0.137 [0.384]	0.426 [0.540]	-0.122 [0.135]	0.563 [0.365]	-0.549 [0.514]
Exp. Tobacco	3.136 [0.701]	-1.178 [0.987]	-0.077 [1.122]	1.957 [0.618]	1.101 [0.871]

Table B.4: Results on the Effect of Asymmetric Information on Amounts Allocated towards each account

Dependent Variable: Amount Allocated towards ...	Informed Spouse, Amounts									Informed Spouse, Lost Lottery			Uninformed Spouse					
	Household Good			Own Account			Spouse's Account			HH Good	Own	Spouse	HH Good	Own Acc.	Spouse Acc.	HH Good	Own Acc.	Spouse Acc.
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(5)	(6)
Win Coin Toss (=1 if won Rs 75)	41.584*** [6.516]	36.549*** [5.701]	37.039*** [5.704]	19.311*** [6.402]	21.640*** [5.304]	21.022*** [5.341]	15.934*** [4.228]	13.762*** [4.498]	16.065*** [4.238]	-	-	-	-	-	-	-	-	-
PI (=1 if private treatment)	-	-	-	-	-	-	-	-	-	-5.736 [4.423]	1.948 [3.672]	3.862 [2.640]	4.127 [4.269]	-1.740 [2.835]	-2.387 [2.822]	4.124 [4.271]	-1.731 [2.835]	-2.393 [2.824]
POD (=1 if private-option-disclose treatment)	-	-	-	-	-	-	-	-	-	3.397 [4.457]	-0.445 [3.471]	-2.910 [2.875]	1.869 [4.224]	-0.039 [2.808]	-1.830 [2.837]	-	-	-
PI X Win (PI=1 if private treatment)	-30.766*** [4.330]	-30.386*** [4.384]	-30.400*** [4.386]	48.839*** [3.650]	48.645*** [3.648]	48.663*** [3.654]	-18.436*** [3.012]	-18.260*** [2.982]	-18.440*** [3.015]	-	-	-	-	-	-	2.280 [4.848]	-1.554 [3.195]	-0.725 [3.339]
POD X Win (POD=1 if private-option-disclose treatment)	-	-10.781** [4.852]	-	-	13.587*** [4.554]	-	-2.659 [3.214]	-	-	-	-	-	-	-	-	1.000 [5.357]	3.164 [3.550]	-4.164 [3.496]
Reveal X Win (Reveal = 1 if POD and Reveal)	-	-	0.317 [5.274]	-	-	-0.398 [3.910]	-	-	0.310 [3.683]	-	-	-	-	-	-	-	-	-
Conceal X Win (Conceal= 1 if POD and Conceal)	-	-	-34.832*** [4.550]	-	-	43.895*** [5.045]	-	-	-9.093** [4.023]	-	-	-	-	-	-	-	-	-
Change in Share of Endowment if Win	-1.898*** [0.488]	-1.489*** [0.409]	-1.526*** [0.407]	-0.945** [0.432]	-1.112*** [0.338]	-1.067*** [0.339]	-0.512* [0.294]	-0.313 [0.328]	-0.522* [0.295]	-	-	-	-	-	-	-	-	-
Own Share of HH Endowment	1.486*** [0.120]	1.472*** [0.104]	1.465*** [0.103]	0.977*** [0.104]	0.963*** [0.085]	0.972*** [0.084]	0.760*** [0.075]	0.728*** [0.087]	0.758*** [0.075]	1.306*** [0.139]	1.146*** [0.125]	0.738*** [0.106]	1.685*** [0.100]	0.871*** [0.079]	0.631*** [0.081]	1.685*** [0.100]	0.871*** [0.079]	0.631*** [0.081]
Household Endowment (initial, without lottery)	0.212*** [0.048]	0.239*** [0.050]	0.240*** [0.049]	0.044 [0.052]	0.048 [0.043]	0.046 [0.043]	0.086** [0.041]	0.116** [0.047]	0.087** [0.041]	0.354*** [0.073]	-0.084 [0.075]	0.087 [0.067]	0.369*** [0.055]	0.197*** [0.041]	0.063 [0.040]	0.369*** [0.055]	0.197*** [0.041]	0.063 [0.040]
Observations	847	1281	1281	847	1281	1281	1281	847	1281	591	591	591	1281	1281	1281	1281	1281	1281

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

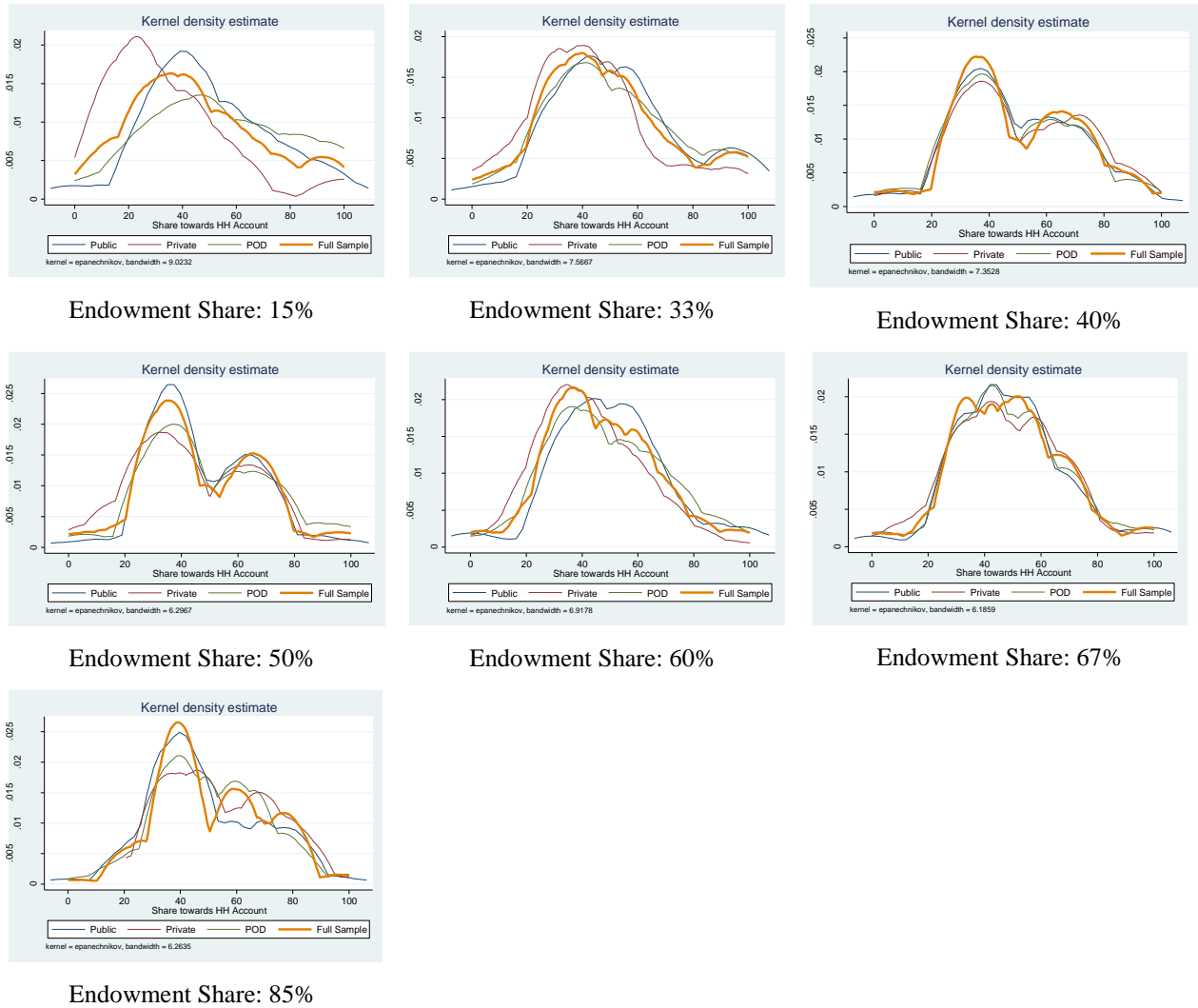
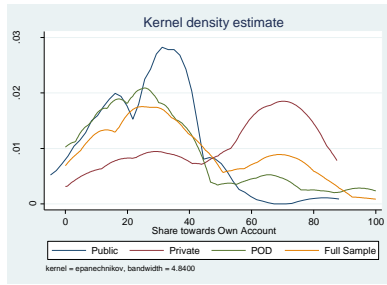
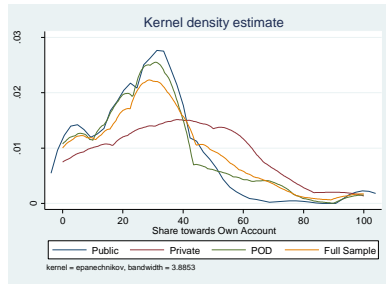


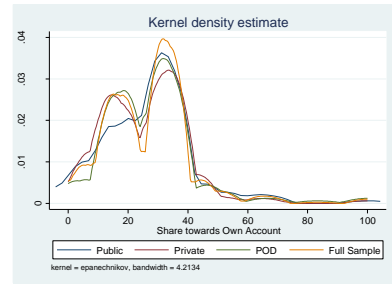
Figure B.2: Kernel Density estimates of Share kept for oneself by endowment share.



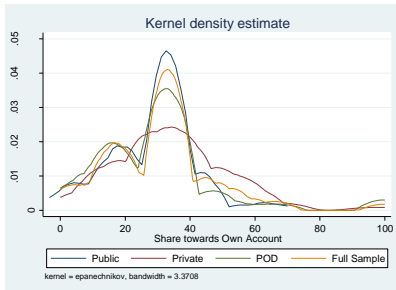
Endowment Share: 15%



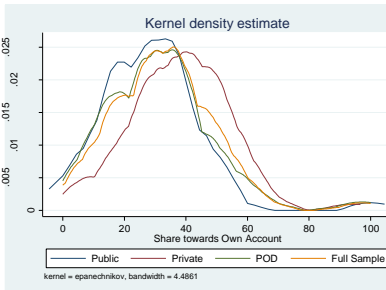
Endowment Share: 33%



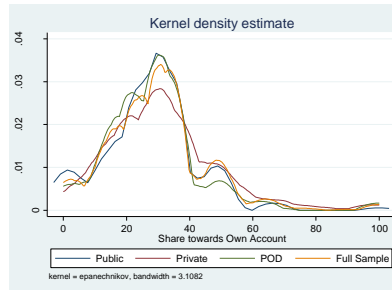
Endowment Share: 40%



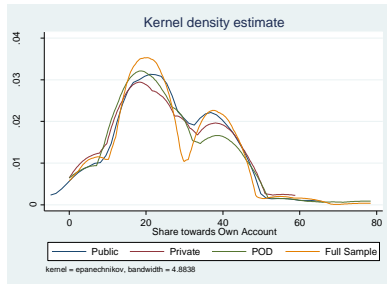
Endowment Share: 50%



Endowment Share: 60%



Endowment Share: 67%



Endowment Share: 85%

Figure B.3: Kernel Density estimates Uninformed Spouses' Behavior

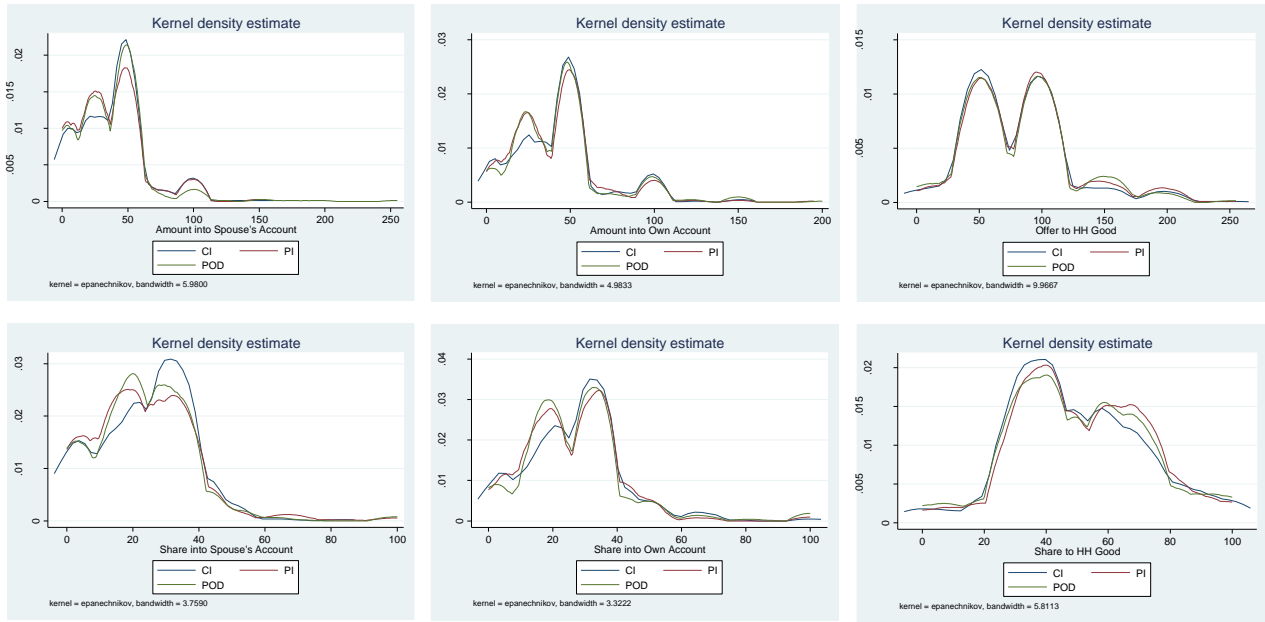


Figure B.4: Kernel Density estimates of Paired Spousal Behavior

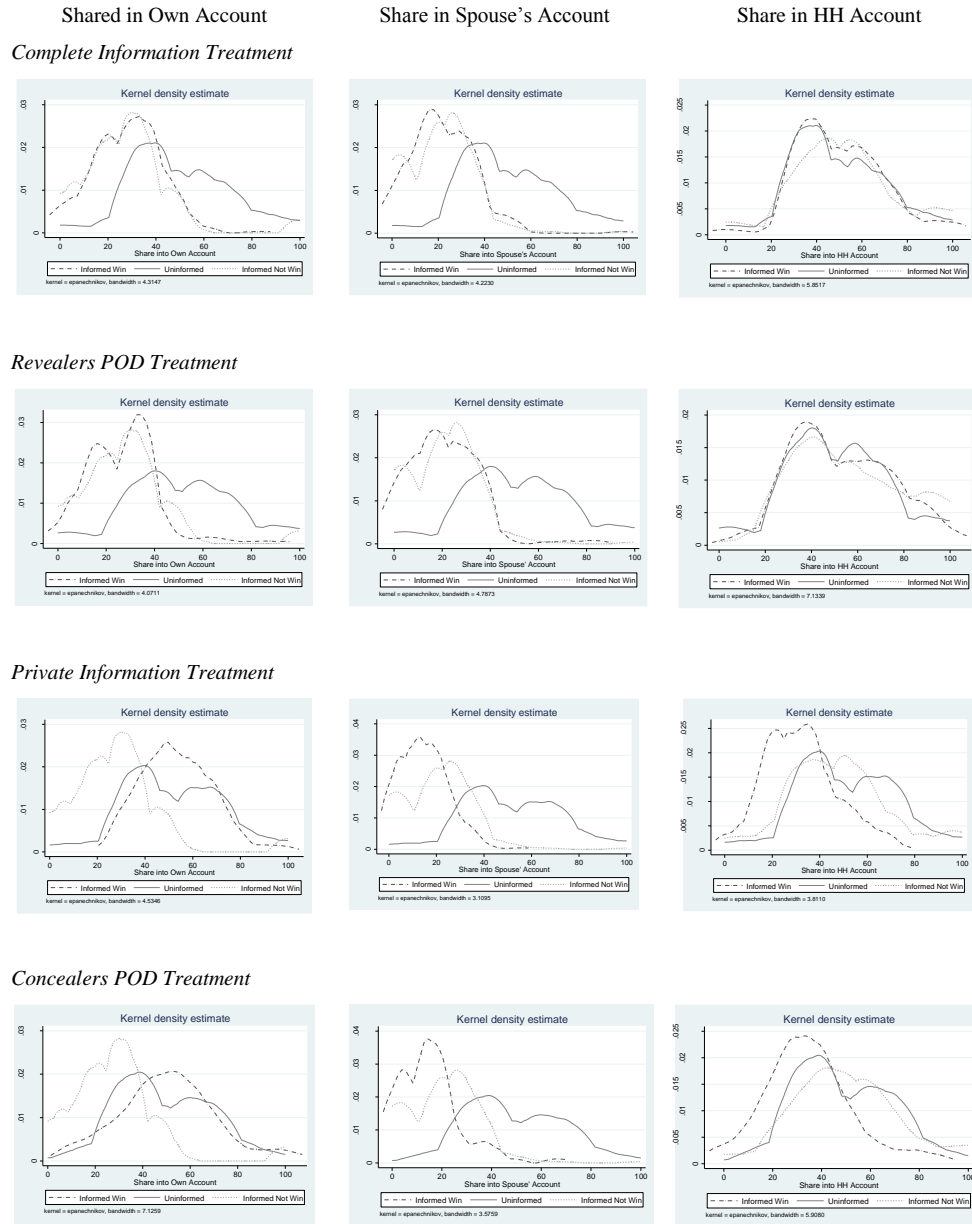


Figure B.5: Kernel Density Estimates and Tests of Equality of Distributions when Informed spouse has the same amount in hand

