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Only Mine or All Ours: An Artefactual Field Experiment on Procedural Altruism

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Abstract

In an artefactual field experiment, we introduce a novel allocation game to investigate the role of procedural altruism in household decision-making and study choices of married spouses. Subjects can allocate their earnings from the experiment either on food items (joint consumption good), or on gender specific personal clothing (private consumption good). Subjects' consumption choices are observed under two treatments – earnings with effort, and earnings without effort. At the aggregate level we find that subjects exhibit a strong preference for own private consumption good when assigned to the effort treatment. However, further scrutiny suggests that women's choice for the joint consumption good in the household remains largely independent of the treatment. In contrast, men exhibit a stronger preference for private consumption good in the effort treatment.

Keywords: procedural utility, household decision making, gender, experiment
JEL Classification: C93, D1, Z1.

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1. Introduction

Household is the core decision-making unit of all economic activities. Not surprisingly then, there has been considerable theoretical and empirical work in economics that analyzes decision-making in the household and its effects on household welfare (Samuelson 1956; Becker, 1965, 1981; Sen 1990; Lundberg and Pollak 2003). The literature suggests that men and women have different bargaining powers that can lead to different welfare outcomes for the family (Udry 1996; Fafchamps and Quisimibing 1999; Duflo and Udry 2004; Akresh 2005; Munro, Kebede, Tarazona-Gomez and Verschoor 2011, Mani 2011).

An unequivocal picture seems to emerge however, of women being the more altruistic member in the family compared to their male counterparts, and providing stronger patronage to overall family welfare, as well as promoting joint household consumption more. For example, Quisumbing and Maluccio (2000) find that in Bangladesh, Ethiopia, Indonesia and South Africa, assets in the hands of women increase expenditures on children's clothing and education and reduce the incidence of illness among girls substantially. Udry, Hoddinott, Alderman, and Haddad (1995), and Quisumbing (1996) find that in sub-Saharan Africa, women endowed with the same amount of resources (access to education, labor and fertilizer) as men, helps to improve agricultural productivity dramatically. Datt and Joliffe (1999), Datt, Simler and Mukherjee (1991), and Cross (1999) find that mother's education has substantial poverty reduction effects in Egypt and Mozambique.

These findings seem to indicate a clear direction towards endowing women in the household with a greater decision-making role in an effort to foster and improve family welfare (Kabeer 1999). In fact, some developing countries have already started to show a purposeful shift towards promoting women's role as the primary decision-maker in their targeted welfare policies.[1] Interestingly though, very little or no work has been done to examine the role of procedural dependency on such demonstrated altruistic preferences by wives in the household. This is largely due to the fact that economics traditionally has focused on outcome dependent behavior. Frey, Benz and Stutzer (2004) in a seminal article advocate a greater need for economic models of decision making to be not just a function of outcomes but also a function of the procedure that leads to an outcome. Benz (2007) explains that the source of procedural utility when making a decision can be linked to different institutions (such as the market, democracy, hierarchy and bargaining), as well as to interactions with other members in the society (where each evaluate actions not just by its consequences but the intentions and intended treatments behind any action). Hence, a notion of procedural utility stresses that a comparative view of procedures and institutions should be undertaken to understand how they address "innate needs of self determination". Whenever changes in procedures and institutions affect observed choices, it can be assigned due to procedural utility that affect human well-being beyond outcomes. Kahneman, Knetsch and Thaler (1986) provided some of the early evidence of procedural utility playing a role in consumer decisions.

A more recent strand of experimental evidence indicates that preferences for sharing or notions of fairness are often procedure dependent. For example, Hoffman and Spitzer

[1] See "Are Men Useless? (Government Says Yes)", NYT, March 9, 2012.

(1985), Güth and Tietz (1986), Hoffman et al. (1994), Rutström & Williams (2000), Jakiela (2009), Dasgupta (2011) find that the frequency of self-regarding choices generally increase when subjects earn the resources or the rights to be the allocators as compared to a situation where subjects are randomly assigned to be the allocators. In line with the above conceptual insight of procedures affecting utility and hence decisions, we define procedural altruism to be altruistic choices that can be process dependent. In the household, since husbands and wives can have different roles due to historical reasons, social conventions or current economic conditions, it begs the question whether altruistic choices among household partners are procedure dependent or not. In particular, we ask: "Does the earning procedure affect altruistic decision-making in the household?" Our experiment results reply in the affirmative.

Evaluating decision-making in the household however, can be complicated. The close proximity of the decision-makers along with repeated interactions in multiple dimensions increase the complications (Lundberg and Pollak 2003, Basu 2006). Understandably, there have been attempts to use very different investigative tools to gather reliable data on household decision-making (Duck 1991; Kirshcler 1989; Almeida and Kessler 1998; Larson and Almeida 1999; Bolger, Davis and Rafaeli 2003). Among these, experimental investigations of intra-household decision-making have been gaining prominence (see Mani 2011 for a discussion). Bertrand and Mullainathan (2001) suggest that potential biases that arise in some of the other exclusively survey-based data gathering exercises can possibly be circumvented in a controlled environment provided by experiments.

The experimental work on household decision-making so far, has focused primarily on issues of efficiency. For example, Bateman and Munro (2005) look at the efficiency of

household decisions using lottery choices and find that couples overall are more risk averse when making choices jointly compared to making choices individually. They conclude that although gender is not a direct determinant of power in joint choices, economic dependence significantly reduces women's decisiveness in joint choices. Iversen et al. (2006) use public good games to find that spouses do not typically try to maximize surplus from cooperation. However, a greater surplus is realized when women are in charge. Munro, Bateman and McNally (2008) use decisions in lottery choices from established couples (married and unmarried) to test for key features of household decision-making such as income pooling and Pareto efficiency. They reject unanimity in decision-making and find some evidence of income pooling when couples are making joint choices. Ashraf (2009) finds that communication between spouses, and observability of actions on savings and consumption choices improve savings for the family over individual savings choices. Munro, Kebede, Tarazona-Gomez and Verschoor (2011), examine the effects of female autonomy on the efficiency of family decision-making among rural and urban couples in the northern state of Uttar Pradesh and southern state of Tamil Nadu. They report that in spite of inefficiency due to tendencies of asset hiding, there exists a tradeoff between gender autonomy and efficiency where the traditionally gender repressive Northern India appears to perform better on efficiency concerns. Mani (2011) looks at household efficiency using a simple investment game, where she varies information to participants exogenously. She finds that spouse's access to information does not affect economic efficiency. In fact, household members are willing to prefer personal control on household income over economic efficiency; when a wife's assigned share increases (exogenously), husbands undercut their own income to

reduce their wives' income. Carlsson, He, Martinsson, Qin and Sutter (2012) measure the relative influence of spouses on joint decisions on intertemporal choices to find that husbands have a stronger influence than wives on such decisions, although wives in richer households, and relatively older wives appear to have the stronger influence on decision making. Robinson (2012) uses a randomized field experiment to look at intra household risk sharing and finds that women send bigger transfers to their husbands in the presence of shocks.

Our paper contributes to the experimental literature on household decision making. In contrast to the above literature that focuses primarily on implications and plausibility of the unitary household model of decision-making (Becker 1981), and issues of efficiency in decision-making in the household more generally, we focus on eliciting the role of procedure on altruistic consumption choices for husbands and wives. We define altruism analogous to Nagel (1970): "by altruism I mean not abject self-sacrifice, but merely a willingness to act in the consideration of the interests of other persons, without the need of ulterior motives." Accordingly, our consideration of altruistic choices in the experiment retain the following criteria identified in Andreoni, Harbaugh and Vesterlund (2008): a consumption choice that indicates consequence/considerations for others in the household and affects one's own choice (although, it might or might not imply sacrifice on one's own part); although ulterior motives might exist alongside altruistic choices, they are not the only motives for the behavior. We also introduce a novel allocation game to examine whether altruistic choices in the household are procedure dependent or not. Subjects in our experiment are randomly assigned to one of the two treatments – (a) no-effort: where a subject receives money for consumption without effort, and (b) effort:

where a subject puts in effort to earn money for consumption. In both treatments subjects choose between a private consumption bundle and a joint household consumption bundle. Finally, our experiment design allows us to provide insight into the separate bargaining sphere model of household decision making (Lundberg and Pollak 1993).

In our experiment, we find that subjects when assigned to the effort treatment have an overwhelming tendency to choose the private consumption bundle over the joint consumption bundle. However, when we separate our results by gender, we find women's choices for joint consumption in the household remain largely independent of the treatment. In contrast, men exhibit a stronger preference for the private consumption bundle in the effort treatment. Our results further suggest that regardless of the earning procedure, women in the household are relatively more altruistic in their consumption choices compared to males.

2. Conceptual Framework

Although we are not explicitly testing a theoretical model due to the complexity of the dynamic decision making environment, it is still useful to situate our experiment in the background of a theoretical framework. We follow below the basic framework of the separate spheres bargaining model (Lundberg and Pollak 1993). The interesting assumption here is that socially evolved gender norms provide focal points for gender specific tacit division of responsibilities. Consequently, these socially recognized and sanctioned gender specific choices, provide a fallback option for any non-cooperative bargaining process over provision of resources between the husband and the wife.

We assume that the husband (h), and the wife (w) respectively have VNM utility functions $U_h(x_h, q_1, q_2)$, and $U_w(x_w, q_1, q_2)$; x_h and x_w are private goods consumed by the husband and wife respectively, and q_1 and q_2 are household public goods jointly consumed by them. Joint consumption of the public good is an important gain from marriage in the model even when the spouses choose their consumption bundles non-cooperatively, and remain the only source of interdependence in the marriage. A cooperative solution with Nash bargaining specifies x_h, x_w, q_1, and q_2 that maximize the product of the gains from cooperation. The gain from cooperation is defined in terms of the deviations from the threat points (that are socially sanctioned). The Nash social welfare function is defined as the difference between the individual utility and the threat points: $S = (U_h-T_h)(U_w-T_w)$. The threat points are given as the indirect utility function $T_i(p_1,p_2,I_h,I_w)$ where p_1 and p_2 are the relative prices of public goods. Prices of x_h and x_w are equal and normalized to one. I_h and I_w are exogenous incomes received by the husband and the wife. The demand function for each good is derived by maximizing S subject to the household budget constraint $x_h+x_w+p_1q_1+p_2q_2 = I_h+I_w$. It follows that the demand functions are $x_i = g^x_i(p_1, p_2, I_h, I_w)$, i = h,w and $q_j = g^q_j(p_1, p_2, I_h, I_w)$, j = 1,2. Income received by the husband and the wife enters these demand functions separately because they affect not only the feasible set but also the threat point. In a non-cooperative equilibrium, when we assume socially prescribed gender roles to assign primary responsibilities to the husband for certain provisions and to the wife for some other provisions (Ex: public good q_1 might be within the husband's traditional sphere, while public good q_2 falls within the wife's sphere) it suggests that the husband unilaterally decides on the level of q_1, while the wife unilaterally decides on q_2.

An implication then is that in a non-cooperative voluntary contribution equilibrium in the family, gender spheres might lead to different equilibrium distribution of resources depending on who controls the resources. In addition, one might hypothesize here that not only the income received, but how it is received (the procedure) can be important in making choices along with associated social norms (Munro et al. 2011). To evaluate the separate spheres proposition, one of the spouses were exogenously given income in our experiment, and was asked to make a choice between private consumption bundle and a public good (joint consumption bundle). The demand functions then are further simplified. We have $p_1=p_2=p$, and $q_1=q_2=q$. Further, we explicitly vary the procedure (τ) by which income is received in the experiment, and assume that the choices depend on τ. The demand functions for the decision maker can then be expressed as $x_h = g^x(p, I_h, \tau)$ when the husband receives the income and is the decision-maker, or as $x_w = g^x(p, I_w, \tau)$ when the wife receives the income and is the decision-maker. The demand for the public good is given by: $q^i = g^q(p, I^h, I^w, \tau)$ where i=h,w, and if $I^h>0$, then $I^w=0$ and vice versa.

3. Experiment

3.1 Procedure

The experiment was conducted in New Delhi, India. Given our interest in observing procedural altruism in the household, our subjects comprise married spouses only. 210 families participated in the experiment. The subjects were recruited from Bhogal, a prominent resettlement colony situated in South Delhi. Bhogal residents predominantly include migrants from the southern part of India, and a majority of the households comprise of earning couples. We hired research assistants from Bhogal to recruit the

couples. Each subject was promised Rs. 50 (= 1 US dollar) for showing up on time for the experiment, and additional remuneration. The nature of additional remuneration was not disclosed at the time of recruitment.

We used a community center near Bhogal as our gathering area for the subjects. The subjects were asked to congregate at the community center at a pre-specified time. The subjects congregated in one of the large rooms of the community center and several research assistants were in charge of monitoring them and ensuring that there was no communication amongst participating subjects. Each married couple were then separated and escorted to two smaller adjoining rooms in the community center. In one of the rooms, the subject chosen to participate in the experiment made decisions privately and after completing the decision participated in a survey on demographic and socioeconomic characteristics of their own household.[2] The subject then received the pay-off from the game and the show-up fee. Parallelly, in the other room, the spouse of the decision-maker was asked to complete the same socio-economic survey and was given Rs. 50 for completing the survey. Once the decisions were made, and the survey was completed, the husband-wife couple was asked to leave the community center without communicating with the other waiting subjects.

We implemented a pre-randomized order and selected one decision-maker from each married couple to be placed into either the effort treatment or the no-effort treatment. This ensured balanced gender representation in each treatment. Of the 210 couples

[2] See Table 1.

participating in the experiment, 100 were assigned to the effort treatment and the remaining 110 were assigned to the no-effort treatment.

In preparation for the experiment we surveyed a subset of members in the community to identify their staple food diet and preferred personal clothing choices. We also visited the local marketplace in Bhogal, which catered mostly to the slum population. Here, we surveyed multiple grocery stores to identify and verify the staple food items purchased by families residing in Bhogal. Similarly, we surveyed the clothing stores in the same market area to identify the common clothing items purchased by residents of Bhogal. We picked two prominent stores in the area to serve the subjects. The stores provided us with store-credit receipts, which we used as our experiment payoffs.

Note, in contrast to Munro, Kebede, Tarazona-Gomez and Verschoor (2011) where both partners receive endowment to allocate, only one of the partners received endowments to allocate in our experiment. This was explained to the partners at the beginning of the experiment and allowed us to control for endowment/earnings more clearly to observe choices where the earning and allocation decision is cleanly separated by gender, devoid of any beliefs or expectations about the (non decision making) partner's choice in household allocation.

3.2 The Procedural Consumption Game and Experiment Treatments

To examine altruism in consumption choices in the household, we introduce a novel allocation game called "The Procedural Consumption Game" that is devoid of any strategic concerns. In the game, each decision-maker was asked to choose between a bundle containing private consumption goods, and a bundle containing joint household

consumption goods. Food items were representative of joint consumption; personal clothing was representative of "assignable" and excludable personal consumption (see Browning et al. 1994; and Lundberg Pollak and Wales 1997). The decision-maker was presented with the two options and asked to use the money from the experiment to choose one of them. The private consumption bundle for males contained a shirt and a pair of trousers; the private consumption bundle for females contained two Sarees. The joint household consumption bundle contained staple food grains (8 kg rice and 1 kg lentil).[3] Each consumption bundle was valued at Rs. 200. It is useful to point out that Rs. 200 was equivalent to a little over a day's worth of average wage for our subject sample. Also, at the time these experiments were run the minimum wages in India were pegged at Rs. 100. At the end of the experiment, the decision-maker was given a store credit receipt (from the designated stores) specifying their choices.

We had already explained to the shopkeepers that they would be receiving subjects with store receipts. We also explained to the shopkeepers the nature of our research and the fact that the subjects can only receive the items mentioned in the store-credit receipt. We verified at the end of each day that the protocol was indeed followed by the shopkeepers. The shopkeepers maintained picture records. We believe that our Procedural Consumption Game ensures that at the end of the experiment, problems of reversibility of intra-household transfer between the couples (See Iversen et al. 2006 for a discussion) are substantially reduced due to the nature of our payoffs that were specified in terms of real commodities and not money which would be more fungible.

[3] The Indian National Sample Survey's 55th round (2000) estimates the mean monthly per capita consumption of rice and pulses to be respectively 5.5 kilograms and 1 kilogram.

In the baseline no-effort treatment the subjects were told that they have received Rs. 200 and asked to choose one of the two consumption bundles. They were shown samples of clothing items as well as the staple food bundle before making their choices. In the effort treatment, prior to the choice task, the decision-maker participated in a real-effort task. In the real effort task, the subject was presented with four plastic bowls, three empty and one containing red, blue, and white poker chips, and was asked to separate in five minutes the chips into the three bowls – one containing only white chips, a second containing only red chips and the third containing only blue chips. If they were successful, they were asked to choose one of the two bundles described above. If they could not complete the task in the allotted time they were promised only the show-up fee of Rs. 50. Note, that five minutes were sufficient to complete the task. Our interest was in evoking a sense of real-effort and not a task that required considerable effort and could not be completed in the required timeframe. All subjects in the real effort task successfully completed the task.

4. Results

4.1 Description of the Subject Pool

Our final subject pool consists of 210 married individuals (105 males and 105 females). Summary statistics for male subjects and female subjects are reported in columns 1 and 2 of Table 1 respectively. The average age of our male subjects is 35 years and female subjects is 32 years. The average length of marriage is 12 years for the male subjects and 15 years for the female subjects indicating early marriage among females. The subjects on an average have three children. Average household income reported by male subjects

is marginally higher than female subjects with an average at Rs 5353 per month. A higher proportion of male subjects report positive savings out of own income compared to female subjects.[4] We also collected data on self-reported measures of conflict on budget allocation decisions between spouses. Male subjects report higher conflict over budget allocation decisions compared to female subjects.

Table 1: Summary statistics

Subject characteristics	**Mean (std. dev) (1) Male**	**Mean (std. dev) (2) Female**
Common (% choosing the common consumption good)	13.33	19.04
	(34.15)	(39.45)
Age (in years)	34.7	32.10
	(9.83)	(8.90)
Completed grades of schooling	3.84	1.56
	(3.03)	(1.99)
Number of years married (in years)	12.18	15.43
	(9.17)	(9.93)
Number of children	2.66	3.08
	(1.33)	(1.22)
Monthly household income (in Rupees)	Rs 5520.09	5186.05
	(3273.24)	(1357.00)
Log (monthly household income)	8.48	8.51
	(0.48)	(0.30)
Savings (% reporting positive savings)	86.66	75.23
	(34.15)	(43.36)
Employed (% working)	95.23	95.23
	(21.39)	(21.39)
Conflict (% reporting conflict over budget allocation decisions)	12.38	4.0
	(33.09)	(19.23)
Sample size	105	105

Since we collect socioeconomic characteristics from both the decision maker and his/her spouse, we can compare the extent to which husbands and wives give similar answers on years married, number of children, household income, and conflict over budget allocation decision within the household. We find that there is no discrepancy in the number of

[4] Using the Indian Human Development Survey from 2005, we compute the average monthly household income for poor households residing in urban Delhi to be Rs 4702. This is close to the average income made by our participant households in New Delhi, India.

children and years married reported between couples. There is a small difference in total household income reported between couples. We find that for 95% of the subjects, the difference in total household income reported between couples is zero and for the remaining 5%, the discrepancy in household income is within 0.50 standard deviation of the mean. Couples are also in agreement on conflict over budget allocation decisions, among those that report any conflict, 76% of the spouses agree on the presence on conflict over budget allocation decisions. In comparison to Munro et. al (2011) samples from Tamil Nadu, our residents depict higher congruence in reported measures of household characteristics. We also note that our sample averages on age, years married and income are typically lower than sample averages reported in Mani (2011), except that the percentage of women reporting conflict on household budget allocation decision is similar to Mani (2011). Our sample includes migrants from Tamil Nadu living in slums (resettlement colonies) of New Delhi, and largely comprises of poor migrants who have moved to the national capital in search for better jobs and economic opportunities (as verified by the sample characteristics reported in Table 1).

4.2 Subject Decisions

Figure 1 describes average consumption choices in the effort and no-effort treatments. We find that 22.7% of the subjects choose the joint consumption bundle in the no-effort treatment, and only 9% of the subjects choose the joint consumption bundle in the effort treatment. We further examine the distribution of these choices by gender. We find that 21.8% of the male subjects assigned to the no-effort treatment choose the joint consumption bundle. However, only 4% of the male subjects assigned to the effort treatment choose the joint consumption bundle (see Figure 2). In the no-effort treatment,

23.6% of female participants choose the joint consumption good, and 14% choose the joint consumption good in the effort treatment (see Figure 3).

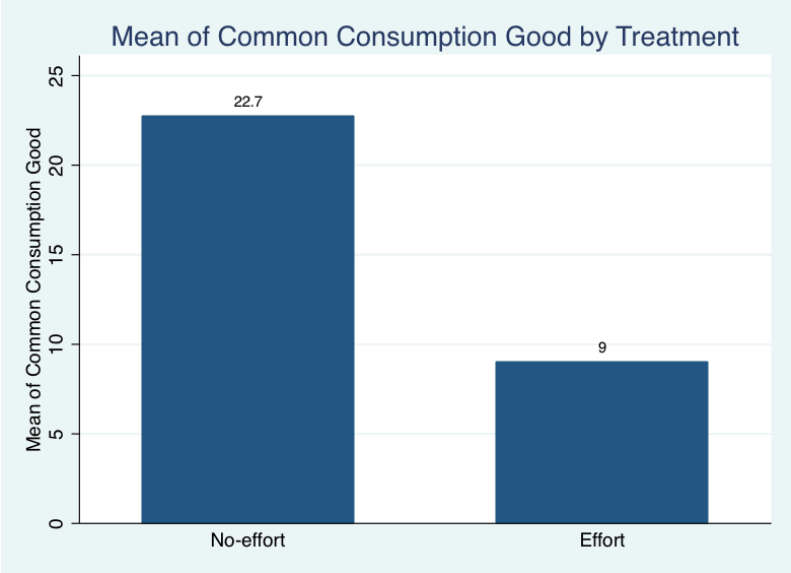

Figure 1: Percentage of joint consumption good by treatment

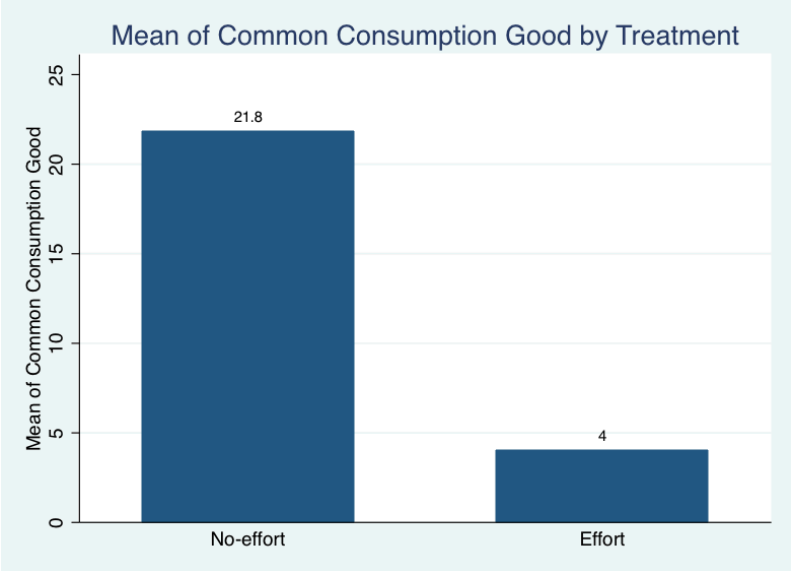

Figure 2: Percentage of joint consumption good by treatment for Males

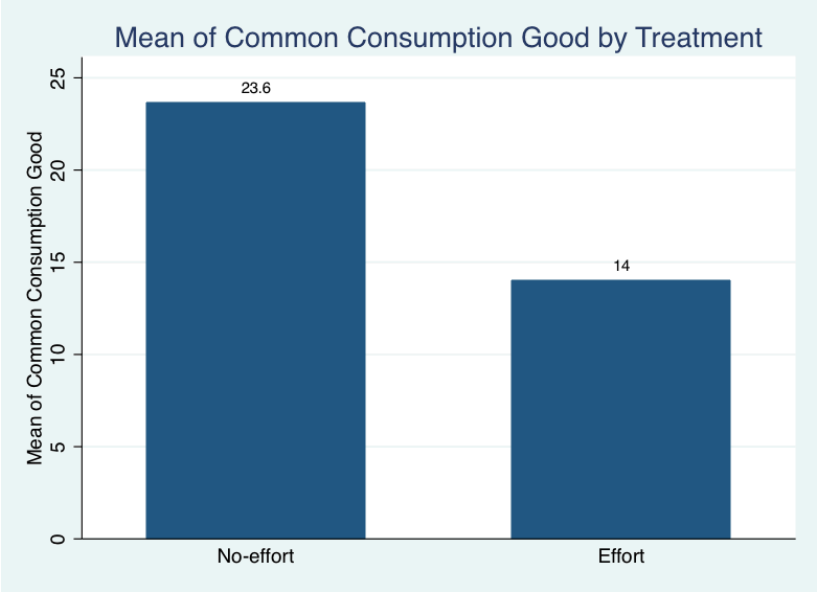

Figure 3: Percentage of joint consumption good by treatment for Females

Next, we formally test the hypotheses below:

H1: Choices are identical in the effort and the no-effort treatment

H2: Choices in the effort treatment are identical for males and females

H3: Choices in the no-effort treatment are identical for males and females

H4: Choices for males are identical in the effort and the no-effort treatments

H5: Choices for females are identical in the effort and the no-effort treatments

Our results indicate that subjects in the effort treatment are significantly less likely to choose the joint consumption bundle compared to subjects in the no-effort treatment (H1 is rejected at 1% significance level, p-value=0.0068). Males are significantly less likely to choose the joint consumption bundle compared to females in

the effort treatment (H2 is rejected at 10% significance level p-value=0.08). Male and female choices for joint consumption bundles are not significantly different in the no-effort treatment (we fail to reject H3, p-value=0.82). Males are less likely to choose the joint consumption bundle in the effort treatment compared to the no-effort treatment (H4 is rejected at the 1% significance level, p-value=0.007). Finally, there is no significant difference in the choice of joint consumption bundle for females across treatments (we fail to reject H5, p-value=0.21).

The mean tests described above however, do not allow us to disentangle treatment differences and gender specific treatment differences from differences in socioeconomic characteristics. Our experiment design allows us to use socioeconomic characteristics collected during the experiment to provide a better insight into choice, conditioning on such factors. In Table 2 we check for balance in household and demographic characteristics between subjects who participated in the effort treatment and subjects who participated in the no-effort treatment. We find that subjects in the effort treatment are on average 5 years younger and have fewer years of marriage compared to subjects assigned to the no-effort treatment. We also find that subjects in the effort treatment have 10% more monthly household income than subjects in the no-effort treatment. We find no statistically significant difference in other characteristics between the two groups (see column 3, Table 2). To be able to isolate the impact of the treatment from other factors, we control for these differences in household and demographic characteristics in the regression analysis to follow.

Table 2: Covariate balance between groups

Variables	Mean (std. dev) Effort (1)	Mean (std. dev) No-effort (2)	Mean difference (std. error) (3) [1-2]
Male (=1 if male, 0 otherwise)	0.50	0.50	0.0
	(0.50)	(0.50)	[0.07]
Age in years	30.82	35.75	-4.93***
	(7.37)	(10.50)	[1.26]
Completed grades of schooling	3.00	2.43	-0.56
	(3.04)	(2.55)	[0.38]
Years married (in years)	12.48	15.01	-2.53*
	(8.29)	(10.68)	[1.32]
Number of children	2.74	3	-0.26
	(1.14)	(1.41)	[0.18]
Monthly household income in Rupees	5619.85	5110.54	509.30
	(2668.64)	(2332.47)	[345.16]
Log (household income)	8.55	8.45	0.10*
	(0.38)	(0.41)	[0.06]
Savings (=1 if positive savings, 0 otherwise)	0.85	0.77	0.07
	(0.36)	(0.42)	[0.05]
Conflict over budget (=1 if conflict, 0 otherwise)	0.05	0.11	-0.06
	(0.23)	(0.30)	[0.04]
Sample size	100	110	

Notes: Standard deviations reported in parentheses for columns 1 and 2. In column 3, standard error reported in parentheses. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

4.3 Regression Analysis

We estimate a multivariate probit regression model to examine treatment and gender specific treatment differences in consumption choices controlling for demographic and socio-economic characteristics. The associated marginal probability effects from a probit regression model along with robust standard errors are reported in Table 3. The underlying latent response function of the probit model takes the following form:

$$Y_i^* = \beta_0 + \beta_1 Treatment_i + \beta_2 Male_i + \beta_3 Treatment * Male_i + \sum_{j=4} \beta_j X_j + \varepsilon_i$$

The dependent variable in Table 3 takes a value 1 if the subject chooses the common consumption good, and 0 otherwise. Treatment is a binary variable, which takes a value 1 if the individual is assigned to the effort treatment and 0 otherwise. Male is equal to 1 if male, 0 otherwise. Xs include a vector of socio-economic characteristics reported in Table 1.

To test whether consumptions choices are identical in the effort and non-effort treatment, we estimate the probit regression model without the interaction term, where β_1 captures differences in consumption choices between the effort and no-effort treatments. The associated regression result is reported in column 1, Table 3. We find that subjects assigned to the effort treatment are 10 percentage points less likely to choose the joint consumption good compared to subjects assigned to the no-effort treatment. This difference is statistically significant at the 5% significance level suggesting that the earning procedure influences altruistic consumption choices in the household.

We are particularly interested in identifying gender specific treatment differences in consumption choices. The associated regression results are reported in column 2, Table 3. The joint test on the treatment dummy and the interaction term ($\beta_1 + \beta_3$), captures differences in consumptions choices between the effort and no-effort treatment for males. The coefficient estimate on the treatment dummy and the interaction dummy jointly has a value of -0.22 (appended in column 2, Table 3) and is statistically significant at the 1%

significance level. We find that male subjects are 22 percentage points less likely to choose the joint consumption good when assigned to the effort treatment compared to when assigned to the no-effort treatment. Next we examine treatment differences among female subjects. The coefficient estimate on the treatment dummy (β_1) captures differences in consumption choices between the effort and the no-effort treatment among female subjects. We find that women are only 0.5 percentage points less likely to choose the joint consumption good when assigned to the effort treatment compared to when assigned to the no-effort treatment, and this difference is not statistically significant at even the 10% significance level. This suggests that womens' preferences for the joint consumption bundle is independent of her treatment status, while males indicate a strong preference for the private consumption good in the effort treatment. Finally, β_3 captures the difference between difference in consumption choices between the effort and no-effort treatment for males and the difference in consumption choices between the effort and no-effort treatment for females. We find that male subjects in comparison to female subjects are 15 percentage points less likely to choose the common consumption good in the effort treatment compared to the no-effort treatment. This suggests considerable gender specific difference in consumption choices by treatment. Our results suggest that procedure in which income is earned does not influence altruistic choices for women; however, it does significantly change men's altruistic choices. Notice that these results cannot be attributed to differential rates of participation in the labor force across gender as we find most male and females in our sample to be employed (see Table 1).

Table 3, column 2 (see below) provides further insights into the role of socioeconomic characteristics, and its influence on experiment choices. First, we find that both age and

number of years married is negatively associated with the choice of joint consumption good. In other words, relatively newly married couples seem to signal preference for joint consumption more compared to couples who have been married for long years. It is plausible that this is due to an inherent desire to appear more caring for the family for the relatively newly weds. Second, we find that subjects with more children are more likely to choose the joint consumption good. This is possibly indicative of a general pressure on common consumption in larger families, where parents would like to provide more to common consumption whenever possible, ceteris paribus. Third, a 100% increase in household income is associated with a 17-percentage point decline in the probability of choosing the joint consumption good. Fourth, subjects with positive savings are less likely to choose the common consumption good compared to subjects who do not save anything, though this difference is not statistically significant. Both of these are intuitively in the right direction. Families with relatively higher income and or saving are not in need of basic food consumption. As a result, they are in a convenient position to spend the earning from the experiment on private consumption. These effects are also in line with the coefficient estimates on completed grades of schooling, for which we find that every additional grade of schooling completed decreases the probability of choosing the common consumption good by 1.4 percentage point, small and statistically significant only in column 3, Table 3. Fourth, we find that conflict in the household over budget allocation decisions affects consumption choices significantly.

Overall, subjects who report conflict in the household over budget allocation decisions are 40 percentage points more likely to choose the joint consumption good. Curiously, we find that the response to conflict differs by gender. When we interact the conflict dummy

with the male dummy and include this as an additional right hand side variable in column 3, Table 3, we find that female subjects reporting conflict over budget allocations in the household are 76 percentage points more likely to choose the joint consumption good. In comparison, male subjects that face conflict over budget allocations in the household are only 16 percentage points more likely to choose the common consumption good.

Table 3: Determinants of Common Consumption Good: Pooled Sample

Variables	**(1) Common**	**(2) Common**	**(3) Common**
Treatment	-0.102**	-0.005	0.015
	(0.046)	(0.06)	(0.06)
Male	-0.02	0.04	0.07
	(0.052)	(0.05)	(0.06)
Treatment*male		-0.15***	-0.15***
		(0.04)	(0.04)
Age in years	-0.006	-0.005	-0.005
	(0.006)	(0.005)	(0.0056)
Completed grades of schooling	-0.0215**	-0.014	-0.02**
	(0.009)	(0.008)	(0.009)
Years married	-0.00025	-0.001	-0.0012
	(0.006)	(0.005)	(0.005)
Number of children	0.045**	0.05**	0.051**
	(0.02)	(0.02)	(0.022)
Log (household income)	-0.121	-0.17**	-0.19**
	(0.07)	(0.07)	(0.07)
Savings (=1 if positive savings, 0 otherwise)	-0.053	-0.05	-0.03
	(0.07)	(0.06)	(0.06)
Conflict over budget (=1 if conflict, 0 otherwise)	0.353***	0.40***	0.767***
	(0.13)	(0.12)	(0.20)
Conflict over budget*male			-0.11***
			(0.03)
Linear Hypotheses:			
Treatment + Treatment*Male = 0		-0.22***	-0.20***
		(0.07)	(0.06)
Conflict over budget + conflict over budget*male			0.16**
			(0.07)
Sample size	210	210	210

Notes: Marginal effects from a probit regression model are presented along with robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The gender specific treatment differences in the pooled estimates reported in Table 3 may be confounded by gender specific differences in household characteristics, which influence the choice of common consumption good. To allow for gender specific differences in socioeconomic characteristics, we estimate the treatment effects separately for males and females. The results reported in Table 4 suggest that the impact of certain socioeconomic characteristics on consumption differs by gender. We find that male are 10 percentage points less likely to choose the common consumption good in the effort treatment compared to the no-effort treatment. Whereas, for women the treatment effects are statistically insignificant, close to zero in magnitude and has no impact on consumption choices. Every additional grade of schooling decreases the probability of choosing the common consumption good for males and females, with the effects being statistically significant only for the former.

We also find that variation in household composition, that is, number of children has no influence on male consumption choices. Whereas, for women, household composition, that is, the number of children in the household is positively related to the choice of the common consumption good. Every additional child in the household increases the probability of choosing the common consumption good by 12-percentage points. This finding is consistent with other results reported along with tests of unitary household models, where women residing in families with more children are far more sensitive to allocation for children's goods [Lundberg, Pollak and Wales, 1997]. We also find conflict within the household is positively related to choice of the common consumption good for both males and females, where conflict increases the probability of choosing the common consumption good by only 18-percentage points among males, it increases the probability

of choosing the common consumption good more dramatically among females (73-percentage points). Female consumption choices are far more sensitive to household composition and conflict than income, grades or treatment differences all of which affect male choices.

The gender differential effects found here re-enforce our overall finding that women are more caring for the household and it is number of children in the household and conflict in budget allocations that make them choose the common consumption good whereas, male choices for the common consumption good are related to his income, grades and the treatment.

4.4 Simulation of Decision-making in the Household

Note that given our experiment design, only one of the household members participate as a decision-maker. However, given our data on socio economic characteristics gathered from both partners (the decision-maker, as well as the non-decision maker), we can further use our regression model to simulate the behavior of the spouses of the decision makers for each treatment. Even though the spouses do not make decisions, using the information from the survey data collected on them along with the marginal effects estimated in Table 4, we can simulate their behavior. This exercise can allow us to use our between-gender household design to evaluate decisions in a within-household context as long as all information is observed privately without any pre-play communication between husbands and wives.

We use the coefficient estimates reported in column 1, Table 4 along with male non-participants' socioeconomic characteristics to find that male non-participants, that is,

spouse of female decision makers in the effort treatment are only 1.9 percent likely to choose the common consumption good whereas in the no-effort treatment they are 10.3 percent likely to choose the common consumption good. We conduct a similar exercise for the female non-participants, that is, the spouse of the male decision makers, using the coefficient estimates reported in column 2, Table 4 and their socioeconomic characteristics to find that females are 11 percent likely to choose the common consumption good in the effort treatment and 15 percent likely to choose the common consumption good in the no-effort treatment.

Table 4: Determinants of Common Consumption Good by Gender

Variables	**(1) Common Male**	**(2) Common Female**
Treatment	-0.10**	-0.05
	(0.04)	(0.10)
Age in years	0.006	-0.014
	(0.007)	(0.009)
Completed grades of schooling	-0.015**	-0.021
	(0.006)	(0.02)
Years married	-0.014	0.009
	(0.009)	(0.008)
Number of children	0.048	0.125***
	(0.03)	(0.04)
Log (household income)	-0.107	-0.072
	(0.12)	(0.18)
Savings (=1 if positive savings, 0 otherwise)	-0.04	0.035
	(0.13)	(0.08)
Conflict over budget (=1 if conflict, 0 otherwise)	0.18	0.73***
	(0.11)	(0.21)
Sample size	105	105

Notes: Marginal effects from a probit regression model are presented along with robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Once again, this behavior among non-participants suggests that within a family, husbands appear to be more stingy in allocating resources on common household consumption in the effort treatment, whereas, females' consumption choices for the common household bundle remain independent of the treatment. These simulated predictions have implications for household decision-making and allows us to predict the decision makers spouses' behavior as well. We find that the gender differential behavior across treatments can be further generalized to differences in husband-wife decisions within the household as well.

5. Conclusion

Our experiment evaluates the role of procedure in altruistic consumption choices among male and female spouses. Our results support the growing work on procedural utility that suggests that subject choices are more self-serving at the aggregate level when the procedure of earning involves effort. However, we find that women's altruistic behavior remain largely independent of the earning procedure, lending support to the notion that relatively, the female gender promotes choices that are more nurturing and caring (Eagly and Crowley 1986; Brickell and Chant 2012). Our results also seem to be supportive of the framework of cooperative conflict (Sen 1990) where women identify more than men in household's interest. The latter is particularly interesting to observe in our subjects where presence of household conflicts over budgetary allocations make men and women behave very differently; men prefer private consumption more, while women prefer joint family consumption more facing such conflicts.

Although, our primary interest in the experiment is in eliciting consumption choices in the household under different earning procedures, our results have implications towards some of the classic work testing common preference models of the family. These models suggest a form of Ricardian equivalence, that is, which family member receives or controls income should not affect the allocation of family resources, suggesting that gender-targeted transfer policies might be unnecessary. Lundberg and Pollak (1993) provide a theoretical framework where this might not be necessarily true. Lundberg, Pollak and Wales (1997) use the changes in the U.K. child benefit scheme in the late 1970s as a natural experiment to investigate consumption patterns when child benefits accrued to the husband vs. when it accrued to the wife. They reject the income-pooling model as their results suggest that there are significant differences in family expenditure patterns and conclude that their results support the notion that children do better when their mothers control a larger fraction of family resources. In our experiment we exogenously vary the income earner as well as the conditions for earning and come to a similar conclusion, i.e., we find wives' choices are relatively more altruistic, and cater more towards joint household consumption compared to husbands, especially when the wife earns the income and is also the decision-maker.

In retrospect, our results broadly support the conclusion of enhancing the role of women in the household. The steps taken by countries such as Mexico and Sri Lanka, where food coupons were directed towards women than men, and India's recent step towards making women the head of the household for food distribution purposes seem a positive move to improve household welfare keeping in mind the more altruistic concerns that women spouses exhibit. Further, our results suggest that a push towards women's empowerment

(Duflo 2012), especially through women's greater participation in the labor force can have positive benefits for joint household consumption and development, as empowered women seem to care significantly more for household consumption than empowered men.

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Appendix

The experimental Instructions

Welcome to today's experiment.

You will receive a colored chip with a code on it. If you have a red chip please go to the room on the left. In this room, you will be asked some survey questions about your day to day life. You are free to say that you do not want to answer any particular question. At the end of the survey, you will be given Rs. 50 and escorted out of the room by one of the experimenters.

[No Effort]

If you have received a green chip please go to the room on the right. Here you will participate in the following tasks:

We will give you a store receipt worth Rs. 200 which can be used to buy only the specified choices below. You have to choose from one of the two options below:

Option 1: A shirt and a pair of trousers [Two Sarees (for females)]. See examples displayed on the table.

Option 2: Food items (see packets displayed on the table)

Once you have made your choice, you will be asked some survey questions about your day-to-day life. You are free to say that you do not want to answer any particular question. At the end of the survey, you will be given Rs. 50 and the store receipt and escorted out of the room by one of the experimenters.

If you have any questions/clarifications you can raise your hand and I will answer your query privately.

[Effort]

If you have received a green chip please go to the room on the right. Here you will participate in the following tasks:

There are four bowls. In one bowl there are chips containing three colors. There are three other empty bowls. You need to separate out the chips into the three bowls, with each containing chips of only one color. You will get five minutes to finish your task. If you complete the task successfully, we will give you a store receipt worth Rs. 200 which can be used to buy only the specified choices below. You have to choose from one of the two options below:

Option 1: A shirt and a pair of trousers [Two Sarees (for females)]. See examples displayed on the table.

Option 2: Food items (see packets displayed on the table)

Once you have made your choice, you will be asked some survey questions about your day-to-day life. You are free to say that you do not want to answer any particular question. At the end of the survey, you will be given Rs. 50 and the store receipt and escorted out of the room by one of the experimenters. Note: if you cannot separate the chips in the three bowls within five minutes you will only receive Rs. 50 showing up on time.

If you have any questions/clarifications you can raise your hand and I will answer your query privately.