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# Intra-Household Resource Allocation in Rural Tanzania: Why Women Care about Disclosure

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**ABSTRACT** *How resources from development or social programs are allocated within the household is important for household welfare. Intra-household resource allocation does not only depend on who receives and allocates the resources, but also on whether the resources are disclosed to other household members. In patrilineal societies in rural Tanzania, like the one we selected for this study, we expect disclosure of the available resources to have a stronger effect on women's allocation decisions than on their husbands'. To test this, we use a choice experiment with 664 couples in rural Tanzania. Each spouse allocates a hypothetical sum of money between themselves, their spouse, and their children. We randomize whether they are told to assume that these resources are disclosed to their spouse. We find that women respond more strongly to disclosure than their husbands. Disclosure of the resources makes women increase the share allocated to their spouse and reduce the share kept to themselves but does not change the share allocated to their children. This disclosure effect is stronger among women with a controlling husband and women who receive transfers from their husband but gets weaker with higher spousal trust.*

**KEYWORDS:** Intra-household resource allocation; choice experiment; Tanzania

**JEL CLASSIFICATION:** D13; D82; J12

## 1. Introduction

Most development or social programs transfer economic resources to households, and how these resources are allocated among household members has important implications for household welfare. For example, resources that are invested in household public goods, such as children's education and health, increase household welfare (Duflo, 2001; Rosenzweig, 1990). An important focus in the academic and policy debate has been on who in the household should receive the transferred resources. Some studies concluded that children benefit more when women are in control of the resources (Armand, Attanasio, Carneiro, & Lechene, 2020; Duflo, 2003; Duflo & Udry, 2004; Haddad, Hoddinott, & Alderman, 1997; Hoddinott & Haddad, 1995; Lundberg, Pollak, & Wales, 1997; Thomas, 1990, 1993).<sup>1</sup> Other have argued more

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generally that tackling persistent gender inequality in access to resources could increase productivity (World Bank, 2012). This conclusion led many programs in the developing world to focus on aiming resources to women and mothers. A few examples are PROGRESA in Mexico (Attanasio, Meghir, & Santiago, 2012), Bolsa Familia in Brazil (Hall, 2008), Bono de Desarrollo Humano in Ecuador (Ponce & Bedi, 2010) and Familias en Accion in Colombia (Attanasio et al., 2010).

Such policy, however, is based on the assumption that women have complete freedom to decide how to spend the received resources. Given the large gender inequality in low-income countries (Jayachandran, 2015; World Bank, 2012), including in Tanzania (Akram-Lodhi & Komba, 2018) which is the setting for this study, this assumption is hardly realistic. Women's allocations are influenced by what other household members – in particular, their spouse – want and the more so if the latter has a stronger say in household decisions. Aiming resources at women might therefore be less effective than expected.

To investigate women's autonomy to allocate the received resources, we look at the behavioral influence of the 'disclosure' of the resources to their spouses. The assumption would be that if women's autonomy to allocate the resources is reduced by their spouse, this effect would be stronger if the transferred resources are disclosed to the spouse. More specifically, we investigate in this paper 1) whether disclosure has an influence on how wives allocate resources within their household, and whether that effect is stronger than for the husbands; 2) how the estimated disclosure effect interacts with the *spousal relationship*. We expect disclosure to have a stronger effect on wives who have controlling husbands, who receive transfers from their spouse, or among couples with lower spousal trust.

To test the behavioral influence of 'disclosure' on intra-household resource allocations we conduct a choice experiment with married or cohabiting couples from a patrilineal society in rural Tanzania. In the experiment, respondents allocate a hypothetical amount of resources among themselves, their spouse, and their children. These decisions are made in private and independently (without any influence from their spouse). To test the effect of disclosure we vary whether respondents are told to assume that the resources would be disclosed to their spouse. Complementing the choice data with data from a questionnaire, we investigate how the disclosure effect on wives' allocation decisions interacts with whether they have a controlling husband, they receive transfers from their husband, and with spousal trust.

Our results can be summarized as follows. First, we find that women allocate more to their children and themselves, and less to their spouses than their husbands do. Second, women respond more strongly to disclosure than their husbands. Being told to assume that the resources would be disclosed to their spouse makes women increase the share allocated to their spouse and reduce the share kept to themselves but does not change the share allocated to their children. Third, the disclosure effect on women's allocation decisions is stronger among women with a controlling husband and women who normally receive transfers from their husband but is weaker among women who have more trust in their husband.

Several studies are related to ours. There is evidence that people often prefer to keep resources hidden from relatives or household members. In Senegal, Boltz, Marazyan, and Villar (2019) elicited the willingness to pay to hide income. Participants were willing to forgo up to 14% of their resources to keep them private from other members in the experimental session. Using an experiment, Jakiela and Ozier (2016) reported that many women in Kenya chose to pay in order to keep their income private from their relatives. They only found a small willingness to pay from men in the sample. Dupas and Robinson (2013) showed that uptake of a non-interest savings account (with large withdrawal fees) was substantial among female entrepreneurs in Kenya but not among men. As the *de facto* savings rate is negative, this implies a positive willingness to pay to use the savings account.<sup>2</sup>

A few recent studies looked at hiding resources from spouses. In an experiment in India, Castilla (2019) found that when a spouse was able to hide income in a separate account, a

quarter chose to do so even though the joint account option would have led to more savings for the couple. This led to a 24% average decrease in potential earnings for the couples. Almås, Armand, Attanasio, and Carneiro (2018) matched data from a conditional cash transfer program in Macedonia with data from a lab experiment that elicited women's willingness to pay to receive a transfer. In the transfer program, the recipient was randomized between the husband and wife in different municipalities. They showed that in the lab experiment women were willing to forgo some income in order to be the transfer recipient rather than their husbands and that their willingness to pay was higher if they were the recipient of the cash transfer program. They interpret this as the positive impact of the program on women's empowerment.

The finding that people prefer to hide resources suggests that their preferences on how to allocate these resources differ from the preferences of the people they hide the resources from. This is supported by evidence that disclosure influences how resources are allocated.<sup>3</sup> Castilla and Walker (2013) used a field experiment in Ghana in which half the winners of a lottery were rewarded in public and half in private. They reported that publicly awarded lottery winnings went toward more household items while privately awarded lottery winnings tended to be hidden. They also observed that men and women allocated their winnings differently. Women allocated private funds into cash gifts to their networks which were seen as an insurance measure because these gifts can be reciprocated at a later time when needed. In Malawi, Goldberg (2017) found that observability of a windfall income made the recipients spend their new income more quickly than those who received the same amount in private. Ashraf (2009) is the only study we are aware of that looked at the effect of disclosure on resource allocation within the household. Randomly varying information about a small cash transfer that was received by one of the spouses in an experiment in the Philippines, she found that the spouse without financial responsibility in the household tended to keep money in private when choices were not disclosed and put money for personal consumption when choices were public.

Focusing specifically on evidence from Tanzania, there are a few studies that give insight into intra-household resource allocation decisions. Mwaseba and Kaarhus (2015) reported that women in patrilineal societies in Tanzania have less control over productive or financial resources compared to women in matrilineal societies. Nsenga and Mwaseba (2021) documented that while both spouses tend to be involved in household resource allocation decisions, the husband tends to have the final say. Galiè, Farnworth, Njiru, and Alonso (2021) observed that couples in Tanzania associated decision-making power of resource allocation with the spouse that earns income, which is more often the husband. A study by Anderson, Reynolds, and Gugerty (2017), similar to ours interviewed spouses separately and found that responses about who makes household decisions greatly depend on who was asked. Overall, intra-household resource allocation in Tanzania appears to favor decision-making power over men. This highlights the importance of studying the effect of disclosure on the decisions of women in Tanzania.

## 2. Research design

In this section, we present the choice experiment and how it was implemented, develop a conceptual framework with hypotheses, and describe the sample.

### 2.1. Choice experiment

To study resource allocation decisions we used a choice experiment with a sample of married or cohabiting couples. The choice experiment was implemented as part of a survey in which we collected information on socio-demographic characteristics of each couple (age, education, number of children, religion, etc.) as well as aspects that characterize intra-couple interaction, such as transfers, husband's controlling behavior, etc. To guarantee privacy, both spouses of each couple in the sample were interviewed individually and in private. The interviews were

conducted simultaneously by separate enumerators so that no communication was possible between the spouses about the choice experiment. They were also not made aware that both spouses participated in the same choice experiment. We used same-sex enumerator-interviewee pairs to maximize the rapport between enumerator and respondent.

In the experiment, each spouse was asked to divide a hypothetical amount of 200,000 TZS (which is approximately 90 USD) between their children, their spouse and themselves. We randomly varied whether they were told to assume that these resources would be disclosed to their spouse. This allows us to test how much if at all, the allocation decisions depend on whether the resources are disclosed to the spouse.

To implement this choice experiment, we used the following procedures. To represent the money we used 20 counters, each representing 10,000 TZS. These were given to the respondent at the start of the exercise. The enumerator put three sheets in front of the respondent, each representing one of the three categories: their children, their spouse and themselves. Thereafter, the respondent was asked, "If you were given a sum of money of 200,000 TZS which you could freely spend, how would you spend the resources?" The respondent divided the 20 counters between the three options according to their preference, by putting them on the respective sheets. Before they were asked to make their choice, respondents were given the opportunity to ask questions for clarification.

Each participant made this decision twice, in two different treatments. In one treatment respondents were told to distribute the money as if their spouse knew of the money, while in the other treatment they were told to distribute the money as if their spouse did not know about the money.<sup>4</sup> The order of the treatments was randomized. This design allows us to conduct both *between-subject* and *within-subject* analyses.

Specifically, as each respondent did the treatments in random order, the comparison of the first decision made by each respondent can be used in a *between-subject* treatment comparison. The randomization ensures that observable and unobservable characteristics of the respondents are the same between treatments. Any differences in allocation decisions can then be attributed to the difference in disclosure between both treatments. As all respondents took a decision in both treatments, we can also conduct a *within-subject* analysis. Such an approach comes with higher statistical power as twice as many observations are used, and, it increases the salience of the treatments as the participants get to know the difference between both treatments. However, there is a risk of 'demand effects' and 'order effects'.<sup>5</sup> We will therefore use the between-subject analysis as our main approach, and use the within-subject analysis to test the robustness of the results.

## 2.2. *Conceptual framework*

To guide the analysis, we develop a conceptual framework that allows us to develop hypotheses on the effect of disclosure on resource allocation, and how it interacts with the gender of the decision-maker. We start by describing how intra-household decisions are commonly made in rural Tanzanian households, as documented by existing studies. Tanzania is made up of numerous ethnicities that can be categorized into patrilineal and matrilineal (Omari, 1991). Mwaseba and Kaarhus (2015) described how women in patrilineal societies (like our study site) tend to have less control over productive or financial resources compared to women in matrilineal societies. Galiè et al. (2021) found that men and women in Tanzania associated decision-making power with the spouse that earns income and that men are perceived as the 'breadwinners' of the household.

Following the large gender imbalance in decision-making power in patrilineal societies in rural Tanzania, we develop hypotheses about 1) the effect of disclosure on intra-household decisions, and whether that effect is stronger for women than for their husbands; 2) how such disclosure effect women's allocation decisions interacts with their *spousal relationship*, as proxied

by whether they have a ‘controlling’ husband, whether they receive transfers from their husband and whether there is spousal trust. To develop these hypotheses, we also make the following assumptions. First, we assume that each spouse cares about the utility their partner and their child(ren) derive from receiving a share of the resources and that they care more if they have more spousal trust. Second, following Browning, Chiappori, and Weiss (2009), we assume that a person does not weigh the utility of their spouse and child(ren) more than their own. Lastly, we assume that both spouses have complete information on each other’s utility functions. Using these assumptions, we look at the optimal resource allocation from the perspective of the spouse who shares the resources, and how it differs between both treatments.

*2.2.1. Case 1 (disclosure treatment).* In this treatment, both spouses are informed about the existence of the resources. As a result, both spouses can exert an influence on how the resources are allocated. We assume that the resources are allocated in such a way that the weight given to the respondent’s preferences increases with the respondent’s relative bargaining power in the household.<sup>6</sup>

*2.2.2. Case 2 (non-disclosure treatment).* In this treatment, only one spouse will know about the existence of the resources.<sup>7</sup> This makes it so that only the utility of the recipient will influence the allocation decision. Comparing both treatments, we develop the following hypotheses:

**Hypothesis 1:** *Disclosure has a stronger effect on women’s decisions than on their husband’s.*

As explained above, we assume that when resources are undisclosed the decision-maker has full autonomy over their allocations. However, once resources are disclosed, autonomy is reduced. Given that our area of study is characterized by large gender inequality (as illustrated by seeing Mwaseba and Kaarhus (2015) and Badstue, Farnworth, Umantseva, Kamanzi, and Roeven (2021)), we assume that women have lower autonomy than their husbands in the disclosure treatment. As a result, the change in decision-making autonomy between both treatments is greater for women than for men, so women’s allocation decisions are more influenced by disclosure than men’s decisions. The hypothesized larger effect of disclosure on women would also be in line with women’s larger inclination to hide resources, as found in Kenya by Jakiela and Ozier (2016) and Dupas and Robinson (2013).

**Hypothesis 2:** *Disclosure has a stronger effect on the decisions of women with a controlling husband.*

In an extension of Hypothesis 1, we expect that women with a controlling husband will be more influenced by disclosure. As women maintain full autonomy over decisions when the resources are undisclosed irrespective of women’s decision-making autonomy outside the experiment, women with a controlling husband will have a larger decrease in their autonomy when the resources are disclosed than those who do not have a controlling husband. This will lead to a larger change in their allocations. In rural Tanzania, the main income earner tends to take control of household decisions (Galiè et al., 2021). While this is mostly the husband, in line with local norms (Badstue et al., 2021), recent evidence in northern Tanzania shows that women’s involvement in household decisions also increases with women’s income (Westeneng & D’Exelle, 2015). In sum, we expect considerable variation in the husband’s control, which moderates the disclosure effect on women’s allocation decisions.

**Hypothesis 3:** *Disclosure has a stronger effect on the decisions of women who receive transfers from the husband.*

Transfers are common between spouses, mostly from the highest income earner to the lowest income earner. As in the society of our study men tend to have a higher income than women, and transfers from husbands are very common. As a result, men with a higher income not only

have more direct control over the household decisions, as we described above, but they may also influence the decision-making of their wives via the transfers they make. Specifically, we expect that women who receive transfers from their husbands (outside of the experiment) will respond more strongly to disclosure, through one of the following mechanisms. First, household members are expected to contribute their fair share to the household. Therefore, if an additional source of income is found (such as the windfall income in the choice experiment), a husband who has contributed in the past (via transfers to his wife) would expect to receive a higher share than a husband who has not made such contributions. Second, the husband can exploit the transfers as a source of power to claim a higher share of the woman's new income, by threatening to withdraw the transfers in the future.

**Hypothesis 4:** *Disclosure has a weaker effect on the decisions of women who have higher spousal trust.*

We expect that women with higher spousal trust will be less responsive to disclosure when allocating household resources. Spousal trust tends to be low in Tanzania (Badstue et al., 2021). Low trust is often the result of an arranged marriage, particularly early on in the marriage (Baland & Ziparo, 2017), when spouses still need to get to know each other and may be hesitant to reveal their preferences. Women with higher spousal trust will assign a higher weight to the utility of their spouse, which makes their allocations more in line with their spouse's preferences even without disclosure. As a result, the disclosure will have a weaker effect on their allocation decisions.

### 2.3. Sample

As our study region, we chose the Misungwi district in the Mwanza region of northern Tanzania. This district is located 47 km south of Mwanza city. Based on the most recent census data, the Misungwi district has a population of 351,607. Ninety percent live in rural settlements (Tanzania National Bureau of Statistics, 2015). Agriculture is the main economic activity, followed by livestock keeping, small-scale mining and petty trade of agricultural and livestock products (Tanzania National Bureau of Statistics, 2016). It is ethnically very homogeneous with most households belonging to the Sukuma tribe, which is patrilineal. To select the respondents we used a multi-stage sampling approach.<sup>8</sup> Our final sample includes 664 married or cohabiting couples. Data collection took place between May and September 2017.

From Table 1 we see that the women in our sample are on average six years younger than the men in our sample. Men and women have similar education levels. Men reported earning over double the amount women reported earning in the 12 months prior to the survey.<sup>9</sup> Most of the subjects in our sample farm crops and poultry. More men than women grow crops. About a third of both men and women report farming cattle, both large and small. About two-thirds of both men and women report farming poultry. We also see that 52% of men report working for someone else, as captured by the 'employment' variable, while only 36% of women in our sample report this.

86% of men say that they sometimes give transfers to their wives and 61% of women say that they sometimes receive transfers from their husbands. This reporting difference between men and women may be due to recall bias, i.e. recall differences between the donating and receiving agents. Note that these answers are self-reported and transfers were not verified. Transfers from wives to husbands are substantially less common.<sup>10</sup>

Looking at the household level characteristics, we see that couples in our sample have, on average, about 3 children under the age of 12. We also created a household wealth index with multiple correspondence analysis using a list of assets.<sup>11</sup> The assets included in the index are: the number of rooms in the house, having an iron roof, having a cement floor, solar-powered lighting, the number of bicycles, and the number of plots of land owned by the household.<sup>12</sup>

**Table 1.** Individual socio-economic characteristics.

	<i>N</i>	Husbands Mean/Percent	<i>N</i>	Wives Mean/Percent	<i>p</i> -value
Age (years)	664	36.8 (10.7)	664	30.4 (9.1)	0.000***
Education (years)	660	5.3 (3.0)	664	5.0 (3.1)	0.055*
Income (TZS)	664	654,170 (1,3761,216)	664	315,638 (798452)	0.000***
<i>Income sources</i>					
Crops	664	92%	664	77%	0.000***
Cattle	664	32%	664	32%	0.859
Small animals	664	33%	664	31%	0.346
Poultry	664	69%	664	56%	0.129
Employment	664	52%	664	36%	0.000***
<i>Intra-household transfers</i>					
% Give transfer	664	86%	664	17%	0.000***
Amount given (TZS)	574	66,172 (75,563)	116	46,810 (85,931)	
% Receive transfer	664	21%	664	61%	0.000***
Amount received (TZS)	138	26,912 (43,007)	407	148,956 (226,593)	
		Household level			
	<i>N</i>	Mean/Percent			
Number of children under 12	664	3.0 (1.5)			
Household wealth	664	1.2 (1.0)			
Wife reports controlling behavior by husband	664	47%			
Women with spousal trust	664	50%			

*Notes:* Standard deviations are reported in parentheses. Two-sided *p*-values reported from an unpaired *t*-test between spouses for continuous variables, and a proportion test for binary variables. Income and amount of transfers refer to the 12 months before the interview.

Lastly, to measure the husband's controlling behavior, we use the following five different behaviors experienced in the six months before the interview, as reported by the wife: the husband refused to give money for household items (reported by 28% of the women), took money from what the wife had earned (9%), forbid the wife from seeing friends or family (10%), reprimanded the wife for speaking to another man (29%) and accused the wife of being unfaithful (11%). 53% of the women in our sample reported that their husbands did not take any of these actions, while 24% reported only having experienced one such behavior. The remaining 23% of our sample reported having experienced two to five of these behaviors. Given this distribution, we decided that a binary variable equal to one if a woman has experienced at least one of these behaviors would be best to capture the variation in these data. Following this definition, 47% of women in our sample reported experiencing controlling behavior from their husbands.

For a better understanding of intra-household dynamics within this region, we also conducted in-depth interviews with 10 female survey participants. We also held informal meetings with three local experts working for different NGOs. The in-depth interviews included seven open-ended questions about how the respondent and her husband make decisions about family planning, how money is spent on their children, how disagreements on how to spend money are handled and how friends can help when there are spousal disagreements. The participants were randomly selected from the sample used for the choice experiment, and interviews took place after the choice experiment, in a second visit. Only the enumerator was present and the responses were audio-recorded (participants were asked permission for this) due to the open-ended nature of the questions. The responses were then transcribed and translated into a text



document. While responses were open-ended, they tended to be brief. Therefore no formal analysis of these responses was done, only a review by the authors in which common responses were found. The conversations with local experts from NGOs were more informal and the questions asked depend on the expertise of the participant.

We learned that in the Sukuma tribe men usually control the household finances and provide women with money when needed. We also learned that men tend to make most household decisions. One local expert told us of a woman who was not able to go to the doctor until her husband returned home because she could not make that decision alone. We also learned that within this culture, men prefer that their private matters, such as money or disagreements, are kept between spouses and forbid their wives from talking about these issues with friends. One struggle faced by women in this tribe is the possibility of their husband taking another wife because polygamy is allowed in the Sukuma tribe. We learned that if men are not happy with their wives, they may start looking for another wife. This could be used as a threat to the first wife. When men have more than one wife, usually the 'new' wife receives more resources and the first wife receives minimal resources if any. Another struggle faced by women in this tribe is that if they start earning their own money and the husband becomes aware of it, then he stops giving her an allowance.

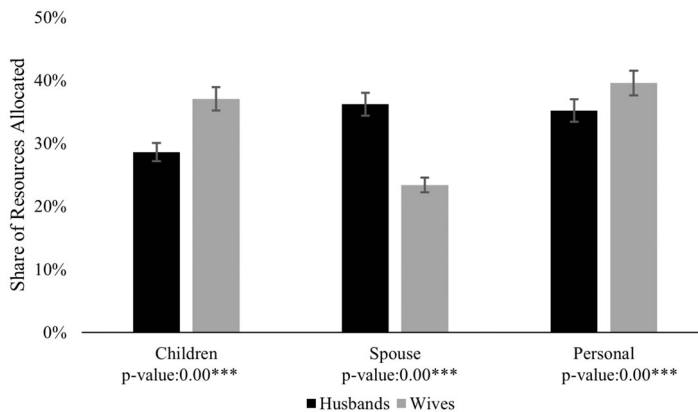
### 3. Results

We first present the results from a descriptive analysis of the respondents' resource allocations and explore these by gender and the disclosure treatment. We then take the analysis further with regression analysis to test each of the hypotheses.

#### 3.1. Disclosure and gender: descriptive analysis

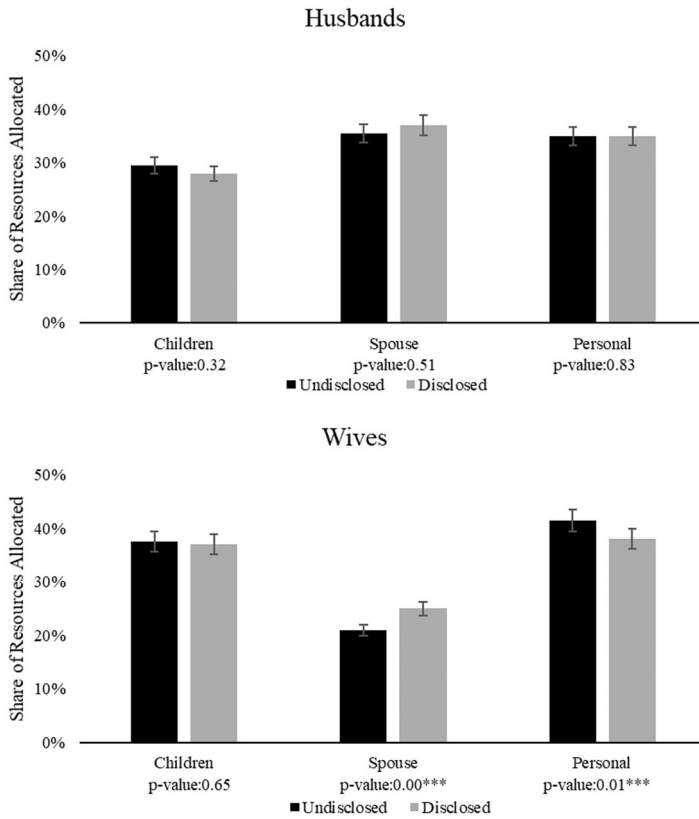
In this analysis, we only use the first decision of the respondent and exploit the random assignment to treatment to make causal inferences. To verify whether the randomization is done successfully, we test whether the between-subject treatments are balanced in our sample. [Table A1](#) in [Section A](#) of the [Appendix](#) shows that there are no significant differences in observable characteristics between those who made disclosed allocations and those who made undisclosed allocations. Also, household characteristics are not statistically different between both treatments.

To begin our analysis, we look at the resource allocation choices by gender. In [Figure 1](#), we compare the allocation decisions between husbands and wives. Using a two-sample *t*-test, we find that



**Figure 1.** Allocation by gender.

Notes:  $N = 664$ . 95% confidence intervals are shown. *P*-values were reported on a two-sample *t*-test. \*\*\*, \*\*, \* indicate significance levels at 1, 5, and 10%, respectively.



**Figure 2.** Disclosure effect by gender.

Notes:  $N = 664$ . 95% confidence intervals are shown.  $P$ -values were reported on a two-sample  $t$ -test. \*\*\*, \*\*, \* indicate significance levels at 1, 5, and 10%, respectively.

the differences in allocations between men and women are statistically significant for all three choices. Women allocate more to the children and themselves compared to men, 37.0% and 39.6% compared to 28.6% and 35.2% respectively. Men spend more on their spouses than women do, 36.2% versus 23.4%.

Figure 2 disaggregates the allocations by treatment, separately for men and women. We do not find any statistically significant difference between the men who made undisclosed allocations and the men who made disclosed allocations across all three groups. However, for women, we do observe that allocations tend to be higher for the spouse and lower for themselves in the 'Disclosed' treatment compared to the 'Undisclosed' treatment. The amounts allocated to children, however, are not different between the treatments. This simple comparison already shows us a gender difference in the influence of disclosure. Women are more likely to make different choices if they know that the resources will be disclosed to their spouse, as we stated in Hypothesis 1.

### 3.2. Disclosure and gender: regressions

We continue our analysis with regressions to test the robustness of the disclosure effect and its interaction with the gender of the respondent. We will start with the regression specification presented in equation 1.

$$y_{r,i} = \beta_0^r + \beta_1^r(\text{F Dis})_i + \beta_2^r(\text{F Undis})_i + \beta_3^r(\text{M Dis})_i + \beta_4^r C_i + \xi_r + h_r + \epsilon_{r,i} \quad (1)$$

**Table 2.** Gender and disclosure.

Resources allocated to ...	Children		Spouse		Personal	
	(1)	(2)	(3)	(4)	(5)	(6)
F Dis	1.533*** (0.252)	1.538*** (0.266)	-2.728*** (0.552)	-2.032*** (0.275)	2.055*** (0.627)	0.494 (0.308)
F Undis	1.632*** (0.255)	1.625*** (0.268)	-3.570*** (0.562)	-2.936*** (0.283)	2.782*** (0.625)	1.312*** (0.318)
M Dis	-0.326 (0.258)	-0.303 (0.257)	0.246 (0.291)	0.223 (0.294)	0.010 (0.305)	0.079 (0.315)
Constant	6.740*** (0.671)	5.794*** (0.835)	6.060*** (0.654)	6.156*** (0.703)	7.155*** (0.905)	8.051*** (1.021)
<i>N</i>	1372	1360	1372	1360	1372	1360
Controls	No	Yes	No	Yes	No	Yes
F Dis vs F Undis <sup>a</sup>	0.70	0.73	0.00***	0.00***	0.01***	0.01***
F Dis vs M Dis <sup>b</sup>	0.00***	0.00***	0.00***	0.00***	0.00***	0.17

*Notes:* OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously (Models 1, 3 and 5 together and models 2, 4 and 6 together), using one of them as reference. Standard errors are clustered at the hamlet level. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively. The controls used in Models 2, 4, and 6 are age, education, income, household wealth, and total number of children under 12 years. Full results of all regressions can be found in Appendix Section B. <sup>a</sup>Two-sided p-value of a Wald test, with  $H_0 : F \text{ Dis} = F \text{ Undis}$ . <sup>b</sup>Two-sided p-value of a Wald test, with  $H_0 : F \text{ Dis} = M \text{ Dis}$ .

The dependent variable,  $y_{r,i}$ , is equal to the number of counters allocated by respondent  $i$  to category  $r$  with  $r = \text{children, spouse, or personal}$ . For each category, we estimate a separate regression. As the counters allocated to the three categories always sum up to 20 counters, we estimate the equations simultaneously, using one of them as a reference. This deals with the correlation of the error terms between the equations.

'F Dis', 'F Undis' and 'M Dis' capture the different combinations of the gender of the respondent and the disclosure treatment, using the combination of undisclosed allocations by men as the reference category.<sup>13</sup>  $C$  is a vector that includes control variables for household wealth, the total number of children, and the respondent's age, education and income.<sup>14</sup>  $h$  are hamlet level fixed effects and  $\epsilon$  is the error term.

Table 2 presents the estimation results. To test the robustness of the estimates we estimate each model with and without control variables. In Models 1–2, the outcome variable of interest is the amount allocated to children. The coefficients for 'F Dis' and 'F Undis' are statistically significant and positive. The size of the coefficients indicates that women give about 1.5–1.6 counters more to their children than their husbands do. However, a Wald test does not find a statistically significant difference between both coefficients. This suggests that women tend to give more to children than men, irrespective of whether resources are disclosed. Looking at the amount allocated to the spouse in Models 3–4, we observe that women tend to allocate less to their spouse than men. The coefficients of 'F Dis' and 'F Undis' are negative and statistically significant. The size of the coefficient of 'F Undis' indicates that women allocate around 3.5 counters less to their spouse than men in the undisclosed treatment. Based on a Wald test, the coefficients of 'F Dis' and 'F Undis' are significantly different, which indicates that disclosure makes women give more to their spouses. We also find that the negative coefficient of 'F-Dis' is significantly different from the coefficient of 'M Dis'. This tells us that also in the disclosure treatment women allocate less to their spouse than men do. Men are not influenced by disclosure, as demonstrated by the statistically insignificant coefficient of 'M Dis'.

Finally, analyzing the amounts allocated to themselves in Models 5–6, we observe that women tend to keep more for themselves than men. The coefficients of 'F Dis' and 'F Undis'

are positive and statistically significant in Model 5 but only ‘F Undis’ is statistically significant in Model 6. The size of the coefficient of ‘F Undis’ in Model 6 confirms that women keep around 1.3 counters more for themselves than men in the undisclosed treatment. Based on a Wald test we find that the coefficients of ‘F Dis’ and ‘F Undis’ are significantly different in both models, which indicates that women keep less for themselves in the disclosure treatment. We also find that the difference in the coefficients ‘F Dis’ and ‘M Dis’ is significant in Model 5, but is not robust to the use of controls (Model 6). Men are not influenced by disclosure, as the coefficient of ‘M Dis’ is not statistically significant.

In sum, these results coincide with what we found in [Figures 1 and 2](#). First, disclosure makes women allocate more to their spouse and less to themselves, but does not influence their allocation to their children. Second, disclosure does not influence men’s allocations.

### 3.3. Disclosure and spousal relationship

In the analysis so far, we have shown that women tend to make different allocation decisions than men. We also found a significant difference in the effect of disclosure between men and women, which supports Hypothesis 1. In the next step, we investigate whether and how the spousal relationship changes the impact of disclosure. Specifically, we test Hypotheses 2, 3 and 4, which focus on potential interactions with the husband’s controlling behavior, and transfers from the husband and spousal trust, respectively. These hypotheses focus only on the decisions of women, as we assumed that disclosure would mainly influence the decisions of women. Our finding that disclosure does not have an effect on men’s choices supports this assumption. [Equation 2](#) shows the regression model that we will use for these analyses.<sup>15</sup>

$$X_{r,i} = \beta_0^r + \beta_1^r D_i + \beta_2^r P_i + \beta_3^r P_i * D_i + \beta_4^r C_i + \zeta_r + h_r + \epsilon_{r,i} \quad (2)$$

In this regression  $D_i$  is a dummy variable equal to one for the disclosure treatment.  $P_i$  is a variable that measures husband’s control, husband’s transfers or spousal trust, with  $P_i * D_i$  used to estimate heterogeneity in the disclosure treatment along  $P_i$ . The other variables are the same as in [Equation 1](#).

**3.3.1. Husband’s control.** We first look at the husband’s control. According to Hypothesis 2, the disclosure effect is stronger for women who have controlling husbands. To measure the husband’s control we use women’s reports on their husband’s controlling behavior in the six months before the interview. As described in [Table 1](#), 47% of women in our sample reported experiencing controlling behavior from their husbands. The use of interaction between disclosure and this variable in the regression allows us to test Hypothesis 2.

[Table 3](#) presents the results. We observe that the coefficient of ‘Disclosed’ is not statistically different from zero in any of the models, which indicates that women who do not have controlling husbands do not change their allocation choices with disclosure. We also observe that the coefficient for ‘Controlling Husband’ is significant in Models 3, 4, and 6. The sign and size of the coefficients show that in the non-disclosure treatment women with a controlling husband allocate around 1 counter less to their spouse and around 0.6 counters more to themselves (when additional control variables are included). This suggests that women who have a controlling husband would make more use of windfall income to increase their access to economic resources. The coefficient we are most interested in is the interaction of ‘Disclosed’ and ‘Controlling Husband’. This coefficient is significant in Models 3–6. The sign and size of the coefficient indicate that women with a controlling husband allocate more to their husbands and keep less for themselves when the resources are disclosed. These results confirm Hypothesis 2.

**Table 3.** Wives' allocations, by controlling husband.

Resources allocated to ...	Children		Spouse		Personal	
	(1)	(2)	(3)	(4)	(5)	(6)
Disclosed	-0.195 (0.328)	-0.276 (0.325)	0.369 (0.309)	0.379 (0.311)	-0.175 (0.360)	-0.103 (0.355)
Controlling husband	0.412 (0.340)	0.314 (0.339)	-1.000*** (0.342)	-0.998*** (0.344)	0.588 (0.381)	0.684* (0.374)
Disclosed × Controlling husband	0.194 (0.483)	0.368 (0.478)	1.089** (0.474)	1.058** (0.475)	-1.282** (0.525)	-1.425*** (0.520)
Constant	8.555*** (0.658)	7.382*** (0.957)	4.106*** (0.643)	4.633*** (0.933)	7.339*** (0.781)	7.985*** (1.133)
Controls	No	Yes	No	Yes	No	Yes

*Notes:*  $N=664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously (Models 1, 3 and 5 together and models 2, 4 and 6 together), using one of them as reference. Standard errors are clustered at the hamlet level. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively. The controls used in Models 2, 4, and 6 are age, education, income, household wealth, and total number of children under 12 years.

**Table 4.** Wives' allocations, by transfers.

Resources allocated to ...	Children		Spouse		Personal	
	(1)	(2)	(3)	(4)	(5)	(6)
Disclosed	-0.690* (0.415)	-0.652 (0.415)	0.608* (0.368)	0.503 (0.371)	0.126 (0.417)	0.148 (0.424)
Transfer 1	-0.680 (0.437)	-0.466 (0.432)	-0.146 (0.403)	-0.625 (0.404)	1.087** (0.489)	1.092** (0.448)
Transfer 2	-0.019 (0.406)	0.141 (0.398)	-0.467 (0.465)	-0.353 (0.438)	1.018** (0.507)	0.213 (0.444)
Disclosed × Transfer 1	1.046* (0.604)	0.966 (0.591)	0.243 (0.539)	0.540 (0.541)	-1.377** (0.617)	-1.506** (0.615)
Disclosed × Transfer 2	0.891 (0.569)	0.852 (0.565)	0.456 (0.533)	0.638 (0.558)	-1.373** (0.575)	-1.491** (0.608)
Constant	8.889*** (0.646)	7.727*** (0.944)	3.245*** (0.749)	4.362*** (0.949)	8.425*** (0.961)	7.911*** (1.118)
Controls	No	Yes	No	Yes	No	Yes

*Notes:*  $N=664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously (Models 1, 3 and 5 together and models 2, 4 and 6 together), using one of them as a reference. Standard errors are clustered at the hamlet level. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively. The controls used in Models 2, 4, and 6 are age, education, income, household wealth, and total number of children under 12 years. Transfer 1 refers to transfers between 2,000 and 50,000 TZS. Transfer 2 refers to transfers between 50,001 and 240,000 TZS.

**3.3.2. Husband's transfers.** Next, we look at the interactions between the disclosure effect and the transfers women receive from their spouses. As documented in Table 1, transfers are common in our sample. In our analysis, we use the women's report about the transfers received, as we focus on women's allocation decisions.<sup>16</sup> We divide the amounts of the transfers into different categories. For a breakdown of these categories see Table B2 in Appendix B.

Table 4 shows the results. The absence of transfers is used as the reference category. Looking at the coefficients of the interaction terms, we observe that women who receive a transfer give themselves significantly less in the disclosure treatment (Models 5 and 6). The size of both interactions is of similar size, indicating that the size of the transfer is not relevant. These results provide support for Hypothesis 3.

**Table 5.** Wives’ allocations, spousal trust.

Resources allocated to ...	Children		Spouse		Personal	
	(1)	(2)	(3)	(4)	(5)	(6)
Disclosed	-0.376 (0.310)	-0.334 (0.306)	1.134*** (0.282)	1.122*** (0.283)	-0.758** (0.328)	-0.788** (0.327)
Spousal trust	-0.832** (0.359)	-0.788** (0.354)	1.662*** (0.332)	1.644*** (0.333)	-0.830** (0.367)	-0.856** (0.363)
Disclosed × Spousal Trust	0.691 (0.481)	0.606 (0.477)	-0.819* (0.450)	-0.804* (0.450)	0.128 (0.509)	0.198 (0.508)
Constant	8.351*** (0.771)	7.088*** (1.015)	2.059*** (0.722)	2.692*** (0.988)	9.590*** (0.957)	10.220*** (1.211)
Controls	No	Yes	No	Yes	No	Yes

Notes:  $N = 664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously (Models 1, 3 and 5 together and models 2, 4 and 6 together), using one of them as a reference. Standard errors are clustered at the hamlet level. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively. The controls used in Models 2, 4, and 6 are age, education, income, household wealth, and a total number of children under 12 years.

3.3.3. *Spousal trust.* Last, we look at spousal trust. According to Hypothesis 4, the disclosure effect is weaker for women with more spousal trust. From the survey data, we create a measure of spousal trust. We asked each respondent whether they believed that their spouse would tell them if they were given 200,000 TZS. We assume that one has more spousal trust if one believes that their spouse would share information about the windfall income. As we focus in this analysis on the wife’s resource allocation decisions, we use a measure of the wife’s trust. Specifically, we use a binary variable that takes the value of 1 if the wife believes that her spouse would tell her about the 200,000 TZS, zero otherwise. 50% of the women in our sample believe that their spouse would disclose the 200,000 TZS.<sup>17</sup>

Table 5 presents the results. The coefficient of ‘Spousal Trust’ is statistically significant in all models, and indicates that women who have spousal trust share on average around 0.8 counters less with their children, share around 1.6 counters more with their spouse and keep around 0.8 counters less for themselves when the resources are not disclosed.

The main effect of interest is the interaction with the disclosure treatment. The coefficient of ‘Disclosed x Spousal Trust’ is negative and statistically significant in Models 3 and 4. This together with the positive and significant coefficient of ‘Disclosed’, indicates that the positive effect of disclosure is weaker among women who have higher spousal trust. This provides support for Hypothesis 4. Women in trusting relationships assign a higher weight to the utility of their spouse so that they allocate more to their spouse in the non-disclosure treatment, and disclosure has a weaker effect on their allocation decisions.<sup>18</sup>

### 3.4. Within-subject analysis

As all spouses made a choice in both treatments, the order of which was randomized, we can also do a within-subject analysis, which has certain advantages. First, it has more statistical power as twice as many observations are used, and, second, it increases the salience of the treatments as the participants get to know the difference between both treatments. This analysis can be found in [Supplementary Materials Section B Within-Subject Analysis Appendix B](#).

We find that disclosure has again a positive effect on the share women allocate to their spouse and a negative effect on their personal share. We also find that there are important order effects, as the disclosure effect is stronger if the disclosure treatment comes first. When we use the men’s sample, we now find that disclosure has a statistically significant effect on

their allocations and that the effects go in the same direction as with the women's sample. Lastly, we find that the order effects on the share allocated to the spouse go in opposite directions with the men's and women's samples. The disclosure effect is stronger for men when disclosure comes second, while for women it is stronger when disclosure comes first.

In [Supplementary Materials Section B Within-Subject Analysis Appendix B](#), we discuss possible explanations for these results. We further argue that the stronger effects are due to the larger salience of the treatments, which might reduce potential hypothetical bias. However, the within-comparison might also increase the risk of demand effects, so in conclusion, we expect that the 'true' gender difference in the disclosure effect would lie somewhere between what we identified with the between-comparison and the within-comparison.

#### 4. Discussion and conclusion

How economic resources from social or development programs are allocated within the household is important for household welfare. Intra-household resource allocation does not only depend on who receives and allocates the resources, but also on whether the resources are disclosed to other household members, and in particular the spouse. To test this, we use data from a choice experiment with a sample of couples from a patrilineal society in northern rural Tanzania. In the experiment, each member of a married or cohabiting couple divided a hypothetical amount of resources between themselves, their children, and their spouse. We identify the effect of disclosure by experimentally varying whether they are told to assume that these resources would be disclosed to their spouse.

Our results can be summarized as follows. First, we find that men and women allocate resources differently. Women tend to give more to their children and keep more for themselves and give less to their spouses than men do. Second, in line with our hypotheses, women are more influenced by the disclosure of external resources than men. They tend to keep less for themselves and share more with their husband if the resources are disclosed but do not change the amount allocated to their children. Third, this disclosure effect is stronger among women who have a controlling husband and women who receive transfers from their husbands but is weaker among women with more spousal trust.

A within-subject analysis confirms the disclosure effect among women and suggests that also men could be influenced by disclosure. While the within-analysis makes the treatments more salient and reduces potential hypothetical bias, it might also increase the risk of demand effects.

Other studies have found evidence of a 'disclosure effect' similar to ours (even if they did not use that phrasing) in the sense that spouses were willing to pay to have resources kept private from their spouses or family members (Almås et al., 2018; Boltz et al., 2019; Dupas & Robinson, 2013; Jakiela & Ozier, 2016). What we contribute to this area of research is a deeper look at the behavioral influence of disclosure and how it interacts with the spousal relationship.

It should be noted that inferences about the disclosure effect in our choice experiment rely on the assumption that in the non-disclosure treatment the spouse would not find out the allocation decisions. One might argue that this is a strong assumption given a large number of resources the respondents are asked to allocate in the experiment. If this assumption does not hold, the identified disclosure effect is most likely underestimated. Disclosure would most likely have a stronger effect if a smaller amount was used. In other words, our results should be interpreted as a lower bound for the disclosure effect.

There are two more reflections that can be made from our analysis. First, one might wonder what would happen if the allocation decisions were made jointly by the spouses instead of individually. At the risk of being somewhat speculative – as this was not tested in the experiment – we expect that women's allocation decisions made in the disclosure treatment are closer to the joint decision scenario than women's decisions without disclosure. This is supported by our finding that women are strongly influenced by disclosure, while husbands are not. Women have

lower autonomy when the resources are disclosed, so their decisions are more likely to be aligned with their husband's preferences, while the husband's autonomy is little influenced.

Second, the absence of a disclosure effect on the share allocated to the children is important to emphasize. The spouses may be more in line with one another regarding how much to spend on their children. This result contrasts with studies that found that children's outcomes may improve when women are in control of resources (Armand et al., 2020; Hoddinott & Haddad, 1995; Thomas, 1990, 1993). However, recent work, also from Tanzania, found that women's control alone does not necessarily matter for children's outcomes. Ringdal and Sjørnsen (2021) found that time preferences rather than decision-making power matter for resources allocated to children's education. Our finding that disclosure only matters for the allocation of resources to the spouse and oneself but not the children, suggests that women prioritize their children if they receive windfall income. Therefore, women will first allocate the required share to their children before allocating the remaining part between themselves and their husbands. Another plausible reason may be that women have differing levels of autonomy in various decision-making domains and that most women have maximum autonomy over how to allocate resources to their children.<sup>19</sup>

A final note is required on the insights that our results provide for policy. As our study uses data from one district in rural Tanzania, caution is needed when one wants to extrapolate the insights to other areas or countries. The evidence generated could be useful for policy reflections around cash transfer programs in patrilineal societies, in rural areas similar to our study area. As described in our literature review of studies in Tanzania, a defining feature is the large power of men in patrilineal societies when decisions are made about how household resources are allocated within the household (Galiè et al., 2021; Mwaseba & Kaarhus, 2015). This explains why disclosure has a stronger effect on women compared to men.

Two elements that policy makers can influence are 1) who in the household receives the resources and 2) whether these resources are given in private. Our results suggest that when resources are given to women, how these are allocated is influenced by whether the husband is informed about these resources. This is even more important for women who have low decision-making autonomy in their households. For women with more spousal trust, this is less important. In sum, where women could benefit more from external resources – i.e. where they have low decision-making autonomy and they have less spousal trust – it is important that resources are not disclosed, for women to decide freely on how the resources are allocated within their household. We do not advocate for the hiding of resources as a long-term development policy as it could lead to potential backlash if it is discovered by the husband and therefore damage spousal trust. However, there are a number of papers in addition to ours (for example, Almås et al. (2018); Boltz et al. (2019); Jakiela and Ozier (2016)) that show that hiding resources is common and preferred by women. Therefore allowing women to decide whether they disclose and how much they disclose to their spouse when they receive external resources provides them with more autonomy.

Policy-makers might also be interested in the optimal frequency of transfers, whether the owner of the distributed assets should be joint or individual, and whether cash transfers should be conditional or unconditional. These elements – which were not studied by our research – are interesting areas for future research.

## Notes

1. Using randomized control trials of cash transfer programs, some more recent studies, however, did not find support for such gender effect (Akresh, De Walque, & Kazianga, 2016; Benhassine, Devoto, Duflo, Dupas, & Pouliquen, 2015; Haushofer & Shapiro, 2016).
2. There is also a large literature that uses lab experiments to study gender differences in resource sharing outside the household. Some studies with university students found that women tend to be more generous than men (see, e.g. Bolton & Katok, 1995; Cox & Deck, 2007; Eckel & Grossman, 1996, 1998; Konow, Saijo, & Akai,



2008 and Croson & Gneezy, 2009, for a survey). Studies conducted in developing countries did not find statistically significant gender effects (e.g. Binzel and Fehr (2013) in Cairo; Jakiela (2011) in Kenya; Gowdy, Iorgulescu, and Onyeiwu (2003) in Nigeria; Ligon and Schechter (2012) in Paraguay; Ado and Kurosaki (2014) in Jakarta). An important exception is D'Exelle and Riedl (2018) who documented that in rural Nicaragua men tend to share more than women, even after controlling for their larger friendship networks.

3. Deschênes, Dumas, and Lambert (2020) note that financial secrecy may also be a coping mechanism for women in order to protect themselves from more financial responsibilities given to them by their husbands.
4. The exact questions were "If you were given a sum of money of 200,000 TZS which you could freely spend and your spouse did NOT know this, how would you spend the resources?" and "If you were given a sum of money of 200,000 TZS which you could freely spend and your spouse knew this, how would you spend the resources?".
5. For an elaborate discussion of the advantages and limitations of both approaches see Charness, Gneezy, and Kuhn (2012).
6. This is in line with the collective model by Chiappori (1992). Even though decisions are made individually in the choice experiment, we assume that in the disclosure treatment the allocation decision made by the recipient is influenced by the utility function of the other spouse. This is the case, as we assume that spouses know each other's preferences, and given that the resources are disclosed the recipient anticipates potential (dis)agreement with the other spouse about the allocation of the resources.
7. Note that while both spouses participated in the choice experiment, they were not told this. Also, the decisions made by each spouse were made in private, so that the other spouse would not find out about their decision.
8. From all rural wards in this district, we randomly selected eight. From each selected ward two villages were randomly selected, and finally two hamlets (sub-villages) per selected village. In each of the 32 selected hamlets, we selected a random sample of 40 married or cohabiting couples who have at least one child and in which the wife is 40 years old or younger. We used the latter selection criteria to ensure that the experiment was equally relevant to all participants. For example, an experiment in which respondents are asked to allocate resources to their children would be little relevant to couples who do not have children. If less than 40 couples were available in a hamlet, we selected all of them. 2 hamlets were used for piloting and not included in the final sample.
9. Income is calculated as the total money earned from farm activities that the respondent is involved in plus income from a salaried job or own business. We recognize that the farm income reported by spouses may overlap which is why we do not calculate total household income as we cannot accurately do so.
10. The questions in the survey read: "Do you sometimes receive any monetary payment from your spouse?" If yes, "How much have you received from your spouse in the last 12 months?" and "Do you sometimes give any monetary payment to your spouse?" If yes, "How much have you given to your spouse in the last 12 months?".
11. Principal component analysis (PCA) is commonly used for this but is meant to be used with continuous variables and not categorical variables. Booyens, van der Berg, Burger, von Maltitz, and Du Rand (2008) and Traissac and Martin-Prevel (2012) both conclude that multiple correspondence analysis (MCA) is more appropriate than PCA for low-income countries. MCA is also useful as it gives more weight to those indicators that are less common, which is useful in measuring assets (Ezzrari & Verme, 2013). For example, most people have a bicycle but fewer have solar power and those with solar power will likely have higher household wealth. MCA can result in positive and negative values, but for ease of interpretation, we re-scaled the index such that the least wealthy household equals zero and the index is always greater or equal to zero.
12. All assets were household level and reported by the husband except the number of plots owned which are individually owned and were reported by each spouse.
13. An alternative approach is to use "Gender," "Disclosure" and "Gender  $\times$  Disclosure." While this generates the same results, it requires additional calculations to estimate the disclosure effect for men and women separately.
14. We use these control variables to deal with omitted variable bias. The omission of variables that correlate with both gender and decision-making might bias the estimates. Although disclosure is randomized in our analysis, gender is not. The variables we chose correlate with both gender and decision-making, as suggested by e.g. Anderson et al. (2017) and Galiè et al. (2021). We also chose control variables similar to Jakiela (2011) whose study relates to ours.
15. For completeness [Table A1](#) Husbands' Allocations, Husband Believes Wife Will Disclose [Table A1](#) conducts the heterogeneity analysis on the male sample. None of the effects are statistically significant
16. [Table B1](#) in the Appendix presents the differences in transfers reported between spouses. We find high variability within the couples which is why we only use the responses of the women.
17. See [Figure B1](#) in Appendix Section B for more details.
18. Within our sample, 66 men reported that they had at least one other wife in addition to the wife included in our sample. The main results are robust to excluding these couples from the analyses (see [Supplementary Materials](#) Section C Monogamous Couples Appendix C).
19. To further analyze the absence of a disclosure effect on the allocations to children, we tested whether the disclosure effect depends on the number of children and their sex, as well as the age and education of the

woman. These results can be found in the [Supplementary Materials](#) Section D Additional Interaction Tables section.6. We find that disclosure lowers the share allocated to children but less so with more children (Table D.1 Number of Children and Disclosure Interactiontable.caption.16). In contrast to Javed and Mughal (2019), we do not find clear gender differences (Table D.2 Number of Boys and Girls and Disclosure Interactiontable.caption.17). As for the characteristics of the wife, in Tables D.3 Allocations and Disclosure Interaction with Age table.caption.18 and D.4 Allocations and Disclosure Interaction with Education table.caption.19, we find that the size of the disclosure effect decreases with the age of the woman and we find no effect of education on the amount allocated to children.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

## References

- Ado, A., & Kurosaki, T. (2014). *Motives for sharing in developing countries: Experimental evidence from Jakarta*. PRIMCED Discussion Paper Series, No. 53.
- Akram-Lodhi, A. H., & Komba, I. (2018). What are the factors driving the gender gap in agricultural productivity in Tanzania. In: *UN environment poverty-environment initiative*. Rome: Italy.
- Akresh, R., De Walque, D., & Kazianga, H. (2016). *Evidence from a randomized evaluation of the household welfare impacts of conditional and unconditional cash transfers given to mothers or fathers*. Technical Report. Washington, D.C.: World Bank.
- Almás, I., Armand, A., Attanasio, O., & Carneiro, P. (2018). Measuring and changing control: Women's empowerment and targeted transfers. *The Economic Journal*, 128(612), F609–F639. doi:10.1111/eoj.12517
- Anderson, C. L., Reynolds, T. W., & Gugerty, M. K. (2017). Husband and wife perspectives on farm household decision-making authority and evidence on intra-household accord in rural Tanzania. *World Development*, 90, 169–183.
- Armand, A., Attanasio, O., Carneiro, P., & Lechene, V. (2020). The effect of gender-targeted conditional cash transfers on household expenditures: Evidence from a randomized experiment. *The Economic Journal*, 130(631), 1875–1897. doi:10.1093/ej/ueaa056
- Ashraf, N. (2009). Spousal control and intra-household decision making: An experimental study in the Philippines. *American Economic Review*, 99(4), 1245–1277. doi:10.1257/aer.99.4.1245
- Attanasio, O., Fitzsimons, E., Gomez, A., Gutierrez, M. I., Meghir, C., & Mesnard, A. (2010). Children's schooling and work in the presence of a conditional cash transfer program in rural Colombia. *Economic Development and Cultural Change*, 58(2), 181–210. doi:10.1086/648188
- Attanasio, O. P., Meghir, C., & Santiago, A. (2012). Education choices in Mexico: Using a structural model and a randomized experiment to evaluate progress. *The Review of Economic Studies*, 79(1), 37–66. doi:10.1093/restud/rdr015
- Badstue, L., Farnworth, C. R., Umantseva, A., Kamanzi, A., & Roeven, L. (2021). Continuity and change: Performing gender in rural Tanzania. *The Journal of Development Studies*, 57(2), 310–325. doi:10.1080/00220388.2020.1790534
- Baland, J.-M., & Ziparo, R. (2017). Towards gender equity in development. In: *Chapter Intra-Household Bargaining in Poor Countries*, p. 69. Oxford, UK: Oxford University Press.
- Benhassine, N., Devoto, F., Duflo, E., Dupas, P., & Pouliquen, V. (2015). Turning a shove into a nudge? A “labeled cash transfer” for education. *American Economic Journal: Economic Policy*, 7, 86–125.
- Binzl, C., & Fehr, D. (2013). Giving and sorting among friends: Evidence from a lab-in-the-field experiment. *Economics Letters*, 121(2), 214–217. doi:10.1016/j.econlet.2013.08.002

- Bolton, G. E., & Katok, E. (1995). An experimental test for gender differences in beneficent behavior. *Economics Letters*, 48(3–4), 287–292. doi:10.1016/0165-1765(94)00621-8
- Boltz, M., Marazyan, K., & Villar, P. (2019). Income hiding and informal redistribution: A lab-in-the-field experiment in Senegal. *Journal of Development Economics*, 137, 78–92. doi:10.1016/j.jdeveco.2018.11.004
- Booysen, F., van der Berg, S., Burger, R., von Maltitz, M., & Du Rand, G. (2008). Using an asset index to assess trends in poverty in seven Sub-Saharan African Countries. *World Development*, 36(6), 1113–1130. doi:10.1016/j.worlddev.2007.10.008
- Browning, M., Chiappori, P.-A., & Weiss, Y. (2009). *Economics of the family*. New York, NY: Cambridge University Press.
- Castilla, C. (2019). What's yours is mine, and what's mine is mine: Field experiment on income concealing between spouses in India. *Journal of Development Economics*, 137, 125–140. doi:10.1016/j.jdeveco.2018.11.009
- Castilla, C., & Walker, T. (2013). Is ignorance bliss? The effect of asymmetric information between spouses on intra-household allocations. *American Economic Review*, 103(3), 263–268. doi:10.1257/aer.103.3.263
- Charness, G., Gneezy, U., & Kuhn, M. A. (2012). Experimental methods: Between-subject and within-subject design. *Journal of Economic Behavior & Organization*, 81(1), 1–8. doi:10.1016/j.jebo.2011.08.009
- Chiappori, P.-A. (1992). Collective labor supply and welfare. *Journal of Political Economy*, 100(3), 437–467. doi:10.1086/261825
- Cox, J. C., & Deck, C. A. (2007). When are women more generous than men? *Economic Inquiry*, 44(4), 587–598. doi:10.1093/ei/cbj042
- Crosan, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47(2), 448–474. doi:10.1257/jel.47.2.448
- Deschênes, S., Dumas, C., & Lambert, S. (2020). Household resources and individual strategies. *World Development*, 135, 105075. doi:10.1016/j.worlddev.2020.105075
- D'Exelle, B., & Riedl, A. (2018). Gender inequality and resource sharing: Evidence from rural Nicaragua. *Journal of Development Perspectives*, 2(1–2), 62–87. doi:10.5325/jdevepers.2.1-2.0062
- Duflo, E. (2001). Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. *American Economic Review*, 91(4), 795–813. doi:10.1257/aer.91.4.795
- Duflo, E. (2003). Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in South Africa. *The World Bank Economic Review*, 17(>1), 1–25. doi:10.1093/wber/lhg013
- Duflo, E., & Udry, C. (2004). *Intrahousehold resource allocation in Côte d'Ivoire: Social norms, separate accounts and consumption choices. Technical report*. Cambridge, Massachusetts: National Bureau of Economic Research.
- Dupas, P., & Robinson, J. (2013). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. *American Economic Journal: Applied Economics*, 5, 163–192.
- Eckel, C. C., & Grossman, P. J. (1996). Altruism in anonymous dictator games. *Games and Economic Behavior*, 16(2), 181–191. doi:10.1006/game.1996.0081
- Eckel, C. C., & Grossman, P. J. (1998). Are women less selfish than men? Evidence from dictator experiments. *The Economic Journal*, 108(448), 726–735. doi:10.1111/1468-0297.00311
- Ezzrari, A., & Verme, P. (2013). A multiple correspondence analysis approach to the measurement of multidimensional poverty in Morocco 2001–2007. In V. Berenger & F. Bresson (Eds.), *Poverty and social exclusion around the mediterranean sea*. Economic studies in inequality, social exclusion and well-being, vol 9. Boston, MA: Springer. [https://doi.org/10.1007/978-1-4614-5263-8\\_7](https://doi.org/10.1007/978-1-4614-5263-8_7)
- Galiè, A., Farnworth, C. R., Njiru, N., & Alonso, S. (2021). Intra-household handling and consumption dynamics of milk in peri-urban informal markets in Tanzania and Kenya: A gender lens. *Sustainability*, 13(6), 3449. doi:10.3390/su13063449
- Goldberg, J. (2017). The effect of social pressure on expenditures in Malawi. *Journal of Economic Behavior & Organization*, 143, 173–185. doi:10.1016/j.jebo.2017.09.005
- Gowdy, J., Iorgulescu, R., & Onyeiwu, S. (2003). Fairness and retaliation in a rural Nigerian village. *Journal of Economic Behavior & Organization*, 52(4), 469–479. doi:10.1016/S0167-2681(03)00026-X
- Haddad, L. J., Hoddinott, J., & Alderman, H. (1997). *Intrahousehold resource allocation in developing countries*. Baltimore, Maryland: Johns Hopkins University Press.
- Hall, A. (2008). Brazil's Bolsa Família: A double-edged sword? *Development and Change*, 39(5), 799–822. doi:10.1111/j.1467-7660.2008.00506.x
- Haushofer, J., & Shapiro, J. (2016). The short-term impact of unconditional cash transfers to the poor: Experimental evidence from Kenya. *The Quarterly Journal of Economics*, 131(4), 1973–2042. doi:10.1093/qje/qjw025
- Hoddinott, J., & Haddad, L. (1995). Does female income share influence household expenditures? Evidence from Cote d'Ivoire. *Oxford Bulletin of Economics and Statistics*, 57(1), 77–96. doi:10.1111/j.1468-0084.1995.tb00028.x
- Jakiela, P. (2011). Social preferences and fairness norms as informal institutions: Experimental evidence. *American Economic Review*, 101(3), 509–513. doi:10.1257/aer.101.3.509
- Jakiela, P., & Ozier, O. (2016). Does Africa need a rotten kin theorem? Experimental evidence from village economies. *The Review of Economic Studies*, 83(1), 231–268. doi:10.1093/restud/rdv033
- Javed, R., & Mughal, M. (2019). Have a son, gain a voice: Son preference and female participation in household decision making. *The Journal of Development Studies*, 55(12), 2526–2548. doi:10.1080/00220388.2018.1516871

- Jayachandran, S. (2015). The roots of gender inequality in developing countries. *Annual Review of Economics*, 7(1), 63–88. doi:10.1146/annurev-economics-080614-115404
- Konow, J., Saijo, T., & Akai, K. (2008). *Morals and mores? Experimental evidence on equity and equality from the US and Japan. Technical report*. Osaka, Japan: Institute of Social and Economic Research, Osaka University.
- Ligon, E., & Schechter, L. (2012). Motives for sharing in social networks. *Journal of Development Economics*, 99(1), 13–26. doi:10.1016/j.jdeveco.2011.12.002
- Lundberg, S. J., Pollak, R. A., & Wales, T. J. (1997). Do husbands and wives pool their resources? Evidence from the United Kingdom child benefit. *The Journal of Human Resources*, 32(3), 463–480. doi:10.2307/146179
- Mwaseba, D. J., & Kaarhus, R. (2015). How do intra-household gender relations affect child nutrition? Findings from two rural districts in Tanzania. *Forum for Development Studies*, 42(2), 289–309. doi:10.1080/08039410.2015.1020337
- Nsenga, J., & Mwaseba, D. (2021). Intra-household gender relations and women participation in non-industrial private forestry in the southern highlands of Tanzania. *International Forestry Review*, 23(1), 68–78. doi:10.1505/146554821832140349
- Omari, C. K. (1991). The family in Tanzania. *International Journal of Sociology of the Family*, 21, 55–71.
- Ponce, J., & Bedi, A. S. (2010). The impact of a cash transfer program on cognitive achievement: The *Bono de Desarrollo Humano* of Ecuador. *Economics of Education Review*, 29(1), 116–125. doi:10.1016/j.econedurev.2009.07.005
- Ringdal, C., & Sjørusen, I. H. (2021). Household bargaining and spending on children: Experimental evidence from Tanzania. *Economica*, 88(350), 430–455. doi:10.1111/ecca.12353
- Rosenzweig, M. R. (1990). Population growth and human capital investments: Theory and evidence. *Journal of Political Economy*, 98(5, Part 2), S38–S70. doi:10.1086/261724
- Tanzania National Bureau of Statistics (2015). *2012 population and housing census*. Dar Es Salaam, Tanzania: Tanzania National Bureau of Statistics.
- Tanzania National Bureau of Statistics (2016). *2016/17 annual agriculture sample survey initial report*. Dar Es Salaam, Tanzania: Tanzania National Bureau of Statistics.
- Thomas (1993). The distribution of income and expenditure within the household. *Annales d'Économie et de Statistique*, (29), 109–135. doi:10.2307/20075898
- Thomas, D. (1990). Intra-household resource allocation: An inferential approach. *The Journal of Human Resources*, 25(4), 635. doi:10.2307/145670
- Traissac, P., & Martin-Prevel, Y. (2012). Alternatives to principal components analysis to derive asset-based indices to measure socio-economic position in low- and middle-income countries: The case for multiple correspondence analysis. *International Journal of Epidemiology*, 41(4), 1207–1208. doi:10.1093/ije/dys122
- Westeneng, J., & D'Exelle, B. (2015). How economic empowerment reduces women's reproductive health vulnerability in Tanzania. *The Journal of Development Studies*, 51(11), 1459–1474. doi:10.1080/00220388.2015.1041514
- World Bank (2012). *World development report 2012*. Washington, D.C.: Gender Equality and Development.

**Appendix A. Balance Test****Table A1.** Disclosure balance test

	Husbands					Wives				
	Disclosed		Undisclosed		<i>p</i> -value	Disclosed		Undisclosed		<i>p</i> -value
	<i>N</i>	Mean/Percent	<i>N</i>	Mean/Percent		<i>N</i>	Mean/Percent	<i>N</i>	Mean/Percent	
Age (years)	341	36.4	323	37.2	0.40	341	30.2	323	30.6	0.62
From village	341	74%	323	71%	0.49	341	29%	323	27%	0.67
Education (Years)	338	5.4	322	5.2	0.44	341	5.0	323	5.0	0.70
Income (TZS)	341	684,665	323	621,977	0.55	341	346,041	323	283,541	0.31
<i>Intra-household transfers</i>										
% Give transfer	341	86%	323	87%	0.53	341	18%	323	17%	0.77
Average amount given (TZS)	292	68,250	282	64,802	0.50	61	35,573	55	59,273	0.14
% Receive transfer	341	19%	323	22%	0.35	341	62%	323	60%	0.53
Average amount (TZS)	66	22,863	72	30,623	0.29	213	142,601	194	155,933	0.55
<b>HOUSEHOLD LEVEL</b>										
	Disclosed		Undisclosed		<i>p</i> -value	Disclosed		Undisclosed		<i>p</i> -value
	<i>N</i>	Mean/Percent	<i>N</i>	Mean/Percent		<i>N</i>	Mean/Percent	<i>N</i>	Mean/Percent	
Number of children under 12	341	3.1	323	3.0	0.56					
Household wealth	341	0.03	323	-0.05	0.31					
Wife reports controlling behavior by husband	341	48%	323	45%	0.45					
Women with spousal trust	341	50%	323	50%	0.82					

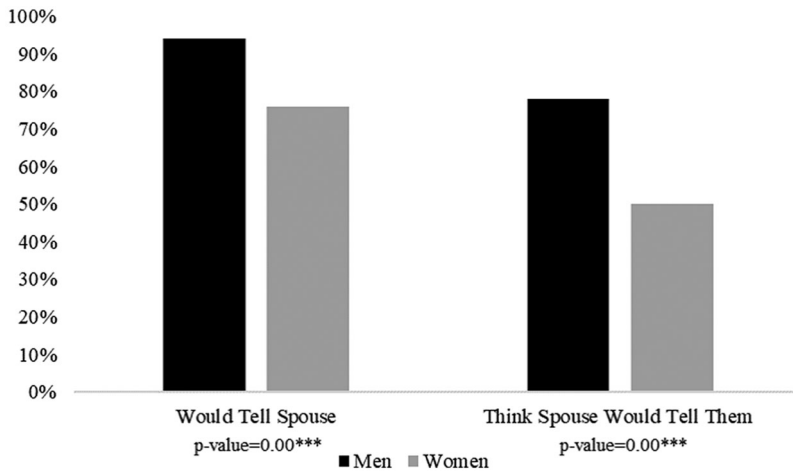
*Note:* *P*-values refer to an unpaired t-test for continuous variables and a proportions test for binary variables.

**B. Additional tables**

**Table B1.** Real intra-household transfer differences between spouses.

	Mean diff. in transfer amount reported (TZS)
Diff. in transfers to wife	34,099 (200,410)
Diff. in transfers to husband	-2,584 (45,260)

*Notes:*  $N = 664$ . The mean difference in transfer amount to wife is the mean difference in what the husband reported giving to his wife subtracted from what the wife reported receiving from her husband. The mean difference in transfer amount to the husband is the mean difference in what the wife reported giving to her husband subtracted from what the husband reported receiving from his wife. The standard deviations of the mean transfer amounts are reported in parentheses.



**Figure B1.** Tell spouse about additional resources.

*Notes:*  $N = 664$ . Test of proportions. \*\*\*, \*\*, \* indicate significance levels at 1, 5, and 10%, respectively.

**Table B2.** Real intra-household transfer categories.

Transfer categories	
Category 0: Receive no transfer	39%
Category 1: 2,000–50,000 TZS	31%
Category 2: 50,001–240,000 TZS	30%

*Notes:*  $N = 664$ . We used the women’s reports about the transfers received. To create the categories we used the following logic: while Category 0 is a natural category, we distributed the rest of the sample equally between two additional categories.

**Table B3.** Gender and disclosure: extended.

Resources allocated to ...	Children (1)	Spouse (2)	Personal (3)
F Dis	1.538*** (0.266)	-2.032*** (0.275)	0.494 (0.308)
F Undis	1.625*** (0.268)	-2.936*** (0.283)	1.312*** (0.318)
M Dis	-0.303 (0.257)	0.223 (0.294)	0.079 (0.315)
Income	-0.027*** (0.009)	0.007 (0.009)	0.021*** (0.007)
Age	0.011 (0.010)	0.001 (0.010)	-0.012 (0.011)
Education	0.026 (0.029)	0.041 (0.029)	-0.067** (0.034)
Asset index	0.016 (0.098)	-0.129 (0.094)	0.113 (0.112)
Num children under 12 yr	0.157*** (0.059)	-0.093 (0.064)	-0.064 (0.067)
Constant	5.794*** (0.835)	6.156*** (0.703)	8.051*** (1.021)

*Notes:*  $N = 1372$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously, using one of them as a reference. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively.

**Table B4.** Wives' allocations, by controlling husband: extended.

Resources allocated to ...	Children (1)	Spouse (2)	Personal (3)
Income women	-0.045*** (0.011)	0.002 (0.019)	0.043** (0.018)
F Age	0.014 (0.018)	-0.009 (0.015)	-0.005 (0.017)
F Education	-0.020 (0.041)	0.018 (0.037)	0.002 (0.042)
Asset index	0.227* (0.133)	0.092 (0.118)	-0.318** (0.138)
Num children under 12 yr	0.289*** (0.084)	-0.090 (0.080)	-0.199** (0.084)
Disclosed	-0.276 (0.325)	0.379 (0.311)	-0.103 (0.355)
Controlling husband	0.314 (0.339)	-0.998*** (0.344)	0.684* (0.374)
Disclosed $\times$ Controlling husband	0.368 (0.478)	1.058** (0.475)	-1.425*** (0.520)
Constant	7.382*** (0.957)	4.633*** (0.933)	7.985*** (1.133)

*Notes:*  $N = 664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously, using one of them as a reference. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively.

**Table B5.** Wives' allocations, by transfers: extended.

Resources allocated to ...	Children (1)	Spouse (2)	Personal (3)
Income women	-0.051*** (0.010)	0.004 (0.020)	0.046** (0.020)
F Age	0.014 (0.018)	-0.008 (0.015)	-0.006 (0.017)
F Education	-0.028 (0.040)	0.027 (0.037)	0.001 (0.041)
Asset index	0.223* (0.132)	0.070 (0.121)	-0.294** (0.138)
Num children under 12 yr	0.269*** (0.083)	-0.111 (0.079)	-0.157* (0.084)
Disclosed	-0.652 (0.415)	0.503 (0.371)	0.148 (0.424)
Transfer 1	-0.466 (0.432)	-0.625 (0.404)	1.092** (0.448)
Transfer 2	0.141 (0.398)	-0.353 (0.438)	0.213 (0.444)
Disclosed × Transfer 1	0.966 (0.591)	0.540 (0.541)	-1.506** (0.615)
Disclosed × Transfer 2	0.852 (0.565)	0.638 (0.558)	-1.491** (0.608)
Constant	7.727*** (0.944)	4.362*** (0.949)	7.911*** (1.118)
Controls	Yes	Yes	Yes

Notes:  $N=664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously, using one of them as a reference. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively. Transfers are measured in TZS.

**Table B6.** Wives' allocations, spousal trust: extended.

Resources allocated to ...	Children (1)	Spouse (2)	Personal (3)
Income women	-0.044*** (0.010)	-0.003 (0.017)	0.047** (0.018)
F Age	0.013 (0.018)	-0.012 (0.014)	-0.001 (0.017)
F Education	-0.023 (0.041)	0.011 (0.036)	0.012 (0.041)
Asset index	0.234* (0.135)	0.079 (0.120)	-0.313** (0.142)
Num children under 12 yr	0.276*** (0.083)	-0.081 (0.077)	-0.195** (0.083)
Disclosed	-0.250 (0.350)	1.373*** (0.316)	-1.122*** (0.383)
Spousal trust	-0.570 (0.351)	2.057*** (0.338)	-1.486*** (0.379)
Disclosed × Spousal trust	0.312 (0.478)	-1.011** (0.445)	0.699 (0.522)
Constant	7.925*** (1.000)	2.816*** (0.885)	9.259*** (1.090)
Controls	Yes	Yes	Yes

Notes:  $N=664$ . OLS regressions with fixed effects at the hamlet level. We estimate the equations simultaneously, using one of them as a reference. \*\*\*, \*\*, \* indicate two-sided significance levels at 1, 5, and 10%, respectively.