In the Public Eye

Norms of Distributive Justice and Sharing Behavior under Asymmetric Information: Evidence from Rural Malawi*

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Abstract

Whether culture is a determinant of economic growth remains a core question in development economics. Sharing norms, in particular, have often been the focus of interest due to their influence on redistribution and incentives for productive activity. Yet, little is known about the relative importance of such norms in developing countries, and whether these norms are fully internalized or domain-specific to a particular informational environment. Utilizing data from a unique lab-in-the-field experiment in the form of a one-shot two-person dictator game with a production phase, involving 1280 subjects, this paper makes three distinct contributions. First, it investigates the influence of six widely discussed norms of distributive justice, namely inequality aversion, strict egalitarianism, liberal egalitarianism, luck egalitarianism, libertarianism, and the principle of equality of opportunity, on sharing behavior in small, tightly knit rural communities in Malawi. I find that decisions are mainly guided by strict egalitarianism, and less strongly by other norms. Interestingly, despite the large influence of strict egalitarianism, subjects reward own and others' effort, take relative rates of return into account, and compensate themselves and others for income shocks and limited opportunities to exert effort. Second, motivated by the observation that rapidly changing socio-economic arrangements alter the informational environment for people, it explores the influence of social image concerns on sharing rules. Specifically, I investigate how sharing of an effort-generated surplus in the above mentioned dictator game changes when dictators know that their contribution to and share taken of the pie cannot be fully observed by receivers. I find that dictators act more selfishly under asymmetric information, i.e. in situations where their social image cannot be damaged by doing so. This shows that changes in community structures are likely to lead to abrupt changes to sharing behavior. Last but not least, I link the experimental results to a rich set of demographic and socio-economic data to offer further insights into the likely evolution of sharing behavior over the development process.

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1 Introduction

Throughout the world, across all societies, individuals engage in various forms of redistribution, such as the tax system of the United States, the meticulous distribution of the spoils of a hunt among the Dobe !Kung of the Kalahari Desert,[1] or the provision of financial support to friends in times of hardship. As the examples suggest, redistribution can be organized through formal or semi-formal institutions or occur in entirely informal settings. Its different aspects have been studied by researchers from disciplines as diverse as law, anthropology, sociology, and economics. In economics, a lot of emphasis has been placed on the rigorous analysis of the incentives for productive activities set by redistributive systems.

Arguably, the more informal the setting in which redistribution takes place, the more can be learned about these incentives by studying the underlying norms of distributive justice of the population. Due to the relative paucity of formal institutions in developing countries, particularly in *rural* areas, the study of sharing norms among African villagers is highly suitable to inform the long standing and controversial debate about culture as one key determinant of economic growth,[2] beyond providing an answer to the question of what constitutes distributive justice in the minds of the study population, which, by itself, may be highly relevant for enriching models in development economics.

Little is known so far about the relative importance of such norms of distributive justice in developing countries, and less even about whether these norms are fully internalized or domain-specific to a particular informational environment, a question of great importance when trying to understand sharing behavior in the broader context of development: People care deeply about their social image, more so in small, tightly knit communities as opposed to more fragmented, anonymous settings. In Sub-Saharan Africa, including Malawi, people predominantly live in such small communities, making social image concerns likely to influence multiple aspects of their decision making, including economic actions. However, living conditions are in the process of changing in even the most remote of locations as broader socio-economic transformations take place in these countries. Modernization is forcing these traditional communities to slowly disintegrate, weakening the potential influence of social image on economic behavior.[3]

Given these changes in community structures, it is of great interest to investigate if, and to what extent, sharing norms are fully internalized. If they are not, we might expect more abrupt changes in social behavior when communities become less tightly knit, i.e. we might see larger, faster, and clearly discernible changes in behavior due to erosion of traditional structures. In other words,

[1] See, for example, Lee (1993) for a description of the social life of the Dobe !Kung, including their sharing rituals.

[2] See Weber (1992) for a seminal paper.

[3] Examples include: the increase of temporary work arrangements outside of a person's village of residence, more permanent forms of internal migration that separate household members from each other, and increased financial infrastructure such as the introduction of bank accounts in remote areas which allows income earners to more easily keep information about their finances from other members of their households.

as soon as the relevance of the concern about social image is altered by a change of environment, individuals would optimize differently. Fully internalized norms which are not followed due to any social image effect, on the other hand, are likely to be eroded gradually and adaptively, based on the requirements of a changed economic and social environment. Depending on two factors – the degree to which the norms followed within a community provide incentives for productive activities, and the direction in which 'social image effects' alter the behavior of individuals – these different scenarios will lead to different predictions regarding the interaction between modernization, changes in sharing behavior, and feedback effects on economic development.

In the backdrop of these debates, this paper makes three distinct contributions utilizing data from a unique lab-in-the-field experiment, involving 1280 subjects, in the form of a one-shot two-person dictator game with a production phase.

First, it investigates the influence of six widely discussed norms of distributive justice on sharing behavior in small, tightly knit communities in one of the poorest regions of Sub-Saharan Africa. Specifically, I determine the relative influence of inequality aversion, strict egalitarianism, liberal egalitarianism, luck egalitarianism, libertarianism, and the principle of equality of opportunity on sharing behavior in Malawian villages. I find that decisions are mainly guided by strict egalitarianism, and less strongly by other norms. Interestingly, despite the large influence of strict egalitarianism, subjects reward own and others' effort, take relative rates of return into account, and compensate themselves and others for income shocks and limited opportunities to exert effort.

Second, it explores the relative influence of social image concerns on sharing rules. Specifically, I investigate how sharing of the effort-generated surplus in the above mentioned dictator game changes when dictators know that their contribution to and share taken of the social surplus cannot be fully observed by receivers. I find that dictators act more selfishly under asymmetric information regarding pie size, i.e. dictators place less weight on the various norms of distributive justice in situations where their social image cannot be damaged. This shows that changes in community structures are likely to lead to abrupt changes in sharing behavior.

Last but not least, I link the experimental results to a rich set of demographic and socio-economic data to offer additional insights into the likely evolution of sharing behavior over the development process.

The specifics of the game were designed such that its outcomes reveal how effort-generated income is shared between individuals who may differ with respect to (a) *assigned* rates of return, (b) income shocks, and (c) opportunities to exert effort, as well as (d) *chosen* effort levels and (e) the degree to which the dictator's contribution to and extraction from the common pie can be observed by the receiver.

Randomly selected participants were assigned to one of eight treatments. The treatments differed with respect to how many effort levels were available to the participants, whether their initial endowment could be reduced by a random income shock, and by the information available

to the receiver. In the "Benchmark Treatment" both players had a large choice set of effort levels to choose from, neither players' endowment could be reduced by an income shock and there was no asymmetric information regarding pie-size and allotted shares. In the three "Equality of Opportunity Treatments", either the dictator, or the receiver, or both players faced a reduced choice set of effort levels, i.e. either one or both players could not exert the highest level of effort available to the players in the Benchmark Treatment. In the "Income Shock Treatments", either the dictator, or the receiver, or both players faced a negative income shock to their monetary endowment which was made known to both players just prior to the distribution of the pie. In the "Asymmetric Information Treatment" the receiver could not fully observe the dictator's contribution to the social surplus and the share the dictator allotted to herself.

Common across all treatments was the way social surplus (i.e. the pie to be shared between dictator and receiver) had to be generated: Subjects needed to separate two types of beans. This effort task was not only familiar to the participants, but also to the greatest possible extent free of any inherently motivating aspects, as well as independent of skill, level of practice,[4] education, gender, and other demographic or socio-economic characteristics.[5] Another common aspect among all treatments was that participants were assigned a high or low rate of return for their effort with equal probability. This experimental variation was introduced to be able to distinguish between contribution-rewarding norms and primarily effort-rewarding norms.

My results suggest that dictators are not merely concerned about their own income, but also take several other factors into account when making distributional choices: First, dictators react as intuitively expected to *all* (exogenous) experimental variations, i.e. dictators reward higher rates of return, and take income shocks and reduced choice sets into account when making their decisions. Second, dictators clearly reward both own and others' effort. Third, despite the first two findings, the highest percentage of observations *and* individuals are driven by strict egalitarianism. Fourth, dictators do behave more selfishly under asymmetric information. Finally, demographic and socio-economic characteristics generally matter little for determining a player's overall generosity, or which norm predictions her decisions match most closely.

Though this study relates to classical empirical work on culture and economic growth, the approach taken puts it more in line with the branch of behavioral studies that employ experimental methods to shed light on the nature of social norms in developing countries. Most of this experimental evidence, however, pertains to *unearned* income (see Camerer (2003) for a survey of dictator game applications). Since it is conceivable that different norms are applied to windfall as compared

[4]The average time it took the author and members of her data entry staff to sort a specific amount of beans did not differ significantly from the average time it took an "experienced" female participant to sort the same amount of beans.

[5]This statement is based on piloting and confirmed by actual outcomes of the experiment. The only potential exception is high age. A minority among the elderly participants had to exert more effort than the average participant (but did not take significantly longer) for sorting the same amount of beans. I will return to and discuss this observation in section 5, during data analysis.

to earned or, more specifically, effort-generated income, the transferability of most of the current evidence to typical growth-relevant economic situations may be very limited, i.e. the majority of documented behavior might be highly domain-specific and less relevant to learning about incentives for productive activities in a community or society.[6]

One notable exception is the recent study of Jakiela (2009) who investigated how subjects in rural Kenya divide windfall as opposed to effort-generated income in comparison to U.S. American subjects. For this purpose, she employed four different types of dictator games which can be categorized according to two questions: (a) How the social surplus was generated (whether through rolling a dice or through subjects' effort), and (b) who generated the social surplus (i.e. dictator or receiver). She finds that subjects in both locations clearly reward their own effort. However, the evidence for the Kenyan sample on the question of whether subjects also reward others' effort is mixed. This can be clearly established only for the U.S. sample. Also, while her study is closest to this research in underlying motivation, it does not aim to distinguish various norms of distributive justice, or highlight any potential trade-off between selfishness and fairness. Nor does it aim to understand how social image concerns influence outcomes.

Overall, the present study is closer to experiments that have been conducted in developed countries regarding effort rewarding behavior of individuals (see Konow (2000) for a prominent example of this branch of the literature). Specifically, the experimental design is based on the work of Cappelen et al. (2007) who employ one-shot two-player dictator games and find that out of those 35 percent of their subjects who mostly act in line with their ideas of fairness, 43.5 percent are strict egalitarians, 38.1 percent are liberal egalitarians, and 18.4 percent act libertarian. I modify and extend the design in Cappelen et al. (2007) in several important ways. First, investment is replaced by a simple effort task for the study of strict egalitarianism, libertarianism, and the traditionally effort-defined principle of liberal egalitarianism. Second, whether people consider equality of opportunity is determined by adding novel treatments: restrictions on the opportunity to exert effort are introduced for subjects assigned to these treatments. Third, luck egalitarianism is explored. It is based on income differences, which are *not* due to production choices (brute luck). I bring in various income shock treatments to investigate whether this principle plays a role in decision making. Fourth, the information structure of the game is altered to credibly test for a simple version of inequality aversion, defined as individuals striving for exactly equalizing *final payoffs* (rather than merely sharing the social surplus equally). Fifth, dictators' preferences are elicited using the strategy method, which allows me to talk about self-consistency of individuals. Sixth, I link the experimental results to a rich set of demographic and socio-economic data. Seventh, I study the norms of randomly chosen participants from Malawian villages, as opposed to a student population in an industrialized country. Arguably, the former has more significance for enriching the discussion about norms and incentives set for productive activities in a society due to the widespread lack of

[6] In addition, this literature is of limited usefulness to inform any discussion about norms of distributive justice (as compared to sharing behavior) since only few such norms are defined on windfall income.

formal institutions in rural Malawi, as laid out above. Last, I introduce asymmetric information in order to better understand the influence of social image concerns on sharing behavior.

The investigation into social image concerns builds on a branch of literature, started by Mitzkewitz and Nagel (1993), which primarily uses ultimatum games to investigate the effects of incomplete information of the responder about the size of the pie on sharing behavior of the proposer.[7] The effect generally found is that proposers pretend to be more generous but are de facto more selfish than under full information. This is achieved by creating the impression that they follow a sharing rule that would be perceived as fair by a majority of players for a small pie when in reality the pie to be shared is large, this being not known to the responder with certainty.

Contrary to most of this literature, I employ dictator games to distinguish whether it is the fear that the responder will reject an offer perceived to be unfair, or concern about one's social image that drives (expected) changes to sharing behavior under incomplete information. In a dictator game only the latter consideration should play a role.

The only other study, to my knowledge, which employs dictator games in this context is Ockenfels and Werner (2012) who conducted their study online using newspaper readers in Germany as experimental subjects. The study featured a complete information and an incomplete information treatment with two different pie sizes in each treatment. In both cases subjects make their decisions about windfall income. The main finding of this study is that dictators in the incomplete information treatment are more frequently giving less or equal to half of the small pie to the receivers than dictators in the complete information treatment, i.e. subjects pretended in a sophisticated way that they were facing a small pie and to be behaving in a fair manner given that.

In contrast to Ockenfels and Werner (2012), I investigate social image effects for *effort-generated* (as opposed to windfall) income in a *developing* (as opposed to highly industrialized) country setting. Ockenfels and Werner (2012) note that due to the setting of their experiment, an unnatural distance between the experimental subjects (newspaper readers) exists which may limit transferability of results. The present study, on the other hand, was conducted in rural communities of a developing country where subjects interact in their natural surroundings. This arguably renders the results less domain specific for the development context. Additionally, a novel aspect of my study is the attempt to capture trade-offs between selfishness, fairness considerations, *and* social image effects.

The rest of the paper is organized as follows. Section 2 describes the structural model and provides definitions of the norms of distributive justice. Section 3 details the experimental set-up while section 4 addresses the implementation in the field. Section 5 discusses empirical results. Section 6 concludes and provides an outlook on emerging questions.

[7] See Gueth et al. (1996), and Huck (1999) for other studies belonging to this branch of literature. For examples of other related literature see, f.ex. Roth and Malouf (1979) and Roth et al. (1981), who investigate bargaining behavior between two individuals when the size of the prize is not known to one of the players.

2 Model

I study one-shot two-person dictator games with a production phase.[8] Individual i is denoted $i = 1$ when i is the dictator and $i = 2$ when i is the receiver. The players may differ with respect to effort chosen, e_i, and rate of return, a_i. Dictators and receivers both participate in production according to the function $x_i = e_i a_i$. Thus, the dictator's and the receiver's effort-generated income is determined by the production functions $x_1 = e_1 a_1$ and $x_2 = e_2 a_2$, respectively. The total effort-generated income[9] that is to be distributed by the dictator is therefore given by $X(e, a) = x_1(e_1, a_1) + x_2(e_2, a_2)$, where e and a are defined as $e = (e_1, e_2)$ and $a = (a_1, a_2)$. Specifically, each dictator is asked to allocate an amount y of the social surplus to herself, leaving $X - y$ for the receiver. Dictators and receivers have additional income in the form of monetary endowments, which might be affected by negative shocks, and through foregoing options to exert effort as will be explained in detail in section 3. For modeling purposes, it suffices to denote the entirety of their respective non-effort-generated incomes, excluding negative shocks, as z_1 and z_2, with $z = (z_1, z_2)$.

Based on the framework in Cappelen et al. (2007), I assume that individuals care about both their own income and the fairness of the distribution between themselves and the player matched with them. In addition, subjects' beliefs about how self-interested they are perceived to be by others, are assumed to directly enter their utility function by affecting their marginal utility of income, with dictators maximizing the utility function

$$V(y; e, a, z, b, s) = (\gamma_0 + \gamma_1 I(h))y - \sum_k \beta_k \frac{(y - m^k(e, a, z, b, s))^2}{2X(e, a)}.$$

Here, $m^k(e, a, z, b, s)$ is the fair amount of effort-generated income that the dictator should keep for herself according to norm k; b_1 and b_2 are the sets of effort choices available to the players with $b = (b_1, b_2)$; $\gamma_0 > 0$, $\gamma_1 > 0$, and $\beta_k \geq 0$ being parameters expressing the importance subjects assign to income and fairness, respectively; $s = (s_1, s_2)$ denotes negative shocks to z,[10] i.e. $s_1,\ s_2 \leq 0$. I(.) is an indicator function, where h denotes a state of the world in which half of the dictator's contribution to the common pot remains "hidden" from the receiver. The assumption is that dictators who believe that the receiver might perceive them as less self-interested than they really are, place a higher weight on income as opposed to fairness considerations.

Maximizing this function determines the optimal share y^* to be

[8] The subsequent discussion partially follows Cappelen et al. (2007).

[9] Total effort-generated income is also referred to interchangeably as "social surplus", "pie", or "money in the common pot" throughout this paper.

[10] Note, that these shocks are known to the dictator prior to making any distributional decisions.

$$y^* = \frac{\sum_k \beta_k m^k(e,a,z,b,s)}{\sum_k \beta_k} + \frac{(\gamma_0 + \gamma_1 I(h))X(e,a)}{\sum_k \beta_k},$$

assuming that an interior solution exists. Note, that the optimal amount a specific dictator allots to herself depends on her fairness ideals, how much money is in the common pot, and the information available to the receiver.

I assume that dictators' decisions may be influenced by one or more of the following principles of distributive justice: inequality aversion (IA), strict egalitarianism (SE), liberal egalitarianism (LE), luck egalitarianism (LuE), libertarianism (L), or the principle of equality of opportunity (EO), all of which satisfy the no-waste condition.[11] These concepts are explained below, in terms of the optimal dictator share they imply.

According to strict egalitarianism it is optimal that dictators and receivers receive equal shares of the social surplus. The fair share for a dictator can thus be denoted as

$$m^{SE}(e,a,z,b,s) = \frac{X(e,a)}{2}. \tag{2.1}$$

The principle of liberal egalitarianism bases optimal shares on the relative effort choices of the players, such that

$$m^{LE}(e,a,z,b,s) = \frac{e_1}{e_1+e_2}X(e,a). \tag{2.2}$$

In contrast to liberal egalitarianism, libertarianism is a purely outcome based principle. The dictator's optimal share equals her effort-generated income:

$$\begin{aligned} m^{L}(e,a,z,b,s) &= \frac{a_1 e_1}{a_1 e_1 + a_2 e_2}X(e,a) \\ &= a_1 e_1. \end{aligned} \tag{2.3}$$

The principle of equality of opportunity alters the latter two principles' outlook in that it allows for choice sets to be taken into account. According to this norm, individuals should compensate themselves and others for reduced possibilities to exert effort, if in general they follow a norm that includes effort as a sharing criterion and is defined over the effort-generated income alone. The fair share for the dictator can be characterized as

$$m^{EO}(e,a,z,b,s) = m^l + \delta^+_{EO}(I_{DRC}) + \delta^-_{EO}(I_{RRC}), \tag{2.4}$$

[11] Strict egalitarianism, liberal egalitarianism, and libertarianism are specified in a similar way to that found in Cappelen et al. (2007), with effort replacing investment.

where $l \in \{LE, L\}$, and $\delta^{+}_{EO}(I_{DRC}) \geq 0$ and $\delta^{-}_{EO}(I_{RRC}) \leq 0$ are parameters that determine how much the dictator cares about the sizes of the players' choice sets, where DRC stands for only the dictator having a reduced choice set and RRC stands for only the receiver having a reduced choice set. A smaller choice set implies a larger fair share for the affected player according to this norm. Note, that we only know the direction but not the magnitude of this effect.

Inequality aversion in its simplest form requires total incomes of players to be equalized in an optimal allocation. The fair share for the dictator is given by

$$m^{IA}(e, a, z, b, s) = ((z_2 + s_2) - (z_1 + s_1)) + \frac{X(e, a) - ((z_2 + s_2) - (z_1 + s_1))}{2} \tag{2.5}$$

if $(z_1 + s_1) \leq (z_2 + s_2)$, and

$$m^{IA}(e, a, z, b, s) = \frac{X(e, a) - ((z_1 + s_1) - (z_2 + s_2))}{2} \tag{2.6}$$

if $(z_1 + s_1) > (z_2 + s_2)$.

In addition, a specific form of luck egalitarianism may influence distributional decisions. In this case, the fair share for the dictator depends directly on s, i.e. the dictator takes differences in income, which are *independent* of productive choices into account (and occur ex post to the latter being carried out):

$$m^{LuE}(e, a, z, b, s) = m^{j}(e, a, z, b, s) + \delta^{+}_{LuE}(I_{s_1}) + \delta^{-}_{LuE}(I_{s_2}). \tag{2.7}$$

Here, $j \in \{SE, LE, LL, L\}$, and $\delta^{+}_{LuE}(I_{s_1}) \geq 0$ and $\delta^{-}_{LuE}(I_{s_2}) \leq 0$ are parameters that determine how much the dictator cares about the shocks to players' endowments. A one-sided negative shock implies a larger fair share for the affected player according to this norm. Again, we only know the direction but not the magnitude of this effect, which is an empirical matter.

3 Experimental Design

The analysis in this paper is based on eight treatments of a one-shot two-person dictator game with a production stage. All participants were randomly selected among the rural population of Ntchisi District in the Central Region of Malawi and assigned to a treatment prior to the instruction phase.

During the recruitment and consenting phase, subjects were informed that they were eligible to participate in a scientific experiment about community norms, including survey part. More specifically, individuals were told that the experiment would involve decision making and potentially carrying out a simple task, similar to one that they might do at home or work, as well as the distribution of money between themselves and another participant of the experiment. They were informed that they would receive a token gift worth approximately 30 Malawi Kwacha (MK) irrespective of their or others' decision-making (including the decision to end participation early)

and between 0 MK up to 350 MK[12] depending on the outcome of the experiment. Additionally, potential participants learned that total participation time (including travel, consenting, experiment, survey, and payment) would in no case exceed three hours.[13]

To assess the value of the incentives to participants, note that in 2005, 46.7 percent of the population in the Central Region lived at or below the national poverty line of 16,165 MK per year (i.e. approximately 44.29 MK per day) according to the World Bank (2007). 16.1 percent of these individuals fell substantially below this line and were classified as "ultra-poor", where ultra-poor indicates the inability of individuals to meet their recommended daily food needs.

In addition to the generally prevailing deep poverty, note that the data used in this paper was collected in July and August 2010. Both months fall in the dry season. Since agriculture is the main livelihood of the study population, opportunity costs for participants are especially low and stable. Goldberg (2010), for example, who conducted a labor supply study in Malawi's Central Region, offered various wages for sessions of hard physical labor, and found that over 70 percent of her sample of 529 subjects chose to work at a rate of only 30 MK *per day* during the dry season. Subjects in my study were paid an average of approximately 100 MK in addition to the token gift.[14] Thus, to sum up, the rewards provided by my experiment were substantial and clearly able to meet the participation constraint of most individuals in the study region.

In terms of incentivizing strategic behavior we need to understand whether variations of shares were meaningful to participants. I allowed dictators to vary shares in steps of 10 MK. Goods prices in the study region start at 0.5 MK, to the author's knowledge. However, informal focus group discussions made it clear that variations of up to 5 MK were not uniformly perceived as meaningful by individuals living in immediate proximity to the second largest trading center of the district.[15] To be on the safe side, I doubled this amount so that the smallest possible variation in the experiment was 10 MK.[16] Given the extreme level of poverty of large parts of the population in the study region, in combination with my findings from the focus group discussions, we can be confident that variations available to dictators in the experiment were large enough to incentivize strategic behavior.

The remainder of this section proceeds as follows. I begin by detailing the general experimental procedure. I then turn to a description of the benchmark treatment, which builds on the experimen-

[12] At the time of the experiment, 350 MK corresponded to 2.18 US-Dollar (typical cash bid rate).

[13] De facto participation time was approximately 1.5 hours, see section 4. Three hours was mentioned as an upper limit based on an outlier during piloting.

[14] Please refer to table 3 for more detailed summary statistics for subjects' payments.

[15] This is likely to be an upper limit for the incremental amount people may not care about for the following reason: Though I did not collect information about incomes in the trading center where the focus groups were conducted, it was very clear from local prices that the local consumption bundle would be more expensive than that in the study area. This suggests that people on average must have been richer in the trading center than in the study area. This being the case, the sums involved would most likely be at least as important to the study participants as for the focus group participants in the trading center.

[16] Examples of goods priced 10 MK in rural areas of the study district (at the time the study took place) are a large piece of bread or a package of pain killers.

tal design of Cappelen et al. (2007), and elaborate how it allows for the identification of inequality aversion, strict egalitarianism, liberal egalitarianism, and libertarianism. I then introduce measures of equality of opportunity and luck egalitarianism, captured in the remaining treatments. A description of the respective contributions of each of these treatments towards identifying the presence of these two norms follows. An in-depth discussion of the asymmetric information treatment and its contribution towards identifying the influence of social image concerns on observed sharing behavior concludes.

3.1 General Experimental Procedure

Figure 1 gives an overview of the steps involved in the experiment, which are described in the following lines. At the beginning of the instruction phase, subjects learned that they had been randomly matched with another subject in the same location and that matching was to remain anonymous both during and after the experiment. Then they received their endowments. Endowments were of two types: monetary and in-kind. Players' monetary endowments were given to them in the form of bottle caps, with one bottle cap representing 10 MK.[17] This conversion rate was made known to the players. Their in-kind endowment was handed out in the form of bags containing a mixture of two types of beans. Players were informed that each bag of beans was worth 20 MK if they chose to return it to the experimenter without separating the beans. They learned that the alternative was to return either one or - if they had two bags - one or both of their bags sorted. Great care was taken to ensure that subjects understood that the money generated by sorting was higher than that from returning unsorted bags, but that the former would go into a common pot to be shared between them and the player matched with them, while the latter would be their own with certainty. Players were randomly assigned to a group with either a low (40 MK per sorted bag) or high (80 MK per sorted bag) rate of return for sorting, each with 50 percent probability. Individuals learned their own, but not their partner's rate of return. However, they were aware that the player matched with them also had an equal chance of having been assigned a low or high rate of return.

Players were then informed that just one subject in each group would be asked to make sharing decisions but it would only be revealed *who* were to be the dictators after all sorting decisions had been carried out. With this important exception, the strategy method was used, i.e. dictators would be asked to share hypothetical common pots for all potential effort-choice/rate of return combinations of the receiver *given* their own de facto effort choice and rate of return.[18] Payments

[17] A higher divisibility of currency was possible only to a limited extent. Since, in addition, denominations lower than 10 MK did not appear to be economically significant to *all* potential subjects, as explained above, the option of including those was not explored any further.

[18] The alternative would have been to elicit sharing preferences from both players for all possible effort/rate of return combinations of their partner, *then* randomly determine who is to be the decision maker. Though this would have had obvious logistical and financial benefits for the experimenter, in the 30+ rounds of piloting for this experiment, evidence mounted that subjects viewed the game differently if randomization between players for the role of dictator

were to be determined by the experimenter upon completion of the game and would be based on the strategies specified by the dictators and the matched receivers' de facto sorting decisions and rates of return, i.e. the experimenter would look up what each dictator's payment plan specified for the *actual* number of bags sorted and rate of return of the respective receiver and pay players accordingly. Subjects were told that they would receive payment immediately after their participation in the study concluded and were informed that all players would learn about their partner's sorting decision and - unless they were a receiver in the asymmetric information treatment - also about their partner's rate of return at that point. It was further conveyed that the receiver would only learn about the payoff relevant decisions of the dictator, but not have the right to learn about the dictator's entire strategy.

Summing up, players were given complete information *about the game*, including production, distribution, and payment phase, prior to any decision making. Importantly, the instruction phase was also designed to guarantee common knowledge among matched players.

Following the instruction phase and a brief test-sorting,[19] players were asked to make their irreversible sorting decisions. After they carried out these decisions they learned who had been assigned the role of the dictator. During the subsequent distribution phase, in which the dictator made her sharing decisions according to the strategy method, each decision could be altered once before it was made final. During the payment phase the experimenter determined final payoffs for each individual (given by the sum of the monetary endowment minus negative shocks to this endowment, payment for bags which had been returned unsorted, and the share of the common pot the individual was to receive based on the dictator's wishes). While subjects were paid, they learned as announced about the other player's sorting decision, rate of return (in case they were not receivers in the asymmetric information treatment) and payoff relevant decisions.

This concludes the description of the general experimental procedures. I now provide an in-depth discussion of each treatment and its contribution towards generating a deeper understanding of the relative influence of the norms of distributive justice listed in section 2, selfishness, and social image concerns, before turning to matters of implementation in the field in section 4.

3.2 Benchmark Treatment

In the benchmark treatment, each participant was given an endowment of 3 bottle caps and 2 bags of beans. Sorted bags generated an income of 4 bottle caps per bag for individuals who had been assigned a low rate of return, and 8 bottle caps per bag for individuals who had been assigned a high rate of return. Each player had the option to sort either 0, 1, or 2 bags, with unsorted bags being automatically returned to the experimenter at the rate of 2 bottle caps per bag, independent

took place *after* sharing decisions were made. According to their own statements, subjects frequently kept less (more) than what they would have perceived as optimal, had they been the dictator with *certainty*, when they thought their opponent might be generous (selfish).

[19] See section 4 for details.

of the subject's assigned rate of return.[20]

As in Cappelen et al. (2007), the benchmark treatment is used to learn about the distribution over strict egalitarianism, liberal egalitarianism, and libertarianism among subjects. Additionally, due to our modified experimental procedures in which subjects were able to observe endowments and money from returning unsorted bags not only for themselves, but also for the other player in addition to the common pot prior to each allocation decision, it is sensible to also test for inequality aversion as guiding norm for allocation decisions of the dictator. Allocations in which the dictator took the entire common pot are called purely selfish for the purpose of this discussion.

Graphically depicting the various norms' predictions highlights important features of the decision making process of the subjects and (through that) how the benchmark treatment allows us to identify the discussed norms: Decisions in line with libertarian predictions (see Figure 3) have the lowest informational requirements of all allocations. The dictator only needs to know her own marginal contribution to the social surplus since it always equals her optimal share. Purely selfish and strict egalitarian allocations are based on information about the size of the common pot, i.e. *both* players' contributions: individuals keep 100 percent and 50 percent of the common pot, respectively (see Figure 4). Liberal egalitarian allocations are proportional to relative effort levels, varying with the common pot size. As the dictator increases her effort, her optimal share increases due to the associated increase in common pot size *and* the higher relative effort level of the dictator as compared to the receiver. The norm's predictions are therefore depicted for different effort levels of the dictator *given* the receiver's effort level and both players' rates of return (see Figure 5 in the appendix).[21] Inequality aversion (see Figure 6) is depicted in the same way. However, the mechanism through which higher effort levels of a player lead to higher optimal shares for her is more indirect compared to liberal egalitarianism, working through the increase in common pot size, as well as the fact that subjects who exert more effort receive less income from returning unsorted bags, which must be taken into account for equalizing final payoffs.

We can distinguish four categories of distributional scenarios:

1) **Matched players are assigned the same rate of return and choose to sort an identical number of bags.** In case social surplus is generated,[22] all norms prescribe equal shares for the players.[23]

2) **Matched players are assigned identical rates of return, but choose to sort a**

[20]Please refer to Table 1 in the appendix for a graphical depiction of the production function.

[21]Note, that effort levels and rates of return jointly determine common pot size.

[22]If both players choose not to sort, no social surplus is generated.

[23]For example, if the rate of return is low for both players ($a_i = 1$, $a_j = 1$), and each player sorts two bags ($e_i = 2$, $e_j = 2$), the size of the social surplus is $X = 160$ and all three norms tested for in the benchmark treatment predict a dictator share of $y_i = 80$. Only purely selfish allocations are characterized by $y_i = 160$. This is the case since both players exerted the same effort (hence liberal egalitarianism suggests equal shares to be optimal), contributed the same amount to the social surplus (hence libertarianism suggests equal shares to be optimal), and do not differ in their monetary endowment and payment for returning unsorted bags (hence inequality aversion suggests equal shares to be optimal). Equal shares are (trivially) optimal under strict egalitarianism.

different number of bags. With the exception of strict egalitarianism, all norms prescribe an unequal distribution of the common pot.[24]

3) **Matched players have different rates of return, but choose to sort an identical number of bags.** In such a case only libertarianism prescribes different optimal shares for the two players.[25]

4) **Matched players are assigned different rates of return and choose to sort a different number of bags.** Here, two sub-cases can be distinguished: i) If the respective effort-generated earnings of the players do not coincide, optimal shares for the players are different under all norms with the exception of strict egalitarianism.[26] ii) If the effort-generated earnings of both players coincide, libertarianism and strict egalitarianism prescribe equal shares. Liberal egalitarianism and inequality aversion prescribe shares to be different.[27]

3.3 Equality of Opportunity Treatments

There are three treatments aimed at investigating whether and to what degree equality of opportunity plays a role for distributional decisions among the subject population. One treatment introduces an "effort cap" only for the dictator, another only for the receiver, and the third treatment introduces an effort cap for both players. Players with an effort cap received only one bag of beans, but 5 bottle caps as monetary endowment. The endowment is chosen such that participants with an effort cap have the same non-effort-generated income as benchmark treatment participants

[24]For example, if the rates of return are high for both players ($a_i = 2$, $a_j = 2$), and the dictator sorts one bag ($e_i = 1$), while the other player does not sort at all ($e_j = 0$), the size of the social surplus is $X = 80$. In this case, a dictator share of $y_i = 40$ is optimal only under strict egalitarianism. Libertarianism determines the optimal dictator share to be the contribution to the social surplus, i.e. $y_i = 80$. Liberal egalitarianism also prescribes $y_i = 80$, since the receiver did not put any effort into generating money for the common pot. Inequality aversion takes into account that the player who sorted one bag less received 20 MK more from returning an additional unsorted bag compared to the dictator. To equalize final amounts subjects take home, the dictator's share must therefore be 20 MK higher than that of the receiver, i.e. $y_i = 50$.

[25]For example, if the rate of return is high only for the dictator ($a_i = 2$, $a_j = 1$), and each player sorts two bags ($e_i = 2$, $e_j = 2$), the size of the social surplus is $X = 240$. Libertarianism predicts a dictator share of $y_i = 160$ since this equals her contribution to the common pot. A dictator following strict egalitarianism trivially keeps $y_i = 120$. This is also the optimal share according to inequality aversion and liberal egalitarianism because both players exerted the same amount of effort.

[26]For example, if the rate of return is high only for the dictator ($a_i = 2$, $a_j = 1$), and she sorted two bags while the receiver sorted only one ($e_i = 2$, $e_j = 1$), the size of the social surplus is $X = 200$. While strict egalitarianism prescribes $y_i = 100$, libertarianism asks for the dictator to keep her marginal product to the social surplus, hence $y_i = 160$. Liberal egalitarianism rewards the dictator with two thirds of the money in the common pot since she exerted double as much effort as the receiver, hence $y_i = \frac{2}{3}200$. Inequality aversion reimburses the dictator for foregoing the money from returning her second bag unsorted (as compared to the receiver), thus the dictator's share is 20 MK larger than the receiver's, i.e. $y_i = 110$.

[27]For example, if the dictator has a low rate of return, $a_i = 1$, and sorts two bags, $e_i = 2$, while the receiver has a high rate of return, $a_j = 2$, and sorts one bag, $e_j = 1$, the social surplus generated is $X = 160$. Strict egalitarianism trivially prescribes $y_i = 80$. Since this equals the dictator's marginal product, it is also the optimal share under libertarianism. According to liberal egalitarianism $y_i = \frac{2}{3}160$ should be kept by the dictator, since she exerted double as much effort as the receiver. $y_i = 90$ is optimal according to inequality aversion, because the receiver has returned an unsorted bag while the dictator has not, i.e. the dictator needs to get 20 MK more of the social surplus than the receiver in order to equalize final payoffs.

in case of sorting either 0 or 1 bag. The goal is to make these treatments comparable to the benchmark treatment for these effort choices in all respects other than the existence of the effort cap.[28]

In treatments with unequal choice sets, the player with the smaller choice set should receive a higher share of the social surplus as compared to that in the benchmark treatment if a dictator follows the principle of equality of opportunity as well as either libertarianism or liberal egalitarianism. Note, however, that we only know the direction, not the magnitude of the effect, which is to be determined empirically. Comparisons of allocation decisions of the treatment in which both players have a limited choice set to those of the benchmark treatment will allow us to control for treatment effects *independent* of decision making which takes equality of opportunity into account.

The predictions for all other norms are identical to those for the benchmark treatment, with the sole exception that the player(s) with a limited choice set cannot exert an effort level of sorting two bags.

3.4 Income Shock Treatments

The income shock treatments aim at investigating whether and to what degree luck egalitarianism forms a basis for distributional decisions among the subject population. During instruction, participants assigned to these treatments learned about the possibility that either they, the player matched with them, or both of them might lose their monetary endowment, i.e. the three bottle caps given to them at the start. Only after their sorting decision was carried out, was it revealed to them who had in fact lost their endowment, i.e. production decisions took place in a symmetric set-up. The goal was to create differences in income that were *entirely independent* of production decisions and to analyze whether dictators would take such income differences into account when distributing the social surplus generated on the basis of those production decisions.

In treatments with only one player experiencing a shock, this player would receive a higher amount of the social surplus than she would in the benchmark treatment if the dictator followed luck egalitarianism. Note, that we only know the direction, but not the magnitude of the effect prior to estimation, as in the case of the 'equality of opportunity' treatments. Comparisons of allocation decisions made when both players experience a negative income shock to those of the benchmark treatment allow me to control for treatment effects that are independent of luck egalitarianism.

The predictions for the other norms are the same as for the benchmark treatment with the exception of inequality aversion (see Figure 7). Since inequality aversion is defined over final outcomes, the norm's prescriptions for treatments that are *not* symmetric in income shocks must trivially differ from those for the benchmark treatment. Specifically, the player who experiences a negative shock of 30 MK should be compensated for this loss in the optimal allocation.

[28] Please refer to Table 2 for the production function.

3.5 Asymmetric Information Treatment

I employ an asymmetric information treatment to investigate whether and to what degree incomplete information of the other player about own rate of return plays a role for distributional decisions of the dictators. In the benchmark treatment, both, effort levels and rates of return of the other player become known to each subject during the payment phase. In contrast to this, the rate of return of the dictator will never become known to the receiver in the asymmetric information treatment. The dictator is aware of this fact while making her decisions. If dictators care about social image we may expect them to derive a higher marginal utility from own income relative to fairness considerations if they are assigned a high rate of return, sorted a positive number of bags, and were part of the incomplete information treatment as compared to all other situations, i.e. if half of their contribution to the social surplus cannot be seen by the receiver.

4 Field Experimental Procedures

The field implementation of this study comprised two distinct parts: a baseline survey and the game. For an overview of all steps involved, please refer to Figure 2. The site of the project was Ntchisi District, a poor, rural district in Malawi's Central Region. 80 rounds of the experiment were conducted over a period of 20 days, 4 on each day.

Careful precautions were taken regarding the locations of all rounds to avoid contamination of the experiment due to subjects learning about the game, e.g. from interaction with prior participants. To understand these precautions, it is useful to think of the choice of location as being divided into two stages: the choice of where to perform the 4 sessions of a particular day ("area" for the sake of expositional clarity), and the choice of where to perform each of these 4 rounds relative to each other ("location" for clarity).

Regarding the first stage, the area for each day was selected such that word of mouth could not be reasonably expected to spread overnight between two areas that were used on consecutive days.[29] Areas were visited sequentially by moving outward from Malomo Trading Center, a trading center which is located close to the border of Ntchisi District. Each round required 16 participant households, randomly selected out of a minimum of 40 households. Hence, each area had to have at least 160 (4 times 40) households.[30] Once an area had been chosen, four clusters of dwellings with a minimum of fourty households in each were identified. These four locations were chosen such that they were geographically sufficiently segregated to render communication between participants of different rounds infeasible.[31] In each of these locations, one experimental round was conducted.

[29] To determine this, I took information on potential meeting places such as markets and boreholes into account, wherever available.

[30] Information on electoral ward boundary demarcations provided by the Office of the District Commissioner, in combination with location scouting data from an earlier joint project, Raballand et al. (2011), aided in the selection of these areas.

[31] In a few cases, a larger cluster of dwellings contained two locations. For these cases, two precautions were taken:

Please refer to figures 11, 12, and 13 for maps and graphical depictions.

Recruitment in each location took place as follows: Upon arrival, assistance was sought from either a village headman or a group village headman in drawing up a map of the houses in that particular location.[32] The study team numbered the houses based on the order in which they were drawn. To determine which households were eligible for participation, the study team then drew 16 numbers out of an envelope with as many numbered paper slips as there were houses.[33]

Eligible households were approached with recruitment scripts. To determine who in the household was eligible for participation, a household listing was compiled. It included all adult members of the household who had been present in the household the previous night.[34] These household members were assigned numbers based on the order in which they were mentioned. Drawing a numbered piece of paper out of an envelope that contained as many numbered paper slips as candidates for participation in that particular household determined the household member eligible for participation. A back-up household was approached in case of absence of any adult members for household listing purposes, absence of the eligible household member,[35] or the latter's refusal or inability to participate.

All eligible household members were asked for consent at a local chief's or group village headman's residence. Since each subject was anonymously matched with another subject of the same location, the fact that each participant was aware of the identity of all other 15 participants in her location guaranteed that each participant knew the average characteristics of her anonymously assigned partner. This ensured that the same degree of anonymity was maintained between different participants of the same and for different rounds, independent of participants' houses' relative locations to each other. After consent, a short baseline survey was conducted. Enumerators then delivered treatment specific game instructions one on one in subjects' houses or at a mutually agreeable place which guaranteed privacy.[36]

The participants were assigned to the same set of treatments in all locations. Rotation of enumerators guaranteed that each enumerator instructed four different treatments per day. The

First, two locations within one cluster were without exception used for consecutive rounds only. Second, these places were always sufficiently spread out to have some natural barrier, e.g. a river, between the two locations.

[32]Within the traditional leadership structure a group village headman is the direct (elected) superior of several village headmen whose villages often form a geographical cluster.

[33]The remaining households were served as back-ups. They would have been visited in the order in which they were drawn if the need arose.

[34]Adults are individuals 18 years and above according to Malawi law.

[35]An eligible household member was declared absent if she could not be found and taken to a local chief's residence for consenting within a time period of 30 minutes.

[36]Both alternatives - group instruction sessions as well as treatment group instruction sessions would have had serious drawbacks compared to the method of instruction chosen. There was a high chance of signaling between participants for both alternatives. In case of *treatment group* instructions, there would have been a non-negligible opportunity for collusion, since all treatments were played at each location, implying a maximum of 6 subjects instructed using the same script at the same time. For *group* instruction sessions, on the other hand, the script would have needed to comprise information about *all* treatment groups which reduced participants' level of understanding drastically as determined during piloting.

rotation scheme guaranteed that each enumerator collected sharing data for each treatment the same number of times over the course of the study and that enumerator and area effects for a specific treatment were not confounded.

Instructions were delivered orally. During instruction, the monetary consequences of each potential sorting decision a player could make were demonstrated to her using bottle caps[37] and bags of beans. The consequences of several potential actions of the other player, given an assumed rate of return, were illustratively demonstrated to her in the same manner. At several pre-defined points, participants were prompted to ask questions. To homogenize replies across different enumerators, the part of the instruction script that had remained unclear to the participant was re-read, if possible, otherwise standardized answers were given. After a final check for understanding upon completion of the script, all subjects were asked to sort a standardized sample amount of beans, to get a clear idea of the difficulty and duration of the task before making their irreversible sorting decisions.

After a participant finished sorting, the enumerator assigned to her contacted the supervisors to learn whether their participant had been assigned the role of decision maker, and - for the monetary shock treatments - whether their participant or the person matched with the participant or both had suffered a negative income shock. Neither information was revealed to the enumerators ex ante, to not influence enumerator performance and to keep a symmetric structure of the production stage. After participants learned about their status, non-decision makers were brought back to the (group) village headman's residence awaiting payment.[38] Decision makers made sharing decisions using the strategy method prior to that.

The decision making process was aided in the following way: the monetary consequences of the decision makers' actions given her rate of return were reviewed and displayed in front of her with bottle caps which were left this way until all sharing decisions were made. For each sharing decision the enumerators demonstrated the consequences of a possible effort/rate of return combination of the other player with bottle caps and bags of beans *given* the sorting decision of (and associated outcome for) the dictator. Next, the dictator was asked whether she wanted to keep more, equal, or less of the common pot as compared to her counterpart. Afterwards, she was asked exactly how much of the social surplus she would like to keep. If her answers were consistent, the monetary consequences of her sharing decision were demonstrated with bottle caps (otherwise, the enumerator would point out the inconsistency and ask the participant how to correct it before proceeding). Importantly, the enumerators performed simple algebra for the participants at this stage, summing up the distributional decisions in terms of a) how much of the social surplus would be left for the

[37]Bottle caps were turned upside down so that different colors would not lead to framing effects. All bottle caps were white on the inside and none stemmed from alcoholic beverages.

[38]Note, that it was impossible for participants to back out who were assigned the role of decision maker from observing the time of arrival back due to different walking times between the place of experimental instruction and (group) village headman's residence, a different number of questions during instruction, different sorting decisions, as well as different starting times based on how fast the baseline survey had been completed initially.

other player, if the decision maker's choice was carried out, and b) calculating final amounts for both players. Subjects were allowed to change their mind about their preferred allocation once at this point, before the enumerator moved on to demonstrate the consequences of another possible effort/rate of return combination of the matched player. This two-step procedure allowed me to overcome educational limitations of parts of the subject population which otherwise might have tainted results.

After the elicitation of decision makers' sharing preferences, they also returned to the chief's residence for payment. Enumerators turned in the sheets on which dictators' and receivers' decisions were recorded to the experimenter who then matched these answer sheets according to a pre-specified matching scheme and paid participants, calling them one by one to the project bus to keep payments private. At the bus, during payment, they were informed about the payoff relevant sorting and sharing decisions of their partner as well as their partner's rate of return in case they were not a receiver in the asymmetric information treatment. Household listing, consenting, baseline survey and game together took approximately 1.5 hours on average, out of which less than 45 minutes were spent on game instruction.

Data entry took place in Lilongwe, the capital of Malawi, by native data entry staff whose mother tongue is Chichewa, the language in which this study was conducted. I programmed the data entry forms in CSPro. Operators performed double entry in the "Verify Cases" mode for all data.

5 Results

The analysis is based on the structural model of optimal choices of dictators described in section 2. First, I present an empirical assessment of whether the norms postulated in the model are appropriate for analyzing the allocation decisions in the data set. After successfully establishing that subjects react as expected to all experimental variations for which at least some norms predict changes of the optimal share, I present OLS results for reduced form versions of the model. These show that the results hold despite inclusion of controls. The analysis proceeds with categorizing observations and individuals by norms: First, I discuss those observations that exactly match a norm's prediction. I present frequencies and discuss the broad patterns of the results before turning to more subtle analyses for those observations that do *not* exactly match any norm's prediction. I then turn to individual level matching. Here, the issue of self-consistency is discussed in addition to repeating the previous analyses. An OLS analysis to identify demographic and socio-economic predictors for conformity with specific norms follows. I then present a mixed logit estimation of the model as well as a conditional logit as robustness check. Last, I determine the influence of asymmetric information on sharing decisions, presenting results from ranksum tests, an OLS analysis, and mixed as well as conditional logit estimation.

5.1 Which Experimental Variations Do Subjects Respond To?

This sub-section assesses which experimental variations and which endogenous decisions the subjects of this study responded to, in order to assess the appropriateness of analyzing the data set with respect to the norms defined in the model section. Specifically, I investigate whether and describe how the common pot shares that dictators kept vary with effort, rate of return, and contribution size. I further determine whether and how dictators take limited choice sets and shocks to personal endowments into account when making decisions about the social surplus.

The results are summarized in tables $4-9$.[39] Sample sizes are stated in terms of individuals as well as in terms of observations. In addition to the mean and median dictator share, the number and percentage of observations falling into each of four categories is reported: purely selfish allocations, dictator shares between 100 and 50 percent of the common pot, equal splits of the social surplus, and "generous" allocations, for which the dictator share is lower than 50 percent of the total effort-generated income.[40] Based on these data, Wilcoxon rank-sum tests and nonparametric equality-of-median tests allow me to assess which experimental variations are most relevant for explaining the outcome data, thus building the foundation for a more detailed analysis of the data in the following sub-sections.

5.1.1 Do Subjects Reward Effort?

The hypothesis that individuals reward both own and others' effort is tested using the data summarized in rows $2-7$ of table 4. To help the reader visualize the results presented in the tables, the data is once more additionally displayed in histograms (see figures $8-10$) for this case.

Figure 8 restricts the data to observations for which the dictator and receiver of a team choose identical effort levels and have been assigned identical rates of return. We see that the majority of decisions is to keep exactly half of the common pot. Dictator shares between 100 and 50 percent of the social surplus make for the second largest group of observations. In comparison, purely selfish and generous allocations are rare.[41] Figure 9 displays those cases in which the dictator has a higher effort level but identical rate of return compared to the receiver. We observe large shifts in the distribution towards higher dictator shares compared to figure 8, in a way that would be intuitively expected for subjects who reward own effort. Figure 10 restricts the data to observations for which the dictator has a lower effort level than the receiver while both players have been assigned the same rate of return. Again, we observe large, intuitive changes in the distribution. Especially

[39] Note, that since the goal of this section is to understand whether and how subjects respond to exogenous and endogenous variations of the experimental environment, rather than explicitly testing model predictions, I restrict the data in various ways to isolate the respective effects.

[40] The usefulness of summarizing the data in these four categories is exemplified in figure 7.

[41] Note, that this supports the model's assumption that individuals do not keep less than what their preferred norms prescribe: For the cases described in figure 8, maximally a sub-set of those dictators who follow luck egalitarianism or the principle of equality of opportunity would have been expected to prefer generous allocations (depending on the relative weight these individuals place on their own income).

striking is the marked increase in generous allocations.

Table 4, rows $2-7$ verify what can be expected based on the histograms: dictators keep significantly more (less) in those cases where they exerted more (less) effort than the receiver, with the exception of a low rate of return for both players and the dictator exerting less effort, in which case the difference turns out to be insignificant, though the distribution shifts in an intuitive way.

Taken together, the evidence clearly suggests that dictators reward both own and others' effort. Therefore, it is appropriate to investigate whether individuals follow effort-based norms of distributional justice as postulated in the model section.

5.1.2 Do Subjects Reward Higher Rates of Return?

We explore the hypothesis that individuals reward a higher rate of return by analyzing the data in rows $8-11$ of table 4.

Rank-sum and equality-of-median tests comparing the location of the distribution of dictator shares when dictators and receivers have identical effort levels and rates of return to when they have identical effort levels but dictators are assigned a higher rate of return (row 8 of table 4), reveals that dictators increase their median share significantly in the latter case. The opposite is not true if dictators have been assigned a lower rate of return than receivers (see row 10 of table 4): differences turn out to be insignificant.

Summing up, we can see that dictators generally do take rates of return into account when making distributional choices - but only when it gives them a higher payoff. Nevertheless we must conclude that it is sensible to investigate whether individuals follow norms of distributive justice that take rates of return into account as postulated in the model section.

5.1.3 Do Subjects Reward Higher Contributions?

We assess the hypothesis that individuals reward their own and others' contributions by analyzing the distributions summarized in rows $12-14$ of table 4 and rows $1-9$ of table 5.

A comparison of the median shares for the distributions where dictators contributed more to the common pot than receivers to the median share kept by dictators who contribute the same as receivers reveals that individuals reward own contribution: shares kept by the dictators increase significantly; in addition, dictators take the magnitude of the difference between their own and others' contribution level into account when determining payoffs - for the maximum (minimum) difference in contribution between dictator and receiver the highest (lowest) average dictator share is kept. If the other player's contribution exceeds the dictator's, we observe *all* previously described effects in reverse, though the difference for contributing 120 MK less does not turn out significant. To sum up, both own and others' contributions to the social surplus are clearly rewarded by dictators.

5.1.4 Do Subjects take Equality of Opportunity into Account?

In order to answer the question whether subjects take equality of opportunity into account, I restrict the data to the treatments where at least one player was limited in her effort choice, and compare these to the data for the benchmark treatment (for which I exclude the observations of dictators, receivers or both players if they sorted 2 bags to ensure broad comparability to the various equality of opportunity treatments).

Tests on the data in rows $10 - 15$ of table 5 and $1 - 14$ of table 6 reveal that while the distributions of the dictator shares for low rate of return dictators shift in the intuitively expected direction depending on whose choice set is restricted, these changes in location are not strong enough to be mirrored in the test statistics of either test.

This picture, however, changes when we investigate the sharing behavior of high rate of return dictators in the context of effort caps: The data shows that for all cases in which only the dictator was limited to sorting maximally one bag the share kept by the dictator is significantly higher, as would be intuitively expected for individuals taking equality of opportunity into account.

If only the receiver was limited to sorting maximally one bag, the median share kept by the dictator is significantly lower than in the benchmark treatment for the same effort choice of the receiver, as would be expected if the principle of equality of opportunity influences decision making for the analyzed sample.

Therefore, the experimental data should be analyzed for the principle of equality of opportunity.

5.1.5 Do Subjects care about Income Shocks unrelated to Productive Activities?

In order to answer this question, we compare the data of the treatments in which at least one of the players experienced a shock to their endowment, to the benchmark treatment data. In all cases, I hold effort level constant between players (see rows $1 - 7$, table 7, rows $1 - 8$, table 8, and rows $1 - 9$, table 9).

The rank-sum and equality-of-median tests show that dictators do not reimburse themselves for income shocks in a way that would show up as significant in these simple location tests. At the same time, test results are significant regarding reimbursement of receivers for such shocks, independent of dictators' rate of return.

A comparison between the treatment in which both players face an income shock to the benchmark treatment reveals no significant difference of the median share kept by the dictator independent of her rate of return. I therefore conclude, that subjects truly respond to differences in non-effort-generated income. It is thus sensible to include luck egalitarianism into the set of norms analyzed in this paper.

5.2 Regression Analysis With Respect To Norm Predictions

In this subsection, I assess the average influence of effort, rates of return, contributions, income shocks, and limited opportunities on monetary outcomes using the *entire* sample for a reduced form regression analysis. While certain effects may not come out as clearly in such an analysis (since they only concern a small sub-part of the sample, such as *one* income shock treatment), the benefits of proceeding this way are clear: In the previous sub-sections, I restricted the data in numerous ways in order to hold all factors but the one of interest constant. Running an OLS allows me to look at whether effects hold more generally without losing sample size while controlling for other factors through inclusion of multiple independent variables. Hence, this analysis is able to deliver confirmation that absent to theory being imposed, effects hold with (or despite) inclusion of controls. In other words, it provides a more comprehensive picture of patterns found in the data relative to the previous subsection's pairwise comparisons, while theoretical specifications (which might obscure these patterns) are absent and become relevant only for the structural estimation of the mixed logit model of multinomial choice.

The outcome variable is the fraction of the common pot kept by the dictator. For tables 10 and 11 I estimate the regression equations

$$y_{is} = \alpha + V_{is}\eta + \epsilon_{is} \tag{5.1}$$

and

$$y_{is} = \alpha + T_i\gamma + V_{is}\eta + T_i RE_{is}\xi + \epsilon_{is}, \tag{5.2}$$

where y_{is} represents the fraction of the common pot that dictator i keeps for herself in scenario s, where a scenario is a specific (hypothetical) effort/rate-of-return combination of the receiver. V_{is} is a matrix of scenario-dependent norm-relevant variables. For different columns/specifications of tables 10 and 11, it is either defined as (a) DE_{is}, a vector of effort levels of the dictator, measured in number of bags sorted, (b) RE_{is}, a vector of (hypothetical) effort levels of the receiver, measured in number of bags sorted, (c) a vector of (hypothetical) differences in rates of return between dictator and receiver, (d) a vector of (hypothetical) differences in dictator's and receiver's contribution to the social surplus, measured in bottle caps, or (e) a combination of the first three vectors.[42] T_i is a vector of treatment group dummies.

For controls set to zero, dictators keep an average between 47.9 and 71.2 percent of the common pot for themselves. These values are in line with findings of earlier studies using dictator games to elicit sharing preferences in developing countries (see Henrich et al. (2001)).

Dictators keep a significantly higher share of the common pot as their own effort increases. In the specification of column 1 of table 10, dictators keep 9 percent more of the (then increased) common pot as their effort increases through sorting one bag. Pooling data across treatments

[42] Other combinations cannot be included due to collinearity concerns.

confirms therefore that subjects strongly reward own effort.

Reversely, dictators keep a significantly lower share of the common pot as the receiver's effort increases. In the specification of column 2 of table 10, dictators keep 12 percent less of the (then increased) common pot as the receiver's effort increases through sorting one bag. Pooling data across treatments confirms therefore that subjects strongly reward others' effort.

Differences in rates of return can take the values -2, 0, or 2, subtracting the rate of return of the receiver from that of the dictator. Dictators keep a significantly higher average share when they have a higher rate of return, as intuitively expected. I interpret this effect using the specification of column 3 of table 10. If the dictator has a higher rate of return than the receiver, she increases her average share by 6 percent. Interestingly, the average effect of the exogenously assigned rates of return on the dictator's share is smaller than that of effort.[43]

A positive difference in contributions, meaning that the dictator contributed more to the social surplus than the receiver, leads to significantly higher average shares the dictator allots to herself.[44]

Income shocks that the receiver alone is facing have highly significant effects independent of the exact regression specification. The sign of the coefficients is as intuitively expected: Dictators keep less of the social surplus when receivers lose part of their endowment. However, income shocks that only the dictator faces have - on average - no significant effects on shares. Finally, if both players face an income shock, we also cannot observe any significant changes of average dictator shares. The OLS results hence fully confirm the findings from the ranksum tests.

Last, we look at the effects of reduced choice sets. It is most sensible to look at the coefficients of the specification of column 10 in table 11 since we can expect pure effort effects being picked up in the other specifications. If we compare the coefficients of the three treatments with effort caps we see that they are ordered in the way we would intuitively expect them to be, even though the effect of an effort cap of the dictator turns out to be not significant.

Exclusion of baseline variables gives a similar picture for all effects. I conclude this subsection by noting that we found clear evidence for the effects we would expect to see if subjects adhered to the norms proposed in section 2.

5.3 Matching the Experimental Data to Norm Predictions

The last subsection successfully established that subjects react as intuitively expected to *all* variations for which at least some norms predict changes of the optimal share. Therefore, I proceed

[43]Regarding comparability, please note that relative to situations in which both players have the same rate of return, a change of one player's rate of return causes a change in common pot size of the same magnitude as can be achieved by either an increase or decrease of the effort level of one of the players. Cases in which both players have effort levels of zero do not enter the analysis, since no social surplus was to be shared.

[44]Note, that to compare the magnitude of the change of this point estimate to the point estimate for receiver's effort level the former point estimate needs to be multiplied by at least 4: the difference in contributions is measured in bottle caps, with 40 MK being the minimal difference in contributions for players whose contributions do not coincide.

by analyzing the data with respect to the principles of distributive justice specified in the model section.

5.3.1 Matching Observations to Norms

In order to categorize observations by norms, I proceed as follows. Initially, I calculate the absolute difference between the share kept by a dictator in a specific allocation and what each norm would prescribe for that particular scenario. If, for example, a dictator kept all 80 MK of a common pot generated only by her partner's effort, the absolute difference to what strict egalitarianism would prescribe is 40 MK. I call categorizations based on zero absolute differences "strong" matches.[45] If individuals care about income as well as norms of distributive justice, we should expect at least some observations to be close to, but not *at* the point any norm prescribes as optimal. In such cases, I specify which norm(s) an observation is "closest to" by determining the smallest absolute difference(s) for the observation. Categorizations based on minimal absolute difference are called "weak" matches for the remainder of the paper.

Strong Match There are multiple scenarios for which the predictions of different norms are identical to each other, as was highlighted in the discussion of the interpretation of the benchmark treatment outcomes. Therefore, I distinguish between "unconditional" (see table 12) and "exclusive" (see table 13) matches: the table of unconditional matches includes *all* observations that have been categorized as conforming with the prediction of a particular norm. Take, f.ex., an observation classified as libertarian: if the observation is an unconditional match it might *also* fall into an additional category besides libertarianism. Exclusive matches, on the other hand, are those for which an observed dictator share is exactly equal *only* to the prediction of the norm(s) specified.

We see that among the unconditional matches 45.10 percent of all observations conform with strict egalitarianism and approximately a third with libertarianism and liberal egalitarianism, respectively. Inequality aversion can be observed in 24.68 percent of all cases. 26.62 percent of all observations cannot be matched to any of the norms.[46]

Comparing exclusive to unconditional matches, the most striking difference is the marked reduction of all norms with the exception of strict egalitarianism. We can observe, that even in cases in which strict egalitarianism predicts different shares from all other norms, 22.02 percent of all observations can be classified as strict egalitarian (see table 13).

[45] Inequality aversion occasionally predicts amounts not divisible by 10 MK, (which is the smallest monetary unit in this experiment - recall that subjects worked with bottle caps, where one bottle cap represented 10 MK), but only by 5 MK. In such cases, if the dictator share is +/- 5 MK compared to what inequality prescribes, it is treated as a zero absolute difference for the purpose of the analysis.

[46] Note, that the latter may well be in line with the model, since strong matches take neither the balance between norm adherence and selfishness nor the balance between two (or more) competing norms into account.

Weak Match Once again, we distinguish between unconditional and exclusive matches. A comparison of weak to strong unconditional matches (tables 14 and 12, respectively) reveals that observations which could not be classified previously, are closest to one or more norms other than inequality aversion. Exclusive weak matches at the observation level (table 15), show only slight changes in percentages compared to table 13, interestingly, the second biggest increase in exclusive matches is for inequality aversion, after strict egalitarianism.

The overall picture we gain from matching observations to norms is that while we observe high percentages of matches for all norms, only strict egalitarianism is frequently followed if it predicts values different from those of other norms' predictions.

5.3.2 Matching Individuals to Norms

In order to categorize individuals by norms, I first calculate the absolute differences between the shares kept by a dictator (for all allocation decisions she had to make) and what a specific norm would predict for each case. Second, I assign an individual to a norm if the all absolute differences are zero for the individual. I call these categorizations "strong" matches. Third, I specify which norm(s) an individual is "closest to" by determining which norm an individual is consistently closest to in terms of absolute difference. I call these categorizations "weak" matches. Since strong and weak matches turned out to be virtually identical, I will discuss them together.

As we can see in table 16, 20 percent of individuals are following strict egalitarianism across all of their decisions. Most notably, close to 7 percent of subjects consistently followed libertarianism. Over 70 percent cannot be attributed to any norm.

The distribution does not change much for exclusive matches (see table 17).

The overall picture we gain from matching individuals to norms is that consistent decision making in our sample occurs according to strict egalitarianism, libertarianism, inequality aversion, and liberal egalitarianism, noted in the order of influence.

Taking observation level and individual level matching results together, we conclude that a surprisingly large percentage of observations/individuals strictly follows only one of the norms postulated. However, the majority of individuals optimizes differently, which, taken together with the fact that experimental subjects do react as intuitively expected to experimental variations, points to the appropriateness of estimating a mixed logit choice model, which will allow subjects to weight income motives and multiple norms.

Before that, I carry out a simple analysis to determine whether demographic or socio-economic variables serve as predictors for following particular norms as identified above.

5.3.3 Demographic and Socio-Economic Predictors of Norm-Abiding Behavior

This subsection analyzes whether the matching outcomes at either the observation or individual level are influenced by demographic or socio-economic characteristics (see table 18 for an example

of this type of regression).[47]

The magnitudes of the coefficients seem small overall. Yet, we observe some strikingly intuitive results: Individuals from richer households, as measured by the household asset index, are significantly less likely to act strict egalitarian and significantly more likely to not follow any of the other norms exactly (i.e. to fall into the category "other").[48] Being more educated is a predictor for a higher likelihood of acting in line with *any* norm, i.e. subjects who are more educated adhere more strictly to norms. Interestingly, and contrary to results from regular dictator games, a higher age seems to predict a lower likelihood of strict egalitarian behavior. To understand the intuition, recall that the effort task employed in this study was sorting beans, a task for which a minority among the elderly had to exert higher effort than the average study participant due to limited mobility of their fingers.[49] Hence, it makes sense that these individuals would be less likely to act strict egalitarian.

In summary, we can draw the conclusion that demographic and socio-economic variables have very limited explanatory power for the outcomes of this study, though they are overall intuitive. Instead, outcomes vary predominantly with exogenous and endogenous variations of the experimental environment.

5.4 Mixed Logit

The subjects of the experiment who are assigned the role of dictator by the randomization process are assumed to be self-interested but also concerned with several different fairness ideals. Looking at the results of a mixed logit estimation (see Table 19) of the model proposed in section 2, we see strongly significant effects of *all* norms on decision making, with strict egalitarianism having the largest weight, independent of whether the specification includes all norms or we compare the coefficients of the specifications in which only one norm is included at a time. The relative importance of liberal egalitarianism and libertarianism does not change across these two types of specifications, contrary to that of inequality aversion in relation to the other norms: If inequality aversion is included by itself it increases the probability for a specific choice more than libertarian or liberal egalitarian concerns (see the fourth column, table 19). However, when included together with strict egalitarianism, many observations are attributed to an influence of the latter, implying that inequality aversion drops in influence on decision making to last place among the norms (see the fifth column, table 19, in comparison). Not surprisingly, own interest (i.e. pure income considerations) is highly significant for decision making, independent of which norms are included (though its effect on dictators' choices seems rather small in comparison to that of the fairness

[47] Results for strong matches, weak exclusive matches, and individual level matches give the same overall picture and are available from the author upon request.

[48] This observation is in line with these individuals weighting between selfishness and other norms.

[49] In addition, it may be that those individuals also perceived attendance at the common meeting point to entail more effort, if walking proved difficult for them.

considerations).

As a robustness check, I estimate McFadden's Choice Model, which is closest to the mixed logit except that it estimates fixed coefficients rather than a distribution of the latter. Results are very similar in nature (see table 20). The only notable difference lies in the relative importance of liberal egalitarianism and libertarianism for choices, which, when both norms are included in the same regression, turns out to be opposite in this analysis to what the mixed logit stated. However, the difference in relative importance is not particularly striking, since both norms' influence is roughly comparable and both estimation results are approximately in line with the matching exercise presented in earlier sub-sections. Most importantly, the relatively large influence of strict egalitarianism on decision making seems confirmed. Hence, we can be assured that results are not just an artefact of the estimation method employed, but that broad patterns can be confirmed independent of exact estimation strategy.

5.5 Influence of Asymmetric Information on Sharing Behavior

Last, I present empirical evidence for the influence of social image concerns on sharing behavior in the subject population.

Ranksum tests in table 21 reveal that dictators who were in a position to hide part of their contribution to and share taken of the common pot did indeed keep a higher share than those in the benchmark treatment - if the receiver sorted at least one bag of beans. While this additional condition does not match any theoretical prior, it can be explained from observations I made in the field: Subjects often reasoned that a person not sorting may have had some limitation in doing so (old age, sickness, etc.). Hence, subjects sometimes applied some type of threshold thinking, giving a person who sorted nothing some threshold amount. Dictators of the asymmetric information treatment who could not hide any income since they had been assigned the low rate of return, do not keep a higher share as opposed to the benchmark treatment, increasing confidence in subjects' full understanding of the strategic environment despite educational limitations.

In an OLS regression framework (see table 22), information has a significantly positive effect on the average share kept by dictators. This effect holds for all specifications in which receiver's effort is explicitly taken into account, with or without the inclusion of baseline variables (results available from author upon request). All other variables influence dictator shares significantly and in the direction we would intuitively expect them to.

Table 23 (mixed logit) is included to establish the relative importance of income and norms on decision making, as compared to any potential effect the different information treatments might have. Incomplete information has the expected effect of significantly increasing dictator shares in the full specification (column 5). We conclude that social image concerns are present, but not decisive for individuals' choices.

6 Conclusion

The link between culture and economic growth motivates this paper to investigate sharing norms in a developing country. This paper studies two main questions. The first is the importance of several frequently discussed norms of distributive justice - strict egalitarianism, inequality aversion, luck egalitarianism, the principle of equality of opportunity, libertarianism, and liberal egalitarianism - in rural communities of Malawi. The second is whether these norms are fully internalized or domain-specific to a particular informational environment. It utilizes data from a unique lab-in-the-field experiment in the form of a one-shot two-person dictator game with a production phase, involving 1280 subjects. The outcomes of the experiment reveal how effort-generated income is shared between individuals who may differ with respect to rate of return, effort, opportunity, or endowments.

Three main sets of results emerge. First, the evidence clearly suggests that dictators are not only motivated by concerns about their own incomes but take into account several factors when making distributional choices. Behavior according to contribution-based and effort-based norms is widely observed, even though equality based norms have the largest influence on individuals' sharing behavior. Moreover, individuals take equality of opportunity and income shocks, which are unrelated to productive activities, into account when distributing social surplus. These findings together with the estimation of the structural model suggest that a complete model of distributional choice for a developing country context should take into account all of the norms studied in this paper.

Second, replicating in an experimental setting the change in the informational environment for people brought about by rapidly changing socio-economic arrangements, I find that dictators act more selfishly under asymmetric information, i.e. in situations where their social image cannot be damaged by doing so. This shows that changes in community structures are likely to lead to abrupt changes to sharing behavior, that the weights that people place on different norms are dynamic, and may be endogenous to the development process.

Last but not least, linking the experimental results to a rich set of demographic and socio-economic data, I find that socio-economic and demographic variables have little explanatory power regarding norm adherence.

The relatively large influence of strict egalitarianism and inequality aversion on decision making seems to be in line with critical voices claiming that norms may disincentivize productive activities in places like Malawi. However, three facts render doubt on whether this truly plays a significant role in lack of development: (1) the fact that effort is rewarded strongly on average, (2) the fact that a multitude of factors is taken into account when making sharing decisions, and (3) the fact that existing work shows that even in developed societies strict egalitarianism seems to be the prevailing norm.

7 Figures

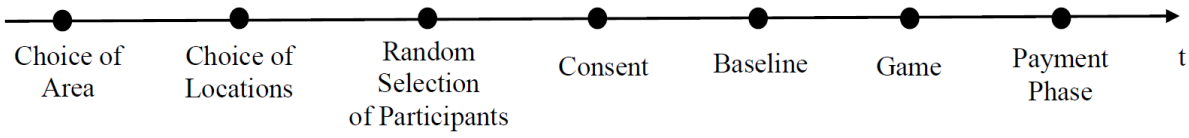


Figure 1: Timing of Experimental Procedures

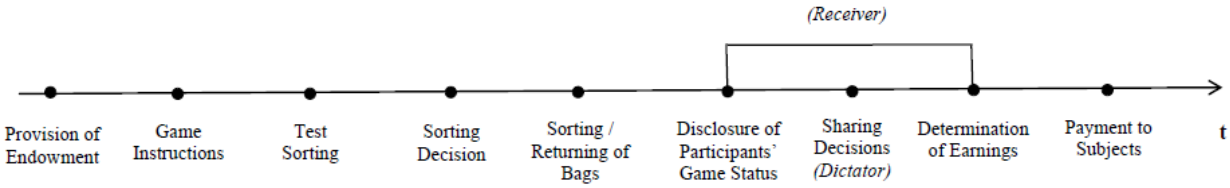


Figure 2: Timing of Field-Experimental Procedures

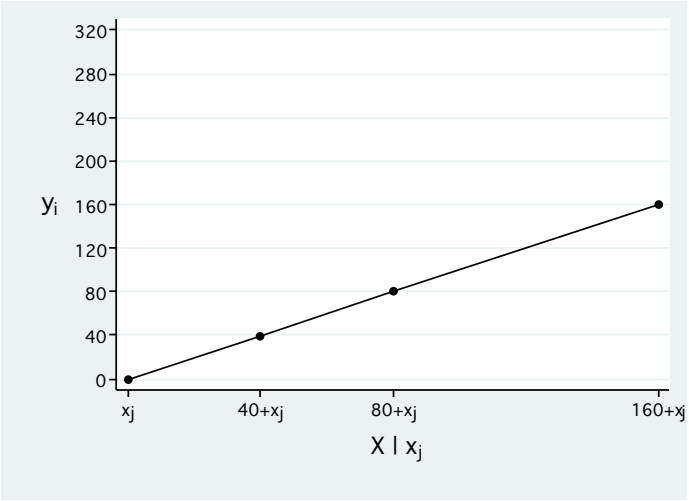


Figure 3: Libertarianism

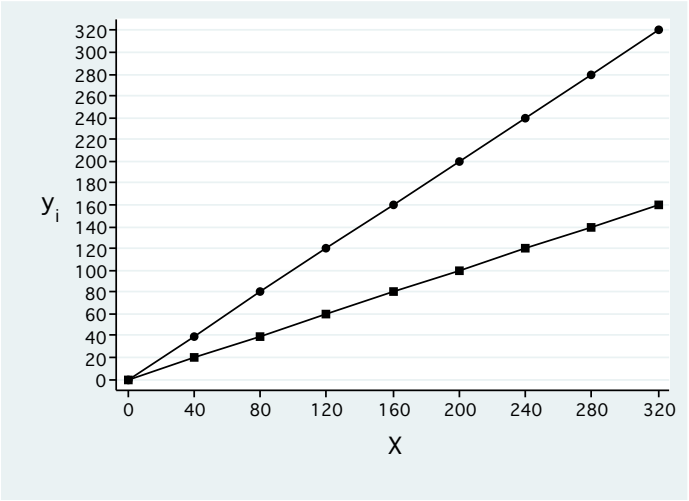


Figure 4: Strict Egalitarianism and Selfishness

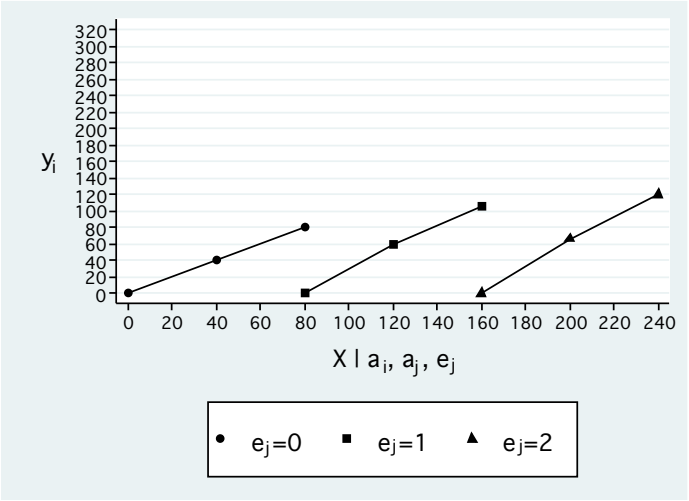


Figure 5: Liberal Egalitarianism; $a_i = 1$, $a_j = 2$

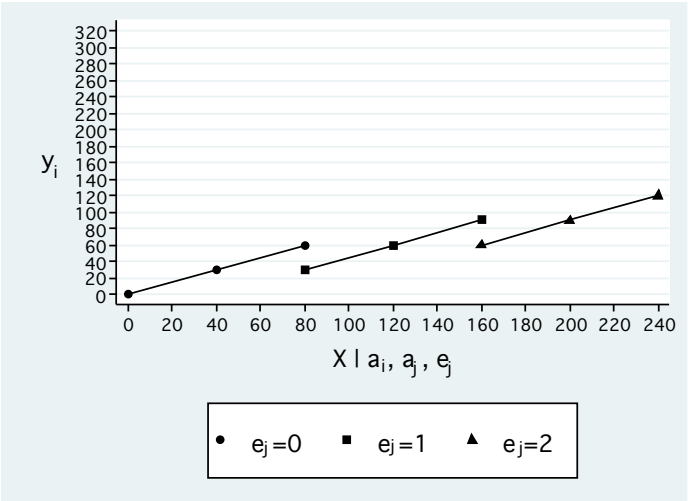


Figure 6: Inequality Aversion; $a_i = 1$, $a_j = 2$

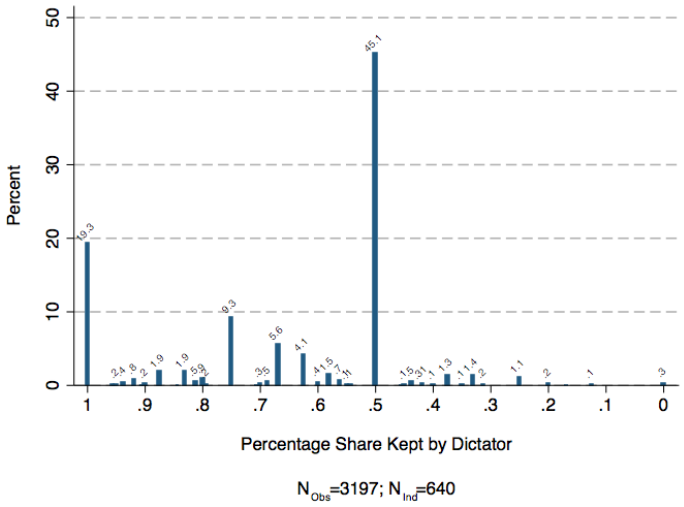


Figure 7: Shares of Common Pot Kept by Dictators (Strategy Method)

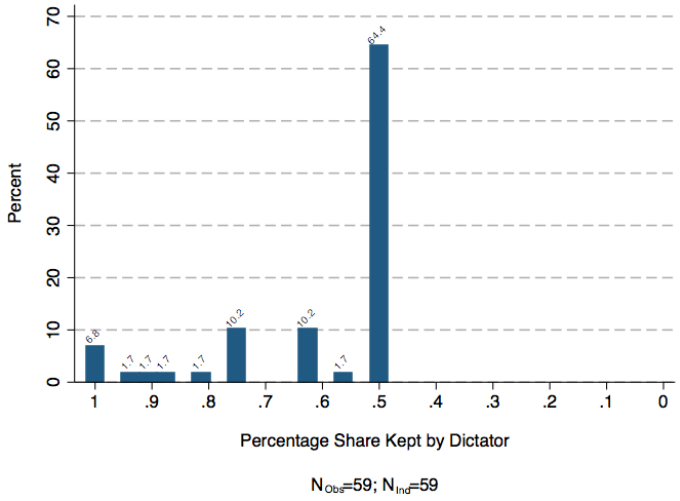


Figure 8: Shares of Common Pot Kept by Dictators for Dictators and Receivers Who Have Identical Effort Levels and Rates of Return (Strategy Method) – Benchmark Treatment

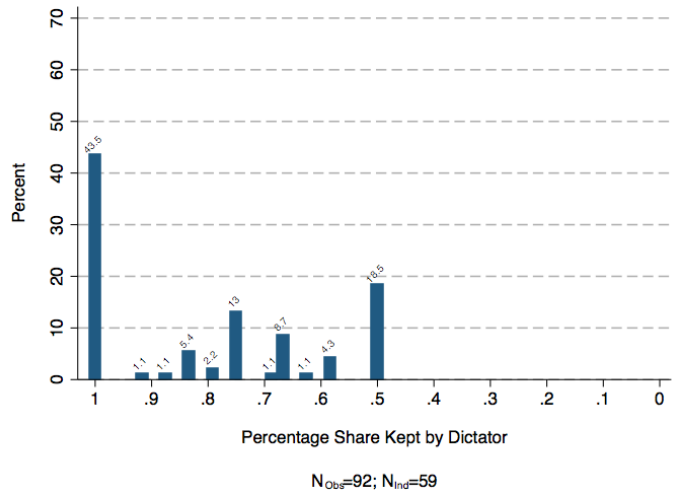


Figure 9: Shares of Common Pot Kept by Dictators for Dictators Who Exerted More Effort than Matched Receivers, but Have an Identical Rate of Return (Strategy Method) – Benchmark Treatment

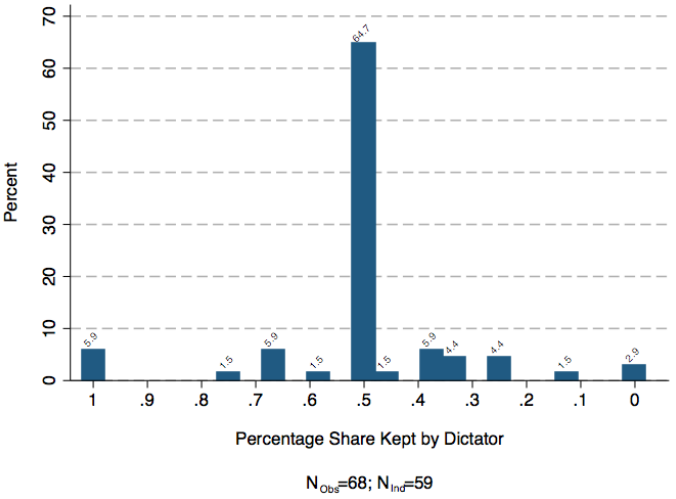
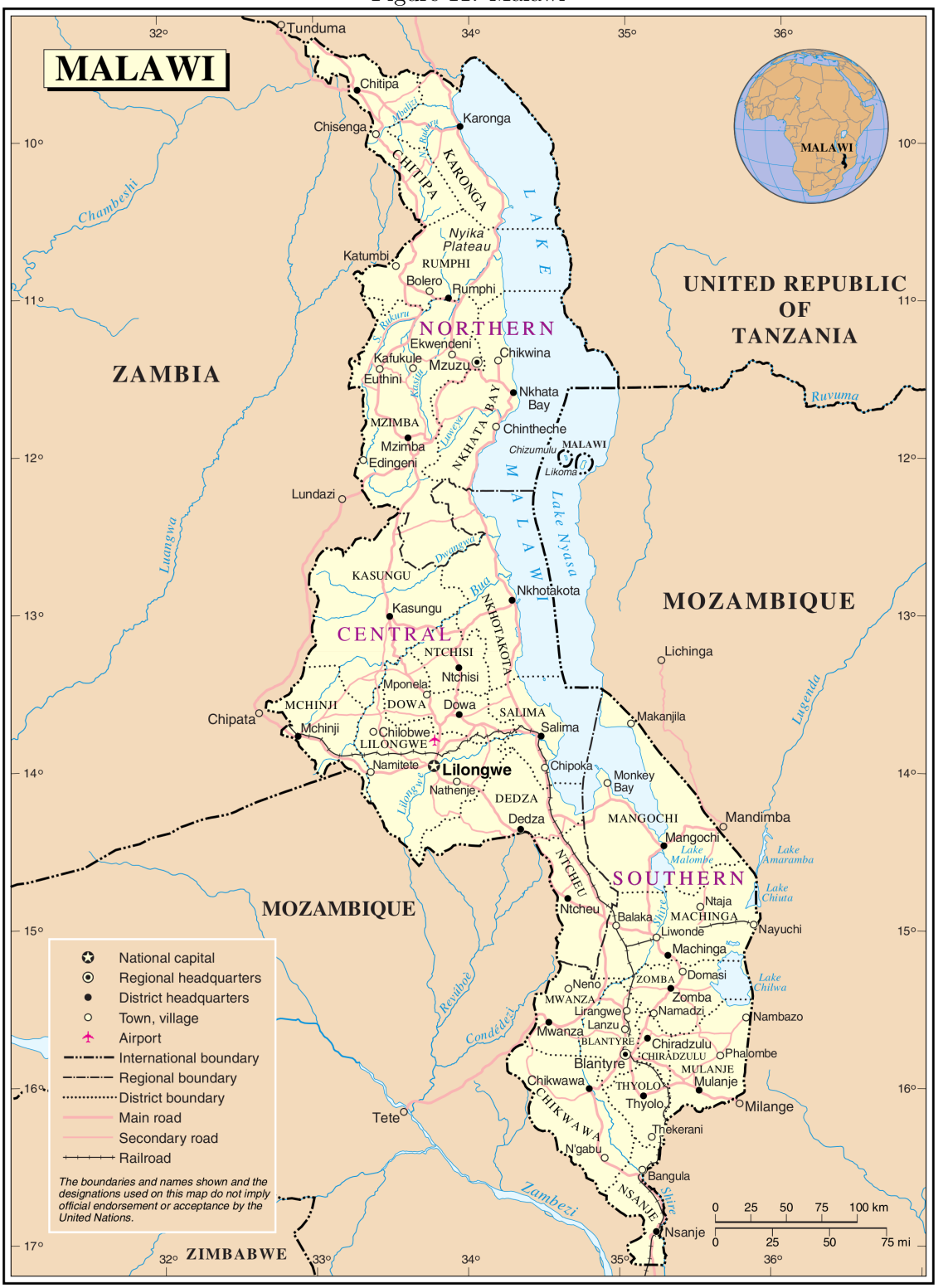


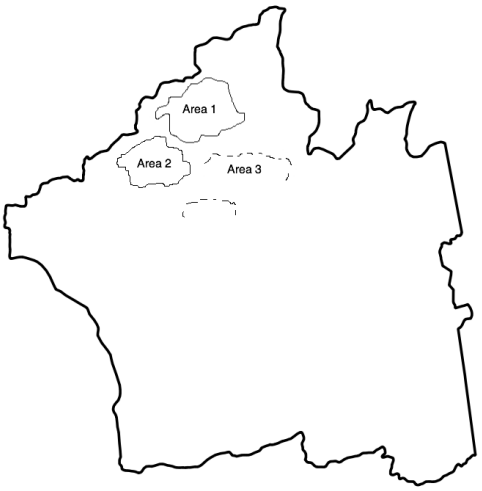
Figure 10: Shares of Common Pot Kept by Dictators for Dictators Who Exerted Less Effort than Matched Receivers, but Have an Identical Rate of Return (Strategy Method) – Benchmark Treatment

Figure 11: Malawi



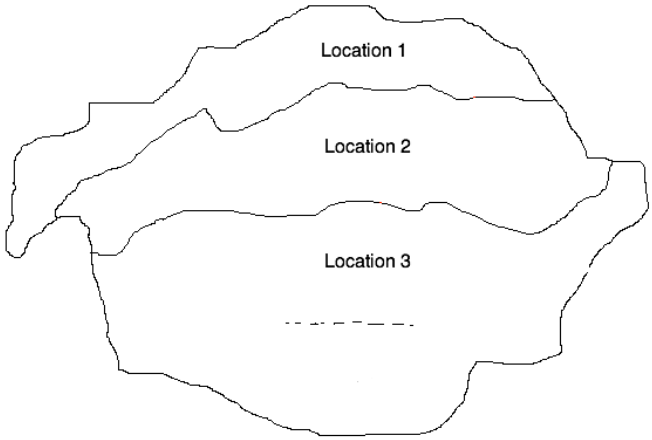
Source: www.worldofmaps.net (2012).

Figure 12: Areas



Source: Created by author.

Figure 13: Locations



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8 Tables

	Effort Generated Income From Sorting (Contribution to Common Pot)	Non-Effort-Generated-Income From Returning Unsorted Bags
Number of Bags Sorted	Low Rate of Return / High Rate of Return	Low and High Rate of Return
2	80 MK / 160 MK	0 MK
1	40 MK / 80 MK	20 MK
0	0 MK / 0 MK	40 MK

Table 1: Generated Income; Benchmark Treatment, Equality of Opportunity Treatments without Effort Cap, Income Shock Treatments, and Asymmetric Information Treatment (Monetary Endowment of 30 MK; 0 MK in Case of Income Shock)

	Effort Generated Income From Sorting (Contribution to Common Pot)	Non-Effort-Generated-Income From Returning Unsorted Bags
Number of Bags Sorted	Low Rate of Return / High Rate of Return	Low and High Rate of Return
1	40 MK / 80 MK	0 MK
0	0 MK / 0 MK	20 MK

Table 2: Generated Income; Equality of Opportunity Treatments with Effort Cap (Monetary Endowment of 50 MK)

	Total amount received		Share of common pot	
Obs.	Mean	Std. Dev.	Mean	Std. Dev.
1280	100.1094	39.09637	56.15625	45.69068

Table 3: Summary Statistics for Subject Payment

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq$ 50%
1	All observations							
	640	3197	.65	.5	19.33	29.88	45.1	5.69
2	Dict. exert more effort than rec., both identical ror., Benchmark, low ror.							
	32	47	.80	$.75^{\dagger,\dagger}$	44.68	36.17	19.15	0
3	Dict. and rec. identical effort and ror., Benchmark, low ror.							
	32	32	.62	.5*	9.38	31.24	59.38	0
4	Dict. exert less effort than rec., both identical ror., Benchmark, low ror.							
	29	41	.54	$.5^{\ddagger,\S}$	7.32	12.19	70.73	9.76
5	Dict. exert more effort than rec., both identical ror., Benchmark, high ror.							
	27	45	.81	$.83^{\dagger,\dagger}$	42.22	40	17.78	0
6	Dict. and rec. identical effort and ror., Benchmark, high ror.							
	27	27	.58	.5*	3.7	25.93	70.37	0
7	Dict. exert less effort than rec., both identical ror., Benchmark, high ror.							
	18	27	.44	$.5^{\dagger,\S}$	3.7	3.7	55.56	37.04
8	Dict. has higher rate of return, both exerted same effort, treatment 1							
	27	27	.66	$.67^{\ddagger,\ddagger}$	7.41	59.26	29.63	3.7
9	Dict. and rec. identical effort and ror., Benchmark, high ror.							
	27	27	.58	.5*	3.7	25.93	70.37	0
10	Dictator has lower rate of return, both exerted same effort, treatment 1							
	32	32	.57	$.5^{\S,\S}$	6.25	28.12	53.13	12.5
11	Dict. and rec. identical effort and ror., Benchmark, low ror.							
	32	32	.62	.5*	9.38	31.24	59.38	0
	Dictator contributes more to common pot than receiver, treatment 1							
12	59	196	.80	$.8^{\dagger,\dagger}$	41.33	38.26	19.9	.51
	Dictator contributes same to common pot as receiver, treatment 1							
13	59	83	.61	.5*	8.43	32.53	59.04	0
	Dictator contributes less to common pot than receiver, treatment 1							
14	62	159	.52	$.5^{\dagger,\dagger}$	5.66	15.73	62.26	16.35

Table 4: Dictator Shares (Strategy Method)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq$ 50%
1	Dictator contributes 160K more to common pot than receiver, treatment 1							
	18	36	.92	$1^{\dagger,\dagger}$	77.78	13.89	8.33	0
2	Dictator contributes 120K more to common pot than receiver, treatment 1							
	18	18	.78	$.8^{\dagger,\dagger}$	16.67	66.66	16.67	0
3	Dictator contributes 80K more to common pot than receiver, treatment 1							
	42	84	.78	$.75^{\dagger,\dagger}$	33.33	47.62	17.86	1.19
4	Dictator contributes 40K more to common pot than receiver, treatment 1							
	41	58	.75	$.75^{\dagger,\dagger}$	37.93	31.04	31.03	0
5	Dictator contributes same to common pot as receiver, treatment 1							
	59	83	.61	.5*	8.43	32.53	59.04	0
6	Dictator contributes 40K less to common pot than receiver, treatment 1							
	38	55	.54	$.5^{\ddagger,\S}$	3.64	23.63	61.82	10.91
7	Dictator contributes 80K less to common pot than receiver, treatment 1							
	45	66	.51	$.5^{\dagger,\dagger}$	7.58	7.57	66.67	18.18
8	Dictator contributes 120K less to common pot than receiver, treatment 1							
	17	17	.56	$.5^{\S,\S}$	11.76	29.42	47.06	11.76
9	Dictator contributes 160K less to common pot than receiver, treatment 1							
	21	21	.44	$.5^{\dagger,\ddagger}$	0	9.53	61.9	28.57
10	Dictator faces reduced choice set, low rate of return							
	46	243	.62	$.5^{\S,\S}$	17.70	24.69	46.5	11.11
11	Benchmark Treatment-excluding dictators sorting 2 bags, low rate of return							
	29	150	.61	.5*	16	21.33	56	6.67
12	Dictator faces reduced choice set, excluding receivers sorting 2 bags, low rate of return							
	46	151	.66	$.58^{\S,\S}$	22.52	27.81	43.71	5.96
13	Both players face reduced choice set, low rate of return							
	44	150	.66	.5*	24	23.33	46	6.67
14	Receiver faces reduced choice set, low rate of return							
	44	158	.67	$.54^{\S,\S}$	21.52	28.48	46.2	3.8
15	Benchmark Treatment-excluding receivers sorting 2 bags, low rate of return							
	44	152	.70	.63*	28.29	29.61	40.13	1.97

Table 5: Dictator Shares (Strategy Method) (continued from previous page)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq 50\%$
1	Receiver faces reduced choice set, excluding dictators sorting 2 bags, low rate of return							
	33	114	.63	$.5^{\S,\S}$	16.67	21.05	57.02	5.26
2	Both players face reduced choice set, low rate of return							
	44	150	.66	.5*	24	23.33	46	6.67
3	Benchmark treatment excluding dictators and receivers sorting 2 bags, low rate of return							
	29	92	.65	.5*	21.74	21.74	53.26	3.26
4	Both players face reduced choice set, low rate of return							
	44	150	.66	$.5^{\S,\S}$	24	23.33	46	6.67
5	Dictator faces reduced choice set, high rate of return							
	34	176	.66	$.5^{\ddagger,\ddagger}$	19.32	26.7	44.89	9.09
6	Benchmark Treatment-excluding dictators sorting 2 bags, high rate of return							
	18	90	.57	.5*	16.67	14.44	53.33	15.56
7	Dictator faces reduced choice set, excluding receivers sorting 2 bags, high rate of return							
	34	108	.70	$.67^{\S,\S}$	27.78	25.93	39.81	6.48
8	Both players face reduced choice set, high rate of return							
	36	124	.68	.63*	20.97	34.68	40.32	4.03
9	Receiver faces reduced choice set, high rate of return							
	36	126	.69	$.63^{\ddagger,\ddagger}$	20.63	36.52	39.68	3.17
10	Benchmark Treatment-excluding receivers sorting 2 bags, high rate of return							
	36	126	.74	.75*	34.92	32.54	27.78	4.76
11	Receiver faces reduced choice set, excluding dictators sorting 2 bags, high rate of return							
	28	94	.63	$.5^{\S,\S}$	14.89	29.79	51.06	4.26
12	Both players face reduced choice set, high rate of return							
	36	124	.68	.63*	20.97	34.68	40.32	4.03
13	Benchmark treatment excluding dictators and receivers sorting 2 bags, high rate of return							
	18	54	.63	.5*	22.22	20.37	46.3	11.11
14	Both players face reduced choice set, high rate of return							
	36	124	.68	.63*	20.97	34.68	40.32	4.03

Table 6: Dictator Shares (Strategy Method) (continued from previous page)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq$ 50%
1	Dictator faces income shock - low rate of return							
	43	236	.68	$.6^{\S,\S}$	23.73	28.82	42.37	5.08
2	Benchmark treatment - low rate of return							
	44	240	.65	.5*	20.83	26.67	47.5	5
3	Dictator faces income shock - low rate of return							
	43	236	.68	$.6^{\S,\S}$	23.73	28.82	42.37	5.08
4	Both players face income shock - low rate of return							
	42	236	.65	.5*	21.19	24.57	50	4.24
5	Receiver faces income shock - low rate of return							
	43	232	.59	$.5^{\dagger,\dagger}$	16.81	13.79	61.21	8.19
6	Benchmark treatment - low rate of return							
	44	240	.65	.5*	20.83	26.67	47.5	5
7	Both players face income shock - low rate of return							
	42	236	.65	$.5^{\S,\S}$	21.19	24.57	50	4.24

Table 7: Dictator Shares (Strategy Method) (continued from previous page)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq 50\%$
1	Dictator faces income shock - high rate of return							
	37	202	.66	$.63^{\S,\S}$	16.83	40.1	37.62	5.45
2	Benchmark treatment - high rate of return							
	36	198	.68	.63*	23.74	31.81	36.87	7.58
3	Dictator faces income shock - high rate of return							
	37	202	.66	$.63^{\S,\S}$	16.83	40.1	37.62	5.45
4	Both players face income shock - high rate of return							
	38	218	.66	.63*	18.35	34.86	42.2	4.59
5	Both players face income shock - high rate of return							
	38	218	.66	$.63^{\S,\S}$	18.35	34.86	42.2	4.59
6	Benchmark treatment - high rate of return							
	36	198	.68	.63*	23.74	31.81	36.87	7.58
7	Receiver faces income shock - high rate of return							
	37	212	.61	$.5^{\dagger,\dagger}$	12.74	24.52	58.02	4.72
8	Benchmark treatment - high rate of return							
	36	198	.68	.63*	23.74	31.81	36.87	7.58

Table 8: Dictator Shares (Strategy Method) (continued from previous page)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq$ 50%
1	Dictator faces income shock							
	80	438	.67	.63§,§	20.55	34.02	40.18	5.25
2	Benchmark treatment							
	80	438	.66	.57*	22.15	29	42.69	6.16
3	Dictator faces income shock							
	80	438	.67	.63§,§	20.55	34.02	40.18	5.25
4	Both players face income shock							
	80	454	.65	.5*	19.82	29.51	46.26	4.41
5	Receiver faces income shock							
	80	444	.60	.5†,†	14.86	18.93	59.68	6.53
6	Benchmark treatment							
	80	438	.66	.57*	22.15	29	42.69	6.16
7	Both players face income shock							
	80	454	.65	.5§,§	19.82	29.51	46.26	4.41
8	Receiver faces income shock - high rate of return							
	37	212	.61	.5†,†	12.74	24.52	58.02	4.72
9	Both players face income shock							
	80	454	.65	.5*	19.82	29.51	46.26	4.41

Table 9: Dictator Shares (Strategy Method) (continued from previous page)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. First and second superscript refer to Wilcoxon Rank-Sum and Nonparametric Equality-of-Median test results respectively. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	(1)	(2)	(3)	(4)	(5)
Dictator's Effort (Measured in Bags Sorted)	0.090***				0.069***
	(0.006)				(0.006)
Receiver's Effort (Measured in Bags Sorted)		-0.120***			-0.110***
		(0.005)			(0.005)
Difference in Rates of Return			0.06***		0.006***
			(0.003)		(0.003)
Differences in Contributions (Measured in Bottle Caps)				0.013***	
				(0.001)	
Constant	0.480***	0.671***	0.550***	0.574***	0.609***
	(0.031)	(0.029)	(0.032)	(0.029)	(0.029)
No. of Obs.	2537	2537	2537	2537	2537
R^2	0.09	0.2	0.02	0.2	0.25
Demographic and Socio-Economic Controls	YES	YES	YES	YES	YES

Table 10: Regressions of Dictator Shares on Model Variables with Baseline Variables. * Significant at 10 Percent; ** Significant at 5 Percent; *** Significant at 1 Percent

	(6)	(7)	(8)	(9)	(10)
Dictator's Effort (Measured in Bags Sorted)	0.098***				0.072***
	(0.006)				(0.006)
Receiver's Effort (Measured in Bags Sorted)		-0.125***			-0.114***
		(0.005)			(0.005)
Difference in Rates of Return			0.006***		0.006***
			(0.003)		(0.003)
Differences in Contributions (Measured in Bottle Caps)				0.013***	
				(0.001)	
Effort Cap (Receiver)	0.017	-0.059***	0.007	-0.026*	-0.046***
	(0.017)	(0.016)	(0.017)	(0.016)	(0.016)
Effort Cap (Dictator)	0.021	-0.024*	-0.030*	0.015	0.013
	(0.015)	(0.014)	(0.015)	(0.014)	(0.014)
Effort Cap (Both Players)	0.041**	-0.063***	0.001	-0.009	-0.028*
	(0.017)	(0.016)	(0.017)	(0.015)	(0.016)
Income Shock (Receiver)	-0.059***	-0.064***	-0.062***	-0.059***	-0.062***
	(0.014)	(0.013)	(0.015)	(0.013)	(0.013)
Income Shock (Dictator)	0.013	0.009	0.01	0.009	0.01
	(0.015)	(0.014)	(0.015)	(0.014)	(0.013)
Income Shock (Both Players)	-0.014	-0.013	-0.008	-0.022	-0.019
	(0.014)	(0.013)	(0.015)	(0.013)	(0.013)
Constant	0.479***	0.712***	0.571***	0.594***	0.634***
	(0.033)	(0.031)	(0.034)	(0.031)	(0.031)
No. of Obs.	2537	2537	2537	2537	2537
R^2	0.11	0.22	0.03	0.22	0.26
Demographic and Socio-Economic Controls	YES	YES	YES	YES	YES

Table 11: Regressions of Dictator Shares on Model Variables with Baseline Variables (continued from previous page). * Significant at 10 Percent; ** Significant at 5 Percent; *** Significant at 1 Percent

8.1 Tables of Norms at Observation Level for Strong Match

Norms	Frequency	Percent
Strict Egalitarianism	1442	45.10%
Libertarianism	1048	32.78%
Liberal Egalitarianism	1065	33.31 %
Inequality Aversion	789	24.68 %
Other	851	26.62 %

Table 12: Unconditional Matches of Preferences to Norms

Note: Number of Observations=3197.

Norms	Frequency	Percent
Strict Egalitarianism	704	22.02%
Libertarianism	107	3.35%
Liberal Egalitarianism	20	0.63 %
Inequality Aversion	212	6.63%
Other	2154	67.38%

Table 13: Exclusive Matches of Preferences to Norms

Note: Number of Observations=3197.

8.2 Tables of Norms at Observation Level for Weak Match

Norms	Frequency	Percent
Strict Egalitarianism	1958	61.24%
Libertarianism	1444	45.17%
Liberal Egalitarianism	1466	45.86%
Inequality Aversion	1147	25.88%

Table 14: Unconditional Matches of Preferences to Norms

Note: Number of Observations=3197.

Norms	Frequency	Percent
Strict Egalitarianism	948	29.65%
Libertarianism	166	5.19%
Liberal Egalitarianism	37	1.16%
Inequality Aversion	377	11.79%
Other	1669	52.21%

Table 15: Exclusive Matches of Preferences to Norms

Note: Number of Observations=3197.

8.3 Tables of Norms at Person Level for Strong and Weak Match

Norms	Frequency	Percent
Strict Egalitarianism	128	20.00%
Libertarianism	44	6.88%
Liberal Egalitarianism	6	0.94%
Inequality Aversion	19	2.97%
Other	450	70.31%

Table 16: Unconditional Matches of Preferences to Norms

Note: Number of Individuals=640.

Norms	Frequency	Percent
Strict Egalitarianism	122	19.06%
Libertarianism	43	6.72%
Liberal Egalitarianism	5	0.78%
Inequality Aversion	13	2.03%
Other	450	70.31%

Table 17: Exclusive Matches of Preferences to Norms

Note: Number of Individuals=640.

8.4 Observation Level Regressions

	SE	L	LE	IA
Female	0.013	-0.076***	-0.085***	0.000
	(0.028)	(0.028)	(0.028)	(0.026)
Age	-0.014***	0.009***	0.007**	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Age Squared	0.000***	-0.000**	-0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Years of Education	0.006*	-0.001	-0.000	0.001
Completed	(0.003)	(0.003)	(0.003)	(0.003)
Head of Household	-0.005	-0.034	-0.035	0.019
	(0.028)	(0.028)	(0.028)	(0.026)
No. of Children Who Grew	-0.006	0.005	0.007*	0.001
Up in Household Together	(0.004)	(0.004)	(0.004)	(0.004)
No. of Children	0.010*	0.002	-0.001	0.008
in Current Household	(0.006)	(0.006)	(0.006)	(0.005)
Household Asset Index	-0.016***	0.009	0.006	-0.004
	(0.006)	(0.006)	(0.006)	(0.005)
Household Animal	0.010	-0.030***	-0.026***	0.001
Ownership Index	(0.009)	(0.009)	(0.009)	(0.008)
Mean of Dep. Var.	0.57	0.42	0.43	0.32
N	2537	2537	2537	2537
R^2	0.01	0.01	0.01	0.00

Table 18: Regression of Weak Match Unconditional Dummies on Baseline Variables. * Significant at 10 Percent, ** Significant at 5 Percent, *** Significant at 1 Percent

	SE	LE	L	IA	SE, LE, L, IA
Mean					
y	0.03***	0.02***	0.02***	0.02***	0.05***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SE Loss Term	0.48***				0.55***
	(0.03)				(0.04)
LE Loss Term		0.13***			0.13***
		(0.00)			(0.02)
L Loss Term			0.11***		0.10***
			(0.01)		(0.02)
IA Loss Term				0.24***	0.08***
				(0.01)	(0.02)
SD					
SE Loss Term	0.51***				0.85***
	(0.04)				(0.05)
LE Loss Term		0.08***			0.06***
		(0.01)			(0.01)
L Loss Term			0.08***		-0.19***
			(0.01)		(0.01)
IA Loss Term				0.17***	-0.13***
				(0.01)	(0.02)
Log Likelihood	-5541.66	-5875.84	-5919.72	-5706.79	-4916.95
Number of Observations	36815	36815	36815	36815	36815
$LRChi^2$	1121.41***	247.74***	217.63***	398.58***	1645.01***

Table 19: Mixed Logit Estimation. * Significant at 10 Percent, ** Significant at 5 Percent, *** Significant at 1 Percent

	SE	LE	L	IA	SE, LE, L, IA
y	0.02***	0.02***	0.02***	0.02***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SE Loss Term	0.15***				0.09***
	(0.01)				(0.01)
LE Loss Term		0.08***			0.02***
		(0.00)			(0.01)
L Loss Term			0.08***		0.04***
			(0.00)		(0.01)
IA Loss Term				0.14***	0.04***
				(0.00)	(0.01)
Log Likelihood	-6102.37	-5999.71	-6028.54	-5906.08	-5754.51
Number of Observations	36815	36815	36815	36815	36815
Number of Cases	2751	2751	2751	2751	2751
$WaldChi^2$	719.47***	844.16***	827.30***	862.59***	918.14***

Table 20: McFadden's Choice Model. * Significant at 10 Percent, ** Significant at 5 Percent, *** Significant at 1 Percent

	N_{ind}	N_{obs}	Mean	Median	100%	50%-100%	50%	$\leq$ 50%
1	Benchmark Treatment							
	80	438	.66	.57*	22.15	29	42.69	6.16
2	Hidden Treatment							
	80	446	.67	.63§	17.04	41.48	38.12	3.36
3	Benchmark Treatment excluding hypo bag sorted = 0							
	80	320	.59	.5*	7.81	31.87	51.88	8.44
4	Hidden Treatment excluding hypo bag sorted = 0							
	80	320	.61	.5‡	5.63	43.74	45.94	4.69
5	Benchmark Treatment, high rate of return of dictator							
	36	198	.68	.63*	23.74	31.81	36.87	7.58
6	Hidden Treatment, high rate of return of dictator							
	35	194	.68	.67§	12.37	58.77	24.74	4.12
7	Benchmark Treatment, high rate of return of dictator excluding hypo bag sorted = 0							
	36	144	.60	.5*	6.94	36.11	46.53	10.42
8	Hidden Treatment, high rate of return of dictator excluding hypo bag sorted = 0							
	35	140	.63	.63‡	5.71	59.29	29.29	5.71
9	Benchmark Treatment, low rate of return of dictator							
	44	240	.65	.5*	20.83	26.67	47.5	5
10	Hidden Treatment, low rate of return of dictator							
	45	252	.66	.5§	20.63	28.18	48.41	2.78
11	Benchmark Treatment, low rate of return of dictator excluding hypo bag sorted = 0							
	44	176	.58	.5*	8.52	28.41	56.25	6.82
12	Hidden Treatment, low rate of return of dictator excluding hypo bag sorted = 0							
	45	180	.59	.5§	5.56	31.66	58.89	3.89

Table 21: Dictator Shares (Strategy Method)

Notes on Abbreviations: A '*' refers to the Benchmark Group. §, ‡, and † mean Not Significantly Different from Benchmark Group, and Significantly Different from Benchmark Group at 5 percent and 1 percent respectively. Superscript refer to Wilcoxon Rank-Sum test result. N_{ind}, N_{obs}: Number of Individuals and Observations; Mean and Median: Mean and Median Share of Common Pot Kept by Dictators; 100%, 50%-100%, 50%, $\leq$ 50%: Share of Common Pot Kept by Dictator is 100% (in %), between 50% and 100% (in %), exactly 50% (in %), and less than 50% (in %), respectively.

	(1)	(2)	(3)	(4)
Dict. Effort	0.072***	0.093***	0.008	0.072***
	(0.005)	(0.005)	(0.006)	(0.005)
Rec. Effort	-0.107***			-0.107***
	(0.004)			(0.004)
Hidden Treatment	0.035**	0.021	-0.007	0.028*
	(0.015)	(0.017)	(0.016)	(0.015)
Diff. In ror.		0.006**		0.006***
		(0.003)		(0.002)
Diff. In Contrib.			0.012***	
			(0.001)	
Constant	0.679***	0.550***	0.639***	0.680***
	(0.008)	(0.007)	(0.008)	(0.008)
N.obs	3197	3197	3197	3197
R-Sq	0.24	0.09	0.2	0.24

Table 22: Regressions of Dictator Shares on Model Variables with Incomplete Information. * Significant at 10 Percent; ** Significant at 5 Percent; *** Significant at 1 Percent

	SE	LE	L	IA	SE, LE, L, IA
Mean					
y	0.01***	0.04***	0.03***	0.00	0.04***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)
Case Hidden	0.06***	0.00	-0.01*	-0.00	0.05***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)
SE Loss Term	1.01***				1.24***
	(0.15)				(0.21)
LE Loss Term		0.23***			-0.01
		(0.03)			(0.06)
L Loss Term			0.15***		0.11**
			(0.02)		(0.05)
IA Loss Term				0.04***	0.03
				(0.01)	(0.02)
SD					
SE Loss Term	0.88***				1.03***
	(0.15)				(0.17)
LE Loss Term		0.13***			0.02
		(0.02)			(0.03)
L Loss Term			0.07***		0.14***
			(0.02)		(0.04)
IA Loss Term				0.00	0.06**
				(0.00)	(0.03)
Log Likelihood	-684.05	-815.15	-839.25	-888.08	-661.87
Number of Observations	6264	6264	6264	6264	6264
$LRChi^2$	238.10***	44.08***	20.46***	0.00	252.92***

Table 23: Incomplete Information Mixed Logit Estimation. * Significant at 10 Percent, ** Significant at 5 Percent, *** Significant at 1 Percent

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