Household bargaining and spending on children: Experimental evidence from Tanzania

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Abstract

This paper studies whether increasing the wife's bargaining power causes a couple to allocate more resources to their child, and, if so, what the underlying mechanisms for this might be. We conduct a novel between-subject lab experiment where we vary the relative bargaining power between spouses. The paper provides two main insights. First, increasing the wife's bargaining power does not increase the share allocated to the child, but leads to more gender-equal allocations to children. Second, it is better for the child that the most patient spouse has more relative bargaining power.

Keywords: Intra-household allocation, female bargaining power, Tanzania

JEL Classification: C92, D13, J13, O12

Since the UN Millennium Development Goals (MDGs) were launched in year 2000, there has been an increased focus on female empowerment in international development aid strategies. Female empowerment is undoubtedly a goal of great intrinsic importance, but the policy debate has also focused on other reasons for empowering women. In particular, it has been argued that increasing women's intra-household bargaining power increases spending on goods and services that benefit children.[1] The assumed positive externalities of female empowerment are also reflected in implemented policies; most conditional cash transfer programs that aim to improve living conditions for children target women (Fiszbein and Schady 2009).

The empirical and theoretical evidence for the positive effect of female empowerment on spending on children are, however, mixed. In this paper, we present evidence from a novel between-subject lab experiment where we exogenously vary the relative bargaining power between the husband and the wife. The design allows us to causally identify whether an increase in the wife's bargaining power affects how much a couple allocates to their child. We also investigate the role of time, risk, and gender preferences, factors that have previously received little attention in the household decision-making literature.

The experiment was conducted with married couples in Dar es Salaam, Tanzania. The main outcome of interest is how the couples distribute a fixed endowment between the wife, the husband, and one of their children. The amount allocated to the child is an investment in his or her education in the form of tutoring. In the experiment, we change the wife's bargaining power by exogenously varying her control over the allocation of the endowment in four treatments. The first treatment is a dictator game where the husband is the dictator and makes the allocation decision. The second and third treatments are Rubinstein shrinking-pie bargaining games; the husband makes the first proposal for the allocation decision in the second treatment, and the wife makes the first proposal in the third treatment (Rubinstein 1982). Finally, the fourth treatment is a dictator game where the wife is the dictator and makes the allocation decision. The treatments are designed

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[1]See, e.g. Thomas (1990; 1993), Phipps and Burton (1998), Attanasio and Lechene (2002), Brown (2003), Duflo (2003), Duflo and Udry (2004), Khandker (2005), Doss (2006), Gitter and Barham (2008), Rubalcava et al. (2009), and Browning et al. (2014).

to capture a gradual increase in the wife's bargaining power. In the first treatment, the husband has complete bargaining power. In the second and third treatments, the bargaining power is shared between the spouses, where the first proposer has the upper hand through a first-mover advantage. Thus, the wife has less bargaining power in the second than in the third treatment. In the fourth treatment, the wife has complete bargaining power.

The paper offers two main insights. First, we find no evidence that increasing the wife's bargaining power causes a larger allocation to the child. To the contrary, we observe a significant reduction (≈ 10 percentage points from a base of 35%) in the allocation to the child in the bargaining treatment where the wife has the first-mover advantage compared to the treatment where the husband is the dictator. This result challenges the common assumption that targeting the wife is beneficial to children. On the other hand, increasing the wife's bargaining power benefits gender equality among children; girls receive as much as boys when the wife has some bargaining power (treatments 2 - 4). This finding suggests that increasing the wife's bargaining power may lead to a more gender-equal society over time. Second, we find that the effect of an increase in bargaining power depends on the difference in time preferences between spouses. When the wife is less patient than the husband, giving her full bargaining power decreases the allocation to the child by 13.7 percentage points (from 38% when the husband is the dictator to 24.3% when the wife is the dictator). This result illustrates the importance of time preferences in the decision-making process in the household.

Our study relates to the growing literature on household decision-making in developing countries. Earlier empirical studies such as Thomas (1990; 1993), Kennedy and Peters (1992), Lundberg et al. (1997), and Case and Deaton (1998) are typically based on survey data, and suggest that wives allocate more resources towards children's human capital and clothing than men do. In the last two decades, a large strand of the household decision-making literature has focused on studying cash transfer programs. Attanasio and Lechene (2002; 2010) and Rubalcava et al. (2009) find that conditional cash transfers to women in Mexico (Oportunidades) increase the families' budget share spent on food

and children's clothing, and decrease the share spent on alcohol compared to households that did not receive a transfer. However, because the transfers were given to women only, these studies do not shed light on the importance of the receiver's gender for spending on children. Yoong et al. (2012) find that when transfers are unconditional, targeting women does not guarantee positive outcomes for the family's welfare.[2] This finding is also supported by more recent randomized controlled trials that exogenously vary the gender of the receiver (Benhassine et al. 2015; Akresh et al. 2016; Haushofer and Shapiro 2016).[3]

Another strand of the household decision-making literature uses lab experiments to test household models, including efficiency and cooperation within the household. This literature suggests that women do not always make choices that are in the best interest of the household. Iversen et al. (2011), Kebede et al. (2014), and Munro et al. (2014) use public good games and find that the wife contributes less to the common pool than the husband does. In this context the wife's decision reduces the household income more than the husband's decision does. Similarly, Jakiela and Ozier (2016) find that women are willing to conceal their initial endowment, even though it reduces their potential earnings in the experiment. Finally, Castilla and Walker (2013) and Hoel (2015) find evidence of inefficiencies and hiding of income when the wife is the decision-maker. We contribute to the household decision-making literature by (i) providing a clean causal test of the effect of an increase in female bargaining power on real investments in children, and (ii) shedding light on the effect of time, risk, and gender preferences.

The paper is organized as follows: Section 1 presents a conceptual framework. Section 2 describes the experimental design. Section 3 discusses the empirical strategy and Section 4 provides the results. Section 5 discusses the results and concludes.

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[2]Welfare is broadly defined and includes "material standards of living as well as human capital and social relationships" (Yoong et al. 2012, 2).

[3]An exception is a recent study by Armand et al. (2016) who find that female recipients spend significantly more on food (especially meat, fish, and dairy products) compared to male recipients.

1. Conceptual Framework

This section introduces a simple conceptual framework to guide our empirical analysis. The framework is based on the collective household model, as developed by Chiappori (1992). We first address the question of bargaining power. Second, we consider underlying mechanisms (time, risk, and gender preferences) that may explain how bargaining power affects household decisions.

Assume that each spouse cares about his or her own consumption and spending on the child. Let $w = $ wife and $h = $ husband, then spouse $s = w, h$'s utility function can be expressed as:

$$u_s = \ln q_s + \alpha_s \ln Q \tag{1}$$

where q_s is spending on private goods, Q is spending on the child, and $\alpha_s \geq 0$ is the weight assigned to the child by spouse s.

First, we consider intra-household bargaining power. In this framework, a spouse's bargaining power is defined as how much weight is assigned to his or her utility in the household utility function (Browning et al. 2014).

$$\max_{q_w, q_h, Q} \mu u_w + (1 - \mu) u_h \tag{2}$$

where $\mu \in (0, 1)$ denotes the wife's bargaining power. When prices are normalized to 1, and household income is denoted by $Y = Q + q_w + q_h$, we obtain the following relationship between the wife's bargaining power and spending on the child:

$$\frac{dQ}{d\mu} = \frac{\alpha_w - \alpha_h}{(\alpha_w \mu + \alpha_h (1 - \mu) + 1)^2} Y \tag{3}$$

From Equation (3), we observe that if the husband and the wife assign the same weight to the child in their utility function, a change in bargaining power does not affect spending on the child. If, however, the wife assigns a higher weight to the child than the husband $(\alpha_w > \alpha_h)$, an increase in the wife's bargaining power increases spending on the child.

To address the underlying mechanisms, we consider the factors determining the weight

assigned to the child by spouse s, α_s. Previous literature has mainly thought of α_s as capturing how much the spouse cares about the child, where the common assumption is that the wife cares more about the child than the husband does. This assumption has support in evolutionary biology theory through the fact that women's fertility is constrained, whereas men's fertility is not (Eswaran and Kotwal 2004). We argue that a broader set of factors may shape α_s, including time, risk, and gender preferences.[4]

Time preferences may be important in determining the weight assigned to the child because spending on children (particulary on children's education, which is the focus of this paper) requires a long-term perspective as it involves delayed benefits (such as higher wages for the child and security in old age for the parents). Thus, we hypothesize that spouses that are more patient assign a higher weight to the child in their utility function than less patient spouses.

The weight assigned to the child can also be affected by the risk preferences of the spouse. A priori, the effect of risk preferences is unclear. On the one hand, as the future is uncertain, a more risk-averse spouse may be more likely to have a lower weight assigned to the child than a less risk-averse spouse. On the other hand, a child may represent an insurance mechanism and education can therefore be more valuable to a risk-averse spouse than to a less risk-averse spouse (Wölfel and Heineck 2012).

Finally, gender preferences may influence the weight assigned to the child. In Asia, there is a clear preference for sons (Qian 2008; Guilmoto 2012), but this is not common elsewhere (Norling 2016). Some studies from Africa and the US show that parents favor children of their own gender (Raley and Bianchi 2006; Dahl and Moretti 2008; Dizon-Ross and Jayachandran 2015), whereas others do not find any gender-biasedness (Norling 2016). If the spouse is gender-biased, he or she will assign a higher weight to a child of one gender than to a child of the other gender.

To summarize, our conceptual framework shows that bargaining power only matters

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[4]In this paper we have chosen to focus on the spouse's preferences. Another important factor is knowledge. The better knowledge the spouse has of the value of education, the more likely he or she is to assign a higher weight to the child. A proxy for knowledge is level of education, and it has been shown that children with parents with a high level of education are more likely to receive a high level of education themselves (Black et al. 2005). Other factors influencing the weight could include social norms and social networks.

if the husband and the wife assign different weights to the child in their utility function. The weight assigned to the child depends on several factors, including caring preferences, time preferences, risk preferences, and gender preferences.

2. Experimental Design and Sample

2.1 *Sample and Setting*

The experiment was conducted with 287 couples in Dar es Salaam, Tanzania. The couples were recruited by distribution of invitation letters (see Appendix G.2.1) to pupils in four different primary schools in a relatively poor ward. The couples signed up for participation in the study by returning a slip with their name and contact information to their child's teacher. They were then called by one of the research assistants to schedule a session.

Each spouse received a TZS5,000 show-up fee (approx. USD2.3 at the time of the study), and had the opportunity to earn more during the experiment. All sessions took place in the afternoon between 1 pm and 5 pm, and each session consisted of between 15 and 30 couples. On average, each household earned TZS40,000 (approx. USD18.6), including the show-up fee. This corresponded to more than two days' worth of wages for low-paying jobs.[5] In addition, we provided one child in each household with an average of 3.4 weeks of tutoring (worth TSZ17,000/USD7.8).

Table Table: Background by Gender provides background characteristics for participants by gender. The average participant is close to 39 years old, and the men are on average eight years older than the women. The couples care for an average of 3.2 children of whom 1.4 are in primary school. Comparing our sample to the Tanzania Demographic Household Survey (DHS), our households are larger than the average in urban Tanzania (5.2 members vs. 4.3 members) (TNBS and ICF Macro 2016, p. 37). Most of the respondents have completed primary school or a higher level of education. Men are more

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[5]The minimum daily wage for trade, communications, and domestic services was around TZS5,000, and for construction around TZS10,000 (http://www.africapay.org/tanzania/home/salary/minimum-wages).

educated than women, which reflects the gender gap in educational attainment in Tanzania (TNBS and ICF Macro 2016, p. 42–43). In addition, there are large gender differences in employment status. While 41% of women report being unemployed, only 5% of men do the same. This is comparable to the DHS data (TNBS and ICF Macro 2016, p. 69–72).

2.2 *Experimental Set-up and Conditions*

The sequence of events is described in Figure G1. At arrival, we conduct a background survey with both spouses present. Couples are subsequently randomized to one of the four treatments, and the husband and the wife are placed in separate rooms according to their treatment. They then face three incentivized tasks. All the tasks are choices of how to allocate a monetary endowment. To illustrate their choice, the participants receive laminated pictures of TZS500 and TZS1,000 notes. They are asked to place the money in different cups illustrating their choice and the research assistants record the answers. By simplifying the tasks in this manner, we ensure that literacy is not a requirement to participate in the study.

To understand the underlying mechanisms behind the couple's decision, we elicit time and risk preferences using two separate tasks. In both tasks the participants are explicitly told that their spouse will not be informed about their decision.[6] We base the time-preference task on Angerer et al. (2015), and the risk-preference task on Gneezy and Potters (1997) because of their simplicity.[7] In the time-preference task, the participants allocate TZS3,000 between the day of the experiment and three weeks later.[8] Any amount they choose to receive after three weeks is doubled. Earnings from the time-preference task are paid out as transfers to mobile phones through M-Pesa.[9,10]

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[6]Instructions for the tasks are provided in Appendix G.3.

[7]The time-preference task is a simplification of the task used by Andreoni and Sprenger (2012).

[8]The participants can allocate TZS0, TZS500, TZS1,500,..., or TZS3,000 to the future (this also applies to the risk-preference task described below).

[9]M-Pesa is an SMS-based money-transferring system allowing individuals to deposit, withdraw, and transfer money with their phone. The receiver could easily liquidate this money, or use it to pay bills such as phone and electricity bills.

[10]To ensure that allocations to the day of the experiment do not reflect a preference for cash over mobile money, both payments in the time-preference task are made using M-Pesa.

Table 1: *Background Characteristics by Gender*

	Wife	Husband	Total	P-value, t-test
A. Background				
Age	34.95	42.66	38.80	0.000***
	(0.45)	(0.59)	(0.41)	
Number of children	-	-	3.17	
			(0.07)	
Children in primary	-	-	1.40	
			(0.03)	
B. Education				
No/some/completed primary	0.38	0.35	0.36	0.244
	(0.03)	(0.03)	(0.02)	
Some secondary	0.50	0.39	0.44	0.005***
	(0.03)	(0.03)	(0.02)	
Completed secondary or more	0.13	0.26	0.19	0.000***
	(0.02)	(0.03)	(0.02)	
C. Employment status				
Unemployed	0.41	0.05	0.23	0.000***
	(0.03)	(0.01)	(0.02)	
Self-employed	0.52	0.67	0.60	0.000***
	(0.03)	(0.03)	(0.02)	
Individuals	287	287	574	

Mean coefficients; standard error of mean in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports descriptive statistics for parents (age, education, employment status) and households (number of children, number of children in primary school). Column (1) reports means for wives, Column (2) reports means for husbands, Column (3) reports means for the total sample, and Column (4) reports p-values for two-sided t-test of difference in means between husband and wife. In panel A, we report background variables for the household. "Age": participant's reported age. "Number of children": total number of children the couple cares for. "Children in primary": total number of children the couple is caring for that are currently attending primary school in Dar es Salaam. In panel B, we report education variables. "No/some/completed primary": share of participants who have no formal schooling, some primary school, or completed primary school as their highest obtained level of education. "Some secondary": share of participants with some secondary school as their highest obtained level of education. "Secondary completed or more": share of participants with completed secondary school or higher as their highest obtained level of education. In panel C, we report occupation variables. "Unemployed": share of unemployed participants. "Self-employed": share of self-employed participants. Remaining participants are employed in the formal sector (public or private).

In the risk-preference task, the participants decide how much of TZS3,000 they want to keep and how much they want to invest in a risky option. After their decision, the participants draw a card from a bag to determine whether the invested money is tripled (green card) or reduced to nothing (red card). They are informed that the probability of winning and losing is the same. Note that risk-neutral (and risk-seeking) individuals should invest the entire TZS3,000 endowment in the risky option. Thus, the risk-preference task can be thought of as a measure of the degree of risk aversion. Earnings from this task are paid out in cash at the end of the experiment.

In the third task, the couples allocate a TZS15,000 endowment between the wife, the husband, and their child. If a couple has more than one child in primary school, one is randomly selected. The name of the chosen child is communicated to the parents before they make the allocation decision. For every TZS1,500 allocated to the child, the child receives one week of tutoring. The couples can allocate amounts of TZS0, TZS1,500, TZS3,000, ..., or TZS15,000, and the maximum possible amount of tutoring is ten weeks. The husband and wife's earnings from the distributive task are paid out in cash. The allocation to the child is paid out as a certificate for tuition.

The structure of the distributive task is determined by the treatment to which the couples were allocated:

Husband Dictator: dictator game with the husband as dictator.

Husband Bargaining: Rubinstein shrinking-pie bargaining with the husband as first proposer.

Wife Bargaining: Rubinstein shrinking-pie bargaining with the wife as first proposer.

Wife Dictator: dictator game with the wife as dictator.

In Husband Dictator, the husband decides how to allocate the endowment. He indicates his allocation by dividing the total endowment between three cups: one with a picture of a woman, one with a picture of a man, and one with a picture of a child. He knows that his wife will be informed about his decision. In Husband Bargaining and Wife Bargaining, the first proposer makes a proposal of how to allocate the endowment. The

Figure 1: *Diagram of Experimental Design*

proposal is then shown to the spouse, who can either agree or disagree. If the spouse agrees, the proposal is implemented. Otherwise, the endowment is reduced by TZS500, and he or she makes a counter-proposal. The couples can go back and forth until an agreement is reached or there is no money left. Wife Dictator is similar to Husband Dictator, but the wife has the role of dictator.

The treatments are designed to exogenously increase the wife's bargaining power in the experiment. When the husband is the dictator, the wife has no bargaining power. In the two bargaining treatments, the bargaining power is shared between the spouses, but the first proposer has the upper hand through a first-mover advantage. Finally, in the fourth treatment, the wife has complete bargaining power. We will refer to the increase in the wife's bargaining power as "small" when comparing Husband Dictator to Husband Bargaining, as "intermediate" when comparing Husband Dictator to Wife Bargaining, and as "large" when comparing Husband Dictator to Wife Dictator.

Theoretically, the comparison of Husband Dictator to Wife Dictator yields information about whether the weights assigned to the child are different in the husband's and the wife's utility function, respectively.[11]

3. Empirical Strategy

A pre-analysis plan was registered at the American Economic Association Randomized Controlled Trials Registry before we collected the data.[12] This plan specifies the empirical strategy, including the hypotheses to be tested, the regression approach, and the dimensions to be studied in the heterogeneity analysis.

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[11]When comparing Husband Dictator with any of the bargaining treatments, confounding factors make it difficult to disentangle the spouses' preferences from bargaining effects.

[12]https://www.socialscienceregistry.org/trials/770.

3.1 *Main Analysis*

We first investigate whether an increase in the wife's bargaining power increases the share allocated to the child by estimating the following regression:

$$y_c = \alpha \quad + \quad \beta_{HB}\text{Husband Bargaining}_c$$
$$+ \quad \beta_{WB}\text{Wife Bargaining}_c + \beta_{WD}\text{Wife Dictator}_c + \delta_S S + \delta_X X_c + \varepsilon_c, \qquad (4)$$

where y_c is the share of the endowment allocated to the child for couple c, α is a constant, Husband Bargaining$_c$, Wife Bargaining$_c$, and Wife Dictator$_c$ are treatment dummies taking the value 1 if couple c is in Husband Bargaining, Wife Bargaining, and Wife Dictator, respectively, S is a set of indicator variables for each session, X_c is a vector of background variables, and ε_c is the error-term. X_c consists of child and parent background variables as well as intra-household differences in education and time and risk preferences (the variables are defined in Table 2 for definition of these variables). The inclusion of X_c allows us to control for initial (observable) differences between couples in the different treatments, and for any imbalance between treatments (see Table B1 in Appendix B). We first estimate the regression with no controls. Then, we sequentially add session fixed effects, child background variables, parent background variables and intra-household difference variables. All regressions are estimated with robust standard errors. When discussing the results, we focus on the full specification.

Husband Dictator is the reference category in Equation (4), and we interpret the estimated treatment effects relative to a situation where the husband has complete bargaining power. From Equation (4), we obtain estimates of the causal effect of a small (β_{HB}), intermediate (β_{WB}), and large (β_{WD}) increase in the wife's bargaining power on y_c.

We also estimate Equation (4) for y_{Hc}, the share allocated to the husband, and for y_{Wc}, the share allocated to the wife, respectively.[13]

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[13]As these regressions were not specified in the pre-analysis plan, they should be considered exploratory.

3.2 *Heterogeneity Analysis*

To shed light on the underlying mechanisms affecting the allocation to the child, we study heterogeneity in the treatment effect. To do this, we use the elicited preferences and background data collected in the survey. We focus on time, risk and gender preferences. In particular, we test whether the treatment effect is different for couples where (i) the husband is more patient, (ii) the husband is less risk averse, and (iii) the chosen child is a boy. These differences may shed light on differences in the weight spouses assign to the child in the utility function.[14]

We estimate the following regression for each of the three respective preference variables and the three treatments, separately:

$$y_c = \alpha + \beta_T \text{Treatment}_c + \beta_{Var} \text{Var}_c + \theta_T \text{Treatment} \times \text{Var}_c + \delta_S S + \delta_X X_c + \varepsilon_c. \quad (5)$$

Treatment_c is an indicator variable for each of the three treatments, Husband Bargaining, Wife Bargaining, and Wife Dictator, Var_c is an indicator variable for couples where the husband is more patient or less risk averse, and couples where the chosen child is a boy, and $\text{Treatment} * \text{Var}_c$ is an interaction term between the background indicator variables and the treatment indicator variables.[15] In all heterogeneity regressions, Husband Dictator is the reference category.

On the basis of these regressions, we study whether there are significant differences in treatment effects between subgroups. The estimated subgroup difference in the causal effect of increasing female bargaining power is given by θ_T. As an illustration, if Var_c is an indicator variable for the husband being more patient than the wife, then the estimate θ_T, shows whether the effect of an increase in female bargaining power is different for couples where the husband is more patient than the wife and couples where he is not.

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[14]All pre-specified heterogeneity dimensions are reported in Appendix C.

[15]In this regression, X_c includes all background variables except the variable captured by Var_c.

3.3 *Robustness Checks*

We focus on the first proposal in the main analysis. As we do not know if the share allocated to the child is constant with income, it may be problematic to use the final proposal.[16] Furthermore, the receiver's decision to accept the proposal or not may be influenced by the presence of other participants in the room waiting for everyone to finish. It is therefore cleaner to consider the first proposal. As a robustness check, we run Equations (4) and (5) with the final proposal in the two bargaining treatments.

We also conduct the heterogeneity analysis of time and risk preferences differences using a stricter definition where we exclude all couples where the spouses have the same time or risk preferences. This analysis can be considered as a robustness check for whether the heterogenous treatment effects hold for different definitions of the preference variables.

All robustness checks are reported in Appendices D and E.

4. Results

We first provide an overview of the couples' allocation decisions in the experiment, and descriptive statistics on time and risk preferences. We then turn to the main analysis of the treatment effects on the share allocated to the child, and on the share allocated to the wife and the husband, respectively. Finally, we discuss heterogeneous treatment effects.

4.1 *Descriptive Statistics*

Figure 2 illustrates the distribution of the share allocated to the child, the wife, and the husband, for the whole sample. The majority of couples allocate shares between 0.20 and 0.40 of the endowment to their child (mean share allocated is 0.34), but there is significant heterogeneity in the distributive behavior. There is also substantial heterogeneity in the distributions of shares allocated to the wife and the husband. The mean share allocated to the husband, 0.29, is significantly smaller than the mean share allo-

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[16]Only 8 of 97 receivers rejected the first proposal.

cated to the wife, 0.37 ($p < 0.000$).

Figure 2: *Share Allocated to the Child, the Wife, and the Husband*
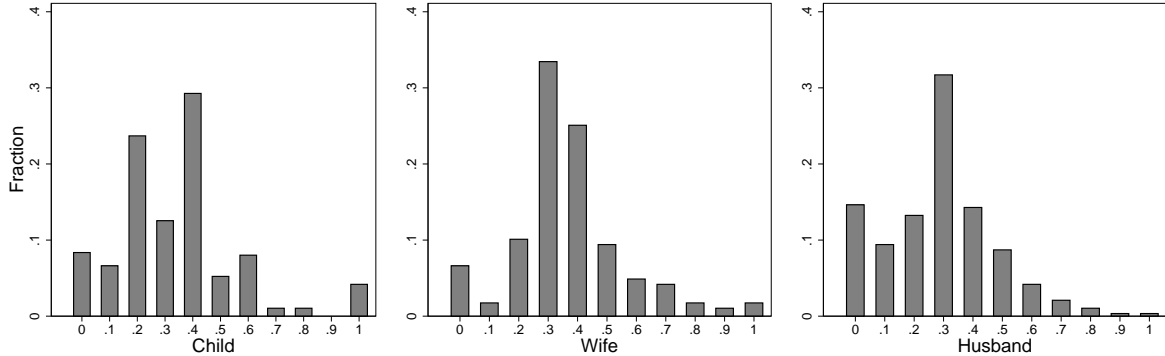
Note: The figure displays the distribution of the share allocated to the child, the wife, and the husband, respectively. The left panel shows the share allocated to the child in the dictator treatments (Husband Dictator and Wife Dictator) and the share proposed to the child in the first proposal in the bargaining treatments (Husband Bargaining and Wife Bargaining). The middle panel shows the share allocated to the wife by herself in Wife Dictator and by the husband in Husband Dictator, and the share proposed to herself in Wife Bargaining and the share proposed to be allocated to her by the husband in Husband Bargaining. The right panel shows the share allocated to the husband by himself in Husband Dictator and by the wife in Wife Dictator, and the share proposed to himself in Husband Bargaining and the share proposed to be allocated to him by the wife in Wife Bargaining.

Next, we consider time and risk preferences. We measure patience as the share of TZS3,000 allocated to the future (the higher the share allocated to the future, the more patient the spouse), and risk aversion as the share of TZS3,000 allocated to the risky option (the higher the share, the lower the risk aversion). On average, the husbands in our sample are significantly less risk averse ($p < 0.000$) and significantly more patient ($p < 0.094$) than the wives.[17]

In Figure 3 we display intra-household differences in patience and risk aversion. Couples are sorted into three categories: husband most patient/least risk averse, husband and wife equally patient/risk averse, and wife most patient/least risk averse. The figure illustrates that there is large variation in the differences in time and risk preferences between spouses. In about 84% of the couples, the husband and the wife have different time preferences, and about 80% have different risk preferences.[18]

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[17]See Figure A1, Appendix A, for a graphical illustration of the distribution of time and risk preferences.

[18]If there is assortative matching in the marriage market, the correlation in preferences between

Figure 3: *Time and Risk preferences Between Husband and Wife*

Time−preference difference

Risk−preference difference
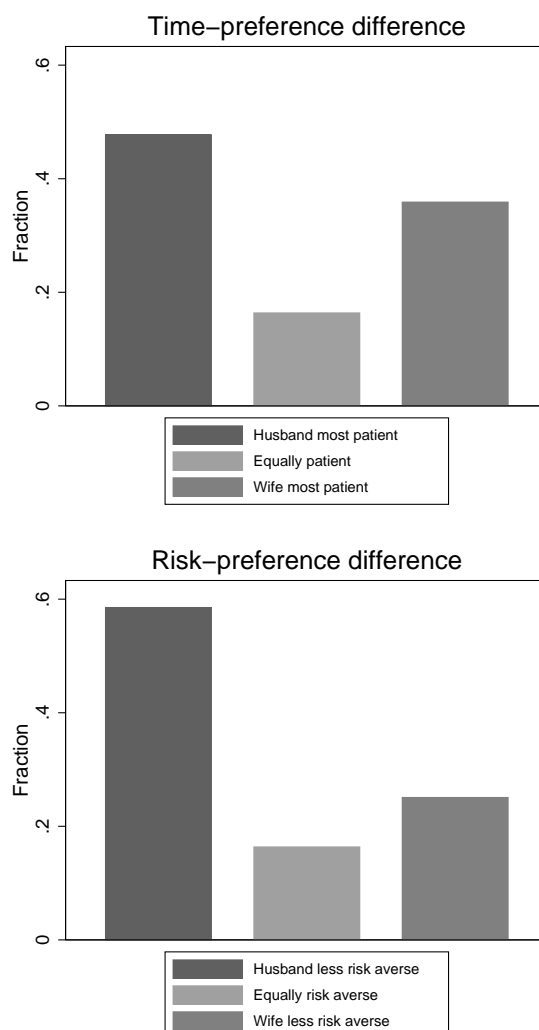
Note: The figure provides a simplified illustration of differences in time and risk preferences between the husband and the wife. Couples are divided into three categories: husband most patient/least risk averse, husband and wife equally patient/risk averse, and wife most patient/least risk averse. Time preferences are measured by the share allocated to the future and the fraction of couples in each of the three categories is illustrated in the upper panel. Risk preferences are measured by the share allocated to the risky option and the fraction of couples in each of the three categories is illustrated in the lower panel.

Figure 4 reports the average share allocated to the child, the wife, and the husband in each of the four treatments. The upper panel illustrates our first finding; an increase in the wife's bargaining power does not cause higher allocations to the child. More specifically, a small or large increase in the wife's bargaining power does not cause significant changes

spouses should be high. In our sample, we find no evidence of assortative matching (the correlation coefficient is -0.050 for time preferences and 0.031 for risk preferences).

Figure 4: *Share Allocated to the Child, the Wife, and the Husband, by Treatment*
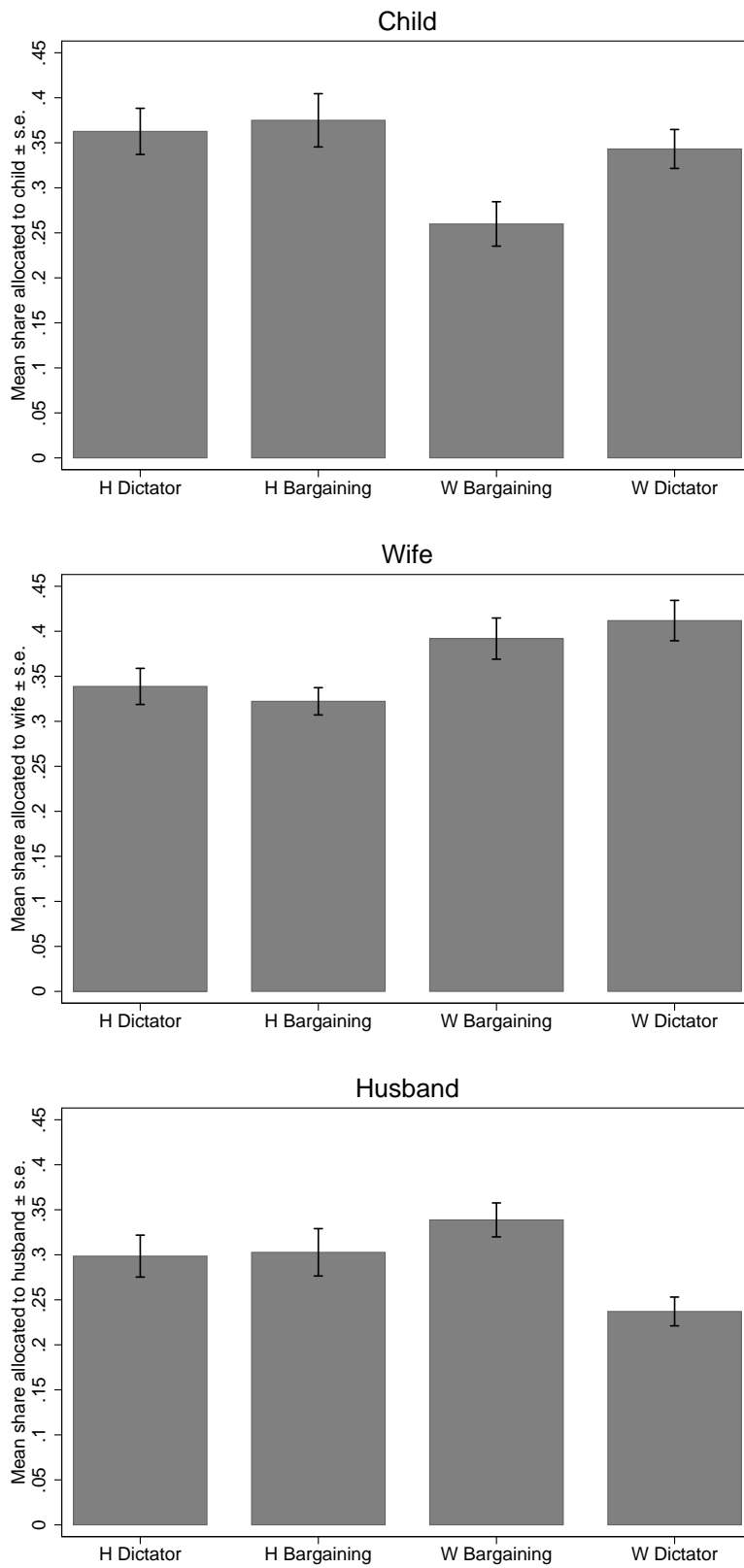
Note: The figure reports mean share allocated to the child (upper panel), the wife (middle panel), and the husband (lower panel) and standard error for Husband Dictator, Husband Bargaining, Wife Bargaining, and Wife Dictator.

in the allocation to the child. An intermediate increase in the wife's bargaining power, however, causes a significant *reduction* in the allocation to the child from 36% to 26%. To obtain a more complete picture of the couples' decisions, we investigate the allocation to the wife and the husband in the middle and lower panels of Figure 4. First, the middle panel shows that an intermediate or large increase in the wife's bargaining power gives her a higher allocation. Second, the lower panel shows that a large increase in the wife's bargaining power reduces the husband's allocation. Third, comparing the middle and lower panels we find that in Wife Bargaining and Wife Dictator, the wife proposes/allocates equally much to herself. However, looking at the upper and lower panels, we find that when the husband has the opportunity to reject the wife's proposal in Wife Bargaining, she proposes a higher allocation to him and a smaller allocation to the child than when she has full bargaining power in Wife Dictator. The overall picture from Figure 4 is that a small increase in the wife's bargaining power does not affect allocations to child, wife, or husband and the endowment is split approximately equally between the three. An intermediate increase in the wife's bargaining power increases the allocation to the wife and reduces the share allocated to the child. A large increase in the wife's bargaining power increases the share allocated to the wife and reduces the share allocated to the husband.

4.2 *Main Analysis*

We now turn to a regression analysis of how the share allocated to the child is affected by the treatments. We also provide regressions for the share allocated to the wife and the husband, respectively.

Table 2 reports regressions for comparisons of Husband Dictator with the three other treatments.[19] In Column (1) we only include the treatment indicator variables Husband Bargaining, Wife Bargaining, and Wife Dictator. In Columns (2) to (5), we sequentially add session fixed effects and background variables.

We focus on the full specification in Column (5) and, consistent with the descriptive

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[19]See Appendix F for extended regression tables.

analysis, do not find a significant effect of a small or a large increase in the wife's bargaining power. However, an intermediate increase in the wife's bargaining power significantly reduces the share allocated to the child.[20]

In terms of background variables, we find a positive effect of the husband's age and a negative effect of the wife's age. Furthermore, couples where the husband is less risk averse than the wife allocate less to the child. The last finding may be an indication that the husbands consider investments in children's education as non-risky.

Based on this regression, we formulate the following main result:

Result 1: Increasing the wife's bargaining power relative to Husband Dictator does not increase the allocation to the child ($\beta_{HB} = 0.022$, $p = 0.576$, $\beta_{WB} = -0.079$, $p = 0.044$, $\beta_{WD} = 0.003$, $p = 0.933$, see Column (5), Table 2). If anything, we find evidence of the opposite; an intermediate increase in the wife's bargaining power causally decreases the allocation to the child ($\beta_{WB} = -0.079$, $p = 0.044$, see Column (5), Table 2).

Result 1 suggests that increasing the wife's bargaining power does not causally increase the allocation to the child. In fact, an intermediate increase in the wife's bargaining power causally *reduces* the allocation. As there is no significant difference between Husband Dictator and Wife Dictator, this is likely not a consequence of differences in the weight assigned to the child between the husband and the wife, but rather due to some other aspects of the bargaining situation (see Section 5 for a discussion).

Next, we consider the effect of increasing the wife's bargaining power on the share allocated to the wife and the husband in Table 3. As in Table 2, both columns show the full specification where all background variables and the indicator variables are defined. A large increase in the wife's bargaining power increases the share allocated to her and decreases the share allocated to the husband. The share allocated to the husband is

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[20]These results hold when we run the same regression with the final share allocated to the child in the two bargaining treatments. This regression is reported in Table E1 in Appendix E. Note that only eight of 97 couples rejected the first proposal. All counter-proposals were accepted.

Table 2: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Child*

	(1)	(2)	(3)	(4)	(5)
Husband Bargaining	0.012	0.016	0.021	0.026	0.022
	(0.039)	(0.039)	(0.040)	(0.038)	(0.039)
Wife Bargaining	−0.103***	−0.100***	−0.096***	−0.080**	−0.079**
	(0.036)	(0.035)	(0.035)	(0.040)	(0.039)
Wife Dictator	−0.019	−0.019	−0.015	0.001	0.003
	(0.034)	(0.033)	(0.034)	(0.032)	(0.032)
Male child			0.020	0.038	0.037
			(0.026)	(0.026)	(0.026)
Chosen child's standard			0.001	0.006	0.005
			(0.007)	(0.007)	(0.007)
Age husband				0.003**	0.003**
				(0.002)	(0.002)
Age wife				−0.004*	−0.004*
				(0.002)	(0.002)
H most patient					0.050
					(0.045)
H least risk averse					−0.069*
					(0.042)
Session FE	No	Yes	Yes	Yes	Yes
Child background	No	No	Yes	Yes	Yes
Parent background	No	No	No	Yes	Yes
Parent difference	No	No	No	No	Yes
Couples	287	287	287	286	286
R^2	0.031	0.115	0.123	0.196	0.208

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. "Session FE": indicator variables for each of the 11 different sessions of the experiments. "Child background" is: "Male child": indicator variable taking the value 1 if the child is a boy, "Chosen child's standard": variable taking values corresponding to the chosen child's school standard between 1 and 7 and "Children total": indicator variable for couples with two or more children. We also include indicator variables for which of the four schools the child is attending. "Parent background" is: "Age$_i$" ($i = H, W$, H=husband, W=wife): count variable for individual i's reported age, "Self-employed$_i$": indicator variable taking the value 1 if i is self-employed, "Highest level of education$_i$": discrete variable taking the following values: $0 =$ No formal education, $1 =$ Some primary school, $2 =$ Primary school completed, $3 =$ Some primary school, $4 =$ Secondary school completed, $5 =$ More than secondary school, "Share allocated to future$_i$": share allocated to the future by i, and "Share invested in risky option i": share allocated to the risky option by i. "Parent difference" variables are: "H most educated": indicator variable taking the value 1 for couples where the husband is more educated than the wife, "H most patient": indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife, and "H least risk averse": indicator variable taking the value 1 if the husband allocates more to the risky option than the wife.

not affected by a small or intermediate increase in the wife's bargaining power. An intermediate increase in the wife's bargaining power increases the share allocated to her, but the effect is not robust to the specification using the final share allocated to the wife (see Table E2 in Appendix E).

Table 3: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Wife and the Husband*

	Allocation to wife	Allocation to husband
Husband Bargaining	−0.017	−0.007
	(0.031)	(0.035)
Wife Bargaining	0.066**	0.003
	(0.032)	(0.035)
Wife Dictator	0.091***	−0.102***
	(0.028)	(0.030)
Male child	0.004	−0.040*
	(0.025)	(0.023)
Chosen child's standard	−0.004	−0.001
	(0.006)	(0.006)
Age husband	−0.000	−0.003**
	(0.001)	(0.001)
Age wife	0.003	0.001
	(0.002)	(0.002)
H most patient	0.038	−0.075*
	(0.037)	(0.039)
H least risk averse	0.035	0.038
	(0.040)	(0.039)
Session FE	Yes	Yes
Child background	Yes	Yes
Parent background	Yes	Yes
Parent difference	Yes	Yes
Couples	286	286
R^2	0.226	0.186

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports a regression of the share allocated to the wife (with possible discrete values of $0, 0.033, 0.67, 0.1, ..., 0.933, 0.967, 1$) in Column (1), and a regression of the share allocated to the husband (with possible discrete values of $0, 0.033, 0.67, 0.1, ..., 0.933, 0.967, 1$) in Column (2) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Based on these regressions we formulate the following result for the allocation to hus-

band and wife:

Result 2: A large increase in the wife's bargaining power increases the allocation to her and reduces the allocation to the husband ($\beta_{WD} = 0.091$, $p = 0.001$, see Column (1), Table 3, and $\beta_{WD} = -0.102$, $p = 0.001$, see Column (2), Table 3). An intermediate increase in the wife's bargaining power increases the allocation to her, but does not affect the allocation to the husband ($\beta_{WB} = 0.066$, $p = 0.039$, see Column (1), Table 3, and $\beta_{WB} = 0.003$, $p = 0.922$, see Column (2), Table 3).

Result 2 shows that giving the wife full bargaining power benefits her. Together, Results 1 and 2 indicate, in our study, that female empowerment benefits women, but not children.

4.3 *Heterogeneity Analysis*

In this subsection, we investigate whether different types of couples are affected differently by an increase in the wife's bargaining power. We focus on difference in time and risk preferences between the husband and the wife, and on the gender of the child.[21]

Columns (1) to (3) in Table 4 consider whether the effect of increasing the wife's bargaining power on the allocation to the child is different between couples where the husband is more patient than the wife and couples where the wife is at least as patient as the husband. Columns (1), (2) and (3) report the difference in effect for a small, intermediate and large increase in the wife's bargaining power, respectively. We find that when the husband is more patient than the wife, an intermediate or large increase in the wife's bargaining power causally decreases the allocation to the child. Similarly, when the wife is at least as patient as the husband, a large increase in bargaining power increases the share allocated to the child.[22] Based on these regressions, we formulate the following

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[21]Table C1 in Appendix C reports the heterogeneity analysis for education level differences and number of children in the household.

[22]In the above discussion, we have used a definition where "H most patient" is equal to 1 when the husband is more patient than the wife, and 0 otherwise. Thus, in 0, we include couples where the husband and the wife are equally patient. To check if these results are sensitive to the definition of the time-preference difference, we estimate regressions where we restrict the sample to couples where one of

result for differences in time preferences between the husband and the wife:

Result 3: The effect of an increase in the wife's bargaining power is dependent on the intra-household difference in time preferences. When the husband is more patient than the wife, increasing the wife's bargaining power *reduces* the allocation to the child ($\theta_{WB} + \beta_{WB} = -0.133$, $p = 0.053$, see Column (2), and $\theta_{WD} + \beta_{WD} = -0.137$, $p = 0.007$, see Column (3), Table 4).

We next consider difference in risk preferences between the husband and the wife in Columns (4) to (6). As above, Columns (4) to (6) respectively investigate a small, an intermediate, and a large increase in the wife's bargaining power. We find that when the husband is less risk averse than the wife, a small increase in the wife's bargaining power increases the share allocated to the child, but the difference in risk preference between the husband and the wife is generally found to be of little importance for the effect of an increase in the wife's bargaining power.[23] The findings on differences in risk preferences can be summed up as follows:

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the spouses is more patient than the other in Table D1 in Appendix D. We find that the negative effects of increasing the wife's bargaining power when the husband is more patient than his wife are robust to the stricter definition, but that the positive effect when the wife is more patient is not.

[23]Table D1 in Appendix D reports the results when we restrict the sample to couples where one spouse is less risk averse than the other and find that the positive effect of an increase in the wife's bargaining power is not robust to the stricter definition of risk-preference difference. Table E3 and E4 in Appendix E reports the results for the final share allocated to the child.

Table 4: *Heterogeneity in Time- and Risk-preference Difference*

	Var = H most patient			Var = H least risk averse		
	HB	WB	WD	HB	WB	WD
Treatment	0.060	−0.039	0.072*	0.013	−0.024	−0.016
	(0.101)	(0.053)	(0.043)	(0.063)	(0.068)	(0.053)
Treatment X var	0.014	−0.094	−0.209***	0.084	−0.040	0.003
	(0.113)	(0.089)	(0.064)	(0.082)	(0.079)	(0.067)
Var	0.102*	0.095*	0.104**	−0.018	−0.005	−0.069
	(0.053)	(0.050)	(0.048)	(0.057)	(0.053)	(0.053)
Treatment (var)	0.073	−0.133*	−0.137***	0.097*	−0.064	−0.013
	(0.049)	(0.068)	(0.050)	(0.054)	(0.055)	(0.044)
Session FE	Yes	Yes	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes	Yes	Yes
Parent difference	Yes	Yes	Yes	Yes	Yes	Yes
Couples	139	140	189	139	140	189
R^2	0.305	0.336	0.321	0.335	0.344	0.288

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Columns (1) to (3) in the table report regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining) in Column (1), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining) in Column (2), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator) in Column (3), the indicator variable "Husband most patient" (indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife), "Treatment X H most patient", an interaction variable between the treatment indicator variables and "H most patient", and a set of explanatory variables. Columns (4) to (6) in the table report regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", and "Wife Dictator", respectively, the indicator variable "H least risk averse" (indicator variable taking the value 1 for couples where the husband allocates more to the risky option than the wife), interaction variables between the treatment indicator variable and "H least risk averse", and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Table 5: *Heterogeneity in Gender Preference*

	HB	WB	WD	WP
			Var = Male child	
Treatment	0.157***	0.006	0.032	0.048
	(0.051)	(0.054)	(0.044)	(0.035)
Treatment X var	−0.240***	−0.126	−0.114*	−0.131**
	(0.083)	(0.086)	(0.062)	(0.056)
Var	0.139***	0.119**	0.124***	0.120***
	(0.045)	(0.046)	(0.047)	(0.046)
Treatment (var)	−0.083	−0.120*	−0.083	−0.084*
	(0.067)	(0.071)	(0.051)	(0.045)
Session FE	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes
Parent difference	Yes	Yes	Yes	Yes
Couples	139	140	189	139
R^2	0.305	0.336	0.321	0.335

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", "Wife Dictator", "Wife some bargaining power" (indicator variable taking the value 1 for couples in Husband Bargaining, Wife Bargaining or Wife Dictator), respectively, the indicator variable "Male child" (indicator variable taking the value 1 if the child is a boy), interaction terms between the treatment indicator variable and "Male child", and a set of explanatory variables. "Treatment (H most patient)": sum of estimated parameters for the treatment indicator variable and "Treatment X H most patient". "Treatment (H least risk averse)": sum of estimated parameters for the treatment indicator variable and "Treatment X H least risk averse". "Treatment (Male child)": sum of estimated parameters for the treatment indicator variable and "Treatment X Male Child". See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Result 4: The intra-household difference in risk preferences makes no difference to the effect of an intermediate or large increase in the wife's bargaining power ($\theta_{WB} + \beta_{WB} = -0.064$, $p = 0.245$, and $\theta_{WD} + \beta_{WD} = -0.013$, $p = 0.758$, see Columns (5) and (6), Table 4). For a small increase in the wife's bargaining power, the share allocated to the child increases if the husband is less risk averse than the wife ($\theta_{HB} + \beta_{HB} = 0.097$, $p = 0.075$, see Column (4), Table 4). However, this finding is not robust to the use of final share allocated to the child.

In Columns (1) to (4) in table 5 we consider the gender of the child. First, we find that when the wife has no bargaining power, significantly more is allocated to boys than

to girls. Second, in all situations where the wife has some bargaining power, at least as much is allocated to girls as to boys. This latter finding is illustrated in Column (4) where we compare the situation where the husband has complete bargaining power to all three situations where the wife has some bargaining power. Based on these regressions, we formulate the following result about the spouses' gender preferences:

Result 5: An increase in the wife's bargaining power leads to more equal allocations to boys and girls. When the husband has complete bargaining power, he allocates significantly more to boys ($\beta_{var} = 0.120$, $p = 0.009$, see Column (4), Table 5). When the wife has some bargaining power, at least as much is allocated to girls as to boys ($\beta_{HB} = 0.157$, $p = 0.003$, see Column (1), $\beta_{WB} = 0.006$, $p = 0.916$, see Column (2), and $\beta_{WD} = 0.032$, $p = 0.470$, see Column (3), Table 5).

Result 3 provides evidence that the time preferences of the spouse with the upper hand in the bargaining situation are important, whereas Result 1 showed that gender is less so. Result 4 shows that risk preferences are not an important attribute in determining the allocation to the child. Finally, Result 5 shows that increasing the wife's bargaining power makes allocations to boys and girls more equal.

5. Discussion and Conclusion

Our paper studies the effect of an increase in the wife's bargaining power on couples' spending on children. We do not find any evidence that such a change in relative bargaining power increases the share allocated to the child. This finding challenges not only earlier studies such as Thomas (1990; 1993), but also the general view among policy-makers that female empowerment leads to higher household spending on children. Our results further suggest that it is the attributes of the main decision-maker (time preferences and gender preferences), not the gender itself, that matter.

Result 1 indicates that increasing the wife's bargaining power does not increase spending on children and might even reduce it: an intermediate increase in the wife's bargaining

power causally reduces the allocation to the child. The share allocated to the child is not significantly different between the two dictator treatments, suggesting that, on average, the husband and the wife assign the same total weight to the child in their utility function. Thus, the effect of an intermediate increase in the wife's bargaining power cannot be explained by a difference in weights assigned to the child.

To further understand how the change in bargaining power affects household decisions, we investigate the couples' allocations to the husband and the wife. An intermediate and a large increase in the wife's bargaining power leads to larger allocations to the wife (Result 2). Comparing the allocations in Wife Dictator to the allocations in Wife Bargaining, we observe changes in the child's and the husband's share, but not in the share to the wife's. Assuming that the outcome in Wife Dictator reflects her preferences, the wife seems unwilling to forego money in order to keep the allocation to the child constant in Wife Bargaining.[24] Rather, she increases the husband's allocation. A possible explanation for this is that she wants to avoid that the husband rejects her proposal, and that she underestimates his preferences for allocation to the child. Thus she gives more to the husband and less to the child than in Wife Dictator. This explanation is in line with previous studies showing that the wives tend to underestimate the husbands' preferences for a public good (Kebede et al. 2014).

Result 3 suggests that time preferences play an important role in household decision-making.[25] In particular, when one spouse has complete bargaining power, it is better for the child that it is the most patient spouse. This finding is in line with previous studies; Ahiakpor and Swaray (2015) find a positive association between male household head's patience and investments in children's education in rural Ghana. Tanaka and Yamano (2015) also find that the more patient the household head is, the higher are the educational expenditures in Uganda. In our sample, men tend to be more patient than

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[24]We do not know how the spouses planned to spend the amount they allocated to themselves, and cannot rule out that either of them prefers to spend their money on other goods for their children such as clothing and food. Furthermore, we do not know what happens in the interaction between the spouses after the experiment. We do not have reason to believe that any behavior after the experiment is correlated with treatment, and thus this cannot explain any of the results discussed.

[25]This is in line with Schaner (2015) who finds that couples who have similar time preferences are more likely to choose the most efficient savings account than couples who have different time preferences.

women, implying that, on average, it is more beneficial for the child if the husband is the main decision-maker.[26]

Result 5 indicates that husbands have *stronger* preferences for allocating money to boys than to girls. Wives, on the other hand, do not display any gender preferences and allocate the same amount to boys and girls. The result is partly consistent with previous studies; Dizon-Ross and Jayachandran (2015) find that, in rural Uganda, men favor boys, but also that women favor girls, and Raley and Bianchi (2006) find that, in the US, men spend more time with boys than with girls, whereas women spend as much time with boys as they spend with girls. Including women in the decision-making process by increasing their bargaining power gives a more gender-equal allocation to the children in our study and, in the long run, female empowerment may consequently lead to societies becoming more gender-equal.

To summarize the result for the underlying mechanisms, our study suggests that the weight assigned to the child depends on the parents' time preferences, but not on their risk preferences. Furthermore, the husband's weight assigned to the child also depends on the gender of the child. In particular, the husband displays a stronger preference for boys. Even though the equal allocations to the child in Husband Dictator and Wife Dictator suggest that the husband and the wife on average assign the same total weight to the child, the underlying mechanisms suggest that these weights consist of different elements. These elements differ systematically between women and men in our sample.

The results presented in this paper point to several avenues for future research. First, studying the spouses' preferences, such as time preferences and risk preferences, seems to be important in future research in order to increase our understanding of the underlying mechanisms determining household behavior. Second, considering other types of spending on children, such as nutrition and health, is important in order to understand the generalizability of our study. Finally, while random assignment of couples to different treatments ensures internal validity, the sample is not necessarily representative. Newer

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[26]Carlsson et al. (2012) and Yang and Carlsson (2012) find that women are more patient than men in China. Our finding is in line with the general finding in Falk et al. (2015), who study time preferences in 75 countries. Overall, they find that men are slightly more patient than women, even though this gender difference is not found in Tanzania (mail correspondence with Armin Falk and Benjamin Enke).

randomized controlled trials have taken a step in the right direction towards testing the generalizability of our and other experimental results, but have, to our knowledge, not studied the role of time and gender preferences.

Our study suggests that increased spending on children is not an instrumental reason for targeting women with cash transfers, but gender equality (among both children and adults) is. Thus, if the aim of a policy is to increase spending on children, targeted cash transfers to women are not necessarily the most efficient instrument.

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Appendix A   Additional Figures

Figure A1: *Distribution of Time and Risk Preferences*
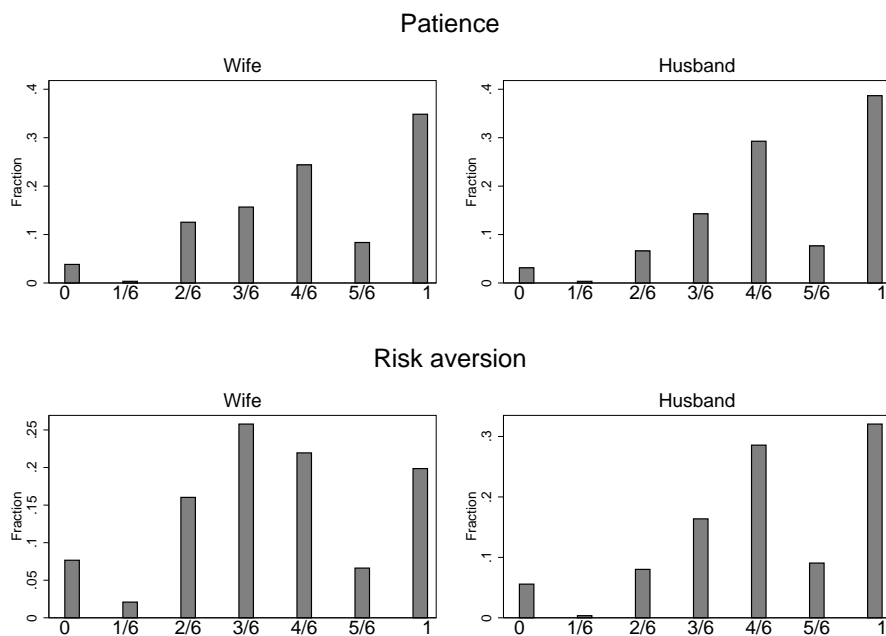
Note: The upper panel illustrates the distribution of time preferences (measured as share of endowment, TZS3,000, allocated to the future) for wives (left) and husbands (right), respectively. The lower panel illustrates the distribution of risk preferences (measured as share of endowment, TZS3,000, allocated to the risky option) for wives (left) and husbands (right) respectively.

Appendix B   Additional Descriptive Tables

Table B1: *Balance Regressions*

	Husband Dictator vs. Husband Bargaining	Husband Dictator vs. Wife Bargaining	Husband Dictator vs. Wife Dictator
Age husband	−0.551	−0.272	−0.451
	(1.937)	(1.551)	(1.494)
Age wife	−0.026	−1.958	−0.860
	(1.357)	(1.254)	(1.173)
Some secondary or more H	−0.069	0.145*	0.029
	(0.088)	(0.078)	(0.067)
Some secondary or more W	0.101	0.144*	−0.010
	(0.084)	(0.077)	(0.069)
Self-employed H	−0.014	−0.132	−0.060
	(0.080)	(0.084)	(0.069)
Self-employed W	0.044	0.095	0.083
	(0.085)	(0.087)	(0.073)
Children not in primary	−0.343	−0.158	−0.252
	(0.236)	(0.278)	(0.218)
Children in primary	0.181*	0.170	0.155*
	(0.108)	(0.108)	(0.088)
Male child	−0.157*	0.033	−0.039
	(0.083)	(0.084)	(0.072)
Standard chosen child	−0.092	−0.074	0.120
	(0.343)	(0.344)	(0.287)
Chosen child attends A	0.085*	0.042	−0.026
	(0.048)	(0.057)	(0.041)
Chosen child attends B	−0.051	−0.105	−0.001
	(0.080)	(0.075)	(0.067)
Chosen child attends C	−0.047	0.046	−0.005
	(0.033)	(0.050)	(0.037)
Share invested in future H	0.013	−0.262***	−0.176***
	(0.046)	(0.037)	(0.033)

Share invested in future W	0.008	0.136***	0.126***
	(0.038)	(0.052)	(0.037)
Share invested in risky option H	−0.085*	−0.094**	−0.067*
	(0.049)	(0.044)	(0.039)
Share invested in risky option W	0.131***	0.032	0.104**
	(0.040)	(0.058)	(0.041)
H most patient	0.036	−0.388***	−0.403***
	(0.082)	(0.080)	(0.066)
H least risk averse	−0.237***	0.140	−0.207***
	(0.083)	(0.086)	(0.070)
H most educated	−0.018	0.005	0.091
	(0.070)	(0.072)	(0.062)

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The table reports coefficients for regressions of each of the background characteristics as dependent variable on indicator variables for treatments ("Husband Bargaining" in Column (1), "Wife Bargaining" in Column (2), and "Wife Dictator" in Column (3)). "Age husband": husband's reported age. "Some secondary or more H": indicator variable taking the value 1 if the husband has completed some secondary schooling or more. "Self-employed H": indicator taking the value 1 if the husband is self-employed. "Children not in primary": number of children currently not in primary school. "Children in primary": number of children currently in primary school. "Male child": indicator variable taking the value 1 if the child randomly chosen for tutoring was a boy. "Standard of chosen child": Chosen child's current standard in school. "Chosen child attends A": indicator variable taking the value 1 for children in primary school A. "Chosen child attends B": indicator variable taking the value 1 for children in primary school B. "Chosen child attends C": indicator variable taking the value 1 for children in primary school C. "Share invested in future H": share allocated by husband to the future. "Share invested in risky option H": share allocated by the husband to the risky option. "Share invested in future W": share allocated by the wife to the future. "Share invested in risky option W": share allocated by the wife to the risky option. "H most patient": indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife. "H least risk averse": indicator variable taking the value 1 for couples where the husband allocates more to the risky option than the wife. "H most educated": indicator variable taking the value 1 for couples where the husband is more educated than the wife. The purpose of this is to check if participants in Husband Dictator and Husband Bargaining, Husband Dictator and Wife Bargaining, and Husband Dictator and Wife Dictator respectively, are different in terms of socioeconomic characteristics. All regressions include session fixed effects, indicator variables for each of the 11 different sessions of the experiment.

Appendix C   Additional Heterogeneity Tables

Table C1: *Heterogeneity in Education Level Differences and Number of Children*

	Var = H most educated			Var = Child total		
	HB	WB	WD	HB	WB	WD
Treatment	0.078	−0.048	−0.011	0.063	−0.058	0.021
	(0.048)	(0.051)	(0.038)	(0.064)	(0.066)	(0.043)
Treatment X var	−0.031	−0.001	−0.041	0.015	0.016	−0.066
	(0.099)	(0.088)	(0.083)	(0.086)	(0.074)	(0.061)
var	0.044	0.148*	0.004	0.028	0.045	0.060
	(0.077)	(0.081)	(0.083)	(0.045)	(0.044)	(0.042)
Treatment (var)	0.047	−0.049	−0.052	0.077	−0.042	−0.046
	(0.091)	(0.081)	(0.078)	(0.059)	(0.053)	(0.049)
Session FE	Yes	Yes	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes	Yes	Yes
Parent difference (educ, pref)	Yes	Yes	Yes	Yes	Yes	Yes
Couples	139	140	189	139	140	189
R^2	0.349	0.346	0.272	0.348	0.346	0.295

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Columns (1) to (3) in the table report regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining) in Column (1), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining) in Column (2), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator) in Column (3), the indicator variable "Husband most educated" (indicator variable taking the value 1 for couples where the husband has obtained a higher level of education than the wife), "Treatment X H most educated", an interaction variable between the treatment indicator variables and "H most educated", and a set of explanatory variables. Columns (4) to (6) in the table report regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", and "Wife Dictator", respectively, the indicator variable "Child total" (indicator variable taking the value 1 for couples that currently care for two or more children), interaction variables between the treatment indicator variable and "Child total', and a set of explanatory variables. "Treatment (H most educated)": sum of estimated parameters for the treatment indicator variable and "Treatment X H most educated". "Treatment (Child total)": sum of estimated parameters for the treatment indicator variable and "Treatment X Child total". See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Appendix D Robustness Check: Time- and Risk-preference Difference

Table D1: *Heterogeneity in Time- and Risk-preference Difference, Strict Definition*

	Var = H most patient 2			Var = H least risk averse 2		
	HB	WB	WD	HB	WB	HD
Treatment	−0.114	−0.038	0.101	−0.040	0.029	0.047
	(0.102)	(0.064)	(0.061)	(0.096)	(0.103)	(0.085)
Treatment X var	0.212*	−0.096	−0.238***	0.122	−0.065	-0.049
	(0.113)	(0.096)	(0.079)	(0.110)	(0.113)	(0.102)
var	0.075	0.091	0.114*	−0.062	−0.029	−0.069
	(0.067)	(0.062)	(0.062)	(0.084)	(0.086)	(0.086)
Treatment (var)	0.098***	−0.133*	−0.138**	0.082	−0.036	−0.002
	(0.048)	(0.067)	(0.055)	(0.055)	(0.059)	(0.047)
Session FE	Yes	Yes	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes	Yes	Yes
Parent difference (educ, pref)	Yes	Yes	Yes	Yes	Yes	Yes
Couples	116	120	152	110	115	146
R^2	0.435	0.430	0.369	0.406	0.395	0.333

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: **All couples where the husband and wife are equally patient and all couples where the husband and wife are equally risk averse are dropped.** Columns (1) to (3) in the table report regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining) in Column (1), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining) in Column (2), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator) in Column (3), the indicator variable "Husband most patient 2" (indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife, and 0 if the wife allocates more to the future than the husband), "Treatment X H most patient 2", an interaction variable between the treatment indicator variables and "H most patient 2", and a set of explanatory variables. Columns (4) to (6) in the table report regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", and "Wife Dictator", respectively, the indicator variable "H least risk averse 2" (indicator variable taking the value 1 if the husband allocates more to the risky option than the wife and 0 if the wife allocates more to the risky option than the husband), interaction variables between the treatment indicator variable and "H least risk averse 2", and a set of explanatory variables. "Treatment (H most patient 2)": sum of estimated parameters for the treatment indicator variable and "Treatment X H most patient 2". "Treatment (H least risk averse 2)": sum of estimated parameters for the treatment indicator variable and "Treatment X H least risk averse 2". See Table 2 for definition of "Session FE", "Child background", and "Parent difference".

Appendix E   Robustness Checks with Final Proposal

Table E1: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Child, With Final Share*

	(1)	(2)	(3)	(4)	(5)
Husband Bargaining	−0.001	0.003	0.009	0.013	0.009
	(0.037)	(0.036)	(0.037)	(0.037)	(0.036)
Wife Bargaining	−0.088**	−0.085**	−0.081**	−0.066*	−0.065*
	(0.035)	(0.035)	(0.035)	(0.039)	(0.039)
Wife Dictator	−0.019	−0.019	−0.017	−0.004	−0.000
	(0.034)	(0.033)	(0.033)	(0.032)	(0.032)
Male child			0.021	0.041	0.039
			(0.026)	(0.026)	(0.025)
Chosen child's standard			0.004	0.008	0.006
			(0.006)	(0.007)	(0.007)
Age husband				0.003*	0.003*
				(0.002)	(0.002)
Age wife				−0.003	−0.003
				(0.002)	(0.002)
H most educated					0.030
					(0.042)
H most patient					0.063
					(0.044)
H least risk averse					−0.067
					(0.040)
Session FE	No	Yes	Yes	Yes	Yes
Child background	No	No	Yes	Yes	Yes
Parent background	No	No	No	Yes	Yes
Parent difference (educ, pref)	No	No	No	No	Yes
Couples	287	287	287	286	286
R^2	0.021	0.104	0.114	0.188	0.201

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the **final** share allocated to the child (share allocated to child divided by the final household endowment (TSZ15000 − TSZ500 for every time a proposal is rejected), with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", and "Parent background".

Table E2: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Wife and the Husband, With Final Share*

	Allocation to wife	Allocation to husband
Husband Bargaining	−0.010	−0.002
	(0.030)	(0.034)
Wife Bargaining	0.045	0.011
	(0.029)	(0.033)
Wife Dictator	0.092***	−0.100***
	(0.028)	(0.030)
Male child	0.002	−0.039*
	(0.024)	(0.023)
Chosen child's standard	−0.005	−0.001
	(0.006)	(0.006)
Age husband	−0.000	−0.003**
	(0.001)	(0.001)
Age wife	0.003	0.001
	(0.002)	(0.002)
H most educated	0.021	−0.041
	(0.036)	(0.033)
H most patient	0.030	−0.080**
	(0.036)	(0.038)
H least risk averse	0.039	0.031
	(0.039)	(0.038)
Session FE	Yes	Yes
Child background	Yes	Yes
Parent background	Yes	Yes
Parent difference (educ, pref)	Yes	Yes
Couples	286	286
R^2	0.218	0.201

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the **final** share allocated to the wife and the husband (share allocated to the wife or the husband divided by the final household endowment (TSZ15000 − TSZ500 for every time a proposal is rejected), with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) in Column (1) and a regression of the **final** share allocated to the husband (with possible discrete values of $0, 0.033, 0.67, 0.1, ..., 0.933, 0.967, 1$) in Column (2) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference (educ, pref)".

Table E3: *Heterogeneity in Time- and Risk-preference Difference, With Final Share*

	Var = H most patient			Var = H least risk averse		
	HB	WB	WD	HB	WB	WD
Treatment	−0.007	−0.018	0.072*	−0.017	−0.006	−0.016
	(0.074)	(0.052)	(0.043)	(0.054)	(0.068)	(0.053)
Treatment X var	0.085	−0.113	−0.209***	0.119	−0.051	0.003
	(0.087)	(0.089)	(0.064)	(0.075)	(0.078)	(0.067)
var	0.092*	0.098*	0.104**	−0.027	−0.004	−0.069
	(0.051)	(0.050)	(0.048)	(0.055)	(0.053)	(0.053)
Treatment (var)	0.078*	−0.131*	−0.137***	0.102*	−0.056	−0.013
	(0.047)	(0.069)	(0.050)	(0.054)	(0.055)	(0.044)
Session FE	Yes	Yes	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes	Yes	Yes
Parent difference	Yes	Yes	Yes	Yes	Yes	Yes
Couples	139	140	189	139	140	189
R^2	0.333	0.319	0.321	0.349	0.327	0.288

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Columns (1) to (3) in the table report regressions of the **final** share allocated to the child (share allocated to child divided by the final household endowment (TSZ15000 − TSZ500 for every time a proposal is rejected), with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining) in Column (1), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining) in Column (2), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator) in Column (3), the indicator variable "Husband most patient" (indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife), "Treatment X H most patient", an interaction variable between the treatment indicator variables and "H most patient", and a set of explanatory variables. Columns (4) to (6) in the table report regressions of the **final** share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", and "Wife Dictator", respectively, the indicator variable "H least risk averse" (indicator variable taking the value 1 for couples where the husband allocates more to the risky option than the wife), interaction variables between the treatment indicator variable and "H least risk averse", and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Table E4: *Heterogeneity in Gender of Child, With Final Share*

	Var = Male child			
	HB	WB	WD	WP
Treatment	0.127***	0.023	0.032	0.042
	(0.046)	(0.054)	(0.044)	(0.034)
Treatment X var	−0.209***	0.119	−0.051	0.003
	(0.079)	(0.085)	(0.062)	(0.055)
var	0.066**	0.121***	0.124***	0.119**
	(0.045)	(0.046)	(0.047)	(0.046)
Treatment (var)	−0.079	−0.114	−0.083	−0.083
	(0.067)	(0.071)	(0.051)	(0.045)
Session FE	Yes	Yes	Yes	Yes
Child background	Yes	Yes	Yes	Yes
Parent background	Yes	Yes	Yes	Yes
Parent difference	Yes	Yes	Yes	Yes
Couples	139	140	189	286
R^2	0.383	0.347	0.304	0.208

Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the **final** share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", "Wife Dictator", and "Wife some power", respectively, the indicator variable "Male child" (indicator variable taking the value 1 if the child is a boy), interaction terms between the treatment indicator variable and "Male child", and a set of explanatory variables. "Treatment (H most patient)": sum of estimated parameters for the treatment indicator variable and "Treatment X H most patient". "Treatment (H least risk averse)": sum of estimated parameters for the treatment indicator variable and "Treatment X H least risk averse". "Treatment (Male child)": sum of estimated parameters for the treatment indicator variable and "Treatment X Male Child". See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference".

Appendix F   Extended Tables

Table F1: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Child, Extended*

	(1)	(2)	(3)	(4)	(5)
Husband Bargaining	0.012	0.016	0.021	0.026	0.022
	(0.039)	(0.039)	(0.040)	(0.038)	(0.039)
Wife Bargaining	−0.103***	−0.100***	−0.096***	−0.080**	−0.079**
	(0.036)	(0.035)	(0.035)	(0.040)	(0.039)
Wife Dictator	−0.019	−0.019	−0.015	0.001	0.003
	(0.034)	(0.033)	(0.034)	(0.032)	(0.032)
Male child			0.020	0.038	0.037
			(0.026)	(0.026)	(0.026)
Chosen child's standard			0.001	0.006	0.005
			(0.007)	(0.007)	(0.007)
More than 2 children			0.022	0.028	0.031
			(0.027)	(0.026)	(0.026)
School A			−0.003	−0.003	−0.004
			(0.045)	(0.043)	(0.043)
School B			0.031	0.035	0.036
			(0.032)	(0.031)	(0.031)
School C			0.000	−0.009	−0.011
			(0.064)	(0.064)	(0.064)
Age husband				0.003**	0.003**
				(0.002)	(0.002)
Age wife				−0.004*	−0.004*
				(0.002)	(0.002)
Self-employed H				−0.004	0.002
				(0.029)	(0.029)

Self-employed W				0.017	0.014
				(0.026)	(0.026)
Highest level of H				0.015	0.005
				(0.014)	(0.020)
Highest level of W				0.018	0.028
				(0.018)	(0.021)
Share invested in future H				0.119*	0.083
				(0.066)	(0.079)
Share invested in future W				0.044	0.107
				(0.048)	(0.072)
Share invested in risky option H				0.012	0.085
				(0.058)	(0.066)
Share invested in risky option W				0.052	−0.026
				(0.048)	(0.067)
H most educated					0.032
					(0.043)
H most patient					0.050
					(0.045)
H least risk averse					−0.069*
					(0.042)
Constant	0.363***	0.387***	0.331***	0.018	0.016
	(0.026)	(0.083)	(0.097)	(0.127)	(0.127)
Session FE	Yes	Yes	Yes	Yes	Yes
Couples	287	287	287	286	286
R^2	0.031	0.115	0.123	0.196	0.208

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. "Session FE": indicator variables for each of the 11 different sessions of the experiments. See table notes of Table 2 for definition of variables.

Table F2: *Effect of Increasing the Wife's Bargaining Power on the Allocation to the Wife and the Husband, extended*

	Allocation to wife	Allocation to husband
Husband Bargaining	−0.017	−0.007
	(0.031)	(0.035)
Wife Bargaining	0.066**	0.003
	(0.032)	(0.035)
Wife Dictator	0.091***	−0.102***
	(0.028)	(0.030)
Male child	0.004	−0.040*
	(0.025)	(0.023)
Chosen child's standard	−0.004	−0.001
	(0.006)	(0.006)
More than 2 children	−0.021	−0.006
	(0.026)	(0.025)
School A	0.010	0.000
	(0.047)	(0.041)
School B	−0.038	0.001
	(0.024)	(0.025)
School C	−0.022	0.016
	(0.046)	(0.038)
Age husband	−0.000	−0.003**
	(0.001)	(0.001)
Age wife	0.003	0.001
	(0.002)	(0.002)
Self-employed H	−0.019	0.016
	(0.024)	(0.023)
Self-employed W	−0.010	−0.005
	(0.023)	(0.022)

Highest level of H	0.001	−0.016
	(0.018)	(0.016)
Highest level of W	−0.007	−0.014
	(0.020)	(0.018)
Share invested in future H	−0.025	−0.075
	(0.063)	(0.062)
Share invested in future W	−0.019	−0.068
	(0.057)	(0.062)
Share invested in risky option H	−0.005	−0.077
	(0.062)	(0.061)
Share invested in risky option W	0.008	0.019
	(0.063)	(0.060)
H most educated	0.006	−0.028
	(0.038)	(0.033)
H most patient	0.038	−0.075*
	(0.037)	(0.039)
H least risk averse	0.035	0.038
	(0.040)	(0.039)
Constant	0.274**	0.724***
	(0.109)	(0.120)
Session FE	Yes	Yes
Couples	286	286
R^2	0.226	0.186

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports a regression of the share allocated to the wife (with possible discrete values of $0, 0.033, 0.67, 0.1, ..., 0.933, 0.967, 1$) in Column (1), and a regression of the share allocated to the husband (with possible discrete values of $0, 0.033, 0.67, 0.1, ..., 0.933, 0.967, 1$) in Column (2), on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator), and a set of explanatory variables. See Table 2 for definition of "Session FE", "Child background", "Parent background", and "Parent difference" as well as background variables.

Table F3: *Heterogeneity in Time- and Risk-preference Difference, Extended*

	Var = H most patient			Var = H least risk averse		
	HB	WB	WD	HB	WB	WD
Treatment	0.060	−0.039	0.072*	0.013	−0.024	−0.016
	(0.101)	(0.053)	(0.043)	(0.063)	(0.068)	(0.053)
Treatment X var	0.014	−0.094	−0.209***	0.084	−0.040	0.003
	(0.113)	(0.089)	(0.064)	(0.082)	(0.079)	(0.056)
H most patient	0.102*	0.095*	0.104**	0.050	0.026	0.016
	(0.053)	(0.050)	(0.048)	(0.067)	(0.065)	(0.055)
H least risk averse	−0.027	−0.022	−0.079	−0.018	−0.005	−0.069
	(0.060)	(0.060)	(0.048)	(0.057)	(0.053)	(0.053)
Male child	0.069	0.074*	0.066**	0.079*	0.081**	0.066**
	(0.042)	(0.040)	(0.031)	(0.040)	(0.041)	(0.031)
Share invested in future H				0.200*	0.215*	0.095
				(0.111)	(0.109)	(0.099)
Share invested in future W				0.039	0.019	0.079
				(0.119)	(0.099)	(0.089)
Chosen child's standard	0.001	0.006	0.018**	0.004	0.005	0.018**
	(0.012)	(0.010)	(0.008)	(0.011)	(0.010)	(0.009)
More than 2 children	0.044	0.050	0.019	0.035	0.056	0.024
	(0.039)	(0.038)	(0.030)	(0.038)	(0.037)	(0.029)
School A	−0.116	−0.035	−0.043	−0.115*	−0.042	−0.036
	(0.077)	(0.060)	(0.053)	(0.068)	(0.056)	(0.052)
School B	−0.015	0.004	0.048	−0.008	0.008	0.054
	(0.045)	(0.042)	(0.039)	(0.043)	(0.042)	(0.040)
School C	0.074	−0.004	0.049	0.026	−0.011	0.016
	(0.085)	(0.074)	(0.075)	(0.086)	(0.074)	(0.081)
Age husband	0.006**	0.004	0.004*	0.005**	0.004	0.004*
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)

	(1)	(2)	(3)	(4)	(5)	(6)
Age wife	−0.006	−0.006*	−0.006**	−0.004	−0.006*	−0.005*
	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Self-employed H	−0.024	−0.011	−0.024	−0.030	−0.012	−0.023
	(0.049)	(0.044)	(0.036)	(0.048)	(0.042)	(0.037)
Self-employed W	0.014	0.077**	0.022	0.008	0.065	0.011
	(0.043)	(0.039)	(0.030)	(0.041)	(0.039)	(0.032)
Highest level of H	0.044	−0.037	0.022	0.028	−0.038	0.021
	(0.036)	(0.033)	(0.026)	(0.033)	(0.033)	(0.029)
Highest level of W	−0.005	0.046	0.027	0.004	0.044	0.033
	(0.032)	(0.030)	(0.027)	(0.032)	(0.031)	(0.028)
Share invested in risky option H	0.090	0.123	0.099			
	(0.106)	(0.087)	(0.074)			
Share invested in risky option W	−0.089	0.010	0.006			
	(0.103)	(0.075)	(0.073)			
H most educated	0.004	0.148**	−0.011	0.032	0.144**	−0.013
	(0.071)	(0.068)	(0.059)	(0.070)	(0.069)	(0.060)
Constant	0.192	0.202	0.093	0.000	0.112	0.041
	(0.203)	(0.200)	(0.151)	(0.205)	(0.195)	(0.158)
Treatment (var)	0.073	−0.133	−0.137	0.097	−0.064	−0.013
	(0.049)	(0.068)	(0.050)	(0.054)	(0.055)	(0.044)
Session FE	Yes	Yes	Yes	Yes	Yes	Yes
Couples	139	140	189	139	140	189
R^2	0.305	0.336	0.321	0.335	0.344	0.288

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Columns (1) to (3) in the table report regressions of the share allocated to the child (with possible discrete values of $0, 0.1, 0.2, ..., 0.9, 1$) on the treatment variables "Husband Bargaining" (indicator variable taking the value 1 for couples in Husband Bargaining) in Column (1), "Wife Bargaining" (indicator variable taking the value 1 for couples in Wife Bargaining) in Column (2), and "Wife Dictator" (indicator variable taking the value 1 for couples in Wife Dictator) in Column (3), the indicator variable "Husband most patient" (indicator variable taking the value 1 for couples where the husband allocates more to the future than the wife), "Treatment X var", an interaction variable between the treatment indicator variables and "var", and a set of explanatory variables. Columns (4) to (6) in the table report regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", and "Wife Dictator", respectively, the indicator variable "H least risk averse" (indicator variable taking the value 1 for couples where the husband allocates more to the risky option than the wife), interaction variables between the treatment indicator variable and "H least risk averse", and a set of explanatory variables. See Table 2 for definition of "Session FE".

Table F4: *Heterogeneity in Time- and Risk-preference Difference and Gender Preference, Extended*

| | Var = Male child | | | |
	HB	WB	WD	WP
Treatment	0.157***	0.006	0.032	0.048
	(0.051)	(0.054)	(0.044)	(0.035)
Treatment X var	−0.240***	−0.126	−0.114*	−0.131**
	(0.083)	(0.086)	(0.062)	(0.056)
H most patient	0.044	0.038	0.012	0.034
	(0.067)	(0.061)	(0.058)	(0.045)
H least risk averse	−0.070	−0.038	−0.075	−0.073*
	(0.061)	(0.061)	(0.051)	(0.042)
Male child	0.139***	0.119**	0.124***	0.120***
	(0.045)	(0.046)	(0.047)	(0.046)
Share invested in future H	0.258**	0.180	0.083	0.143*
	(0.120)	(0.110)	(0.124)	(0.077)
Share invested in future W	0.098	0.044	0.072	0.080
	(0.114)	(0.099)	(0.098)	(0.072)
Chosen child's standard	0.001	0.006	0.019**	0.006
	(0.011)	(0.010)	(0.008)	(0.007)
More than 2 children	0.037	0.043	0.027	0.027
	(0.038)	(0.037)	(0.029)	(0.026)
School A	−0.123*	−0.051	−0.042	−0.014
	(0.071)	(0.058)	(0.054)	(0.045)
School B	−0.010	0.009	0.045	0.033
	(0.044)	(0.042)	(0.039)	(0.031)
School C	0.034	−0.011	0.014	−0.026
	(0.081)	(0.072)	(0.082)	(0.064)
Age husband	0.005**	0.004	0.004*	0.003*

	(0.002)	(0.003)	(0.002)	(0.002)
Age wife	−0.004	−0.006*	−0.005*	−0.003
	(0.003)	(0.003)	(0.003)	(0.002)
Self-employed H	−0.006	−0.011	−0.018	0.007
	(0.046)	(0.043)	(0.036)	(0.029)
Self-employed W	0.006	0.056	0.012	0.009
	(0.040)	(0.043)	(0.031)	(0.026)
Highest level of H	0.039	−0.034	0.023	0.003
	(0.032)	(0.033)	(0.028)	(0.019)
Highest level of W	−0.011	0.043	0.027	0.024
	(0.033)	(0.030)	(0.029)	(0.020)
Share invested in risky option H	0.106	0.046	0.034	0.069
	(0.097)	(0.091)	(0.091)	(0.067)
Share invested in risky option W	−0.256**	−0.021	0.002	−0.021
	(0.118)	(0.085)	(0.085)	(0.069)
H most educated	0.035	0.145**	−0.022	0.034
	(0.068)	(0.065)	(0.058)	(0.041)
Constant	0.047	0.127	0.022	-0.012
	(0.188)	(0.191)	(0.155)	(0.119)
Treatment (var)	−0.083	−0.120	−0.083	−0.084*
	(0.067)	(0.071)	(0.051)	(0.046)
Session FE	Yes	Yes	Yes	Yes
Couples	139	140	189	286
R^2	0.394	0.361	0.304	0.20

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the share allocated to the child on the treatment variables "Husband Bargaining", "Wife Bargaining", "Wife Dictator" and "Wife some power", respectively, the indicator variable "Male child" (indicator variable taking the value 1 if the child is a boy), interaction terms between the treatment indicator variable and "Male child", and a set of explanatory variables. "Treatment (H most patient)": sum of estimated parameters for the treatment indicator variable and "Treatment X H most patient". "Treatment (H least risk averse)": sum of estimated parameters for the treatment indicator variable and "Treatment X H least risk averse". "Treatment (Male child)": sum of estimated parameters for the treatment indicator variable and "Treatment X Male Child". See Table 2 for definition of "Session FE".

Appendix G   Data Documentation

G.1   *Experimental design*

(copy of text in paper) The sequence of events is described in Figure G1. At arrival, we conduct a background survey with both spouses present. Couples are subsequently randomized to one of the four treatments, and the husband and the wife are placed in separate rooms according to their treatment. They then face three incentivized tasks. All the tasks are choices of how to allocate a monetary endowment. To illustrate their choice, the participants receive laminated pictures of TZS500 and TZS1,000 notes. They are asked to place the money in different cups illustrating their choice and the research assistants record the answers. By simplifying the tasks in this manner, we ensure that literacy is not a requirement to participate in the study.

To understand the underlying mechanisms behind the couple's decision, we elicit time and risk preferences using two separate tasks. In both tasks the participants are explicitly told that their spouse will not be informed about their decision.[27] We base the time-preference task on Angerer et al. (2015), and the risk-preference task on Gneezy and Potters (1997) because of their simplicity.[28] In the time-preference task, the participants allocate TZS3,000 between the day of the experiment and three weeks later.[29] Any amount they choose to receive after three weeks is doubled. Earnings from the time-preference task are paid out as transfers to mobile phones through M-Pesa.[30,31]

In the risk-preference task, the participants decide how much of TZS3,000 they want to keep and how much they want to invest in a risky option. After their decision, the participants draw a card from a bag to determine whether the invested money is tripled (green card) or reduced to nothing (red card). They are informed that the probability of winning

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[27]Instructions for the tasks are provided in Appendix G.3.

[28]The time-preference task is a simplification of the task used by Andreoni and Sprenger (2012).

[29]The participants can allocate TZS0, TZS500, TZS1,500,..., or TZS3,000 to the future (this also applies to the risk-preference task described below).
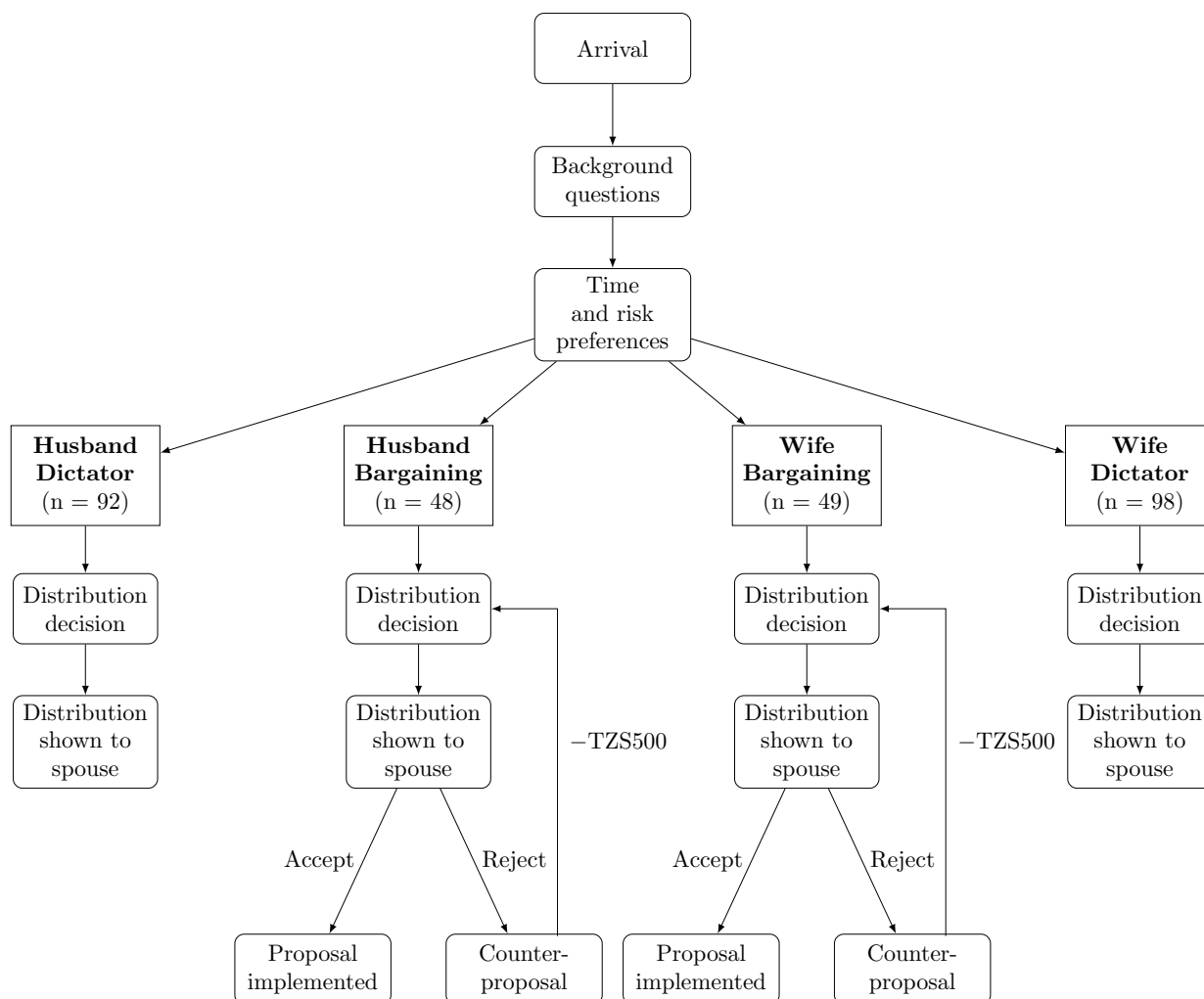
[30]M-Pesa is an SMS-based money-transferring system allowing individuals to deposit, withdraw, and transfer money with their phone. The receiver could easily liquidate this money, or use it to pay bills such as phone and electricity bills.

[31]To ensure that allocations to the day of the experiment do not reflect a preference for cash over mobile money, both payments in the time-preference task are made using M-Pesa.

and losing is the same. Note that risk-neutral (and risk-seeking) individuals should invest the entire TZS3,000 endowment in the risky option. Thus, the risk-preference task can be thought of as a measure of the degree of risk aversion. Earnings from this task are paid out in cash at the end of the experiment.

In the third task, the couples allocate a TZS15,000 endowment between the wife, the husband, and their child. If a couple has more than one child in primary school, one is randomly selected. The name of the chosen child is communicated to the parents before they make the allocation decision. For every TZS1,500 allocated to the child, the child receives one week of tutoring. The couples can allocate amounts of TZS0, TZS1,500, TZS3,000, ..., or TZS15,000, and the maximum possible amount of tutoring is ten weeks. The husband and wife's earnings from the distributive task are paid out in cash. The allocation to the child is paid out as a certificate for tuition.

Figure G1: *Diagram of Experimental Design*

The structure of the distributive task is determined by the treatment to which the couples were allocated:

Husband Dictator: dictator game with the husband as dictator.

Husband Bargaining: Rubinstein shrinking-pie bargaining with the husband as first proposer.

Wife Bargaining: Rubinstein shrinking-pie bargaining with the wife as first proposer.

Wife Dictator: dictator game with the wife as dictator.

In Husband Dictator, the husband decides how to allocate the endowment. He indicates his allocation by dividing the total endowment between three cups: one with a picture of a woman, one with a picture of a man, and one with a picture of a child. He knows that his wife will be informed about his decision. In Husband Bargaining and Wife Bargaining, the first proposer makes a proposal of how to allocate the endowment. The proposal is then shown to the spouse, who can either agree or disagree. If the spouse agrees, the proposal is implemented. Otherwise, the endowment is reduced by TZS500, and he or she makes a counter-proposal. The couples can go back and forth until an agreement is reached or there is no money left. Wife Dictator is similar to Husband Dictator, but the wife has the role of dictator.

The treatments are designed to exogenously increase the wife's bargaining power in the experiment. When the husband is the dictator, the wife has no bargaining power. In the two bargaining treatments, the bargaining power is shared between the spouses, but the first proposer has the upper hand through a first-mover advantage. Finally, in the fourth treatment, the wife has complete bargaining power. We will refer to the increase in the wife's bargaining power as "small" when comparing Husband Dictator to Husband Bargaining, as "intermediate" when comparing Husband Dictator to Wife Bargaining, and as "large" when comparing Husband Dictator to Wife Dictator.

Theoretically, the comparison of Husband Dictator to Wife Dictator yields information about whether the weights assigned to the child are different in the husband's and the

wife's utility function, respectively.[32]

G.2 *Selection and Eligibility of Participants*

The couples were recruited by distribution of invitation letters (see English version of the letter below) to pupils in four different primary schools in a relatively poor ward. The couples signed up for participation in the study by returning a slip with their name and contact information to their child's teacher. They were then called by one of the research assistants to schedule a session. In order to be eligible for participation in the study, the couple had to care for at least on child attending primary school at the time of the study, and be living together as husband and wife.

G.2.1 *Invitation letter*

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[32]When comparing Husband Dictator with any of the bargaining treatments, confounding factors make it difficult to disentangle the spouses' preferences from bargaining effects.

Economic and Social Research Foundation (ESRF)

P. O. Box 31226

Dar es salaam

25th May 2015

To parents of ……………………………………………………………

REF: INVITATION TO PARTICIPATE IN RESEARCH ON HOUSEHOLD DECISION-MAKING

I have a pleasure to invite you both (father and mother) to participate in a research project about decision-making. Participation in the research project will take about three hours. Each of you will receive a show up fee and some refreshments. Depending on the decisions you make during the study, you may receive an additional amount. The research project will take place between July 8 and August 5. Precise date and venue will be communicated to you later.

Taking part in the study is entirely your decision. You do not have to participate in this study if you do not want to. If you decide to participate in the study, you can still withdraw at any time. All information you give will be completely confidential. We will not be able to trace your answers and decisions back to you.

We would highly appreciate your participation, it is very important to our research.

Coordinator

██████████

If you would like to participate, please fill in your mobile phone numbers in the form provided below and return to us through your child in the next day so that we can call you back. For more details you can reach us through the following numbers:

██

████████████████████████

CONTACT FORM

Child's name……………………………………………………………………………

Father's name………………………………………………………Phone numbers (1)…………………………………………….

(2)…………………………………………….

Mother's name………………………………………………………Phone numbers (1)…………………………………………….

(2)…………………………………………..

This section provides the instructions for elicitation of time and risk preferences as well as for the distributive decision for dictators and first proposers.

G.3.1   *Time preferences*

We will now hand out tokens that symbolize Tsh 3,000. Please use these to indicate your allocation. At the end of the study, you will be paid in mobile money.

You have received Tsh 3,000 and you are now asked to choose the amount you want to invest. The rest of the amount will be added to your payment that you receive today and will be paid in mobile money.

The amount you invest will be doubled and you will receive it in 3 weeks. For example, if you choose to invest nothing, you will receive Tsh 3,000 in mobile money today. If you choose to invest all of the Tsh 3,000, you will receive nothing today and Tsh 6,000 in mobile money in three weeks. If you choose to invest Tsh 1,000, you will receive Tsh 2,000 in mobile money today and Tsh 2,000 in mobile money in three weeks.

After three weeks, those of you who decide to invest some of the money will then get the mobile money. Those of you who do not invest, will not get anything after three weeks.

Please raise your hand if you have any questions

We will now come to each of you individually to verify that you have understood the task you have been given.

We now ask you to choose the amount of tokens you want to invest. The tokens you put in the cup with the picture of a calendar is the tokens you choose to invest. The invested amount will be doubled and received in mobile money in 3 weeks. The tokens you choose

not to invest will be paid out to you in mobile money today after the session is completed.

Has anyone not made their choice?

My assistants will now come around to record your answers. We then move on to the next part of the session.

G.3.2 *Risk preferences*

We will now hand out tokens that symbolize Tsh 3,000. Please use these to indicate your allocation. At the end of the study, you will be paid in real money, not mobile money. Your decision will be anonymous.

You have received Tsh 3,000 and you are now asked to choose the amount that you wish to invest in a risky option. The amount you choose not to invest, will be added to your payment.

In the lottery, there is an equal chance that the investment will fail or succeed. If the investment fails, you lose the amount you invested. If the investment succeeds, you receive 3 times the amount invested.

After you have chosen how much you wish to invest, you will draw a card from a bucket to determine whether you win or lose. If the card is green, you win 3 times the amount you chose to invest. If the card is red, you lose the amount you chose to invest. It is equally likely that the card is green or red.

For example, if you choose to invest nothing, you will get the Tsh 3,000 for sure. That is, the draw of card will not affect your payment. If you choose to invest all of the Tsh 3,000, then if you draw a green card, you receive Tsh 9,000 in payment, and if you draw a red card you receive nothing in payment. If you chose to invest Tsh 1,500, then if you

draw a green card, you receive 6,000 (1,500 + 3*1,500) in payment, and if you draw a red card, you receive 1,500 in payment

Please raise your hand if you have any questions.

We will now come to each of you individually to verify that you have understood the task you have been given.

We now ask you to choose the amount of tokens you want to invest. The tokens you put in the cup with the picture of a question mark is the tokens you choose to invest and which will triple if you draw a green card, and be reduced to zero if you draw a red card. The tokens you choose not to invest will be paid out to you for sure after the study is completed. The payment will be made in cash, not mobile money.

Has anyone not made their choice?

My assistants will now come around to record your answers and to draw the card. We then move on to the next part of the study.

G.3.3 *Distributive choice*

Dictator treatments (Husband Dictator and Wife Dictator)

In this part of the study, you will be paired with your spouse. This means that the decisions you make will affect both your own and your spouse's payment.

Your household has received Tsh 15,000 and you have been chosen to decide how the money should be allocated between yourself, your child and your spouse.

We will now hand out tokens that symbolize Tsh 15,000. You will use these to show how you want to split the money between yourself, your child and your spouse. At the end of

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the study, you will be paid in real money according to the decision you made.

Your spouse will be informed about the task you have been given and the decision you make. However, he or she will not make any decision in this part of the session.

For each Tsh 1,500 you give to your child, this child will receive 1 week of tutoring. The tutoring is conducted Monday through Friday from 15:00 to 17:00. It includes tuition, a speed test each day and a weekend test. Your child will be taught in groups of 25-40 children. The tutor teaches mathematics, English and Sayansi.

The RAs will now come and tell each of you which of your children has been randomly chosen to receive the tutoring.

Please raise your hand if you have any questions.

We will now come to each of you individually to verify that you have understood the task.

We now ask you to distribute the tokens between the three cups on your desk. Remember that the choice you make here will be implemented. The tokens you put in the cup with the picture of a woman will be paid out to your wife if you are a man and to yourself if you are a woman. The tokens you put in the cup with the picture of a child will be paid out as tutoring for your child. The tokens you put in the cup with the picture of a man will be paid out to yourself if you are a man and to your husband if you are a woman, after the completion of the session.

Has anyone not made their choice?

My assistants will now come and record your answers. They will take your decision to

your spouse, so that she can see what you decided to do.

We now move on to the next part of the session.

G.3.4 Bargaining treatments (Husband Bargaining and Wife Bargaining)

In this part of the study, you will be paired with your spouse. This means that the decisions you make will affect both your own and your spouse's payment.

Your household has received Tsh 15,000 and you have been chosen to propose how the money should be allocated between yourself, your child and your spouse.

We will now hand out tokens that symbolize Tsh 15,000. You will use these to show your proposal for how to split the money between yourself, your child and your spouse. At the end of the study, you will be paid in real money.

When you have made your choice, we will reveal it to your spouse. He or she can either agree or disagree with your proposal. If he or she agrees, then your choice is implemented. If your spouse disagrees, he or she will get the opportunity to make a new proposal for the allocation of money and you can agree or disagree with the new proposal. You can do this as many times you like in order to get to an agreement for an allocation, but for each time you disagree the amount is reduced by Tsh 500. For example, if your spouse disagrees with your first proposal he or she will propose an allocation of Tsh 14,500. If you then disagree with him or her, you will propose a new allocation of Tsh 14,000.

For each Tsh 1,500 you give to your child, this child will receive 1 week of tutoring. The tutoring is conducted Monday through Friday from 15:00 to 17:00. It includes tuition, a speed test each day and a weekend test. Your child will be taught in groups of 25-40

children. The tutor teaches mathematics, English and Sayansi.

The RAs will now come and tell each of you which of your children has been randomly chosen to receive the tutoring.

Please raise your hand if you have any questions.

We will now come to each of you individually to verify that you have understood the task you and your spouse have been given.

We now ask you to propose a distribution of the tokens between the three cups on your desk. The tokens you put in the cup with the picture of a woman is what you propose to give to yourself if you are a woman and to your wife if you are a man. The tokens you put in the cup with a picture of a child is what you propose to give to your child and which will be paid out as tutoring if proposal is accepted. The tokens you put in the cup with the picture of a man is what you propose to give to yourself if you are a man and to your husband if you are a woman.

Has anyone not made their choice?

My assistants will now come and record your answers. They will take your proposals to your spouses so that he or she can see what you propose to do and decide whether he or she agrees or disagrees with you. Please wait patiently while we wait for the response of your spouses.