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# Generosity and sharing among villagers: Do women give more?

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## Abstract

This paper explores generosity among anonymous villagers and sharing within families using a dictator game field experiment that was carried out in rural villages in Ethiopia. We find that generosity among anonymous villagers is very low compared with the findings in the dictator game literature. On average, the dictators in our sample allocate only 6% of their endowments to anonymous persons in the village, and three-fourths of the dictators keep all of their endowments to themselves when paired with anonymous persons. However, we found very high levels of sharing between husband and wife. In terms of gender differences, we find that women are not more generous towards anonymous persons, nor are they more likely to share within their families. In fact, there is some evidence, albeit weak, showing that women allocate less to anonymous persons than do men. Additionally, there is strong evidence that women are less likely to share their resources with their spouse than are men.

**Keywords:** Dictator game, generosity, sharing, field experiment, Ethiopia, Africa

JEL codes: C93, D03, O12

## 1 Introduction

Since the dictator game was introduced by Kahneman et al. (1986), a number of game experiments have been conducted with real monetary payments as well as tokens to explore people's altruism and generosity. What is consistently found across studies and across different societies is a significant deviation from the prediction of the canonical model of the self-interested man (Camerer, 2003; Henrich et al., 2001). Individuals do share with other people without any reciprocal expectations. Camerer (2003) found that more than 60 percent of dictators give positive amounts of money. A recent meta-analysis of dictator game experiments based on data from more than 130 studies reported that on average, dictators shared 28 percent of their endowments (Engel, 2011).

One of the concerns about earlier experimental studies in economics, including dictator game experiments, is the extent to which the results can be generalized. The typical subjects of most experiments have been university students from developed countries who may not represent other segments of society in the developed world or their counterparts in developing countries. Available evidence suggests that subjects from western educated and developed societies differ in many important behavioral dimensions (see Henrich et al., 2010b for discussion), limiting the generalizability of lab experiment results to the larger society. Some recent studies have attempted to fill this research gap by conducting experiments with non-student subjects and subjects from developing countries (see Cardenas and Carpenter, 2008 for review). A cross-country study by Henrich and colleagues based on experiments in 15 small-scale societies show that although the canonical model of self-interested individuals was not supported by the results from any of the societies in the sample, there were large variations across societies in the observed behaviors (Henrich et al., 2001; Henrich et al., 2010a; Henrich et al., 2006). More

diversified data from field experiments are needed to better understand the patterns of divergence from the game theoretic expectations. In this regard, there is a dearth of experimental evidence from Africa.

Results from various dictator game experiments suggest that women are more altruistic than men and value generosity and equality of pay-offs (Andreoni and Vesterlund, 2001; Dufwenberg and Muren, 2006; Eckel and Grossman, 1996, 1998). Based on a double-blind dictator game experiment at three universities in the US, Eckel and Grossman (1998) conclude that women are more generous than men and donate twice as much as men to their anonymous partners. Eckel and Grossman (1998, 2008) argue that the conflicting results that were reported for gendered difference in generosity and cooperation from various public goods and ultimatum games may have been caused by factors that could have confounded basic gender differences. For example, if women are more risk averse, then they may be more generous in the ultimatum game and less generous in the public goods game. The authors claim that the double-blind dictator game offers a pure test of basic male/female differences in selfishness because it eliminates strategic risk, subject/subject interactions and subject/experimenter interactions (Eckel and Grossman, 1998, 2008). However, gender differences may not be universal across cultures. Evidence from other behavioral experiments highlights the relevance of culture for gendered differences. For example, a study of Masai women and men in Tanzania (a patriarchal society) and Khasi women and men in India (a matrilineal society) revealed that in identical experiments, the men were more competitive in Masai society and the women were more competitive in Khasi society. This evidence indicates that such gender differences in preferences are affected by socialization and culture and may not be universal. This paper seeks to test whether sharing behavior among poor

villagers in Africa shows the same pattern as that reported in most of the dictator game literature, particularly focusing on gender-based differences in generosity.

We explore generosity among anonymous villagers and sharing within families using a dictator game field experiment that was carried out in rural villages in Ethiopia. Our sample contains 362 men and 362 women from 17 communities in Southern Ethiopia. We maintain players' anonymity for sharing with non-spouse villagers using a pairing procedure that makes it impossible for either the dictators or the recipients to identify their partners. For sharing between husbands and wives, the game design allows the dictator anonymity during the experiment. To the best of our knowledge, this combined within-household and within-village sharing with a focus on gender differences in allocation is a novel contribution of our study that provides new insights on intra-family and intra-village sharing.

We find that generosity among anonymous villagers is very low compared with the findings in the dictator game literature. On average, the dictators in our sample allocate only 6% of their endowments to anonymous persons in the village. Three-fourths of the dictators keep all of the pie to themselves when paired with anonymous persons. In terms of gender differences, we find that women are not more generous than men towards anonymous villagers. In fact, there is weak evidence that shows smaller allocations by women to anonymous villagers. We find that there is a high level of sharing between married couples. More than 80% of the players transfer part of their endowments to their spouses, with the majority allocating half of their endowments.

However, women allocate significantly less than men to their spouses.

## 2 Sample and experimental design

### 2.1 Sample

This study is based on a dictator game played in the field with a sample of 362 households in 17 communities in Southern Ethiopia in 2012. These communities contain an average of 500 farm households under a local administrative structure called a *kebele*. The sample households within a *kebele* were randomly selected from a list of residents provided by village administrators. These households were sampled for a household survey in 2007 and resurveyed in 2012. The participants in this study are monogamous married couples<sup>1</sup>. The experiments were introduced after couples had participated in separate survey interviews that took place immediately before the experiment. The money received in the experiments could therefore be regarded as earned rather than as windfall money. This sample was rich in the sense that it contained respondents from three different ethnic/language groups and from three different religions (Muslims, Orthodox Christian, and Protestants) living in rural areas with varying degrees of market access and market orientation (see Appendix).

### 2.2 Experimental design

In each village, an appropriate site was identified for the experiment (such as an office at the health station or an agricultural extension office). All households in the village played the game within one day to minimize communication and information leakage. Households were informed of the experiment date, place and time at the conclusion of the household survey. The household

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<sup>1</sup> The sample size for the household survey was approximately 600. We administered the experiment to all of the 2012 households, but 15% of these households were polygamous, 12% were female headed (typically widowed) and the remainder did not have their spouses with them at the time of the survey for different reasons (e.g., because of travel, serious illness or marital separation); in these cases, the game was played with another member. **For this study, we use only data from monogamous households where both the husband and the wife were present.**

heads and their respective spouses were asked to come to the experiment site together. Three separate places (rooms or shades) were prepared at the experiment site to be used during the game. The place where the dictator made the allocation decision was always a secluded room. The other places were prepared for those players identified as recipients and for the couples who had not yet played the game. These two groups were kept separate using all available means. When rooms were available, these two groups were put into separate rooms. If there were no other rooms, participants were kept on opposite sides of the compound in which the experiment took place. All of the public spaces used for experiments had fenced compounds, but it was not always possible to find more than one room at the experiment sites.

Because the majority of the respondents are illiterate, the experimenter explained the game and completed the form with their allocation decisions. In each village, the experiment was conducted by bilingual enumerators who spoke the local language. None of the enumerators was personally known to the respondents, and thus, we hope that enumerator bias is minimal. Two to three facilitators managed the activities outside of the primary game room; at least one of these facilitators was a development agent who worked in the community. Our team also conducted two successful surveys in 2007 and 2012 and established credibility. One of this study's authors attended the experiments in each village to ensure the consistency of the experiment across the villages.

Once all of the households in the sample were gathered, couples were invited into the primary game room one by one according to their household numbers<sup>2</sup>. The couples were informed that a coin toss would determine who would be the first to play the game in the primary game room.

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<sup>2</sup> This was the ID that we assigned to the households when they were randomly selected for a survey in 2007 from a complete list of households in the village administration office in 2007.

Once the coin was tossed, the loser was asked to wait in a separate location for his/her turn and was not told anything further about the game until then. The winner of the coin toss was identified as a dictator and the loser a recipient. However, as we will discuss later, the real recipient of the allocation could be the spouse or another recipient from the village. The dictators were given instructions about the game and made decisions on how to allocate their endowments only after their spouses had left the room. The losers/recipients were later called one by one after all of the winners/dictators had played the game.

We combined the dictator game with a stated preference approach to obtain information about the subjects' willingness to share with spouses and with anonymous villagers. Each winner of the first coin toss was told that s/he could decide how to dispose of 40 EB (Ethiopian Birr). This endowment is approximately 2.5US\$ and equivalent to two days' salary for unskilled workers in the study areas. The money (three 10EB notes and two 5EB notes) was put on the table in front of the dictator, and the dictator was asked to make allocation decisions in two scenarios: a) the recipient is a spouse; b) the recipient is an anonymous person among the sample in the village. The dictators were informed that once they made their allocation decisions for both scenarios, another coin toss would determine whether or not the money would be shared with their spouses or with anonymous villager. After the winner had decided how much to allocate in each case, a coin was tossed and the money was set aside in an envelope based on the results of the coin toss<sup>3</sup>. The dictators would then keep the remaining amount and leave the study location without talking to anyone else from the waiting households or to their spouses until after the experiment was completed.

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<sup>3</sup> When the coin toss was heads, the spouse received the transfer and thus a household ID was written on the envelope. If the result was tails, the anonymous person received the transfer and the envelope was marked with a code denoting that it was for an anonymous. All of the anonymous envelopes were collected together, and recipients who did not receive envelopes from their spouses received randomly chosen envelopes from this bundle.

After all of the winners had played, recipients were called one by one to the game room and each received an envelope that contained the amount allocated from his/her spouse or from the anonymous person depending on the outcome of the second coin toss<sup>4</sup>. All of the envelopes were topped with 10 EB to ensure that no respondent received an empty envelope. Although the game had been explained to them, the recipients were not informed about how much their spouses had allocated or whether the allocations they received came from anonymous villager.

### 3 Results

There were 724 participants in the game: 362 men and 362 women. Because the dictator was identified from each married couple using a coin toss, there was always one dictator and one recipient from each household, giving us 362 dictators and the same number of recipients. Slightly more women were identified as dictators (53%). As was indicated in the game design, dictators made their allocation decisions in two scenarios, and the actual recipients were determined through coin toss. This procedure provided us with two allocation decisions for each dictator, one for the anonymous villager and one for the person's own spouse. We separately analyzed the allocations to the two types of recipients.

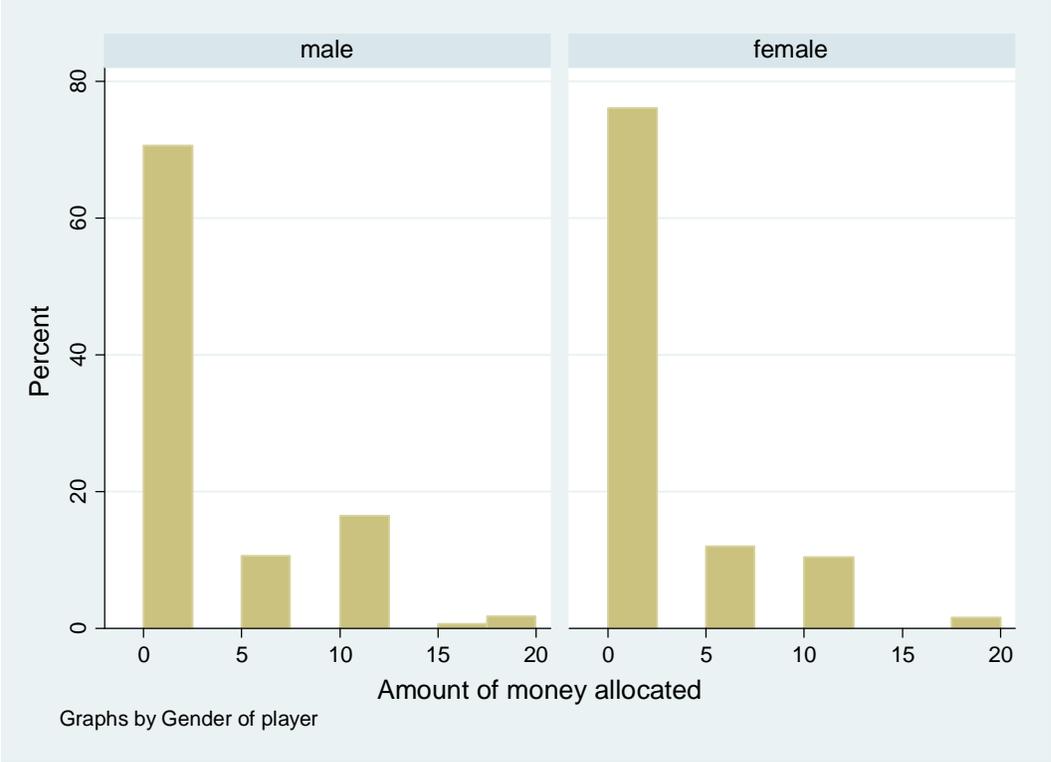
#### 3.1 Sharing among anonymous villagers

Figure 1 shows the frequency of allocation for each feasible amount that dictators donated to anonymous individuals. We see that a large proportion of villagers kept all of their endowments

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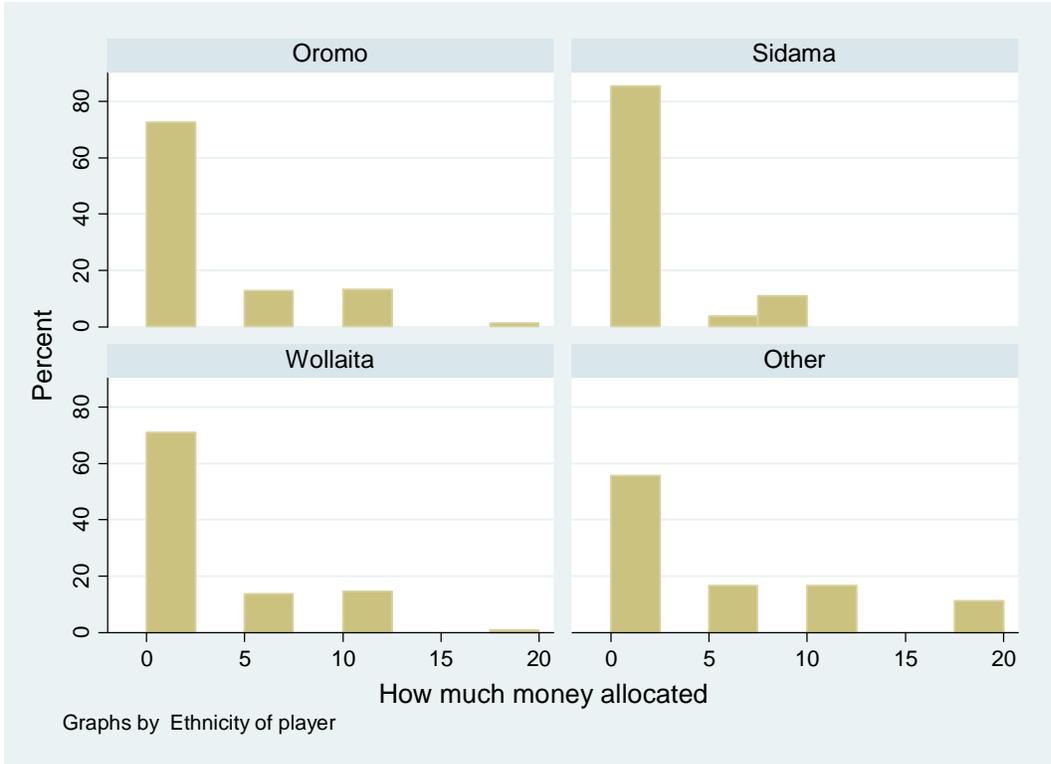
<sup>4</sup> Recipients also played a hypothetical game stating how much they would have allocated in the two scenarios if they had received 40EB, but these results are not discussed here.

to themselves. The distribution for male and female dictators appears similar, with the proportion of women who kept their full endowments to themselves being slightly larger than that of men.



**Figure 1 Amount donated to anonymous person in the village (Endowment=40 EB)**

The Oromo, Wollaita and Sidama are the main ethnic groups in the experiment villages, accounting for 95% of the sample. Figure 2 shows the allocation decisions by ethnicity. We see that the Sidama has the lowest positive allocations, whereas the Oromo and the Wollaita have similar distributions. Dictators who belong to minority ethnic groups in the survey area are more likely to donate positive amounts than are those in the majority.



**Figure 2 Allocation to anonymous person disaggregated by dictator ethnicity**

Table 1 reports the probabilities of sharing and the average amounts of money allocated to anonymous individuals.

**Table 1 Allocations to anonymous individuals from the same village. Endowment=40 EB. Dictators= 362**

Dictator <sup>a</sup>	Proportion with non-zero allocations		Amount allocated (Full sample)			Amount allocated (positive offers)	
	Mean	Std.Err	Mean	Std.Err	Max	Mean	Std.Err
Men	0.29	0.035	2.62	0.350	20	8.90	0.540
Women	0.24	0.031	1.95	0.288	20	8.15	0.589
Total	0.27	0.023	2.27	0.225	20	8.54	0.398

*a- The difference between men's and women's donations was only weakly significant. Z-test for equal proportion of non-zero allocations and Kolmogorov-Smirnov test for the equality of the distributions were not significant. However, the t-test for equality of mean amount allocated is significant at 10% (one-tail).*

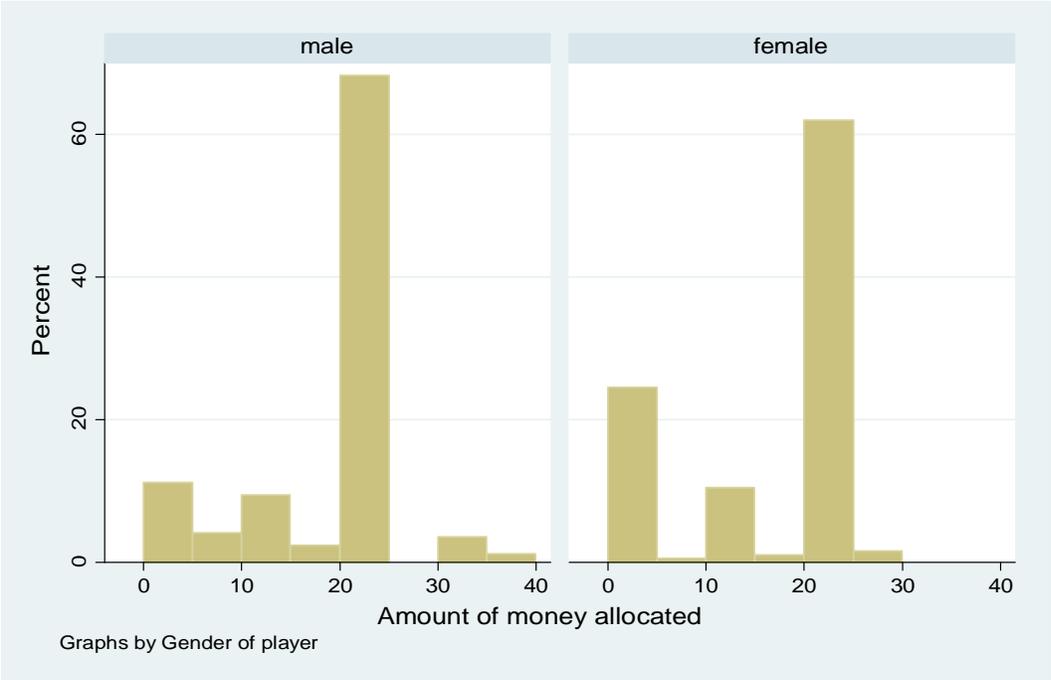
Only 27% of the dictators are willing to share with anonymous person in the village. Men have a slightly higher probability of sharing and they transfer higher amounts than do women on average. However, the difference in allocations between men and women is only weakly significant. The levels of positive donations in this sample is much lower than those observed in most experiments, in which more than 60% of dictators across different experiments donated non-zero amount (Camerer, 2003; Engel, 2011). For an African example, we can observe the experiment by Ensminger (2000), which shows that the percentage of players who kept their entire endowments in the Orma community in Kenya was 9% (Ensminger, 2000). The level of sharing in our sample, in terms of the average amount shared, is also very small. For the full

sample, this average is barely 6% of the endowment, although if we compute the shares only for those who made non-zero donations, the share rises to 21%. The literature shows much larger shares. For example, a survey of dictator game studies that covers developing and developed countries as well as student and non-student samples report reported mean allocations that range from 19% to 47% (Cardenas and Carpenter, 2008). A meta-study of dictator experiments based on data from more than 130 published papers finds that the average sharing constructed from all the studies is 28% (Engel, 2011). The same paper reports that when considering only non-zero donations, the share of their endowments that dictators transfer to recipients rises to an average of 42% (P.607), which is double the figure in our sample. One reason for the lower level of sharing with anonymous villagers could be that the money was earned in our study. Dictator game experiments that incorporated the element of *earned assets* report sharing behavior that differs from typical dictator game experiments. For example, in the study by Cherry et al. (2002), 70.67% of the dictators who played with earned money took all of the pie, whereas only 15.61% of dictators who played with unearned money took all of it. A qualitatively similar result was found in List and Cherry (2008) where 50% of dictators allocated positive amounts from their unearned endowments but only 29% allocated positive amounts when the endowment was earned. Although these results support our supposition that the low levels of sharing in our data may reflect the fact that the dictators had earned the money, the potential recipients in our sample could also be considered to have equally earned the money given that they participated in the pre-experiment survey in the same way as the randomly selected dictators. One might thus expect higher transfers than when dictators allocate their earned endowments to recipients who did not earn the pie. Studies show that dictators are more likely to allocate non-zero amounts if the recipients are perceived to have earned the endowment in the game (Engel, 2011; Oxoby and

Spraggon, 2008). It appears that when endowments are to be allocated between players who have both earned it, the dictator's claim on the pie is the most important determinant of the level of sharing.

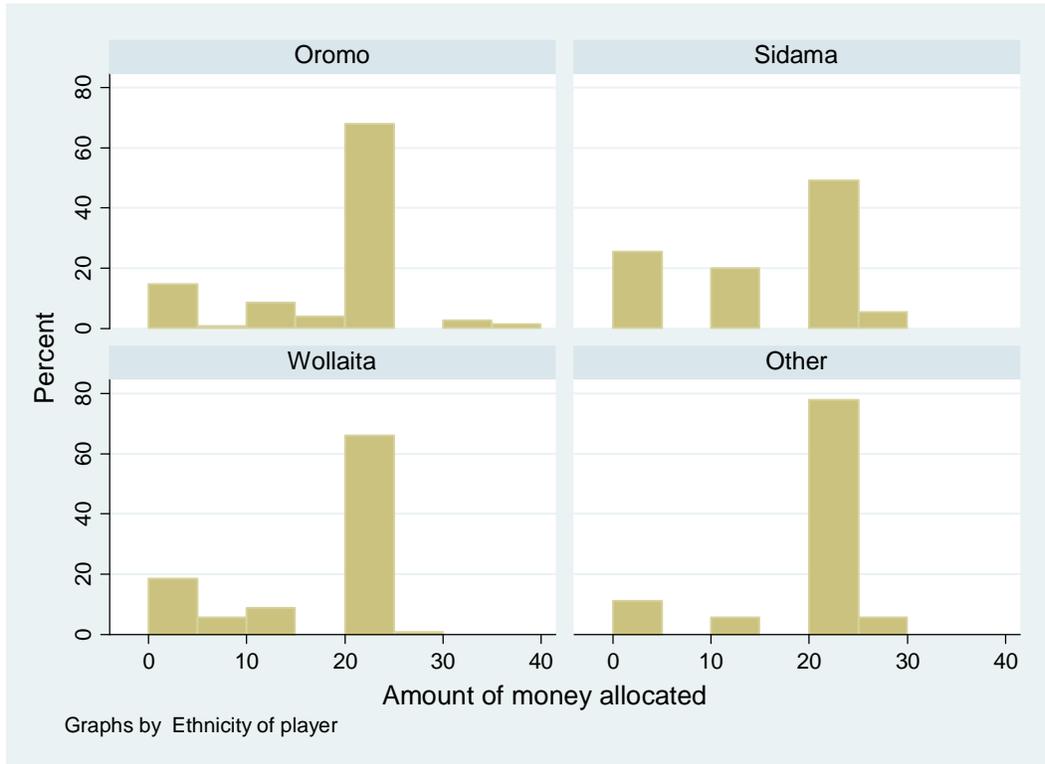
**3.2 Sharing within family: Allocation to spouse**

As may be expected, there is more sharing between married couples than among anonymous individuals within the villages. The distribution of amounts donated to spouses has a mode at 20 EB (Figure 3) where more than 60 percent of dictators chose to transfer half of their endowments to their spouses. Male dictators appeared to be more willing to share with their spouses than did female dictators. The percentage of male dictators who kept their full endowments to themselves is smaller than that of female dictators, and proportionately more male dictators gave half of their endowments than did female dictators.



**Figure 3 Sharing with spouses by dictator's gender**

The allocation decisions by ethnic group are presented in Figure 4. Equal sharing was the norm for all ethnic groups. However, the Sidama players were relatively less likely to share their endowments equally with their spouses.



**Figure 4 Allocations to spouses by dictator's ethnicity**

Table 2 summarizes the allocation decisions for male and female dictators. We see that husbands are more likely than wives to share with their spouses (statistically significant at the 1% level).

On average, dictators allocated 38% of their endowments to their spouses. The average allocation was higher for male than for female dictators (significant at the 1% level). If we restrict the sample to those who sent non-zero amounts, then male and female dictators allocated similar amounts to their spouses, the equivalent of 47% of their respective endowments.

**Table 2 Allocations to dictators' spouses. Endowment=40 EB. Dictators= 362**

Dictator <sup>a</sup>	Dictators with non-zero allocations (proportion)		Amount allocated (Full Sample)			Amount allocated (by those who shared)	
	Mean	Std. Err	Mean	Std. Err	Max	Mean	Std. Err
Male	0.89	0.024	16.68	0.602	40	18.77	0.443
Female	0.76	0.031	14.09	0.632	30	18.66	0.333
Total	0.82	0.02	15.3	0.443	40	18.72	0.278

*a- The difference between men's and women's donations is statistically significant. The Z-test for equal proportions of non-zero allocations and the t-test for equality of unconditional mean allocation reject equality at the 1% level of significance. The Kolmogorov-Smirnov test of equality of distribution function reject equality of distribution at 10% level of significance.*

The statistics we obtain here show high levels of sharing within families, but this is not something we can easily compare with generosity among anonymous villagers. Unless we assume that couples have completely separate budgets, the transfer of money between a husband and wife cannot be considered indicator of generosity or altruism in the same way as would transfers of money to anonymous villagers whose incomes and expenditures are in no way related to the dictators. Although there may not be a perfect pooling of resources within households, members of households who live together are likely to benefit from one another's incomes. Another issue is the fact that spouses are likely to reciprocate outside of the game environment. Unlike sharing with anonymous persons, dictator games with known persons may be viewed as sub-games in a sequence of games among persons who know one another

(Dufwenberg and Kirchsteiger, 2004). Personal attributes of the recipient as well as recent reciprocal interactions may affect the responses. Still, the variation in the sharing behavior shows the relative levels of cooperation and the extent of resource pooling within households. Our findings suggest that husbands are more likely to share their resources within the family than are wives. In other words, wives are more likely to keep and prioritize separate budgets than are husbands. Qualitatively similar results were reported by Kebede et al. (2014) from experiments involving various treatments in the form of voluntary contributions. They found that although both men and women chose to keep a portion of their endowments to themselves at the expense of household efficiency, in some of the treatments, men contributed more than women did but the women never contributed more than the men in any of the treatments. They also found that the husbands' expectations of their wives' contributions were higher than their wives' actual contributions, and the wives' expectations of their husbands' contributions were lower than their husbands' actual contributions.

### **3.3 Econometric analysis**

We further explore the correlations between social context and behavior in dictator games by exploiting the additional information from the survey. We estimate two Tobit models for allocation decisions. In the first model, we include only the players' genders and ages as explanatory variables. If women are in fact more generous than men (Eckel and Grossman, 1998), we expect a positive correlation between being female (the dummy variable) and the amount of money allocated by the dictator. In the second model, we include more factors that influence individuals' behavior. We include household wealth indicators, individuals' share of assets within their households and their ethnic and religious backgrounds. We do not have any *a priori* expectations regarding dictators' ethnic and religious backgrounds, but we expect dictators

from better-off households to be more generous. The regression results for generosity towards anonymous individuals are reported in Table 3, and the results for sharing with spouses are displayed in Table 4.

### **3.3.1 Factors associated with generosity towards anonymous person in the village**

Table 3 reports the results for allocations to anonymous persons. The results from the first model, with only individual characteristics as regressors, show that the coefficient on the female dummy variable is negative, indicating that women allocate less than men do. However, the coefficient is significant only at the 10% level. The dictator's age did not matter for allocations to anonymous villagers. Model 2 includes additional socioeconomic variables, and it fit the data better than did the basic model. Being female was still negatively correlated with the amounts allocated to anonymous villagers, but in this model, the difference was no longer statistically significant.

Although wealth did not affect dictators' decisions to allocate money to anonymous villagers, the shares of household wealth that the dictators claimed as their own were positively correlated with their allocations and significant at the 10% level.

**Table 3 Tobit model for factors associated with allocations to anonymous person in the village**

	Recipient is an anonymous villager			
	Model 1		Model 2	
	Coeff. <sup>a</sup>	Robust Std.Err <sup>b</sup>	Coeff.	Robust Std.Err
Female dictator	-2.41 *	1.427	-2.037	1.534
Age	-0.03	0.076	-0.034	0.064
Farm size in hectares			-0.032	0.38
Livestock (in TLU)			0.222	0.192
Other household asset			0.000	0.000
Own share in the household asset			12.098	* 6.446
<i>Ethnicity: Baseline-Oromo</i>				
Sidama			-5.134	** 2.25
Wollaita			0.518	2.792
Others			7.787	**** 2.021
<i>Religion: Baseline-Muslim</i>				
Protestant Christian			0.050	3.371
Orthodox Christian			-0.278	3.85
Other			-8.579	7.433
Constant	-4.30	3.881	-4.11	4.208
Sigma	11.77	0.705	11.20	0.661
Log-likelihood	-479		-459	
Number <sup>c</sup>	347		339	

*a - Significance levels: \*: 10%, \*\*: 5%, \*\*\*: 1%.*

*b- Standard errors are controlled for correlation at the community level*

*c- There are fewer observations in the estimation than descriptive because some of the variables collected through the household survey are missing*

Compared with individuals from the Oromo ethnic group, members of the Sidama group are less likely to share their endowments with anonymous individuals. In contrast, dictators from the ethnic groups who are not in the majority in the study area donate more to anonymous villagers than do those from the Oromo ethnic group. Religion was not significantly correlated with generosity towards anonymous villagers.

### **3.3.2 Factors associated with sharing with spouses**

Similar to allocations to anonymous persons, we run two Tobit models for allocations to spouses. The first one includes only the individual demographic characteristics, age and sex. The results are reported in Table 4. Female dictators allocate less to their spouses than do male dictators. The coefficient on gender is significant in both models at the 1% level, indicating a strong difference in preferences between husbands and wives, controlling for other socioeconomic factors.

Dictators from households with larger farm holdings allocated more to their spouses (significant at the 10% level). Compared with Oromo dictators, Sidama and Wollaita dictators donated less to their spouses. Protestant Christian dictators donated more to their spouse than did their Muslim counterparts.

**Table 4 Tobit estimations of allocations to spouses**

	Recipient is the dictator's spouse					
	Model 1			Model 2		
	Coeff.		Robust Std.Err	Coeff.		Robust Std.Err
Female dictator	-3.366	***	1.065	-3.394	***	1.092
Age	-0.013		0.04	-0.017		0.034
Farm size in hectares				0.399	*	0.203
Livestock (in TLU)				-0.062		0.101
Other household asset				0.000		0.000
Own share in the household asset				2.609		4.058
<i>Ethnicity: Baseline-Oromo</i>						
Sidama				-6.073	***	1.995
Wollaita				-3.814	*	2.289
Others				-0.713		1.899
<i>Religion: Baseline-Muslim</i>						
Protestant Christian				4.646	**	1.913
Orthodox Christian				3.258		2.094
Other				-1.676		4.736
Constant	16.927	****	2.141	15.482	****	1.478
Sigma	9.845		0.771	9.697		0.712
Log-likelihood	-1135			-1099		
Number <sup>c</sup>	347			339		

*a - Significance levels: \*: 10%, \*\*: 5%, \*\*\*: 1%.*

*b- Standard errors are controlled for correlation at the community level*

*c- There are fewer observations in the estimation than descriptive because some of the variables collected through the household survey are missing*

## 4 Conclusion

This paper examines generosity among anonymous villagers and sharing between married couples using dictator game experiments that involved 362 couples from 16 villages in Ethiopia. We combined the dictator game with a stated preference approach to obtain information about the subjects' willingness to share with spouses and with anonymous villagers.

We find that generosity among anonymous villagers is very low compared with findings from other studies in the dictator game literature. On average, the dictators in our sample allocate only 6% of their endowments to anonymous persons in the village, compared with the more than 20% share found in the literature (Engel, 2011). Three-fourths of the dictators kept all of their endowments to themselves. Part of the lower generosity levels may be explained by the fact that the dictators in our field experiment earned their pies by participating in a survey. However, it was known to the dictators that the recipients had also participated in the same survey and were thus equally entitled to the pie. In contrast, we find high levels of sharing between married couples. More than 80% of the players donated part of their endowments to their spouse. Equal sharing was the norm between husbands and wives.

Our gender disaggregated analysis of allocation decisions shows that women are not more generous than men. In fact, there is some evidence, albeit weak, to suggest that women are less generous than men in their allocations to anonymous individuals in the village. In terms of sharing with spouses, there is strong evidence that women are less likely to share their endowments with their husbands than men are with their wives. Our econometric analysis shows that gender becomes a less important determinant of allocations to anonymous persons if other socioeconomic factors are controlled for. However, in regard to sharing with spouses, gender is a

significant predictor even after controlling for socioeconomic factors. Female dictators allocate significantly less to their spouse than do male dictators to their wives. The dictator's ethnic and religious background also influences allocation decisions. In both anonymous and spousal allocations, at least one of these factors is significant.

## References

- Andreoni, J., Vesterlund, L., 2001. Which is the fair sex? Gender differences in altruism. *Quarterly Journal of Economics*, 293-312.
- Camerer, C., 2003. *Behavioral game theory: Experiments in strategic interaction*. Princeton University Press.
- Cardenas, J.C., Carpenter, J., 2008. Behavioural Development Economics: Lessons from Field Labs in the Developing World. *The Journal of Development Studies* 44, 311-338.
- Cherry, T.L., Frykblom, P., Shogren, J.F., 2002. Hardnose the dictator. *American Economic Review*, 1218-1221.
- Dufwenberg, M., Kirchsteiger, G., 2004. A theory of sequential reciprocity. *Games and economic behavior* 47, 268-298.
- Dufwenberg, M., Muren, A., 2006. Generosity, anonymity, gender. *Journal of Economic Behavior & Organization* 61, 42-49.
- Eckel, C.C., Grossman, P.J., 1996. The relative price of fairness: Gender differences in a punishment game. *Journal of Economic Behavior & Organization* 30, 143-158.
- Eckel, C.C., Grossman, P.J., 1998. Are women less selfish than men?: Evidence from dictator experiments. *The economic journal* 108, 726-735.
- Eckel, C.C., Grossman, P.J., 2008. Differences in the economic decisions of men and women: Experimental evidence. *Handbook of experimental economics results* 1, 509-519.

- Engel, C., 2011. Dictator games: a meta study. *Experimental Economics* 14, 583-610.
- Ensminger, J., 2000. Experimental Economics in the bush: why institutions matter, in: Menard, C. (Ed.), *Institutions, Contracts, and Organizations: Perspectives from new institutional economics*. Northampton (Massachusetts): Edward Elgar. Edward Elgar Publishing, Inc, Northampton, MA, pp. 158-171.
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., McElreath, R., 2001. In search of homo economicus: behavioral experiments in 15 small-scale societies. *American Economic Review*, 73-78.
- Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., Cardenas, J.C., Gurven, M., Gwako, E., Henrich, N., 2010a. Markets, religion, community size, and the evolution of fairness and punishment. *science* 327, 1480-1484.
- Henrich, J., Heine, S.J., Norenzayan, A., 2010b. The weirdest people in the world? *Behavioral and brain sciences* 33, 61-83.
- Henrich, J., McElreath, R., Barr, A., Ensminger, J., Barrett, C., Bolyanatz, A., Cardenas, J.C., Gurven, M., Gwako, E., Henrich, N., 2006. Costly punishment across human societies. *science* 312, 1767-1770.
- Kahneman, D., Knetsch, J.L., Thaler, R.H., 1986. Fairness and the assumptions of economics. *Journal of business*, S285-S300.
- Kebede, B., Tarazona, M., Munro, A., Verschoor, A., 2014. Intra-household Efficiency: An Experimental Study from Ethiopia. *Journal of African Economies* 23, 105-150.

List, J.A., Cherry, T.L., 2008. Examining the role of fairness in high stakes allocation decisions. *Journal of Economic Behavior & Organization* 65, 1-8.

Oxoby, R.J., Spraggon, J., 2008. Mine and yours: Property rights in dictator games. *Journal of Economic Behavior & Organization* 65, 703-713.

**Table A1 Description of survey sites**

Region	District	Farm size	Agriculture	Access to roads and markets	Population
Oromia	Shashemene 4 villages	<ul style="list-style-type: none"> <li>- Current average holding 1.15 ha</li> <li>- 22% of farms were below 0.5 ha in 2007</li> </ul>	<ul style="list-style-type: none"> <li>- Rain-fed plough agriculture</li> <li>- Cereal-producing area</li> </ul>	<ul style="list-style-type: none"> <li>- Town of Shashemene (growing trade center) located in the district</li> <li>- District lies along the road to Addis Ababa and Awassa</li> <li>- 4 villages at different distances from town</li> </ul>	<ul style="list-style-type: none"> <li>- 94% Oromo ethnicity</li> <li>- 98% Muslim</li> </ul>
Oromia	Arsi Negelle 4 villages	<ul style="list-style-type: none"> <li>- Current average holding 1.38 ha</li> <li>- 12% of farms were below 0.5 ha in 2007</li> </ul>	<ul style="list-style-type: none"> <li>- Rain-fed plough agriculture</li> <li>- Cereal-producing area</li> </ul>	<ul style="list-style-type: none"> <li>- District lies along the road to Addis Ababa and Awassa</li> <li>- 4 villages at different distances from the main road</li> </ul>	<ul style="list-style-type: none"> <li>- 92% Oromo ethnicity</li> <li>- 85% Muslim</li> <li>- Food insecure</li> </ul>
Oromia	Wondo Oromia 2 villages	<ul style="list-style-type: none"> <li>- Current average holding 0.84 ha</li> <li>- This sample was part of Shashemene District in 2007</li> </ul>	<ul style="list-style-type: none"> <li>- Perennial zone</li> <li>- Plough and hoe</li> </ul>	<ul style="list-style-type: none"> <li>- Geographically close to Wondo Genet -Sidama</li> </ul>	<ul style="list-style-type: none"> <li>- 97% Oromo ethnicity</li> <li>- 79% Muslim</li> <li>- 18% Protestant</li> <li>- A new district composed of communities from Sidama and Oromia zones</li> </ul>
SNNP	Wondo Genet 3 villages	<ul style="list-style-type: none"> <li>- Current average holding 0.55 ha</li> <li>- 64% of farms were below 0.5</li> </ul>	<ul style="list-style-type: none"> <li>- Perennial zone</li> <li>- Have access to irrigation</li> <li>- Cash crops:</li> </ul>	<ul style="list-style-type: none"> <li>- Good road access to the towns of Awassa and Shashemene</li> </ul>	<ul style="list-style-type: none"> <li>- 60% Sidama ethnicity</li> <li>- 23% Oromo ethnicity</li> <li>- 90% Protestant</li> <li>-</li> </ul>

		ha in 2007	sugarcane, chat and coffee - Food crops: Maize and enset		
SNNP	Wollaita 4 villages	- 67% of farms were below 0.5 ha in 2007	- Perennial zone - Rain-fed subsistence agriculture - Main crops: Enset, maize, root and tuber crops	- Relatively remote area - Road access to towns not good	- 97% Wollaita ethnicity - 50% Protestant - 45% Orthodox Christian - Densely populated and poor