Rich meets poor – an international fairness experiment

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Abstract

Why do people in rich countries not transfer more of their income to people in the world's poorest countries? To study this question and the relative importance of needs, entitlements, and nationality in people's social preferences, we conducted a real effort fairness experiment where people in two of the world's richest countries, Norway and Germany, interacted directly with people in Uganda and Tanzania, two of the world's poorest countries. In this experiment, the participants were given the opportunity to transfer money to poor persons with whom they were matched. The study provides four main findings. First, entitlement considerations are crucial in explaining the distributive behavior of rich people in the experiment; second, needs considerations matter a lot for some participants; third, the participants acted as moral cosmopolitans; and finally, the participants' choices are consistent with a self-serving bias in their social preferences.

Why do people in rich countries not transfer more of their income to people in the world's poorest countries? A simple answer is that they are self-interested. That is, even though they recognize the needs of the poor, they fail to act upon fairness considerations. But is the picture this simple? In this paper, we study an alternative explanation. We suggest that many rich people find it fair to keep most of their income, and that they justify this view by invoking an entitlement argument of fairness. There are other possible explanations. Rich people may believe they mainly have moral obligations towards their compatriots, and thus may reject the idea of what is sometimes called moral cosmopolitanism. Or they may lack trust in the efficiency of the governmental and non-governmental institutions that facilitate such transfers.

This paper reports the results of an experiment designed to study the relative importance of *needs*, *entitlements*, and *nationality* in people's social preferences.[1] We explicitly designed the experiment to avoid the question of whether people trust the existing channels of transfers, for example charity organizations. Hence, we conducted

[1]For related experimental studies of social preferences, see Aguiar, Brañas-Garza, and Miller (2007) and Eckel and Grossman (1996) on the role of needs, Cappelen, Hole, Sørensen, and Tungodden (2007a); Cappelen, Sørensen, and Tungodden (2007b); Cherry, Frykblom, and Shogren (2002); Frohlich, Oppenheimer, and Kurki (2004); Konow (2000), Konow (1996), and Hoffman, McCabe, Shachat, and Smith (1994) on the role of entitlements, and Whitt and Wilson (2007) on the role of nationality. For an overview of the experimental literature on social preferences, see Camerer (2003).

a real effort fairness game where people in two of the world's richest countries, Norway and Germany, interacted directly with people in Uganda and Tanzania, two of the world's poorest countries. The participants were given the opportunity to transfer money to poor persons with whom they were matched. This design made needs considerations a salient feature of the distributive situation. To introduce entitlements considerations, the distribution phase was preceded by a production phase where the participants exerted real effort and earned income.

To study whether rich people feel that they have a special moral obligation toward their compatriots, we also matched the rich participants with other participants from rich countries. In some distributive situations, they were matched with someone from their own country, and in other distributive situations, with someone from another rich country. As Norwegians and Germans are almost equally rich and were almost just as productive in the experiment, only nationality considerations could explain a difference in the transfers in the two types of distributive situations. Finally, to study the extent to which our findings were the result of a self-serving bias among the rich, the poor participants also made a similar set of distributive choices where they were matched with rich participants, participants from their own country, and participants from another poor country. If there were a self-serving bias in the moral considerations of the participants, then rich participants should be less egalitarian and assign greater weight to entitlements considerations relative to needs considerations than poor participants. In sum, to study needs, entitlements, nationality and self-serving bias, the experiment involved real effort and redistribution among participants from four different countries.

What happens when rich meets poor? The study provides four main findings. First, we find that entitlements considerations are crucial in explaining the distributive behavior of rich participants in the experiment. On average, the rich participants kept 68.1 percent of the total income for themselves when they met poor participants, and, based on the estimation of a choice model, we show that much of this appears to have been motivated by entitlements considerations. Moreover, entitlements considerations are also essential in explaining the pattern of transfers from rich to poor; namely, on average, rich participants transferred much more income to the productive poor than to the unproductive poor. Second, needs considerations matter. When we remove the needs motive from the estimated choice model, the predicted amount transferred from the rich to the poor decreases by a third. Needs considerations are

also essential in explaining why rich participants treated poor participants differently from other rich participants. Rich participants gave away far more than the other participant's production value when they met a poor participant, but clearly less than the other person's production value when they met a rich participant. Third, the participants acted as moral cosmopolitans. We do not find any evidence of compatriots being treated differently in the distributive choices. Finally, participants' choices are consistent with a self-serving bias in the moral considerations. That is, rich participants are less egalitarian and attach greater weight to entitlements considerations relative to needs considerations than poor participants.

The paper is structured as follows. Section 1 provides a discussion of the experimental design. Section 2 reports descriptive statistics and some basic observations from the experiment. Section 3 introduces an individual choice model for the distributive behavior, while the estimation of this model and simulations are presented in Section 4. Section 5 provides some concluding remarks.

1 Design

We conducted a dictator game where the distribution phase was preceded by a production phase, and where participants were located in four different countries.

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 entitlements considerations an important part of the distributive problem, and the main focus of our study was to see how these considerations were traded off against needs considerations when rich people decided how much to transfer to poor people.

The participants were matched simultaneously with participants from all four countries. Two of the countries, Norway and Germany, are among the world's richest countries, while the other two countries, Uganda and Tanzania, are among the poorest. 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).

At the beginning of the experiment, all participants were given a complete description of how the experiment would proceed. At each location, and 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 make the participants familiar with the idea that they were taking part in an international experiment where they would interact with participants from different parts of the world.[2] 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.[3]

1.1 Sample

We conducted six sessions with a total of 391 students, recruited from the University of Oslo in Norway, the University of Mannheim in Germany, the University of Makerere in Uganda, and the University of Dar es Salaam in Tanzania. All participants were recruited from the general student population at the four universities. Table 1 provides an overview of the nationality of the participants in the six sessions.[4] Even though students in Uganda and Tanzania are not among the poorest of the poor in these countries, they are still extremely poor when compared with Norwegian and German students. Moreover, both the University of Dar es Salaam and the University of Makerere receive support from the international donor community, including Germany and Norway. Thus, it should be uncontroversial to assume that, in our sample, needs considerations pulled toward giving the earned income to the participants from Tanzania and Uganda.

As shown in Table 1, not all countries were represented in all sessions. In the first session and the second session, we had some problems with the network. In the last session, administrative reasons made it impossible to include two countries. However, we do not find any difference in behavior between the incomplete sessions and the three sessions that included all four countries, and thus, we apply the full data set in our analysis.

[2]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.

[3]The screenshots and instructions to the participants are provided in an appendix (not for publication).

[4]The gender and age compositions are almost the same in the rich and the poor countries, and thus we do not reported disaggregated data along these dimensions.

Table 1: Number of participants per session

	Country				
session	Norway	Germany	Uganda	Tanzania	total
1	20	0	22	21	63
2	17	18	0	0	35
3	20	17	22	21	80
4	21	20	22	22	85
5	22	20	22	21	85
6	22	0	0	21	43
total	122	75	88	106	391

1.2 Production phase

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. We introduced by design differences in price. As expected, the participants had different productivity with respect to the task they were assigned. To avoid excessive complexity, however, we did not introduce differences in working time, with all participants working 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, and it was selected to ensure that it was inconceivable that it in any way should 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* was the number of correct words he had typed during the production phase. To give the participants easy numbers to work with in the distribution phase of the experiment, the computer rounded up each participant's production to the nearest multiple of 50. The *value of production* for each participant was 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.

1.3 Distribution phase

In the distribution phase each participant was paired with another participant and asked to 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 they made their decision, they were given information about the price assigned to the other participant, his production, and nationality.

The participants were asked to make proposals in, on average, eight independent distributive situations, where in each situation they were matched with a different participant.[5] Before making a final submission of their proposals, they were given an overview of all of their proposals and the opportunity to revise any of them.

When everyone had submitted their choices, the computer with equal probability selected one of the situations for each person. The computer then selected, with equal probability, either the person's own proposal in this situation or the other participant's proposal, as the one determining his actual payment from the experiment.

At the end of the experiment, each participant was assigned a payment code. This code was used as identification for anonymously receiving the payment from the experiment. The payment procedure was designed to ensure that no one in the lab, including the research group, knew how much each participant earned from the experiment.

2 Descriptive evidence

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

2.1 Results from the production phase

Table 2 provides statistics on production and production value in each country. As expected, there were significant differences in productivity.[6] Average production in

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

[6] The difference in productivity between rich and poor is most likely related to the rich students being more experienced with computers and this kind of work.

Table 2: Production by country

	Number of correct words			
	Norway	Germany	Uganda	Tanzania
Mean	750.0	682.7	271.0	242.5
SE(mean)	25.4	24.9	13.2	10.7
Standard deviation	280.6	216.3	123.6	110.6
minimum	250	200	50	0
25th percentile	550	550	200	150
75th percentile	900	800	300	300
maximum	1700	1400	650	650
	Production value in USD			
	Norway	Germany	Uganda	Tanzania
Mean	54.8	55.77	19.7	18.3
SE(mean)	2.50	2.90	1.16	1.13
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

the rich countries was about three times the average production in the poor countries and, given that prices were randomly assigned, there was a similar difference in production value.

The results from the production phase imply that we, as planned, recreated in the experiment an important feature of real world inequality; namely, the more needy are, on average, less productive. [7] In 699 of 768 distributive situations where a rich person met a poor person, the rich person had a higher production value (in 16 distributive situations they had the same production value). In many cases, the difference was substantial, and the maximal difference was obtained in a distributive situation where the rich had a production value of 140 USD and the poor had a production value of 7.5 USD. On average, the rich participants' share of production was 73.4 percent, while their share of production value was 72.9 percent.

Thus the production phase provided us with exactly the kind of distributive sit-

[7] This is not to say that the rich always are more productive than the poor. We can well imagine tasks in which the opposite would be true.

Table 3: Average production by country and price

	price (USD/word)		
Country of decision maker	0.05	0.10	total
Norway	756.9	742.1	750.0
	(37.0)	(34.5)	(25.4)
Germany	653.4	701.1	682.7
	(43.6)	(30.1)	(25.0)
Uganda	270.8	271.2	271.0
	(20.3)	(16.0)	(13.2)
Tanzania	239.6	245.3	242.5
	(11.5)	(18.2)	(10.7)

Note: Standard errors in parentheses.

uations that we aimed at, where, when rich meets poor, the two moral motives push in opposite directions. By observing how rich participants deal with a set of such situations, where they have to take into account huge variation in the productivity among the poor, we can identify how they trade off entitlement considerations and needs considerations.

Table 3 provides information on the correlation between production and the randomly assigned price. From the table we can see that only in Germany was there noticeably higher average productivity with the higher price, but the difference is not more than 7 percent, and is not statistically significant (using a one-sided t-test with a p-value of 0.18). This is as expected given the design of the experiment. In order to induce maximum effort from all individuals, we had a very high piece rate payment and a short period of production. The productivity numbers are also in line with baseline tests without a distribution phase.

2.2 Results from the distribution phase

On average, and as shown in Table 4, rich participants gave away 31.9 percent of total income when matched with poor participants. However, there was large variation in the distributive behavior of the rich. We observe that some rich participants gave away everything to the poor, whereas some rich participants took everything for themselves. This shows that both self-interest and needs play a role in the distributive choices of the rich.

Table 4: Rich meets poor: statistics on share of total income given to the poor

Mean	0.319
Median	0.316
Standard deviation	0.210
Standard deviation (individual)	0.073
Share that takes all	0.107
Share that gives all	0.018
n	768

Note: Calculated on the subset of situations where rich participants met poor participants. Standard deviation (individual) is the average of the within-invididual standard deviations.

Why did most rich participants not give away more to the poor? We consider two possible explanations in addition to self-interest. First, rich participants may not be moral cosmopolitans, and thus may not have felt that they had a strong moral obligation toward participants in other countries (whether rich or poor). Second, the rich participants may have considered themselves morally entitled to a large share of total income, given that they had created most of what was to be shared.

Let us first consider the role of entitlements considerations (see Konow (2003); Fleurbaey (2008) for general discussions of entitlement theories). If all rich participants shared the *libertarian* entitlement ideal that individuals are morally entitled to the value of their production, this would justify, on average, their taking of 72.9 percent of total income when meeting poor participants. Hence, entitlements considerations potentially provide an important explanation for why the rich participants did not transfer more of the total income to the poor. Moreover, entitlements considerations may also explain why rich participants differentiate among the poor; poor participants with a higher production value may have been viewed as entitled to more than poor participants with a lower production value. In this respect, it is important to note from Table 2 that there was substantial variation in the production value among the poor; the maximum and minimum are 65 USD and 0 USD, respectively.

It is not obvious, however, that all rich participants share a libertarian entitlement ideal. It is commonly argued that people should be compensated for factors beyond individual control, and this view can be given two different interpretations in the present experiment. First, some may see this as implying that people should not be held responsible for the randomly assigned price, but still held responsible for

their productivity. We refer to this as the *meritocratic* entitlement ideal, where each person's entitlement is defined by his share of total production. The meritocratic entitlement ideal provides a very similar picture to the libertarian entitlement ideal in this experiment, and would justify the rich taking, on average, 73.4 percent of the total income when meeting poor participants. Second, if productivity is also considered to be beyond individual control, a drastically different picture emerges. All individuals are then viewed as having the same entitlements, independent of their production and the price. We refer to this as the *egalitarian* entitlement ideal. It implies that the poor and the rich were both entitled to an equal share of the income, independent of how much they had produced in the production phase.

We consider libertarianism, meritocratism, and egalitarianism as the salient entitlement views in the distributive situations in this experiment. They all imply, on average, that the rich participant was entitled to at least 50 percent of the total income. Libertarianism and meritocratism also justify differentiating among the poor, giving a larger share to the productive poor (meritocratism) or to the poor with a higher production value (libertarianism). Egalitarianism, on the other hand, justifies giving the same share to all poor participants, and thus does not provide a basis for differentiating among the poor.

Table 5 provides evidence of some rich participants differentiating among the poor, by showing that the share of total income given is highly responsive to the poor's share of production. In contrast, we observe that the poor is less responsive to the productivity of the rich in their choices. In Section 4, we study in more detail what explains these patterns. We also observe from Table 5 that the participants' responsiveness to production and price was quite similar when they met rich and poor participants.

To study the role of nationality and the extent to which the participants are moral cosmopolitans, we provide Table 6. It shows the average share given to the other participant conditional on nationality. Given that the Norwegians and Germans were almost equally productive, moral cosmopolitans would, on average, give almost the same share to participants from Norway and Germany. Indeed this is what we observe; Germans and Norwegians gave almost the same to compatriots as to participants from the other rich country. The small difference in share given corresponds to the small difference in productivity, where both Norwegians and Germans gave a slightly larger share to slightly more productive Norwegians. We observe the same pattern for the

Table 5: Responsiveness of the share of total income given to the share of production and the relative price

	Rich meets poor	Rich meets rich	Poor meets rich	Poor meets poor
$a_2/(a_1 + a_2)$	0.545	0.510	0.243	0.203
	(0.040)	(0.043)	(0.079)	(0.047)
p_2/p_1	0.037	0.044	0.030	0.020
	(0.008)	(0.009)	(0.012)	(0.013)
R^2	0.258	0.208	0.026	0.034
Observations	768	820	768	802

Note: Regressions with individual fixed effects, standard errors in parentheses. The dependent variable in the regressions is the share of total income given to the other participant. The independent variables are the other participant's share of total production, $a_2/(a_1 + a_2)$, and the relative price of the two participants, p_2/p_1.

poor participants, where both Tanzanians and Ugandans gave a slightly larger share to slightly more productive Ugandans. Hence, we interpret Table 6 as providing strong evidence of the participants acting as moral cosmopolitans in the experiment.[8] This finding is in line with Whitt and Wilson (2007), who find that Muslims, Croats, and Serbs participating in a dictator game in post-war Bosnia–Herzegovina favored to a surprisingly small degree participants of the same ethnicity.

We have already provided in Table 4 some evidence for the presence of needs considerations in rich participants' distributive choices. Some give away everything to the poor, and such behavior can hardly be explained by anything other than the needs motive. To illustrate further, consider participant 291, whose value of production was 85 USD. He was matched with seven other participants; four poor and three rich. The poor had USD production values of 15, 27.5, 30 and 32.5, whereas the rich had USD production values of 65, 70 and 75. In all matches with the poor participants, he transferred everything to the poor; in contrast, in matches with the rich participants, he gave away 43–47 percent of the total income.

More generally, needs considerations also appear to be important in explaining the pattern of transfers presented in Table 7. This table reports the amount given to the other participant as a fraction of his production value. We find here a systematic difference in behavior toward poor and rich participants. Rich participants gave

[8] It also provides strong evidence for the participants believing that there were actual recipients in the other labs.

Table 6: Average share of total income given conditional on nationality

		Country of the other participant			
	total	Norway	Germany	Uganda	Tanzania
Norway	0.365	0.378	0.368	0.368	0.348
	(0.007)	(0.013)	(0.015)	(0.015)	(0.012)
Germany	0.256	0.273	0.255	0.251	0.236
	(0.009)	(0.015)	(0.020)	(0.016)	(0.017)
Uganda	0.417	0.426	0.459	0.418	0.381
	(0.008)	(0.014)	(0.021)	(0.016)	(0.013)
Tanzania	0.366	0.379	0.433	0.356	0.318
	(0.008)	(0.014)	(0.022)	(0.014)	(0.015)

Note: Standard errors in parentheses.

Table 7: Average share given to the other participant of his production value

	Other participant	
	Rich	Poor
Rich	0.691	1.456
	(0.017)	(0.051)
Poor	0.590	0.828
	(0.013)	(0.022)

Note: Standard errors in parentheses.

away far more than the other participant's production value when they met a poor participant, but far less than the other participant's production value when they met a rich participant. Similarly, participants from the poor countries gave away a smaller share of the production value when they met a rich participant than when they met a poor participant.

This transfer pattern is consistent with the participants being motivated by needs considerations in their distributive choices. However, it could also be explained by the egalitarian entitlements ideal, which justifies giving, on average, a larger share of the production to poor participants to compensate for their lower productivity. In Section 4, we study in greater detail the extent to which the findings in Table 7 are mainly the result of participants acting on the needs motive or the egalitarian entitlement motive.

To summarize, the participants in the experiment acted as moral cosmopolitans.

They also appear to have been motivated by both entitlements and needs considerations. This creates a moral tension when the more productive rich meets the less productive poor, and we now provide a choice model to study this tension in detail.

3 A model of distributional choices

We model the participants as moral cosmopolitans assigning weight to self-interest, needs, and entitlements considerations when making distributional choices.[9] Importantly, the model allows the participants to differ in both the relative importance they assign to entitlements and needs and in their perception of what constitutes a fair entitlement.

3.1 The utility function

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

$$V_i^{k(i)}(y;\cdot) = y - \beta_i(y - m^{k(i)})^2/2X - \delta\alpha_i(y - m^P)^2/2X. \tag{1}$$

X is the total income to be distributed and y is the income a person keeps for himself. The weight individual i attaches to the entitlement ideal $m^{k(i)}$ is given by β_i, and the weight attached to the needs ideal m^P is given by α_i. Needs considerations are not always relevant, and thus we introduce the indicator δ; $\delta = 1$ when a rich and a poor person meets, otherwise $\delta = 0$.

Both entitlements and needs considerations imply an ideal distribution of the total income. Entitlements considerations are based only on information on each individual's contribution, where we assume that an individual i endorses either the

[9] For other models of social preferences, see Bolton and Ockenfels (2000); Charness and Rabin (2002); Engelmann and Strobel (2004) and Fehr and Schmidt (1999). See also Andreoni and Miller (2002) and Fisman, Kariv, and Markovits (2007) for studies of the consistency of social preferences.

egalitarian ideal (m^E), the meritocratic ideal (m^M), or the libertarian ideal (m^L):

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

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

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

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 $X - m^{k(i)}$ 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 rich person gives all the income to the poor person. 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 poor participants.

$$m^P = \begin{cases} 0 & \text{if } i \text{ is rich and the other participant is poor,} \\ X & \text{if } i \text{ is poor and the other participant is rich.} \end{cases} \tag{3}$$

If an interior solution exists, the optimal proposal when a rich participant meets a poor participant ($\delta = 1$) is

$$y^* = [\tau_i m^{k(i)} + (1 - \tau_i) m^P] + \frac{X}{\beta_i + \alpha_i},$$

where $\tau_i = \beta_i/(\beta_i + \alpha_i)$. The terms within the brackets provide the income person i considers to be justifiable on moral grounds to give to himself, and reflects the trade-off between entitlements considerations and needs considerations. The last term provides the additional income a person takes because of self-interest. A very self-interested person has low values of β and α, and thus takes 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 is the case for a person mainly acting on entitlements considerations. Thus, τ captures the relative importance of the two moral motives in a person's distributional choices, and is therefore crucial for our analysis of how people trade-off entitlements and needs. Shortly we will report the distribution of τ for rich and poor.

The interior solution when participants of the same income level meet ($\delta = 0$) is

$$y^* = m^{k(i)} + \frac{X}{\beta_i}.$$

Hence, when needs considerations are irrelevant, a person would keep what he considers himself morally entitled to plus an additional amount that is decreasing in the weight he attaches to entitlements considerations.

Actual choices may differ from the interior solution for three main reasons. First, y^* could be larger than total income, and thus the argument that maximizes $V^{k(i)}(y;\cdot)$ would be the corner solution X. Second, participants were constrained in their choices by design, and could only choose in discrete steps from the 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 (McFadden 1974), 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 $\mathcal{Y}$. Total utility is then given by

$$U_i(y;\cdot) = V_i^{k(i)}(y;\cdot) + \varepsilon_{iy}/\gamma \quad \text{for all } y \in \mathcal{Y}, \tag{4}$$

where γ captures the importance of the random part, and the individual choice is given by the argument that maximizes U_i 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.

3.2 The likelihood function

In formulating the likelihood function, we need to take into account that the entitlements ideal, $m^{k(i)}$, and the weight attached to entitlements and needs considerations, α_i and β_i, 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 $\log\beta$. More-

over, we let λ^E, λ^M, and λ^L represent the estimated shares of the population acting on the egalitarian, meritocratic, and libertarian entitlement ideals, 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 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, $(y_{is}, \mathcal{Y}_s, \boldsymbol{a}_s, \boldsymbol{p}_s, \delta_s)$ are the observable variables; y_{is} is the amount of money i takes 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 and the prices of the two individuals matched in s; and δ_s is the indicator showing whether the other participant in s is at the same income level as i.

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

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

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

4 Estimates and simulations

We separately estimate the choice model for participants from the rich and poor countries, and apply these estimated models to study the importance of different motivations in explaining the observed level and pattern of transfers.

4.1 The estimates of the choice model

Table 8 reports the estimates of the choice model.

We observe that the meritocratic entitlement ideal is most prominent among rich participants. The model estimates that 42.1 percent of rich participants are meritocrats who find it fair that people are rewarded according to their productivity. This implies that, if acting purely on entitlements considerations, they would transfer more to the productive poor than the unproductive poor. So would the share of libertarians, estimated to be 34.1 percent of all rich participants, and thus the estimated

Table 8: Estimates of the choice model

	A		B		C
	Rich	Poor	Rich	Poor	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: Specifications A reports estimates of the full model. Specification B reports estimates on a restricted model, that only uses observations from distributive situations involving participants of the same income level. Hence, the parameters pertaining to the needs motive (μ_α, σ_α and ρ) are not estimated. The parameters pertaining to the entitlement motive are estimated by applying the same entitlement ideals as in specification A. Specification C reports estimates where the parameters are restricted to be the same for rich and poor. Standard errors (in parentheses) are calculated using the BHHH method (Berndt, Hall, Hall, and Hausman 1974). Money 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).

model predicts that 76.2 percent of the rich participants would take productivity into account when determining how much to transfer to the poor participants. At the same time, the estimated share of egalitarians is 23.8 percent, and thus the model also predicts that 65.9 percent of the rich participants, the egalitarians and the meritocrats, would not take the randomly assigned price into account when determining how much to transfer to the poor participants.

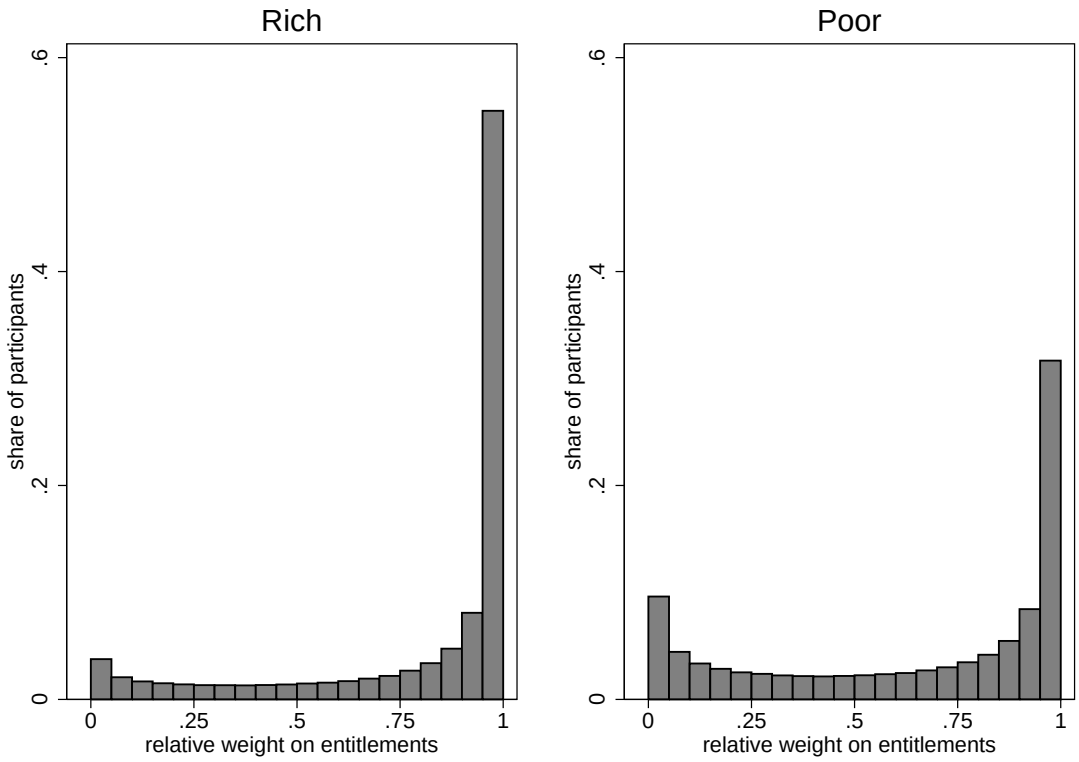
To interpret the estimates of the distributions of α (the weight attached to needs) and β (the weight attached to entitlements), it is useful to study the implied distribution of $\tau = \beta/(\beta+\alpha)$, as presented in Figure 1. Figure 1 provides a strong message on the relative importance of the two moral motives, needs and entitlements. We observe that entitlements considerations are much more important than needs considerations for the participants. In fact, for more than 50 percent of the rich participants, entitlements considerations completely dominate needs considerations. Regardless, it is also evident from Figure 1 that needs considerations matter a lot for some rich participants; 17.1 percent of rich participants assign more weight to needs than to entitlements.

If we now compare the estimates for the rich participants with the estimates for the poor participants, we observe that there is a larger share of egalitarians and a smaller share of meritocrats among the poor participants. With respect to the relative importance of needs and entitlements, we find from Figure 1 that needs are more essential in explaining the choices of the poor participants than of the rich participants. In fact, 33.9 percent of the poor participants assigned more weight to needs than to entitlements when meeting rich participants. These differences between the rich and the poor are consistent with a self-serving bias in the participants' moral perceptions.[10] It benefits the rich not to be egalitarian and to assign more importance to entitlements than needs, and it benefits the poor to be egalitarian and assign more importance to needs than entitlements.

Specification B only uses data from matches within income groups (where rich meets rich and poor meets poor). If rich participants applied a different entitlement ideal when meeting poor participants, then this specification should give different population estimates than the full model. This is not the case for the rich participants; the estimated shares of the different entitlement ideals in the restricted model are almost the same as for the full model. The picture is less clear for the poor par-

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

Figure 1: The distribution of the relative weight on entitlements (τ) for rich and poor.



Note: The figure is based on the estimates reported in column A in Table 8.

ticipants, where we observe a difference in the estimates between the full model and the restricted model. However, in a comparison of rich and poor participants, the overall picture is the same: there are more egalitarians among the poor participants. To study whether the observed differences are statistically significant, we report specification C which restricts the parameters in the model to be the same for rich and poor. Based on a likelihood ratio test of specification A and C, we can reject that the two groups are identical ($p < 0.001$).

4.2 Simulations

To further study the fit of the model, the relative importance of the different motives, and the extent of a self-serving bias in the choices, we provide simulations based on the estimates in specification (A) in Table 8.

The columns $(S+E+N)$ in Table 9, Table 10, and Table 11 reporting simulation results of the full model, show that the estimated model nicely predicts both the observed level and the pattern of transfers from rich to poor.

Let us now consider why the rich participants do not transfer more of the income to the poor participants. First, we study the role of self-interest by looking at what the participants would have done 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 entitlements and needs considerations: column $(E + N)$ in Table 9. Interestingly, we observe that it is not only self-interest that constrains rich participants from giving everything to poor participants. Even if they acted as impartial spectators, they would have given most of the income, 54.6 percent, to the rich participant. In short, given the observed differences in production, the rich participants found it morally acceptable that they received a larger share of the total income. Self-interest implied that they took even more than what they considered morally acceptable; on average, the increase is 13.7 percentage points (from 54.6 to 68.3 percent). This illustrates that even a substantial reduction in the weight assigned to self-interest among the rich would not have a huge effect on the average level of transfers to the poor.

Needs considerations matter for the rich, as illustrated by the simulations reported in columns $(S + E)$ and $(S + N)$ in Table 9. Column $(S + E)$ reports what the

Table 9: Rich meets poor: how important are different motivations?

		Simulations with different motivations			
statistic on share given	data	$S+E+N$	$E+N$	$S+E$	$S+N$
Mean	0.319	0.317	0.454	0.225	0.379
Median	0.316	0.267	0.435	0.194	0.208
Standard deviation	0.210	0.246	0.255	0.173	0.372
Share that takes all	0.107	0.075	0.013	0.103	0.141
Share that gives all	0.018	0.011	0.024	1.4e-4	0.087
n	768	768000	768000	768000	768000

Note: The simulations are based on the estimates reported for the rich in column A in Table 8. 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 ideal, α and β, in accordance with the estimates. $S+E+N$ refers to a simulation of the full model, where all motives, self-interest (S), entitlements (E), and needs (N) are included. The other simulations exclude one of these motives in turn.

rich participants would have done in the same set of distributive situations if the poor participants were not poor, and we observe that the predicted average share given away would have dropped by 9.2 percentage points (from 31.7 percent to 22.5 percent). Alternatively, assume that entitlements considerations were not relevant: see column ($S+N$). The estimated model now predicts that the rich, motivated by needs considerations, would have given away, on average, 37.9 percent of the total income. This shows that they assign quite some weight to needs in a trade-off with self-interest.

Entitlements and needs are also important in explaining the pattern of transfers from rich to poor. Not surprisingly, the entitlement motive is crucial in explaining why rich participants give more to the productive poor. To illustrate, we provide Table 10. It shows that the full model nicely predicts the responsiveness of the share given to relative production and relative price. In contrast, if entitlements considerations were deemed irrelevant in these situations, then, from column ($S+N$), we observe that this relationship would vanish.

The needs motive, however, is required to explain why the share of the opponent's production value given by rich participants to poor participants is twice the share given to other rich participants. As shown in Table 11, the full model captures

Table 10: Rich meets poor: responsiveness of the share of total income given to the share of production and the relative price.

		Simulations with different motivations			
	data	$S+E+N$	$E+N$	$S+E$	$S+N$
$a_2/(a_1+a_2)$	0.549	0.434	0.483	0.469	0.023
p_2/p_1	0.017	0.038	0.037	0.042	0.011
Constant	0.154	0.160	0.285	0.054	0.361
n	768	768000	768000	768000	768000
R^2	0.084	0.044	0.049	0.106	0.000

Note: The simulations are based on the estimates reported for the rich in column A in Table 8. 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 ideal, α and β, in accordance with the estimates. $S+E+N$ 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.

this pattern of differentiation between rich and poor opponents. If we remove the needs motive, the restricted model $S+E$ underestimates the share given to poor participants. In other words, the presence of egalitarians, who would also give a larger share of the production value to poor participants, does not fully account for this pattern.

To study further the extent to which the choices of the rich are consistent with a self-serving bias, we compare them with the choices of the poor. We observe from Table 12 that the prediction is that the poor would have acted differently than the rich as impartial spectators in the same set of distributive situations. The poor impartial spectator would have given, on average, 43.7 percent to the rich participant and 56.3 percent to the poor participant. In the same set of situations, the rich impartial spectator would have given, on average, 54.6 percent to the rich participant, and 45.4 percent to the poor participant. This is in line with rich participants assigning greater weight to entitlements considerations relative to needs considerations than poor participants, and is thus consistent with a self-serving bias in moral perceptions. However, as can be seen from Table 12, the model underpredicts somewhat the overall level of transfers from poor to rich, and this may partly explain the observed differences in predicted impartial spectator behavior.

Table 11: Rich meets poor: average share left to the other participant of his production value.

		Simulations with different motivations			
	data	$S+E+N$	$E+N$	$S+E$	$S+N$
Rich opponent	0.691	0.685	1.082	0.685	0.163
Poor opponent	1.456	1.471	2.159	0.993	1.900

Note: The simulations are based on the estimates reported for the rich in column A in Table 8. 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 ideal, α and β, in accordance with the estimates. $S+E+N$ 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.

Finally, it is interesting to observe that moral considerations played an equally important role for poor participants as for rich participants. The predicted share of total income given away when self-interest is introduced decreases from 45.4 percent to 31.7 percent for the rich participants, whereas it decreases from 43.7 percent to 33.7 percent for poor participants. This shows that moral considerations are not a luxury the poor cannot afford; rather a basic motivation that is essential in explaining their distributive choices.

5 Concluding remarks

Much work on social preferences has focused on explaining why people give more away in distributive situations than that predicted by pure self-interest. In contrast, we have studied the extent to which a particular set of moral considerations, entitlements considerations, may contribute to explaining why people in the world's richest countries do not give away more of their income to people in the world's poorest countries.

Our main finding is that entitlements considerations are essential in explaining the choices of rich participants in the experiment, and are far more important than needs considerations. Even if the rich participants had acted as impartial spectators, they would have given away less than 50 percent to the poor participants. This clearly illustrates that it is not only self-interest that constrains people's willingness

Table 12: Poor meets rich: how important are different motivations?

		Simulations with different motivations			
statistic on share given	data	$S+E+N$	$E+N$	$S+E$	$S+N$
Mean	0.415	0.337	0.437	0.401	0.054
Median	0.467	0.318	0.463	0.429	0.031
Standard deviation	0.235	0.270	0.264	0.272	0.076
Share that takes all	0.051	0.125	0.051	0.083	0.407
Share that gives all	0.012	6.9e-4	0.003	0.002	2.2e-5
n	768	768000	768000	768000	768000

Note: The simulations are based on the estimates reported for the poor in column A in Table 8. 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 ideal, α and β, in accordance with the estimates. $S+E+N$ 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.

to transfer income to others. Moreover, the importance of entitlements considerations also explains why rich participants differentiated among poor participants, and transferred a larger amount of money to the productive poor.

This is not to say that needs considerations are irrelevant in explaining distributive behavior. If the needs motive were removed, the estimated choice model predicts that the average share of transfers from rich to poor would decrease from 31.7 percent to 22.5 percent of total income. In addition, the needs motive contributes to explaining the fact that the share of the opponent's production value given by rich participants to poor participants was much larger than the share given to other rich participants. However, there are large differences in the importance assigned to needs considerations. Almost 50 percent of the rich participants assigned almost no weight to needs in their choices, whereas 17.1 percent assigned more weight to needs than to entitlements.

The experiment was conducted with students in Tanzania and Uganda, and one may argue that the needs motive would have played a more prominent role if we rather involved the poorest of the poor in these two countries. However, even if this were the case, it is not clear what would have been the overall impact on average transfers from rich to poor. It seems likely that the production of the poor participants

also would have been lower in this case, and this would have pulled toward giving less, on average, to the poor participants. Moreover, it is important to note that the rich participants in the experiment clearly acknowledged the needs of the poor participants. In fact, we predict that if entitlements considerations were not present, the rich participants would have transferred 37.9 percent of total income to poor partcipants. Hence, our main finding is not that rich participants did not recognize the needs of the participants, and thus assigned much importance to entitlement considerations; rather, our experiment shows that even in a situation were the needs of the poor clearly are recognised, entitlements considerations appear to play a far more important role in distributive choices.

By comparing the choices of the rich and poor participants, we have also shown that these choices are consistent with a self-serving bias in the social preferences. The rich are less egalitarian and assign relatively greater importance to entitlements considerations than the poor. However, there are other possible explanations for this observations. For example, Uganda and Tanzania have only recently introduced substantial market reforms and have historically relied on egalitarian social and family structures. These cultural and social factors have most likely played an important role in shaping the social preferences that the poor participants in this experiment acted upon (see also Henrich, Boyd, Bowles, Camerer, Fehr, and Gintis (2004)).

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

We believe that the tension between entitlements considerations and needs considerations is important in a number of settings, including studies of international political initiatives in global development. Political initiatives, such as the United Nations Millennium Development Goals, fair trade initiatives, and debt relief campaigns place different emphasis on entitlements and needs. For example, the Millennium

Development initiative argues that needs considerations should be given absolute priority, whereas fair trade initiatives argue that the fundamental moral problem of international distribution is that producers in poor countries do not receive their fair entitlement. Other initiatives, such as the Jubilee Debt Campaign, appear to appeal to both entitlements and needs considerations when arguing for the cancellation of debt.

Typically, needs considerations justify far more redistribution than entitlements considerations, which may make it tempting for proponents of large-scale schemes of international redistribution to appeal to the needs argument. This may not be a wise strategy, however, if, as suggested by our experiment, entitlements considerations carry much more weight in the populations of rich countries. Initiatives justified on the basis of entitlements considerations may then find greater political support and be more sustainable than initiatives justified on the basis of needs considerations. Moreover, our study illustrates why making the rich less self-interested would not necessarily have a big impact on the amount of money transferred to the poor. In our experiment, we predict that a move from the actual level of self-interest to the very unlikely situation where everyone acts as impartial spectators would not imply the increase in average transfers from rich to poor of more than 13.7 percentage points (from 31.7 to 45.4 percent). This illustrates that if we were to observe a marginal decrease in self-interest in the richest countries of world, we should not expect a substantial increase in transfers to the poor. More morally oriented individuals do not only assign more weight to needs, but also to entitlements, and thus the net effect of a reduction in self-interest depends on the relative importance of these two moral considerations.

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