Needs vs entitlements – an international fairness experiment

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Abstract

What is the relative importance of needs, entitlements, and nationality in people's social preferences? To study this question, we conducted a real effort dictator experiment where students in two of the world's richest countries, Norway and Germany, were matched directly with students in two of the world's poorest countries, Uganda and Tanzania. The experimental design made the participants face distributive situations where different moral motives came into play, and based on the observed behavior we estimate a social preference model focussing on how people make trade-offs between entitlements, needs, and self-interest. The study provides four main findings. First, entitlement considerations are crucial in explaining distributive behavior in the experiment; second, needs considerations matter a lot for some participants; third, the participants acted as moral cosmopolitans and did not assign importance to nationality in their distributive choices; and, finally, the participants' choices are consistent with a self-serving bias in their social preferences.

1 Introduction

It has been suggested that the entitlements motive and the needs motive account for the largest fraction of giving in the real world (Konow 2010). For example, the needs motive is crucial in explaining donations to charities and the support to international political initiatives such as the United Nations Millennium Development Goals, whereas the entitlements motive plays an important role in sharing arrangements at the workplace and in the numerous fair trade initiatives taking place at the global arena. But how do people trade off these two motives

in their social preferences? To address this question, we conducted a real effort dictator game where students in two of the world's richest countries, Norway and Germany, were matched directly with students in two of the world's poorest countries, Uganda and Tanzania. The matching of people from high-income and low-income countries made needs considerations a salient feature of the distributive situation. To introduce entitlement considerations, the distribution phase was preceded by a production phase where the participants exerted real effort and earned money. The dictator was then asked to decide how to distribute the money earned by himself and the other participant between the two of them.

Nationality may play a role in distributive choices involving individuals from different countries, where people may treat compatriots differently from foreigners. To take into account the potential role of nationality in social preferences, we also matched participants from countries at the same income level with each other. In some distributive situations they were matched with someone from their own country, in other distributive situations with someone from the other country at the same income level. For example, Norwegians were matched both with other Norwegians and with Germans. As Norwegians and Germans are almost equally rich and were almost equally productive in the experiment, only nationality considerations could explain a difference in the transfers in the two types of distributive situations.

The participants from the high-income and the low-income countries made choices in the same set of distributive situations, which allows us to study also the potential influence of a self-serving bias in moral motivation. In particular,

we look at whether participants from high-income countries assigned less weight to needs considerations than participants from low-income countries.

We offer four main findings. First, entitlement considerations are crucial. The participants assigned great importance to individual contributions in their distributive choices. Second, needs considerations matter. Participants from high-income countries gave away far more to the other participant than what he had earned in the production phase when they met a participant from a low-income country, but less than what he had earned when they met a participant from a high-income country. Third, the participants acted as moral cosmopolitans. We do not find any evidence of participants assigning importance to nationality in their distributive choices. Fourth, the participants' choices are consistent with a self-serving bias in moral motivation. In particular, participants from high-income countries assigned less weight to needs considerations than participants from low-income countries.

These findings add to an extensive experimental literature on social preferences (Camerer 2003; Konow 2003). A number of recent studies have investigated the role of entitlements in various distributive situations, where it has been shown that individual contributions matter for people's distributive behavior (Cappelen, Drange Hole, Sørensen, and Tungodden 2007; Cappelen, Sørensen, and Tungodden 2010; Cherry, Frykblom, and Shogren 2002; Gächter and Riedl 2006; Frohlich, Oppenheimer, and Kurki 2004; Hoffman, McCabe, Shachat, and Smith 1994; Jakiela 2009; Konow 1996, 2000; Oxoby and Spraggon 2008). There have also been some experimental studies demonstrating the importance of needs

(Aguiar, Brañas-Garza, and Miller 2008; Eckel and Grossman 1996; Konow 2010), but, to our knowledge, no experimental study focussing directly on the potential role of nationality in social preferences.

Our study also connects to the interesting literature using questionnaire-experimental techniques ("vignettes"), in particular the cross-cultural work of Gaertner, Jungeilges, and Neck (2001), Gaertner and Schwettmann (2007), and Schokkaert and Devooght (2003). These papers show that there are differences across cultures both in perceptions of what are fair entitlements and in the importance assigned to needs considerations.

In contrast to the previous literature, we study jointly the three moral motives, entitlements, needs, and nationality, within an experimental setting where participants from low-income and high-income countries are matched together in distributive situations. We also present, to our knowledge, the first social preference model that combines a concern for entitlements with a concern for needs, and we use the estimated model to shed light on the observed choice patterns. We show that the model predicts nicely the participants' behavior across distributive situations, including in the case where we predict the behavior of a non-random hold-out sample that differs substantially from the estimation sample.

To shed further light on the relative importance of the different motives in the choice model, we use simulations to discuss some interesting counterfactual cases. We show that self-interest is not the only motive constraining participants from high-income countries from giving more to participants from low-income countries. The model predicts that if participants from high-income countries

were to act as impartial spectators in a similar set of distributive situations where they had nothing at stake, they would still give a larger share to more productive participants from high-income countries than to less productive participants from low-income countries. This illustrates that entitlements represent a strong moral motive that may contribute to explain why people do not give a larger share of income to the more needy. Still, the counterfactual analysis also illustrates that needs matter. If the needs motive were removed, the estimated choice model predicts that the share given from participants in the high-income countries to participants in the low-income countries would decrease by almost one-third.

The paper is structured as follows. Section 2 presents the experimental design. Section 3 reports descriptive statistics and some basic observations from the experiment. Section 4 introduces the social preference model, while the estimated model and simulations are presented in Section 5. Section 6 provides some concluding remarks.

2 Experimental design

We conducted a real effort dictator game where the distribution phase was preceded by a production phase, and where students were located in Germany, Norway, Tanzania and Uganda.

At the beginning of the experiment, all participants were given a complete description of how the experiment would proceed. At each location, as part of the introduction, a research assistant took an overview picture of the lab and immediately uploaded it to an Internet site. The pictures from all locations were

then shown to all participants on their computers after the introduction was completed. We did this to familiarize the participants with the idea that they were taking part in an international experiment where they would interact with participants from different parts of the world.[1]

All interaction between the participants was anonymous and conducted through a web-based interface. English was the language of communication in all four countries. It is an official language in both Uganda and Tanzania, and German and Norwegian students are also fluent in English.

2.1 Sample

We conducted six sessions with a total of 391 students, recruited from the University of Mannheim in Germany, the University of Oslo in Norway, the University of Dar es Salaam in Tanzania, and Makerere University in Uganda. All participants were recruited from the general student population at the four universities.[2]

In the analysis, we assume that the participants from Tanzania and Uganda, on average, are more needy than the participants from Norway and Germany. This is in line with aggregate statistics which show huge income gaps between the two European and the two African countries. Real GDP per capita is 48 times higher in Norway, the richest country, than in Uganda, the poorest country (Table 6, International Comparison Program 2008).

[1]The pictures also ensured that the participants believed that there were actual recipients in the other labs. The pictures did not reveal any information beyond what can be observed by a participant when entering a lab. Pictures, screenshots, and instructions to the participants are provided in a web-appendix.

[2]See Table A.1 in the web-appendix for more detailed information on the six sessions.

These differences are also reflected in the average standard of living for students in the respective countries. To illustrate, the average disposable income (including transfers) of regular full-time students not living with parents was 16600 USD per year in Norway and 11500 USD per year in Germany;[3] in contrast, there have been rioting and strikes over undisbursed student loans and stipends intended to help the students pay for books and meals at the University of Dar es Salaam and Makerere University. The typical self-assessment among students in the African countries has been that "the majority of us come from poor families" ... "our parents have already sold pieces of land, herds of cattle ... to pay ... tuition fees" (East Africa in Focus, September 22, 2009). This situation has also been recognized by the donor community, and both the University of Dar es Salaam and Makerere University receive support from international donors, including donors from Germany and Norway.

The long-term outlook also differs fundamentally for the students. Al-Samarrai and Bennell (2007) report that university graduates with some years of experience had an average monthly income of 275 USD (Tanzania) and 286 USD (Uganda) in 2001, and they point out that "[m]any university graduates were part-time entrepreneurs generating secondary income that is essential for their household survival, but these part-time activities were invariably limited in scale and sophistication "(p. 31). Thus, it should be rather uncontroversial to assume that, on average, the participants from the low-income countries are

[3]In local currency, the numbers are 112 000 NOK per year in Norway (Table 4, Løwe and Sæther 2007) and 770 EUR per month in Germany (Figure 6.1, Isserstedt, Middendorff, Fabian, and Wolter 2007).

more needy. When interpreting the results, however, we should keep in mind that some participants may focus on the relative, not absolute, living standard of students in their country, which may weaken the perception of the African students as more needy than the European students.

2.2 Production phase

In the standard version of the dictator game, the money to be distributed is "manna from heaven". In this experiment, however, the participants were asked to distribute money they had earned in a production phase. This made entitlement considerations an important part of the distributive problem, and the main focus of our study is to see how these considerations were traded off against needs considerations when participants from high-income countries (HI-participants) interacted with participants from low-income countries (LI-participants).

The production phase was designed to capture some important features of a real life distributive situation, where differences in earnings may be due to differences in prices, individual productivity, and working time. By design, we introduced differences in price, and, as expected, the participants also had different productivity with respect to the task they were assigned. To avoid excessive complexity, however, we did not introduce differences in working time, all participants worked for 30 minutes.

At the beginning of the production phase, each participant was assigned a hard copy of the same text in English. The text was a purely descriptive report from a biological research expedition, selected to ensure that it should not influence the distributive decisions of the participants. The task was to type as

many correct words as possible from the assigned text into a word processor file. All participants had access to the same software and they were also allowed to use a spell checker. Before they started to type, the computer assigned with equal probability a price per correct word to each participant, either 0.1 USD or 0.05 USD. After 30 minutes they submitted their document to a program that calculated the number of correct words. No one finished the text before the time was up.

A participant's *production* is the number of correct words he typed during the production phase. To give the participants easy numbers to work with in the distribution phase, the computer rounded up each participant's production to the nearest multiple of 50. The *value of production* for each participant is thus the product of two factors: the number of correct words he had typed in 30 minutes and the price he had been assigned per correct word.

2.3 Distribution phase

In the distribution phase, the participants made decisions in, on average, eight independent distributive situations, where in each situation they were matched with a different recipient.[4] An individual making eight choices was, to the extent possible, randomly paired with participants from all four countries, and within each country paired with one participant who had been assigned a high price and one participant who had been assigned a low price in the production phase. In each distributive situation, both participants were asked how they would like to

[4]We had to allow for some variation in the number of choices made by individuals in order to deal with different session sizes.

distribute the total income, that is, the sum of the value of their own production and the value of the other participant's production. Before making a decision, they were given information about the price assigned to the other participant, his production, and nationality. Before making a final submission of their choices, the participants were given an overview of all of their choices and the opportunity to revise any number of them.

When everyone had submitted their choices, the computer selected, with equal probability, one of the distributive situations for each person. The computer then selected, again with equal probability, either the person's own choice in this situation or the other participant's choice, as the one determining his actual payment from the experiment. Hence, when the participant made a distributive choice, he knew that if this decision was selected for a participant, it would be the only one that would apply for this individual.

At the end of the experiment, each participant was assigned a payment code on their screen, which they were asked to write down on a payment form that was in a folder next to their computer. After the experiment was completed, the computer generated a list of the payment codes together with the corresponding amounts earned in the experiment for research assistants that were not present in the lab. On the basis of this list, the assistants prepared envelopes containing the payments. They also ensured that it was not possible to identify the amount of money inside the envelope simply by looking at it. When the assistants had prepared all the envelopes, they put them in a box and transferred them to the lab. They immediately left the lab so that no one in the lab knew how much

money each of the envelopes contained. The envelopes were then given to the participants in accordance with the payment code they had been assigned. The payment procedure was designed to ensure that no one in the lab, including the research group, would know how much each participant earned from the experiment.

3 Experimental evidence

In this section, we present results from the production and distribution phase of the experiment.

3.1 Results from the production phase

Table 1 provides statistics on production value in each country, where we observe significant differences. Average production in the high-income countries was about three times the average production in the low-income countries and, given that prices were randomly assigned, there was a similar difference in production value.[5]

[Table 1 about here]

In 699 of 768 distributive situations where an HI-participant met an LI-

[5]The higher productivity in high-income countries most likely reflects more experience with computers. As illustrated in Jakiela (2009), for other tasks that also may be used in an experimental setting, there may not be productivity differences between high-income and low-income countries.

participant, the HI-participant had a higher production value (in 16 distributive situations they had the same production value). In many cases the difference was substantial. The maximal difference was obtained in a distributive situation where the HI-participant had a production value of 140 USD and the LI-participant had a production value of 7.5 USD. On average, the HI-participant's share of the total production of the pair was 73.4%, while their share of total income was 72.9%. Thus, the experiment recreated an important feature of real-world inequality: the more needy have on average a lower productivity.

In order to induce maximum effort from all individuals, we had a high piece rate payment and a short period of production. Figure 1 shows average production by country and price. We observe that only in Germany was there noticeably higher average productivity with the high price (7.0%), but the difference is not statistically significant (one-sided t-test, $p = 0.18$). The productivity numbers are in line with baseline tests without a distribution phase (and thus also without the context of taking part in a international experiment).

[Figure 1 about here.]

3.2 Results from the distribution phase

Table 2 shows the average share given to the other participant by nationality. We observe that participants from Uganda gave away the largest share and participants from Germany the smallest share to the other participant (41.7% versus 25.6%). Overall, the LI-participants gave away a statistically sig-

nificantly larger share than the HI-participants (38.9% versus 32.4%, $p = 0.001$).[6]

[Table 2 about here]

We observe from Table 2 that the average share given away is not very sensitive to the nationality of the recipient. But, as is evident from Figure 2, there was large variation in how the recipients' contribution was taken into account in the distributive choices. The upper panels show how the recipient's share of total income relates to share given, whereas the lower panels show how the recipient's share of total production relates to share given. In each of the panels for the HI-participants, we find three patterns; a concentration of observations around equal sharing, sharing according to contribution, and no sharing. These patterns are also present, but less strong, in the panels for the LI-participants.

We also report regression lines showing the coefficients from linear regressions of share given on the recipient's contribution, where we run separate regressions for when the recipient is from a low-income country and from a high-income country. We observe that the regression lines within each of the panels for the HI-participants is equally flat, which shows that the HI-participants' responsiveness to the recipient's contribution is independent of whether this is a HI-participant or LI-participant. The LI-participants are slightly more responsive to contribution when they are matched with HI-participants, but this

[6]It is interesting to observe that the average share given to compatriots in Tanzania is very close to what Holm and Danielson (2005) find in a standard dictator game only involving students from the University of Dar es Salaam (31.8% versus 30.0%).

difference is only statistically significant for total production.[7] Across panels, we observe that the regression lines for the LI-participants are flatter than for the HI-participants.[8], which shows that LI-participants were less responsive to the recipient's contribution than HI-participants.

[Figure 2 about here.]

Figure 3 reports the average relative share given to the other participant of his production value, where we observe that both HI-participants and LI-participants give a larger relative share to LI-participants; 1.456 versus 0.691 for HI-participants ($p < 0.001$) and 0.83 versus 0.59 for LI-participants ($p < 0.001$).

[Figure 3 about here.]

3.3 Interpretations of the distributive patterns

The observed distributive patterns provide evidence of the extent to which nationality, entitlements and needs affected the choices of the participants.

Table 2 shows that, for each of the four countries, the average share given to compatriots was almost the same as the average share given to participants in

[7] Tests of equal coefficient: for HI-participants, p =0.991 (share of total income) and p =0.859 (share of total production); for LI-participants, p =0.177 (share of total income) and p =0.095 (share of total production).

[8] Tests of equal coefficient based on pooled regressions: p <0.001 (share of total income) and p <0.001, share of total production

the country with the same income level. For example, Norwegians gave 37.8% to other Norwegians and 36.8% to Germans, and Germans gave 25.5% to other Germans and 27.3% to Norwegians. The small difference in share given corresponds to the small difference in productivity, where both Norwegians and Germans gave a slightly larger share to the more productive Norwegians. We observe the same pattern for Tanzania and Uganda, where the more productive Ugandans received slightly more from both Tanzanians and Ugandans.

These differences in share given are not statistically significant when controlling for productivity differences, and, furthermore, nationality does not influence how the participants take into account the recipient's contribution in their distributive choices.[9] Thus, we conclude that the participants in this experiment acted as moral cosmopolitans and did not assign any moral relevance to nationality.[10]

Figure 2 provides strong evidence of entitlement considerations playing an important role in the distributive choices of both HI-participants and LI-participants (see Konow (2003) and Fleurbaey (2008) for general discussions of entitlement theories). First, we observe concentration around equal sharing, which takes place in 16.8% (HI-participants) and 24.6% (LI-participants) of the distributive decisions. This is in line with an *egalitarian* fairness view where

[9] See Table A.2 in the web-appendix.

[10] Note that the countries at the same income level in our study are culturally close, which means that our test of nationality is not a test of whether cultural differences matter in distributive choices. Whitt and Wilson (2007) shed light on the latter issue, by showing that Bosnjaks, Croats, and Serbs participating in a dictator game in post-war Bosnia–Herzegovina to a surprisingly small degree favored participants of the same ethnicity.

everyone has worked the same amount of time and is entitled to an equal share of the total income, independent of how much they produce and the price they receive in the production phase.

Second, we observe concentration around the diagonal, which is in line with the fairness view that individual contributions create entitlements. Given our design, this fairness view can be given two different interpretations. A *libertarian* fairness view would be that the participants are entitled to the value of their production, which means that they are held responsible for both how much they produce and the price they are assigned in the production phase. A *meritocratic* fairness view, on the other hand, would be that entitlements should be related to individual production, which means that they are held responsible for how much they produce, but not for the randomly assigned price.[11] We observe sharing exactly according to the libertarian fairness view in 26.2% (HI-participants) and 14.7% (LI-participants) of the decisions, and exactly according to the meritocratic fairness view in 23.3% (HI-participants) and 15.1% (LI-participants) of the decisions.[12]

Hence, there seems to be substantial heterogeneity in fairness views among the participants. In order to establish the prevalence of the different fairness views, however, we also need to take into account the fact that people typically make trade-offs between different motives in their distributive decisions.For example,

[11]The meritocratic fairness view may be considered a version of equity theory, which states more generally that outcomes should be in proportion to contributions (Konow 2003; Selten 1978).

[12]Further disaggregated statistics on the share of decisions that fit each of the fairness views are reported in Table A.3 in the web-appendix.

a participant who endorsed the egalitarian fairness view did not necessarily give away half of the total income, but may have traded off fairness considerations and self-interest and, as a result, decided to give away less. Thus, in the study of the prevalence of different fairness views, we need to move beyond looking at the share of participants making decisions exactly in line with one of the fairness views, an issue we return to in Section 5.

As shown in Figure 3, needs considerations also appear to be important in explaining the pattern of transfers. Conditional on the recipient's production value, both HI-participants and LI-participants gave away more to LI-participants, which is consistent with the participants viewing needs as a morally relevant consideration in their distributive decision. This transfer pattern, however, is also consistent with the egalitarian fairness view, which justifies giving a larger relative share to LI-participants to compensate for their lower productivity. In Section 5, we study in greater detail the extent to which the findings in Figure 3 are mainly the result of participants acting on the needs motive or on the egalitarian fairness view. We note here, however, that even if we restrict ourselves to distributive situations where there are small productivity differences, we observe that both HI-participants and LI-participants gave a larger share to LI-participants. For example, if we look at situations where both participants produced between 350–550 words, we find that HI-participants gave 42.7% to LI-participants and 36.7% to other LI-participants, and, similarly, LI-participants gave 42% to other LI-participants and 33.5% to HI-participants.[13] Finally, some

[13]There are in total 90 distributive situations of this kind. Note that also in this subset of situations, HI-participants produced on average more than LI-participants (445.2 words versus

individuals behaved in a way that can hardly be explained by anything else than the needs motive. To illustrate, consider HI-participant 291, whose production value was 85 USD. He was matched with seven other participants; four LI-participants and three HI-participants. The LI-participants had production values of 15, 27.5, 30 and 32.5 USD, whereas the HI-participants had production values of 65, 70 and 75 USD. In all matches with LI-participants, he gave away everything; in contrast, in matches with HI-participants, he gave away 43–47% of the total income.

To summarize, the participants in the experiment acted as moral cosmopolitans. They also appear to have been motivated by both entitlement and needs considerations, and we now turn to a more detailed study of how they traded off these considerations in their distributive decisions.

4 A model of distributional choices

We model the participants as moral cosmopolitans assigning weight to self-interest, needs, and entitlement considerations when making distributional choices.[14] Importantly, the model allows the participants to differ in the relative importance they assign to entitlements and needs, and in their perception

414.3 words).

[14]This is an extension of the model introduced in Cappelen et al. (2007), which focused on the trade-off between self-interest and entitlements. For other models of social preferences, see Bolton and Ockenfels (2000); Charness and Rabin (2002) and Fehr and Schmidt (1999). See also Andreoni and Miller (2002) and Fisman, Kariv, and Markovits (2007) for studies of the consistency of individual behavior in distributive situations.

of what constitutes a fair entitlement.

4.1 The utility function

We assume that person i makes a trade-off between self-interest, entitlements, and needs in distributional choices. More specifically, we assume that the choices are based on the following utility function,

$$V^k(y;\cdot) = y - \beta(y - m^e)^2/2X - \delta\alpha(y - m^n)^2/2X, \tag{1}$$

where X is the total income to be distributed and y is the income a person keeps for himself. The weight attached to the entitlement fairness view m^e is given by β, and the weight attached to the needs ideal m^n is given by α, where we allow for individual heterogeneity both in α and β. Needs considerations are not always relevant, and thus we introduce the indicator δ; $\delta = 1$ when an HI-participant meets an LI-participant, otherwise $\delta = 0$.

Both entitlement and needs considerations justify a particular distribution of the total income. Entitlement considerations are based only on information about each individual's contribution, where we assume that an individual endorses either the egalitarian (m^E), meritocratic (m^M), or libertarian (m^L) entitlement view,

$$m^E = X/2, \tag{2a}$$

$$m^M = \frac{a_i}{a_i + a_j}X, \tag{2b}$$

$$m^L = p_i a_i, \tag{2c}$$

where a_i is the production and $p_i a_i$ the production value of individual i. Consequently, $X = p_i a_i + p_j a_j$, and $X - m^k$ is what individual i considers to be individual j's fair entitlement.

We assume that needs considerations imply that the ideal distribution would be that the HI-participant gives all the income in the experiment to the LI-participant. Such a view can be justified in different ways: for example, by appealing to the fact that the expected welfare gain from the income earned in the experiment is much greater for LI-participants.[15]

$$m^n = \begin{cases} 0 & \text{if } i \text{ is an HI-participant who meets an LI-participant,} \\ X & \text{if } i \text{ is an LI-participant who meets an HI-participant.} \end{cases} \tag{3}$$

If an interior solution exists, the optimal choice when an HI-participant meets an LI-participant ($\delta = 1$) is

$$y^* = [\tau m^e + (1 - \tau) m^n] + \frac{X}{\beta + \alpha},$$

where $\tau = \beta/(\beta + \alpha)$. The terms within the brackets give the income person i considers to be justifiable to keep for himself on the basis of a trade-off between entitlement considerations and needs considerations. The last term captures the additional income a person keeps due to self-interest.

A highly self-interested person has low values of β and α, and thus keeps most (or all) of the total income for himself. A person mainly acting on needs considerations has a low β and a high α, and consequently a low τ, whereas the opposite

[15] See for example Singer (2009), who uses this line of reasoning to defend extensive redistribution from rich to poor countries. His main argument is that if we can prevent something bad without sacrificing anything of comparable significance, we ought to do it.

is the case for a person mainly acting on entitlement considerations. Thus, τ captures the relative importance of needs and entitlements in the participants' distributional choices.

When participants from countries at the same income level meet ($\delta = 0$), the interior solution is given by,

$$y^* = m^e + \frac{X}{\beta}.$$

Hence, when needs considerations are irrelevant, a person would keep what he considers his fair entitlement plus an additional amount that is decreasing in the weight attached to entitlement considerations.

Actual choices may differ from the interior solution for three reasons. First, y^* may be larger than total income, and thus the argument that maximizes $V^k(y;\cdot)$ could be the corner solution X. Second, participants were constrained in their choices by the experimental design, and they had to choose from the discrete choice set $\mathcal{Y} = \{0, 2.5, 5, \ldots, X\}$. Third, choices may differ from the optimum y^* because of random shocks.

To handle these deviations from the interior solution, we use a random utility framework, where total utility is assumed to be the sum of a deterministic part (in our context, V) and a random part that is specific to each alternative in the choice set, $\mathcal{Y}$ (McFadden 1974). Total utility is then given by

$$U(y;\cdot) = V^k(y;\cdot) + \varepsilon_y/\gamma \quad \text{for all } y \in \mathcal{Y}, \tag{4}$$

where γ captures the importance of the random part, and the individual choice is given by the argument that maximizes U on $\mathcal{Y}$. We make the standard assumption that the ε is an i.i.d. extreme value variate, which gives rise to choice

probabilities of the particularly simple logit form.

4.2 The likelihood function

In formulating the likelihood function, we need to take into account the fact that the entitlement view, m^e, and the weight attached to entitlement and needs considerations, α and β, are unobserved characteristics of the individual. Furthermore, we must respect the panel structure of the data set.

For pragmatic reasons, we approximate the distribution of (α, β) with a bivariate log normal distribution, where the distribution is parameterized such that $(\log \alpha, \log \beta) \sim N(\mu_\alpha, \mu_\beta, \sigma_\alpha, \sigma_\beta, \rho)$; μ_i and σ_i are the expectation and the standard deviation of $\log i$, $i = \alpha, \beta$, and ρ is the correlation coefficient of $\log \alpha$ and $\log \beta$. Moreover, we let λ^E, λ^M, and λ^L represent the estimated shares of the population acting on the egalitarian, meritocratic, and libertarian entitlement views, respectively. In sum, all parameters to be estimated are contained in $\boldsymbol{\theta} = (\mu_\alpha, \mu_\beta, \sigma_\alpha, \sigma_\beta, \rho, \gamma, \lambda^E, \lambda^M, \lambda^L)$.

To capture the fact that we have repeated observations of each individual, let $s = 1, \ldots, S_i$ index the distributive situations where individual i makes a choice. In each situation, $(y_{is}, \mathcal{Y}_s, \boldsymbol{a}_s, \boldsymbol{p}_s, \delta_s)$ are the observable variables; y_{is} is the amount of money i keeps for himself in s; $\mathcal{Y}_s = \{0, 2.5, \ldots, \boldsymbol{p}_s \cdot \boldsymbol{a}_s\}$ is the set of all possible choices i could make in s; $\boldsymbol{a}_s, \boldsymbol{p}_s$ are the vectors representing the productivities of and the prices for the two individuals matched in s; and δ_s is the indicator showing whether the other participant is from a country at a different income level.

We can now state the likelihood contribution of an individual i as

$$L_i(\boldsymbol{\theta}) = \sum_{k\in\{E,M,L\}} \lambda^k \iint \left[\prod_{s=1}^{S_i} \frac{\exp\left(\gamma V^k(y_{is}, \boldsymbol{a}_s, \boldsymbol{p}_s, \delta_s, \beta, \alpha)\right)}{\sum_{r\in\mathcal{Y}_s} \exp\left(\gamma V^k(r, \boldsymbol{a}_s, \boldsymbol{p}_s, \delta_s, \beta, \alpha)\right)} \times f(\alpha, \beta; \mu_\alpha, \mu_\beta, \sigma_\alpha, \sigma_\beta, \rho) \right] d\alpha d\beta, \quad (5)$$

where $f(\alpha, \beta; \mu_\alpha, \mu_\beta, \sigma_\alpha, \sigma_\beta, \rho)$ is the density of (α, β).

5 Estimates and simulations

We here estimate the choice model, and use it to study the importance of the different motivations in explaining the observed level and pattern of transfers.

5.1 The estimates of the choice model

Table 3 reports estimates of the choice model. Specification A reports estimates of the full model where we allow for different parameter vectors for HI-participants and LI-participants.[16] The estimated model shows that there is substantial heterogeneity in fairness perceptions among the participants, and that all three fairness views play a role in explaining the behavior of the participants. We observe that 76.2% of HI-participants and 67.3% of LI-participants were either meritocrats (42.1% and 34.3%) or libertarians (34.1% and 33.3%), and thus that a clear majority of the participants found it morally justifiable to transfer more to a productive recipient than to an unproductive

[16] In Table A.6 in the web-appendix, we also report estimates for a specification that corrects for differences in purchasing power between the high-income and the low-income countries when calculating fair entitlements. The log likelihood value of this specification is much lower than for specification A in Table 3.

recipient. At the same time, the estimated share of egalitarians is 23.8% among HI-participants and 32.3% among LI-participants, and thus a clear majority of the participants, the egalitarians and the meritocrats, did not find it justifiable to take the randomly assigned price into account in their distributive choices.[17]

[Table 3 about here.]

The estimated distributions of α (the weight attached to needs) and β (the weight attached to entitlements) shed light on how the participants traded off entitlements and needs. To interpret these estimates, it is useful to study the implied distribution of $\tau = \beta/(\beta + \alpha)$, as presented in Figure 4.[18] It shows that entitlement considerations were clearly more important than needs considerations for most of the participants in this experiment. In fact, as seen in the left panel, entitlement considerations completely dominated needs considerations for a majority of the HI-participants; the cumulative frequency of $\tau > 0.95$ is 55%. At the same time, it is also evident from Figure 4 that some HI-participants assigned great weight to needs considerations; the cumulative frequency of $\tau < 0.5$ is 17%.

[Figure 4 about here.]

[17] The estimated shares for HI-participants are closely in line with what we found in a previous study, where the sample was students at the Norwegian School of Economics and Business Administration (Cappelen et al. 2010).

[18] The estimated marginal distributions of α and β are presented in Figure A.1 in the web-appendix.

To study whether the participants' view of fair entitlements was sensitive to whether they were paired with an HI-participant or an LI-participant, we compare the full model (A) to a restricted model (B) which only uses data from matches of participants that are from countries at the same income level. We observe that for the HI-participants, the estimated shares of the different entitlement views in the restricted model are almost the same as for the full model. For LI-participants, we observe a lower share of meritocrats and a higher share of egalitarians in specification B, which provides some evidence of the LI-participants being more inclined to hold the recipient responsible for his contribution if the recipient was an HI-participant.

Overall, the estimates show that HI-participants and LI-participants differ both in the prevalence of the different fairness views and in the weight assigned to needs considerations. In both specifications A and B, we find more egalitarians among the LI-participants and more meritocrats among the HI-participants. And from comparing the estimated distributions of τ for HI-participants and LI-participants, we observe that LI-participants assigned more importance to needs considerations than did HI-participants.[19] The difference in average τ, 0.80 (HI-participants) versus 0.64 (LI-participants), is substantial and statistically significant ($p < 0.001$).[20] More generally, in order to test whether the observed

[19]We observe from Figure 4 that a larger share of LI-participants assign greater weight to needs than to entitlements (the cumulative frequencies of $\tau < 0.5$ are 34% and 17%), and a smaller share make choices that are completely dominated by entitlement considerations (the cumulative frequencies of $\tau > 0.95$ are 32% and 55%).

[20]Inference on average τ is based on simulations using the sampling variation of $\boldsymbol{\theta}$; 10000

differences between HI-participants and LI-participants are statistically significant, we introduce specification C, which restricts the parameters in the model to be the same for both groups. Based on a likelihood ratio test of specifications A and C, we can reject that the two groups are identical ($p < 0.001$).

The observed differences between the HI-participants and the LI-participants are consistent with a self-serving bias in moral perceptions. It benefited (in selfish terms) the HI-participants not to be egalitarian and to assign more importance to entitlements than to needs, and it benefited the LI-participants to be egalitarian and to assign more importance to needs than to entitlements. Thus, similar to what is established in Frohlich et al. (2004), the participants seem to have traded off one fairness view with another in a self-serving fashion.[21]

5.2 Validation of the model

We here provide a discussion of the validity of the model, including both simulations of the full model and a discussion of how well the model performs on different non-random hold-out samples. Table 4A reports the simulation results of the full model for the situations where HI-participants meet LI-participants. We observe that the estimated model predicts nicely the choices of the participants. Among the HI-participants, it predicts closely the average share given (31.9% versus 31.7%) and the average relative share given of the recipient's production value (1.456 versus 1.471), while it underestimates

draws of $\boldsymbol{\theta}$ were made based on its estimated covariance matrix, and τ was calculated for each value.

[21] See also Konow (2000) for a related discussion of self-serving biases in distributive choices.

somewhat the marginal effect of the recipient's income on share given (0.416 versus 0.278). Among the LI-participants, the estimated model predicts closely the marginal effect of the recipient's income on share given (0.237 versus 0.219), but underestimates somewhat the average share given (41.5% versus 33.6%) and the average relative share given of the recipient's production value (0.590 versus 0.470).

[Table 4 about here.]

The choice model assumes that individuals are moral cosmopolitans and do not assign any importance to nationality in their distributive choices. To investigate further the validity of this assumption, we estimate the model on the decisions made by the Norwegian participants without including the situations where Germans are recipients, and then use the estimated model to predict the decisions made in the excluded situations. We focus on the Norwegian participants in this exercise, since this is the largest group of participants from any of the four countries (see Table A.1 in the web-appendix). From Table 5, we observe that the model also in this case fits the data nicely, which provides further support for our finding that the participants acted as moral cosmopolitans.

An aim of our model is to capture how people make distributive decisions when there are productivity differences, and thus it is interesting to study whether the model predicts well on a non-random hold-out sample that differs substantially from the estimation sample with respect to productivity (Keane and Wolpin

2007). We include in the estimation sample HI-participants who have produced at or above the median productivity in the high-income countries (on average 913.3 words), and LI-participants who have produced at or below the median productivity in the low-income countries (on average 169.6 words). Consequently, the hold-out sample consists of HI-participants who have produced below the median productivity in the high-income countries (on average 533.7 words), and LI-participants who have produced above the median productivity in the low-income countries (on average 341.2 words). The estimation sample thus consists of individuals who differ greatly in productivity, whereas the non-random hold-out sample consists of individuals with much more similar productivity.

We now use the estimated model to predict the decisions for the non-random hold-out sample. Table 5 reports the predictions for the interactions between HI-participants and LI-participants, where the HI-participant is the decision maker. We observe that the estimated model is successful in predicting the main features of the data for the non-random hold-out sample. This suggests that the model captures robustly how people handle productivity differences in distributive decisions.

[Table 5 about here.]

To summarize, we find that the model predicts well the behavior across distributive situations. It captures how the participants responded to needs and entitlement considerations, and also the level of transfers observed in the data.

5.3 Counterfactual analysis

To shed some further light on the relative importance of the different motives in the estimated full model, we use simulations to discuss some interesting counterfactual cases. These counterfactual cases generate predictions from the model, and it would be interesting to test these predictions in future experiments.

First, we study the role of self-interest by looking at the model's predictions of how the participants would have acted as impartial spectators (i.e., when self-interest is not at stake) in the same set of distributive situations. In our framework, this amounts to simulating a restricted version of the estimated choice model where the participants are only motivated by entitlement and needs considerations. The $(E + N)$ bars in the upper panels in Figure 5 report the predicted share given away in these cases. Not surprisingly, the shares increase relative to what is observed in the data, since the actual behavior is constrained by self-interest. But the figure also highlights that it was not only self-interest that constrained the HI-participants from giving everything to LI-participants in the experiment. Even if they were to act as impartial spectators, the model predicts that they would have given away most of the income to an HI-participant in a match with an LI-participant. In other words, given the productivity differences in the experiment, the HI-participants found it morally acceptable to receive a larger share of the total income. Self-interest implies that they gave away even less than what they considered morally acceptable; on average, this reduction is 13.7 percentage points (from 45.4% to 31.7%).

[Figure 5 about here.]

By comparing the simulations for the HI-participants and the LI-participants, we can also shed some further light on the role of a self-serving bias in the distributive choices. We observe from the $(E + N)$ bars in the upper panel that the estimated model predicts that LI-participants would have acted differently from the HI-participants as impartial spectators in the situations where HI-participants met LI-participants. An impartial LI-participant would have given 43.7% to the HI-participant and 56.3% to the LI-participant, whereas an impartial HI-participant would have given 54.6% to the HI-participant and 45.4% to the LI-participant.

Two additional counterfactual situations can shed some further light on how the share given away was affected by needs considerations. First, focussing on the situations where HI-participants met LI-participants, the $(S + E)$ bars in the upper panel in Figure 5 report what model predicts that the participants would have done if needs considerations were not relevant in such situations. We observe that the predicted average share given away would have dropped by 9.2 percentage points (from 31.7% to 22.5%) among the HI-participants, and increased by 7.4 percentage points (from 33.6% to 40.0%) among the LI-participants. Second, to study the role of needs in explaining why HI-participants gave away a much larger relative share of the recipient's production value to LI-participants than to HI-participants, consider the $(S + E)$ bars in the lower right panel in Figure 5. If

needs were not relevant and this should be accounted for by egalitarian considerations alone, the estimated model predicts a very small difference in relative share given by HI-participants to LI-participants and other HI-participants. Thus, the observed pattern can only be explained by incorporating the needs motive.

6 Concluding remarks

The present paper has reported from an experiment studying how people trade off entitlement and needs considerations. Our main finding is that entitlement considerations are essential in explaining the choices of the participants, and far more important than needs considerations. Even if the participants from high-income countries had acted as impartial spectators, the estimated choice model predicts that they would have given away less than 50% to the participants from the low-income countries. This is not to say that needs considerations are irrelevant in explaining distributive behavior. Some HI-participants assigned greater weight to needs considerations than to entitlements considerations, and the needs motive is also crucial in explaining why HI-participants gave away a much larger relative share of the recipient's production value to LI-participants than to HI-participants.

The experiment was conducted with students, and this may have weakened the role of the needs motive. African students are typically not among the poorest of the poor in their society, and thus it would be interesting to study this trade-off also in distributions situations involving the most valuable groups in low-income countries. Still, it is important to note that, on average, the participants from

the high-income countries clearly acknowledged the greater needs of the students from the low-income countries.

We have also shown that the distributive choices of the participants are consistent with a self-serving bias in their social preferences. The participants from high-income countries were less egalitarian and assigned greater importance to entitlement considerations than the participants from low-income countries. There are other possible explanations of these differences, however. For example, Uganda and Tanzania have only recently introduced substantial market reforms and have historically relied on egalitarian social and family structures, which most likely have played an important role in shaping the social preferences of the participants from these countries (Henrich, Boyd, Bowles, Camerer, Fehr, and Gintis 2004).

Finally, the participants acted as moral cosmopolitans, and treated compatriots in the same manner as others. This finding, however, is not inconsistent with people perceiving that they have special moral obligations toward compatriots in many real-life situations. Such special moral obligations could arise from sharing a common institutional framework or other special relations with compatriots. These features were not present in this experiment, however, where the participants interacted within the same framework and enjoyed the same sort of relations with participants from all of the countries involved. In such a setting, it is interesting to observe that nationality itself did not appear to generate special moral obligations towards compatriots.

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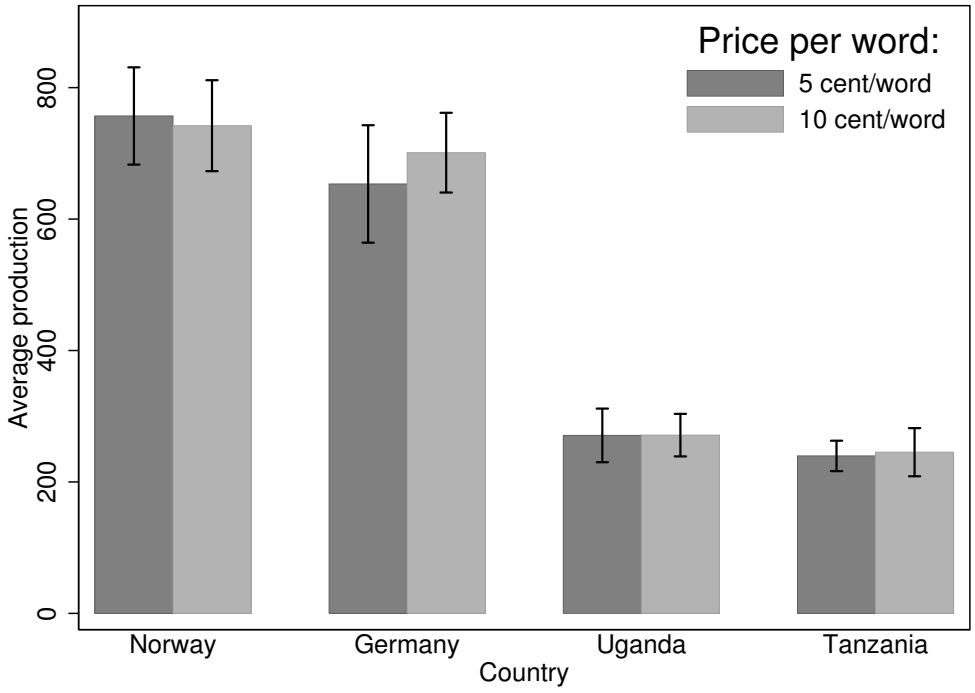
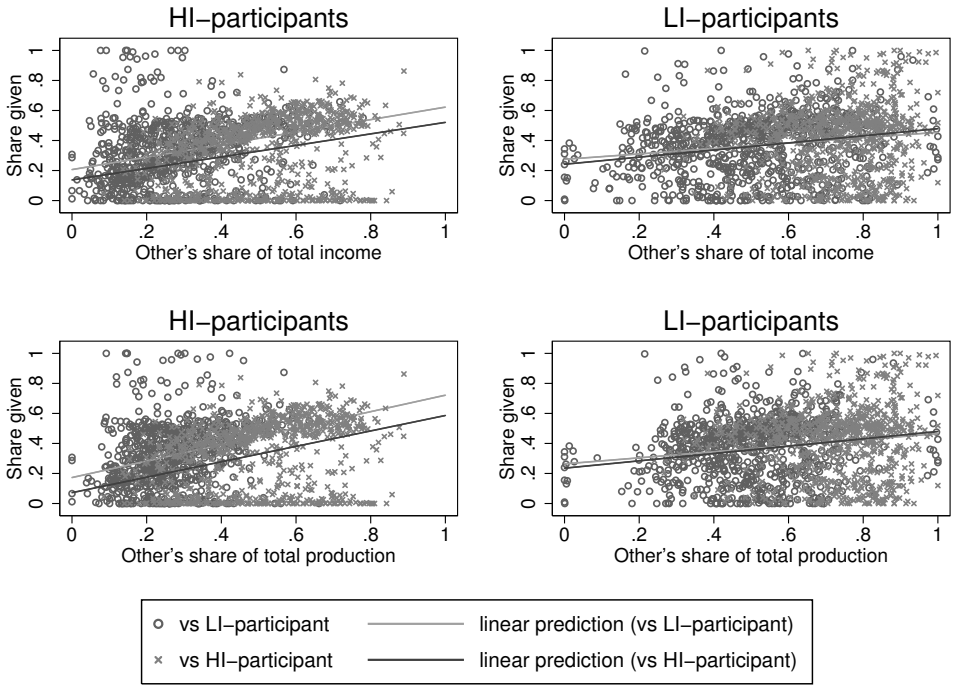
Figure 1: Average production by country and price



Note: The figure shows average production of correct words by country and price. Confidence interval (95%) indicated by error bars.

Figure 2: Responsiveness of share given to contribution

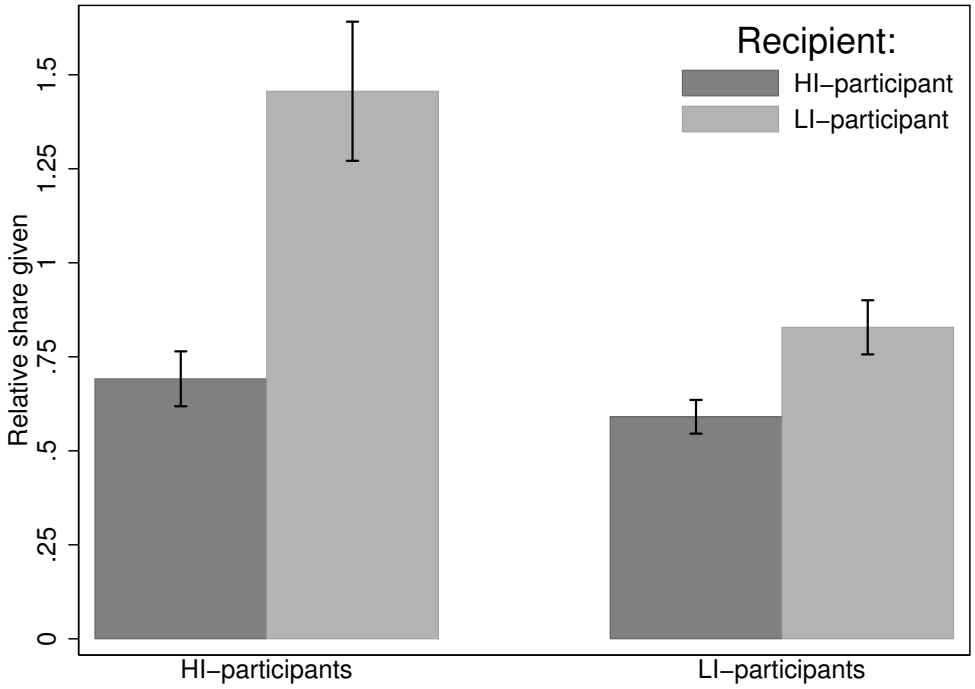


Note: Scatter plot of share given and the recipient's contribution, where contribution is measured by share of total income in the upper panels and share of total production in the lower panels. The left panels report the decisions made by HI-participants, the right panels report the decisions made by LI-participants. The regression lines show the coefficients from linear regressions of share given on the recipient's contribution,

$$y_{is} = \beta x_{is} + \gamma_i + \varepsilon_{is},$$

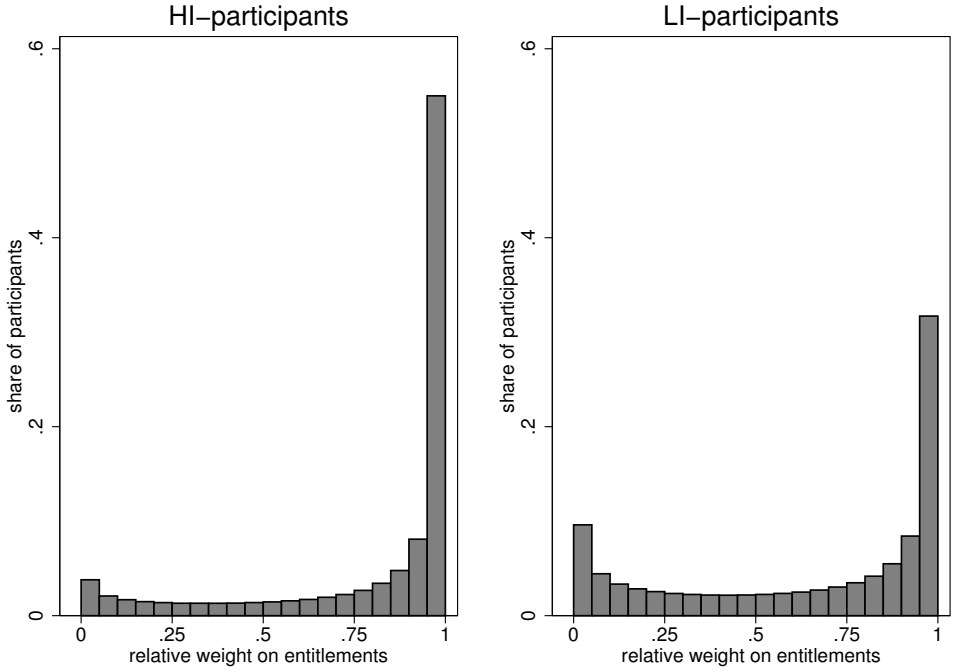
where y_{is} is share given by individual i in situation s, x_{is} is the recipient's contribution in this situation, and γ_i is the individual fixed effect.

Figure 3: Relative share given to the other participant of his production value



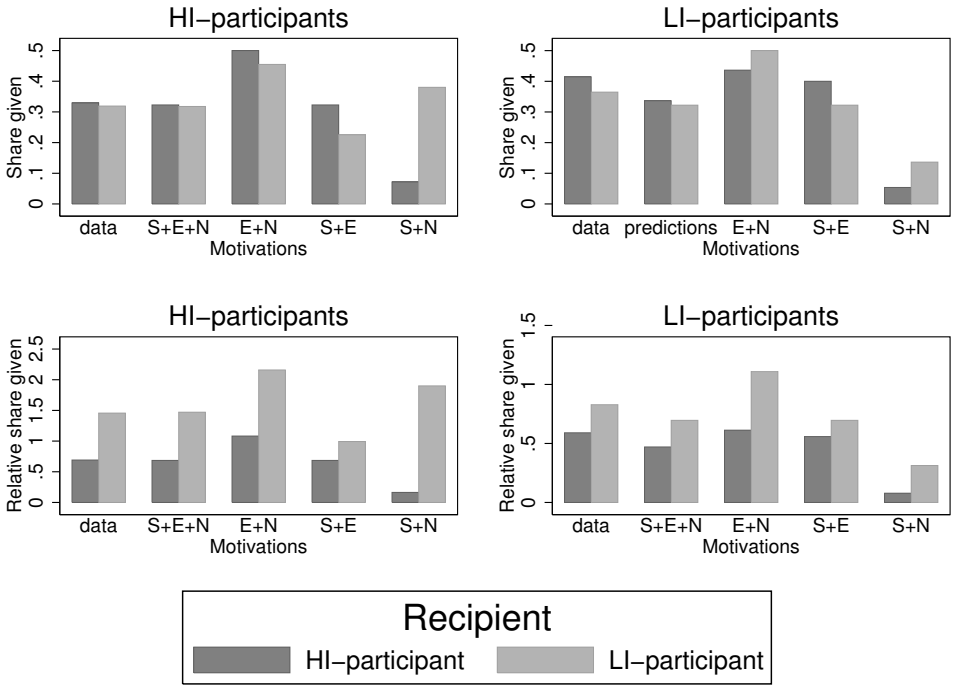
Note: The figure reports the average relative share given to the other participant of his production value, where the relative share is defined as the amount given divided by the recipient's production value. The left bars report the decisions made by HI-participants, the right bars report the decisions made by LI-participants. Confidence interval (95%) indicated by error bars.

Figure 4: Needs vs entitlements



Note: The figure reports the distribution of τ for HI-participants and LI-participants, where τ is the relative weight assigned to entitlements versus needs; $\tau = 1$ if a participant only assigns weight to entitlements, $\tau = 0$ if a participant only assigns weight to needs. The figure is based on the estimates reported in column A in Table 3.

Figure 5: Counterfactual analysis



Note: The bars in the upper panels show the average share given to the other participant, in data or in simulated data. $S + E + N$ refers to a simulation of the full model, where all motives, self-interest (S), entitlements (E), and needs (N) are included. The other three simulations exclude one of these motives in turn. The bars in the lower panels show the average relative share given to the other participant of his production value, in data or in simulated data, where the relative share is defined as the amount given divided by the recipient's production value. The simulations are based on the estimates reported in column A in Table 3. They are calculated with 1000 replications of each individual and the distributive situations in which he is involved. Each replication is randomly assigned an entitlement fairness view, α and β, in accordance with the estimates.

Table 1: Production value

	Norway	Germany	Uganda	Tanzania
Average	54.8	55.77	19.7	18.3
Standard deviation	27.7	25.1	10.9	11.7
Minimum	15	15	2.5	0
25th percentile	32.5	35	12.5	15
75th percentile	70	75	26.25	20
Maximum	135	140	50	65

Note: The table reports statistics on average production values in USD, by country.

Table 2: Share given conditional on nationality

		Country of the recipient			
	Total	Norway	Germany	Uganda	Tanzania
Norway	0.365	0.378	0.368	0.368	0.348
	(0.016)	(0.021)	(0.024)	(0.022)	(0.019)
Germany	0.256	0.273	0.255	0.251	0.236
	(0.021)	(0.026)	(0.031)	(0.021)	(0.024)
Uganda	0.417	0.426	0.459	0.418	0.381
	(0.017)	(0.021)	(0.028)	(0.018)	(0.017)
Tanzania	0.366	0.379	0.433	0.356	0.318
	(0.019)	(0.023)	(0.031)	(0.021)	(0.020)

Note: The table reports average share of total income given conditional on the nationality of both the decision maker and the recipient. Standard errors in parentheses (corrected for repeated observations of individuals).

Table 3: Estimates of the choice model

	A		B		C
	HI-participant	LI-participant	HI-participant	LI-participant	All
λ^E, share egalitarian	0.238	0.323	0.225	0.449	0.362
	(0.039)	(0.040)	(0.041)	(0.044)	(0.033)
λ^M, share meritocratic	0.421	0.343	0.425	0.266	0.342
	(0.049)	(0.040)	(0.054)	(0.039)	(0.036)
λ^L, share libertarian	0.341	0.333	0.351	0.285	0.297
	(0.046)	(0.039)	(0.049)	(0.040)	(0.033)
γ	11.997	17.421	11.598	28.718	9.504
	(0.184)	(0.715)	(0.268)	(1.784)	(0.121)
μ_α	−0.998	0.284			-1.652
	(0.211)	(0.225)			(0.157)
μ_β	2.395	1.654	2.203	1.736	2.581
	(0.180)	(0.135)	(0.215)	(0.165)	(0.121)
σ_α	3.648	1.691			3.939
	(0.116)	(0.168)			(0.110)
σ_β	3.677	2.154	4.183	1.821	3.178
	(0.118)	(0.130)	(0.334)	(0.154)	(0.089)
ρ	0.525	−0.472			0.515
	(0.021)	(0.042)			(0.021)
$\log L$	−3687.6	−3328.8	−2023.5	−1497.9	−7520.7

Note: Specification A reports estimates of the full model, where μ_i and σ_i are the expectation and the standard deviation of the lognormal distributions of the weight attached to needs (α) and entitlements (β), and ρ is the correlation coefficient of $\log\alpha$ and $\log\beta$. Specification B reports estimates on a restricted model, which only uses observations from distributive situations involving participants at the same income level. Hence, the parameters pertaining to needs (μ_α, σ_α, and ρ) are not estimated with this specification. Specification C reports estimates where all parameters are restricted to be the same for HI-participants and LI-participants. Standard errors (in parentheses) are calculated using the BHHH method (Berndt, Hall, Hall, and Hausman 1974). Income is scaled in units of 100 USD. One of the estimated population shares and its standard error are calculated residually. The likelihood is maximized using the FmOpt library (Ferrall 2005).

Table 4: Simulation results on full model

	HI vs LI		LI vs HI	
	data	predictions	data	predictions
Average share given	0.319	0.317	0.415	0.336
Median of share given	0.316	0.269	0.467	0.318
Standard deviation of share given	0.210	0.247	0.235	0.270
Share that takes all	0.107	0.075	0.051	0.125
Share that gives all	0.018	0.012	0.012	6.5e-4
Average relative share given	1.456	1.471	0.590	0.470
Marginal effect of the recipient's income share	0.416	0.278	0.237	0.219
Marginal effect of the recipient's production share	0.549	0.373	0.244	0.313
Observations	768	768000	768	768000

Note: Predictions refer to the simulation of the full model. The simulations are based on the estimates reported in column A in Table 3. These are calculated with 1000 replications of each individual and the distributive situations in which he is involved. Each replication is randomly assigned an entitlement fairness view, α, and β, in accordance with the estimates. Average relative share given is defined as the amount given divided by the recipient's production value. The marginal effect of other's income share is taken from a regression of share given on the other participant's income share (with individual fixed effects).

Table 5: Validations of model

A. Moral cosmopolitanism

	Estimation sample Norway vs Norway, Uganda and Tanzania		Hold-out sample Norway vs Germany	
	data	predictions	data	predictions
Average share given	0.364	0.373	0.368	0.361
Median share given	0.400	0.375	0.456	0.414
Standard deviation	0.211	0.238	0.220	0.202
Share that takes all	0.111	0.047	0.184	0.049
Share that gives all	0.015	0.012	0.000	4.9e-6
Average relative share given	1.351	1.406	0.770	0.771
Marginal effect of other's share of income	0.360	0.312	0.357	0.350
Marginal effect of other's share of production	0.513	0.413	0.545	0.479
Observations	791	791000	206	206000

B. Productivity differences

	Estimation sample HI vs LI, large prod. diff.		Hold-out sample HI vs LI, small prod diff	
	data	predictions	data	predictions
Average share given	0.283	0.289	0.376	0.357
Median share given	0.274	0.241	0.435	0.378
Standard deviation	0.225	0.223	0.202	0.218
Share that takes all	0.221	0.071	0.125	0.061
Share that gives all	0.007	0.003	0.008	0.004
Average relative share given	1.161	1.120	0.940	0.871
Marginal effect of other's share of income	0.396	0.333	0.341	0.303
Marginal effect of other's share of production	0.737	0.549	0.601	0.499
Observations	434	434000	392	392000

Note follows on page 49.

Note to Table 5 on page 48: The table compares predictions to data on different subsamples. Estimation of the model was done on one subset of data, and the estimates were then used to predict on a hold-out sample. In panel A, the estimation was done on the decisions made by participants in Norway in situations involving recipients from Norway, Uganda and Tanzania, and the hold-out sample was decisions made by participants in Norway in situations involving recipients from Germany. In panel B, the estimation sample consists of HI-participants who have produced at or above the median productivity level of the high-income countries, and LI-participants who have produced at or below the median productivity level of the low-income countries. The hold-out sample consists of HI-participants who have produced below the median productivity level of the high-income countries, and LI-participant who have produced above the median productivity level of the low-income countries. Productivity is measured by correctly typed words.

The two left columns show data and predictions for the subset of decisions used to estimate the model, the two right columns show data and predictions for the hold-out sample. Relative share given is defined as the amount given divided by the recipient's production value. The marginal effect of other's share of income is taken from a regression of share given on the other's income share (with individual fixed effects and controlling for the income level of the recipient). The predictions are based on the estimates of the model reported in Table A.7 in the web-appendix and 1000 random replications with parameters assigned from the estimated distributions.