# How Fair Shares Compare: Experimental Evidence from Two Cultures*

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**Abstract**

We use experimental economic methods to study social preferences governing the distribution of earned and unearned income in rural villages in western Kenya. We use a suite of economic experiments which allow us to vary the extent to which income depends on individual effort while holding other aspects of the economic environment constant. Results suggest that, in rural villages, the relative weight placed on others does not depend on the extent to which those individual increased the total surplus through their own effort. In contrast, subjects in a standard university lab in the US consistently allocate more money to any subject who has exerted effort, relative to a subject in an analogous situation who has not exerted effort.

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# 1 Introduction

People are sometimes willing to sacrifice their own payoffs to help strangers, reward helpful actions by others, and punish uncooperative behavior; the social preferences underlying such behavior have been documented in many societies by experimental economists. Social preferences are likely to play a particularly important role in the economic lives of those living poor, rural communities in the developing world: in such settings, households often rely on neighbors and relatives to help them cope with negative shocks, and voluntary transfers between households are common. This has prompted scholars to describe the rural village as a "moral economy" in which individuals are motivated by concern for their neighbors' welfare and aversion to inequality within the community.[1] Scott (1976), for example, highlights the primacy of the universal right to subsistence in the moral code of poor agricultural households, while Platteau (2000) argues that many "tribal" societies are characterized by egalitarian norms which discourage individual wealth accumulation. Though standard models of pure self-interest can partially explain transfers between households who interact repeatedly (cf. Coate and Ravallion 1993), economic theory suggests that individual social preferences can both directly motivate some transfers and shape the space of enforceable informal insurance contracts (Foster and Rosenzweig 2001). It is therefore important to provide a positive characterization the social preferences of individuals living in poor, rural communities, as they are a key input into any model of informal insurance or measure of social welfare.

In this paper, we use experimental economic methods to study the social preferences of villagers in rural western Kenya. We focus on the differential treatment of earned and unearned income. Studies in university labs in the developed world document what Fahr and Irlenbusch (2000) term an "earned property rights" effect: revealed social preferences indicate that subjects place relatively greater weight on the payoffs of those who have increased aggregate income through individual effort.[2] We ask whether an earned property rights effect is observed

[1] The term "moral economy" was popularized in this context by Scott (1976). See Fafchamps (1992) and Ravallion and Dearden (1988) for examples of its use in the economics literature.

[2] See, for example, Hoffman, McCabe, Shachat, and Smith (1994) Cherry, Frykblom, and Shogren (2002) for evidence that subjects in experimental dictator games are less generous when they have earned either the budget itself or the right to play the dictator role. Cappelen, Hole, Sorensen, and Tungodden (2007) demonstrate the prevalence of fairness ideals which dictate that individuals are entitled to a share of total output that reflects

in poor communities with strong traditions of solidarity and mutual assistance. Arguments presented in, for example, Platteau (2000) suggest that poor villagers engaged in subsistence agriculture may view the distinction between earned and unearned income differently:

> "Inasmuch as 'work, in the sense of persistent individual effort, is never recognized as the reason of success' and success is attributed entirely to 'luck' and 'is never believed to be brought about or furthered by personal effort and initiative' [Rogers, 1969: 118–9], private appropriation of persistent surpluses is deemed to be unfair. In other words, a worldview that tends to consider any income as essentially 'unearned' naturally leads to a progressive concept of justice according to which rich people ought to share their income with others."
>
> — Platteau (2000, p. 198)

This characterization of poor, rural communities in the developing world motivates the present study.

Our experimental design measures social preferences in benchmark treatments where luck alone governs income, and compares them to the social preferences revealed in treatments where income is determined by individual effort. The experimental setting allows us to vary the extent to which income depends on luck as opposed to effort while holding other aspects of the economic environment — and the individual attributes of those making and receiving transfers — constant. We then contrast the choices made by subsistence farmers in rural Kenya with those of individuals drawn from a standard university lab subject pool at a top US university. We view the university lab subject pool as a particularly interesting comparison population because of the tremendous importance of individual ability and hard work in competitive academic environments.

Our experimental design includes four distinct treatments, each a modified dictator game in which one subject (the "dictator") divides a budget between herself and an anonymous "recipient" (another subject chosen at random from the same experimental session). Our

their relative contribution of ability and effort.

experimental treatments differ along two dimensions: how the budget is generated, and who decides how to divide it. In each of the games we consider, the size of the dictator's budget is determined by the actions of one of the subjects – either the dictator or the recipient. In Luck treatments, one subject rolls a die, and the outcome of the roll determines the size of the budget. In Effort treatments, one subject engages in a real effort task for which she is paid a piece rate; that subject's earnings constitute the dictator's budget. We also vary whether the subject making the allocation decision (i.e. the dictator) is the same person who won or earned the budget. In Giving treatments, dictators divide money that they themselves won or earned; in Taking treatments, dictators divide money won or earned by the recipient. Our cross-cut design involves a total of four experimental treatments: Luck-Giving, Luck-Taking, Effort-Giving, and Effort-Taking.

We explore two dimensions of variation across treatments. Comparing Taking treatments to more standard Giving treatments allows us to explore what we term the "nominal ownership effect": the extent to which dictators allocate more to recipients when the recipients' actions (either their luck or their effort) generated the budget. Second, comparing Effort treatments to benchmark Luck treatments allows us to measure respect for earned property rights — both the dictators' own earned property rights (in the Effort-Giving treatment) and the earned property rights of others (in the Effort-Taking treatment). We then compare the relative magnitudes of these effects in two very different cultural contexts — one (the Kenyan rural village sample) characterized by strong traditions of mutual assistance and informal insurance, and another (a top university in the US) characterized by an intense focus on individual merit and effort.

We report three main findings. First, we observe a strong nominal ownership effect in the Kenyan rural village sample. Kenyan dictators allocate recipients approximately 18 percentage points more of the budget in treatments where the recipients, as opposed to the dictators, generate the money being divided (through either luck or individual effort). Second, among Kenyan villagers, we observe a modest (4-6 percentage point) own earned property rights effect, but no evidence that allocations to other subjects depend on the extent to which those subjects exerted effort. Lastly, we find that patterns differ markedly in our US university lab

sample. Among undergraduates, we find no evidence of a nominal ownership effect. However, undergraduate subjects respect both their own earned property rights and the earned property rights of others.

Our work is most closely related to other laboratory and lab-in-the-field experiments exploring the variation in social preferences across societies and cultural communities.[3] We build on existing experimental evidence documenting substantial variation across societies in social preferences governing the distribution of unearned income (cf. Henrich, Ensminger, McElreath, Barr, Barrett, Bolyanatz, Cardenas, Gurven, Gwako, Henrich, Lesorogol, Marlowe, Tracer, and Ziker 2010). Our study extends this literature by exploring cross-cultural variation in the differential treatment of earned and unearned income. More generally, our work contributes to the expanding discourse exploring the opaque relationship between culture, social norms, and economic growth.

The rest of this paper is organized as follows. In Section 2, we present our experimental design and relate our empirical analysis strategy to existing theoretical models of social preferences. Section 3 describes our experimental procedures and subjects, with particular emphasis on our lab-in-the-field procedures. Section 4 presents our results, and Section 5 concludes.

## 2 Conceptual Framework

Dictator games measure social preferences in the absence of strategic or reputational considerations. Within any dictator game, $i$ (the "dictator") divides a fixed budget between herself and another player, $j$ (we refer to this player as "the recipient"). Interactions between players are anonymous and one-shot — the recipient does not even have a choice to make. Hence, dictator games provide an unconfounded measure of individual social preferences: purely self-interested players will allocate the entire budget to themselves; any tendency to allocate money to the recipient is evidence of altruism, inequality-aversion, or a related form of social preferences.

We assume individual $i$'s social preferences can be represented by a utility function $u_i(\pi_i, \pi_j)$

[3] See, for example, Roth, Prasnikar, Okuno-Fujiwara, and Zamir (1991), Henrich, Heine, and Norenzayan (2010), and Hermann, Thöni, and Gächter (2008).

where $\pi_i$ denotes the payoff to the dictator and $\pi_j$ denotes to the payoff to the recipient[4]. Each dictator, $i$, chooses $\pi_j$ to maximize her utility subject to the budget constraint $\pi_i + \pi_j \leq m$. Her optimal $\pi_j^*$ satisfies:

$$\pi_j^*(m) = \text{argmax}_{\pi_j \in [0,m]}\ u_i\big(m - \pi_j, \pi_j\big). \tag{1}$$

We simplify notation by normalizing the budget size to one (without loss of generality when social preferences are homothetic); the dictator then chooses $z = \pi_j/m$, the optimal share of the budget to allocate to the recipient:

$$z = \text{argmax}_{z \in [0,1]}\ u_i\big(1 - z, z\big). \tag{2}$$

## 2.1 Experimental Design

We conduct four variants of the dictator game which differ along two dimensions: how the budget is generated, and who decides how to divide it. In all treatments, each dictator decides how to divide a budget, $m > 0$, between herself and an anonymous recipient — another subject chosen at random from the same experimental session. Dictators do not learn recipients' identities during or after the experiment. In each of the games we consider, either the dictator or the recipient takes an action which determines the size of the dictator's budget. In Luck treatments, one of the two subjects rolls a die to determine the budget size, so $m$ depends only on chance. In Effort treatments, either the dictator or the recipient earns the budget by engaging in a simple real-effort task for which she is paid a piece rate. Luck treatments serve as a benchmark which allow us to evaluate the extent to which dictators reward effort — either their own or the recipient's — in the Effort treatments. Numerous studies suggest that experimental subjects typically allocate less to recipients in settings where they have earned the money being divided, relative to settings where the dictator's budget is unearned (cf. Cherry, Frykblom, and Shogren 2002). However, few studies have explored the extent

[4]See Andreoni and Miller (2002), Fisman, Kariv, and Markovits (2007), and Fisman, Jakiela, and Kariv (2014) for evidence that individual choices in dictator games are consistent with the maximization of a well-defined other-regarding utility function.

to which dictators respect the "earned property rights" (Fahr and Irlenbusch 2000) of other subjects (see Ruffle (1998) for an exception). To explore this issue, we also vary whether the subject making the allocation decision is the same person who won or earned the budget. In GIVING treatments, subjects decide how to divide money that they either won (by rolling the die) or earned (by completing the real-effort task) themselves; in TAKING treatments, subjects divide money won or earned by the recipient.[5]

We employ a cross-cut experimental design that includes four distinct treatments, represented in Figure 1 below: LUCK-GIVING, EFFORT-GIVING, LUCK-TAKING, and EFFORT-TAKING. The LUCK-GIVING treatment is most similar to a standard dictator game experiment: dictators divide their own unearned income. In the LUCK-TAKING treatment, on the other hand, the dictator divides the recipient's unearned income. In the EFFORT-GIVING treatment, the dictator earns money and decides how to divide her earnings between herself and the recipient; and in the EFFORT-TAKING treatment, the recipient earns the income by completing the real effort task, and the dictator decides how to divide it.

Figure 1: Experimental Design

| | LUCK | EFFORT |
|---|---|---|
| GIVING | Luck-Giving (LG) | Effort-Giving (EG) |
| TAKING | Luck-Taking (LT) | Effort-Taking (ET) |

Our design creates two key dimensions of variation across treatments. One source of variation is the nominal ownership of the budget. In all dictator games, the dictator owns the budget in the sense of Grossman and Hart (1986) because she controls the final budget allocation. In standard dictator games, and in our GIVING treatments, the budget is also provisionally allocated to the dictator. In fact, the GIVING treatments considered here go further because the dictator also generates the budget, either by rolling the die or by completing the real effort task. In the TAKING treatments, on the other hand, ownership is more ambiguous: by construction, the dictator still holds decision rights; however, the recipient is responsible for

[5]Dictator games which allow for both giving and taking have been employed by List (2007), Bardsley (2008), and Fisman, Jakiela, and Kariv (2013). Greig (2006) and Jakiela (2013) use taking (only) treatments similar to the one employed here.

generating the budget and it is provisionally allocated to her. This might lead dictators to place greater weight on recipient payoffs in the TAKING treatments. We refer to any such entitlement on the part of the recipient as the *nominal ownership effect*.

As discussed above, a number of experimental studies also suggest that dictators are less generous with earned income than with unearned funds (cf. Cherry, Frykblom, and Shogren 2002).[6] In the spirit of Locke (1980[1690]), Fahr and Irlenbusch (2000) refer to the sense of entitlement associated with exerting effort to generate an endowment or budget as an "earned property right." If earned property rights are important, dictators will feel justified in being less generous in the EFFORT-GIVING treatment than in the LUCK-GIVING treatment, but will also feel an obligation to be more generous in the EFFORT-TAKING treatment than in the LUCK-TAKING treatment. We refer to any such tendency as an *earned property rights effect*.

## 2.2 Relationship to Theory

To keep the exposition as simple as possible, we focus on testing for nominal ownership and earned property rights effects in a parsimonious linear regression framework (discussed below). It is, however, worth highlighting the connections between these potential reduced form effects and existing models of social preferences. Specifically, we show that nominal ownership and earned property rights effects are consistent with both the constant elasticity of substitution (CES) social utility function proposed by Andreoni and Miller (2002) and extended by Cox, Friedman, and Gjerstad (2007), and with the model of heterogeneous fairness ideals proposed by Cappelen, Hole, Sorensen, and Tungodden (2007). Since the effects we study are consistent with both models, our data do not provide a test of which fits the data better. Instead, this section highlights the fact that our reduced form analysis is guided by prevailing theoretical models of social preferences.

**The Constant Elasticity of Substitution Model of Social Preferences.** In the constant elasticity model of social preferences proposed by Andreoni and Miller (2002), the optimal

[6] See Fahr and Irlenbusch (2000), Cherry (2001), and List (2007) for closely related results. In a similar vein, Hoffman, McCabe, Shachat, and Smith (1994) and Hoffman, McCabe, and Smith (1996) show that dictators are less generous when they have earned the right to make the allocation decision.

budget share that the dictator allocates to the recipient depends on two parameters: $\theta_i$, which measures the utility weight that $i$ puts on consumption by the recipient relative to her own consumption; and $\rho_i$, the elasticity of substitution between $\pi_i$ and $\pi_j$, which measures the curvature of the dictator's altruistic indifference curves. Cox, Friedman, and Gjerstad (2007) extend the model by allowing $\theta_i$ to depend on $i$'s level of innate, generalized altruism and her emotional state when making an allocation decision; her emotional state, in turn, depends on the dictator's perceived status relative to the recipient and the extent to which to which the recipient's action causes the dictator to feel a sense of (positive or negative) reciprocity toward him. Both of these emotional factors can vary across situations (including experimental treatments).

In the CES model, more innately altruistic dictators will allocate more to recipients. In addition, experimental treatments which enhance the recipient's status relative to the dictator will increase in the amount that the dictator allocates to the recipient, as will treatments and actions (by the recipient) which trigger feelings of positive reciprocity.[7] Relative to the benchmark Luck-Giving environment, the other experimental treatments may induce variation in the perceived status of the dictator relative to the recipient. For example, the model would predict a nominal ownership effect if recipients had higher status in the Taking treatments because their luck and/or effort had generated the budget. Earned property rights may also enhance a player's status, as suggested by Cox, Friedman, and Gjerstad (2007). If earned property rights determine status within the experiment, dictators and recipients will have equal status in the Luck treatments, but the status of the subject earning the budget will be higher in the Effort treatments. Thus, if earned property rights increase a subjects's status, then the CES model predicts an earned property rights effect.

**A Model of Fairness Ideals.** Cappelen, Hole, Sorensen, and Tungodden (2007) and Almas, Cappelen, Sorensen, and Tungodeen (2010) propose an alternative utility formulation in which allocations to others depend on a "fairness ideal" which dictates a fair amount that should be

[7] In our setting, reciprocity concerns are only relevant in the Effort-Taking treatment, since that is the only setting where the recipient chooses an action. Under reasonable assumptions, reciprocity would generate a positive relationship between budget size and the share allocated to the recipient in the Effort-Taking treatment.

allocated to the recipient. In their model, dictators make tradeoffs between self-interest and the desire to conform to their own ideals of fairness. The optimal interior budget share for the recipient is the fairness ideal minus an amount reflecting the need to set the marginal cost of violating one's own fairness ideals equal to the marginal benefit of an additional dollar to oneself.

A fairness ideal is a mapping from conditions of production within the experiment to a fair share for the recipient. Each individual's fairness ideal is unobserved, and multiple ideals may exist within the population. Cappelen, Hole, Sorensen, and Tungodden (2007) consider three fairness ideals: the egalitarian, the libertarian, and the meritocratic.

According to the **egalitarian** fairness ideal, each individual is entitled to an equal share of income. Hence, in a dictator game, the fair share for the recipient is always equal to one half the total budget. In a population comprising only egalitarians, we would therefore expect the average amount allocated to recipients to be the same in all four treatments.

The **libertarian** fairness ideal suggests that every individual is entitled to keep what she produces — in our experiment, the income that she generates through luck or effort. In the Giving treatments, the fair share for the recipient is consequently zero; in the Taking treatments, the recipient's fair share is the entire budget. Hence, the presence of libertarians in the population explains a nominal ownership effect, since these individuals will always keep the entire budget for themselves in the Giving treatments, but will allocate the recipient substantially more in the Taking treatments.[8]

Finally, the **meritocratic** fairness ideal dictates that people should be held responsible for those factors under their control, but not factors beyond their control. In this context, luck is beyond one's control. Hence, the meritocratic ideal of fairness suggests that the fair share for recipients in the Luck treatments is half of the dictator's budget: like egalitarians, meritocrats will allocate the same amount to the recipient in the Luck-Giving and Luck-Taking treatments. However, the presence of meritocratic individuals can explain the existence of an earned property rights effect. Consider the case of the Effort-Giving treatment: the dicta-

[8]Even in the Taking treatments, the model does not predict that a libertarian dictator will allocate the entire budget to the recipient. The optimal interior allocation to the recipient is the fair share minus a term reflecting the marginal utility of own income, as compared with the cost of violating one's own ideals of fairness.

tor's action (combined with her skill at the real-effort task) generates the budget; to determine what is a fair share for the recipient, she must ask herself how much the recipient would have earned if he had been responsible for generating the budget. The dictator then makes an allocation decision based on her belief. Specifically, given an actually level of earnings by the dictator of $m^i$, the meritocratic fairness ideal is

$$\frac{\tilde{m}^j}{m^i + \tilde{m}^j}, \tag{3}$$

where $\tilde{m}^j$ denotes the dictator's beliefs about how much the recipient would have earned. It is easy to see that the model predicts an (own) earned property rights effect if there are meritocrats in the population and these individuals hold sufficiently pessimistic beliefs about how much recipients would have earned (had they been responsible for generating the budget). A similar argument demonstrates that the presence of meritocratic subjects in the population can lead to an earned property rights effect in favor of the recipient in the Effort-Taking treatment, though such an effect is likely to be smaller if subjects are overly confident about their own abilities relative to others.

### 2.3 Template for Analysis

Our main outcome of interest is the share of the budget that dictator $i$ in treatment $t$ allocates to the recipient. We operationalize the concept of nominal ownership by defining an indicator variable for the Taking treatments, where the recipient may have some implicit entitlement to the money being divided:

$$NominalOwnership = \begin{cases} 0 & \text{if } t = LG, EG \\ 1 & \text{if } t = LT, ET. \end{cases} \tag{4}$$

We measure respect for earned property rights by including the indicators

$$OwnEarnedPropertyRight = \mathbb{1}\left(t = EG\right) \tag{5}$$

and

$$RecipientEarnedPropertyRight = \mathbb{1}\left(t = ET\right). \tag{6}$$

We include two separate variables because neither of the theoretical models predicts that earned property rights effects will be exactly symmetric.[9] This generates the empirical specification:

$$\begin{aligned} z_{it} = \alpha_i &+ \delta NominalOwnership_t \\ &+ \gamma OwnEarnedPropertyRight_t + \lambda RecipientEarnedPropertyRight_t + \varepsilon_{it} \end{aligned} \tag{7}$$

where $\alpha_i$ indicates $i$'s level of innate or generalized altruism, which will increase the allocation to the recipient across all treatments. Many experimental studies suggest substantial heterogeneity in individual altruism (cf. Andreoni and Miller 2002, Cox, Friedman, and Gjerstad 2007, Fisman, Kariv, and Markovits 2007, Leider, Mobius, Rosenblat, and Do 2009). In some specifications, we allow innate altruism to depend on observable individual characteristics such that $\alpha_i = X_i\beta$, where $X_i$ is a vector of individual characteristics. Factors associated with greater innate altruism will be correlated with higher transfers to recipients in all experimental treatments. We also consider the possibility of unobservable heterogeneity in innate altruism by allowing $\alpha_i$ to be drawn from a distribution, the moments of which can be estimated. We can approximate this in a reduced form context by including individual random effects, as in Leider, Mobius, Rosenblat, and Do (2009).

## 3 Experimental Procedures and Data

We conduct lab experiments in two very different cultural contexts: in a standard university laboratory setting in the United States, and in lab-in-the-field settings in rural Kenya. Experiments using our US university lab subject pool were conducted at the Xlab at the University of California, Berkeley, using the undergraduate subject pool and following standard

[9] Specifically, in the CES model, the status associated with earning the budget may have a symmetric effect on $\theta_{ij}$, the utility weight on the recipient's payoff relative to the dictator's own payoff. However, because that effect is then mediated through the non-linear CES demand function, we would not expect the own earned property rights effect to be equal in magnitude to recipients' earned property rights effect.

procedures. We describe our recruitment and implementation procedures in the field setting in detail below.

### 3.1 Lab-in-the-Field Setting and Subject Pool

We conducted 14 experimental sessions in field laboratories which we set up in Busia District, a poor, predominantly rural area in western Kenya. We conducted four sessions of each EFFORT treatment and three sessions of each LUCK treatment. Each session took place in a different rural community located less than one hour from Busia Town, the main urban center. In each location, we recruited participants from the catchment area of a single primary school, using the schools to define the boundaries of a community for recruitment purposes and as a location in which to set up the field lab.

Experimental subjects were Kenyan adults drawn from the primary school catchment areas. Approximately one week before each experimental session, members of the research team worked with the school's head teacher and the local village elders to compile a list of adults between the ages of 18 and 35 residing in the community.[10] Letters of introduction explaining the presence of the research teams in the community were sent to these individuals. One day prior to each experimental session, members of the research team visited the household of each individual who had been sent an invitation letter. Potential subjects completed a short survey and were invited to attend the experimental session the following day. 548 individuals were surveyed prior to the experiment, 78.1 percent of whom attended the experiment. The sample also includes 118 individuals who were not surveyed prior to the experimental session; these individuals had received introductory letters, but were not at home when the survey team visited their household. A total of 546 people participated in the experimental sessions in Busia.

Summary statistics on experimental subjects are reported in Table 1. The average age

[10] We chose to target adults aged 18 to 35 because almost all adults from western Kenya who fall in that age range are at least conversant in Swahili. It was not possible to conduct sessions in multiple tribal languages at the same time, and many older adults have limited formal schooling and are only comfortable speaking their tribal languages. Because village elders were not always sure of the exact ages of potential subjects, our sample includes a small number of slightly older individuals (14 subjects aged either 36 or 37, and 2 subjects in their early forties.

among subjects in the Kenyan rural village sample is 27 (Table 1, Panel A). Most subjects (70 percent) are from the locally-dominant Luhya ethnic group, though the sample also includes individuals from the minority Teso and Luo ethnic groups. 41 percent of Kenyan subjects are female. 55 percent have at least a primary school education, while 20 percent have completed secondary school. The vast majority of Kenyan subjects are involved in home production: 96 percent farm their own plot, while 52 percent own at least one cow and 87 percent own at least one chicken. However, 82 percent of Kenyan subjects come from households in which at least one adult member works (in either the informal or the formal sector). To generate a measure of social capital, subjects were asked to describe their participation in a variety of community groups. On average, Kenyan subjects are active members of two such groups, the most common being church groups, rotating savings and credit associations (ROSCAs), and women's groups.[11]

Relative to the Kenyan villagers, the university lab subjects are younger, better educated, and more likely to be female. The average age in the US university sample is only 20 (Table 1, Panel B), as opposed to 27 in the Kenyan village sample. 63 percent of university lab subjects are female, versus 41 percent of Kenyan subjects. 30 percent of US subjects are economics or business majors, and an additional 27 percent are majoring in another social science discipline.

### 3.2 Experimental Protocol

The experimental protocol used to administer lab sessions is common to all four treatments; to the extent possible, the same protocol was followed in both the lab-in-the-field setting in Kenya and the university lab sessions in the US. All experimental sessions in Kenya were held using two empty primary school classrooms. Sessions were held in the afternoon, by which time lower grades had departed school for the day leaving their classrooms vacant. Experimental sessions in the US were conducted at the UC Berkeley Xlab, which was also partitioned into separate rooms. At the start of the experiment, participants were randomly assigned to one of the two rooms. Sessions began with a detailed explanation of the structure of the experiment. Experimental instructions were presented orally and further illustrated using wall posters and

[11] A ROSCA is an informal group-lending mechanism funded by individual contributions from members.

hypothetical scenarios acted out by members of the research team.[12] The presentation of the instructions included a trial period during which subjects were allowed to practice rolling the die (in the LUCK treatments) or carrying out the piece rate task (in the EFFORT treatments).

The decision-making phase of the experiment occurred immediately after the instructions. Each subject was randomly matched with a recipient in the other room whose identity was not revealed during or after the experiment. Each subject had to decide how to divide a budget between herself and the matched recipient in the other room. Subjects were called outside one at a time to make their allocation decisions. Not all Kenyan subjects were literate, so the decisions of all subjects were recorded by members of the research team (in both Kenya and the US). Each subject sat with a single enumerator who recorded her decisions. In Kenya, pairs of pupils' desks were set up in isolated shaded areas of the schoolyard; in the US, pairs of chairs were set up in the empty hallway outside the experimental lab. Before recording any decisions, enumerators quizzed subjects on the structure of the game to verify comprehension. In the few cases where participants did not fully understand the instructions, the enumerators reviewed the protocol with them before proceeding. To ensure that budget sizes were comparable across all four treatments, we used the strategy method: for every feasible budget size that could be realized in the experiment, each subject indicated how she would like to divide that amount between herself and the recipient.

Once the decisions of all subjects had been recorded, the income-generation phase of the experiment began. In EFFORT treatments, subjects were paid for completing a simple piece-rate task: each subjects was given a bucket containing three different varieties of dried beans; subjects were paid a fixed amount per gram of a designated variety of bean that she collected from the bucket during a 10 minute period. Subjects were informed that, if they wished to stop collecting beans at any time, their earnings would be calculated immediately based on their work up to that point.[13] At the end of the 10 minutes, subjects' beans were weighed

[12] Copies of the instructions are included in the Online Appendix. For the Kenyan sessions, English instructions were first translated into Swahili and then verified via back-translation.

[13] No subjects in either Kenya or the US chose to stop early. The total quantity of beans was calibrated such that a hard-working player could remove most, but not all, of the chosen variety during a 10 minute period — thus, the task became harder over the course of the experiment. No player ever exhausted their supply of beans during the allotted 10 minutes.

using a digital scale to determine their earnings. In LUCK treatments, each player was given one opportunity to roll a twenty-sided die to determined her winnings and, consequently, the dictator's budget.

After the income generation phase of the experiment, subjects returned to a single classroom. Subjects in both classrooms played the role of the dictator and generated income. At the end of the experiment, one of the two rooms was chosen at random, and the decisions of subjects in that room determined the final payouts. Two colored disks labeled "A" and "B" were placed into a large plastic cup, and one of the disks was chosen at random. The decisions of the dictators in the chosen room were implemented. All subjects received their payments in cash at the end of the experimental session. Experimental sessions (in both Kenya and the US) lasted approximately three hours.

# 4 Results

## 4.1 The Correlates of Generalized Altruism

We begin by exploring the correlates of generalized altruism in each of the two subject pools. As discussed above, characteristics associated with greater altruism should be correlated with the allocation to the recipient across all of our experimental treatments. We report Tobit regressions of the fraction of the budget allocated to the recipient on a vector of individual characteristics (Table 2). Because we use the strategy method to record individual allocation decisions, each subject made more than one decision; we therefore cluster standard errors at the subject level in all specifications.

We focus first on the Kenyan rural village sample. In specifications which pool the data from all four treatments (Table 2, Panel A, Column 1), we find that greater educational attainment (the indicator for having completed secondary school) is positively associated with the allocation to the recipient: more educated dictators allocate 6.1 percentage points more to recipients, on average (p-value 0.010). Interestingly, when we estimate separate specifications for each of the four experimental treatments, we find that secondary education is positively and (marginally) significantly associated with the amount allocated to the recipient in both of

the EFFORT treatments, but negatively and significantly associated with the allocation to the recipient in the LUCK-TAKING treatment (Table 2, Panel A, Columns 2 through 5). Other characteristics, including gender, are not significantly related to the allocation to the recipient in the Kenyan rural village sample.

In the US university sample, we find evidence that female dictators allocate a larger fraction of the budget to recipients. When data from all four treatments is pooled, the coefficient estimate suggests that women allocated 10.4 percentage points more of the budget to recipients than men (p-value 0.013). The regressions also suggest that subjects majoring in math, science, or engineering allocate more to recipients, on average; this effect is driven by behavior in the EFFORT-TAKING treatment, where subjects majoring in math, science, or engineering allocate 27.9 percentage points more to recipients than other subjects. This pattern is particularly interesting since math, science, and engineering are generally perceived as fields in which success depends on individual hard work.

### 4.2 Nominal Ownership and Earned Property Rights Effects

We next test for the presence of nominal ownership and earned property rights effects in each of our subject pools. We estimate Equation 7 via Tobit (Table 3, Columns 1 through 6) and linear regression including individual random effects (Table 3, Columns 7 through 9). Having found that individual characteristics do explain some of the observed variation in generalized altruism, we report some specifications with the complete set of individual characteristics included as controls (Table 2, Columns 4 through 6).

In the Kenyan rural village sample (Table 2, Panel A), we find that the nominal ownership effect (i.e. the indicator for the TAKING treatments) is positive and consistently significant. The coefficient estimates suggest that allocations to recipients are between 16.3 and 18.4 percentage points higher when the recipient generated the budget (through either luck or individual effort). This pattern is in marked contrast to the results for the US university sample, where we find no evidence of a nominal ownership effect. In fact, the coefficient on the nominal ownership variable is negative in all specifications in the university sample, and is at least marginally significant in 6 of the 9 regressions (Table 2, Panel B).

Turning to earned property rights effects, we again find quite different patterns in the Kenyan village and US university samples. In the Kenyan rural village sample, regression estimates suggest an own earned property rights effect: dictators allocate the recipient between 4.3 and 6.3 percentage points less in the Effort-Giving treatment than in the Luck-Giving treatment, and the effect is consistently significant at at least the 10 percent level (Table 2, Panel A). However, there is no evidence that Kenyan subjects respect the earned property rights of others; in fact, the point estimates suggest that dictators allocate slightly less to the recipient in the Effort-Taking treatment than in the Luck-Taking treatment, though the effect is typically not significant.

This contrasts with the behavior of subjects in the US university lab sample. Undergraduate dictators allocate 6.3 to 10.1 percentage points less of the budget to recipients in the Effort-Giving treatment than in the Luck-Giving treatment, suggesting an own earned property rights effect, though coefficient estimates are only marginally significant. They also respect the earned property rights of others, allocating between 9.1 and 17.4 percentage points more to recipients in the Effort-Taking treatment than in the Luck-Taking treatment. This latter effect is consistently significant at at least the 95 percent confidence level.

Thus, consistent with the argument outline by Platteau (2000), we find substantial evidence that experimental subjects drawn from poor village economies view individual effort very differently than subjects drawn from a standard lab experimental subject pool at a university in a wealthy country. For university students, the utility weight placed on an individuals payoff appears to be directly related to their level of effort, but we find no such pattern in the Kenyan rural village sample.

## 5 Conclusion

We conduct a suite of modified dictator games designed to measure the extent to which individual social preferences governing the distribution of earned and unearned income differ. We conduct identical lab experiments in two very different cultural contexts: in lab-in-the-field settings in rural villages in western Kenya, an environment with strong egalitarian traditions

and norms of mutual assistance, and in a standard university lab setting in the US. Our experiments vary whether or not the size of the dictator's budget depends on luck as opposed to individual effort, and whether the dictator is asked to divide her own winnings or earnings or the those of another subject.

Consistent with previous evidence from university labs, we document a substantial earned property rights effect in our university subject pool. Undergraduate subjects allocate significantly less to others when they divide their own earned (as opposed to unearned) income. Moreover, US undergraduates treat individual effort more or less symmetrically, allocating more to those who have increased total income through their effort than to those who have not done so. We do not find similar patterns in our Kenyan village sample. While Kenyan subjects are less generous with earned income than with unearned income, they do not allocate more to recipients who have generated the budget through hard work as opposed to luck.

Our findings resonate with descriptive work on the values and norms underlying individual behavior in poor communities. For example, in his study of firms in rural Indonesia, Geertz (1963) writes "Traditional values supporting collective benefits as against individual enrichment induce a strong resistance to the rationalization of [enterprises] once they are formed... This essentially conservative kind of approach to change can be very inhibiting to long-run development." By using experimental economic tools, we are able to show that rural villagers do appear less inclined to reward others' effort than subjects in the more individualistic environment of a US university.

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Table 1: Summary Statistics — Subject Characteristics

| | Mean | S.D. | Median | Minimum | Maximum | N |
|---|---|---|---|---|---|---|
| *Panel A: Kenyan rural village sample* | | | | | | |
| Female | 0.41 | 0.49 | . | . | . | 533 |
| Age | 27.50 | 5.40 | 27 | 18 | 45 | 533 |
| Completed primary school | 0.55 | 0.50 | . | . | . | 530 |
| Completed secondary school | 0.20 | 0.40 | . | . | . | 530 |
| Married | 0.70 | 0.46 | . | . | . | 527 |
| Number of children | 2.54 | 2.05 | 2 | 0 | 10 | 533 |
| Household size | 5.97 | 2.46 | 6 | 1 | 15 | 530 |
| HH farms own plot | 0.96 | 0.19 | . | . | . | 532 |
| HH member employed | 0.82 | 0.38 | . | . | . | 533 |
| HH has tin roof | 0.40 | 0.49 | . | . | . | 533 |
| HH has latrine | 0.89 | 0.31 | . | . | . | 533 |
| Bicycles owned by HH | 1.04 | 0.79 | 1 | 0 | 7 | 533 |
| Cows owned by HH | 1.42 | 2.15 | 1 | 0 | 20 | 533 |
| Chickens owned by HH | 7.83 | 8.56 | 6 | 0 | 70 | 533 |
| Christian | 0.97 | 0.16 | . | . | . | 533 |
| Luhya | 0.70 | 0.46 | . | . | . | 532 |
| Teso | 0.25 | 0.43 | . | . | . | 528 |
| Luo | 0.05 | 0.22 | . | . | . | 528 |
| Community groups | 2.08 | 1.65 | 2 | 0 | 8 | 533 |
| *Panel B: US university sample* | | | | | | |
| Female | 0.63 | 0.48 | . | . | . | 185 |
| Age | 20.13 | 1.44 | 20 | 18 | 25 | 185 |
| Year in university | 2.91 | 0.96 | 3 | 1 | 4 | 185 |
| Economics major | 0.30 | 0.46 | . | . | . | 185 |
| Social science (not economics) major | 0.27 | 0.45 | . | . | . | 185 |
| Math, science, or engineering major | 0.41 | 0.49 | . | . | . | 185 |
| Art or humanities major | 0.16 | 0.36 | . | . | . | 185 |

Table 2: Correlates of Altruism

*Dependent variable: budget share allocated to recipient*

| *Treatments included:* | All | LG | EG | LT | ET |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *Panel A: Kenyan rural village sample* | | | | | |
| Female | -0.024 | 0.006 | -0.053 | -0.019 | -0.031 |
| | (0.02) | (0.038) | (0.033) | (0.033) | (0.043) |
| Completed Secondary School | 0.061** | -0.001 | 0.081* | -0.072** | 0.095* |
| | (0.025) | (0.049) | (0.048) | (0.033) | (0.055) |
| Married | 0.04* | -0.057 | 0.053 | 0.022 | 0.072 |
| | (0.024) | (0.048) | (0.037) | (0.034) | (0.047) |
| Household size | 0.001 | -0.016 | 0.004 | 0.016* | -0.006 |
| | (0.005) | (0.01) | (0.007) | (0.009) | (0.01) |
| HH asset index | 0.01 | -0.003 | 0.012 | -0.003 | 0.014 |
| | (0.006) | (0.015) | (0.014) | (0.008) | (0.014) |
| Budget size | -0.002*** | -0.004*** | -0.002*** | -0.003*** | -0.001 |
| | (0.0003) | (0.0006) | (0.0005) | (0.0007) | (0.0006) |
| Constant | 0.301*** | 0.415*** | 0.182*** | 0.383*** | 0.383*** |
| | (0.036) | (0.079) | (0.051) | (0.055) | (0.084) |
| Observations | 10480 | 2120 | 3220 | 2380 | 2760 |
| *Panel B: US university sample* | | | | | |
| Female | 0.104** | 0.117* | 0.128 | -0.05 | 0.143* |
| | (0.042) | (0.066) | (0.082) | (0.082) | (0.075) |
| Art or humanities major | 0.019 | -0.027 | 0.014 | -0.087 | 0.151 |
| | (0.057) | (0.068) | (0.121) | (0.123) | (0.107) |
| Math, science, or engineering major | 0.072* | 0.025 | -0.012 | -0.043 | 0.279*** |
| | (0.043) | (0.074) | (0.084) | (0.078) | (0.071) |
| Budget size | -0.002*** | -0.0006 | -0.001 | -0.005*** | -0.002 |
| | (0.0007) | (0.002) | (0.0008) | (0.002) | (0.001) |
| Constant | 0.045 | 0.096 | -0.003 | 0.168** | 0.019 |
| | (0.04) | (0.067) | (0.079) | (0.082) | (0.068) |
| Observations | 3700 | 720 | 960 | 960 | 1060 |

Robust standard errors clustered at the subject level. All specifications are estimated via Tobit, controlling for censoring of the share of the budget allocated to the recipient at 0 and 1. *** indicates significance at the 99 percent level; ** indicates significance at the 95 percent level; and * indicates significance at the 90 percent level.

Table 3: Nominal Ownership and Earned Property Rights Effects

*Dependent variable: budget share allocated to recipient*

| *Specification:* | Tobit (1) | Tobit (2) | Tobit (3) | Tobit (4) | Tobit (5) | Tobit (6) | R.E. (7) | R.E. (8) | R.E. (9) |
|---|---|---|---|---|---|---|---|---|---|
| *Panel A: Kenyan rural village sample* | | | | | | | | | |
| Nominal ownership | 0.184*** | 0.184*** | 0.178*** | 0.183*** | 0.183*** | 0.176*** | 0.167*** | 0.167*** | 0.163*** |
| | (0.025) | (0.025) | (0.024) | (0.027) | (0.027) | (0.025) | (0.022) | (0.022) | (0.021) |
| Own earned property right | -0.047* | -0.047* | -0.063*** | -0.044* | -0.044* | -0.06** | -0.043** | -0.043** | -0.057*** |
| | (0.025) | (0.025) | (0.024) | (0.025) | (0.025) | (0.024) | (0.021) | (0.021) | (0.02) |
| Recipient's earned property right | -0.03 | -0.03 | -0.052** | -0.029 | -0.029 | -0.051* | -0.027 | -0.027 | -0.047** |
| | (0.026) | (0.026) | (0.025) | (0.027) | (0.027) | (0.026) | (0.024) | (0.024) | (0.023) |
| Constant | 0.246*** | 0.27*** | 0.283*** | 0.256*** | 0.28*** | 0.294*** | 0.265*** | 0.286*** | 0.298*** |
| | (0.019) | (0.019) | (0.017) | (0.043) | (0.043) | (0.042) | (0.016) | (0.016) | (0.015) |
| Observations | 10660 | 10660 | 10660 | 10360 | 10360 | 10360 | 10660 | 10660 | 10660 |
| *Panel B: US university sample* | | | | | | | | | |
| Nominal ownership | -0.105** | -0.105** | -0.058 | -0.112** | -0.112** | -0.065 | -0.062* | -0.062* | -0.029 |
| | (0.052) | (0.052) | (0.059) | (0.054) | (0.054) | (0.06) | (0.034) | (0.034) | (0.039) |
| Own earned property right | -0.103* | -0.103* | -0.096* | -0.093* | -0.093* | -0.087 | -0.064* | -0.064* | -0.061 |
| | (0.053) | (0.053) | (0.058) | (0.052) | (0.052) | (0.057) | (0.036) | (0.036) | (0.038) |
| Recipient's earned property right | 0.164*** | 0.164*** | 0.13** | 0.174*** | 0.174*** | 0.14** | 0.121*** | 0.121*** | 0.091** |
| | (0.053) | (0.053) | (0.057) | (0.052) | (0.052) | (0.056) | (0.037) | (0.037) | (0.04) |
| Constant | 0.159*** | 0.18*** | 0.163*** | 0.059 | 0.08 | 0.063 | 0.199*** | 0.218*** | 0.208*** |
| | (0.037) | (0.037) | (0.041) | (0.049) | (0.049) | (0.052) | (0.026) | (0.027) | (0.029) |
| Observations | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 | 3700 |
| Budget size controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Budget × treatment interactions | No | No | Yes | No | No | Yes | No | No | Yes |
| Additional individual controls | No | No | No | Yes | Yes | Yes | No | No | No |

Robust standard errors clustered at the subject level. All specifications are estimated via Tobit, controlling for censoring of the share of the budget allocated to the recipient at 0 and 1. *** indicates significance at the 99 percent level; ** indicates significance at the 95 percent level; and * indicates significance at the 90 percent level.