

“Egalitarian Motives in Humans”

1. Income alteration that cannot be attributed to egalitarian motives

In response to one reviewer’s suggestion, we considered a method to illustrate the amount of observed income alteration that cannot be attributed to egalitarian motives. Below we show a table with the relative frequencies of sending positive and negative tokens to group members as a function of whether the target and sender are above the average income for their group. Consistent with our hypothesis that egalitarian motives influence subject decisions, above average earners in cells (1) and (2) are much more likely to have their income reduced, while below average earners in cells (7) and (8) are much more likely to have it augmented. Furthermore, the strongest likelihood of spending money on tokens occurs in cell (7) where above average earners can pay to increase the income of below average earners.

	Relative Frequency of Sending Negative Token		Relative Frequency of Sending Positive Token	
	Target is Above Average Earner	Target is Below Average Earner	Target is Above Average Earner	Target is Below Average Earner
Sender is Above Average Earner	(1) 27.7%	(3) 13.0%	(5) 16.6%	(7) 36.1%
Sender is Below Average Earner	(2) 30.4%	(4) 12.2%	(6) 16.9%	(8) 26.6%

The only cells in this table where behavior is *always* inconsistent with egalitarian motives are (4) a below average earner sends negative tokens to a below average earner which makes both poorer, and (6) a below average earner sends positive tokens to an above average earner which makes the rich richer and the poor poorer. Since both of these frequencies are above zero, we acknowledge in the main text of the paper that there are other factors besides a concern for equality that induce costly taking and giving. However, just like the Fehr and Gaechter (*Nature*, 2002) and Falk, Fehr, and Fischbacher (*Econometrica*, 2005) experiments, our experiment does not establish and is not capable of establishing what these other factors are. Instead, our experiment shows that people are willing to pay for costly taking and giving even when the norm enforcement motive is eliminated, and consistent with an egalitarian motive, people are much more willing to pay for taking when the target is rich and giving when the target is poor.

One might be tempted to use the frequencies in cells (4) and (6) as a “baseline” level of non-egalitarian taking and giving that occurs under any circumstances, but these alternative motivations to take and give may vary under different conditions. For example, there may be a strong desire *not* to be the lowest earner; that motive would spur competition between below average earners in cell (4) but not between above average earners in cell (1). Thus the “baseline” may be lower for cell (1) than for cell (4). Since we do not know what the baselines are for categories other than cell (4) and cell (6), in the main text we only report the taking and giving that occurs in cell (4) and cell (6) as inconsistent with egalitarian motives. However, it is possible that some of the taking and giving observed in the other cells is also due to alternative motivations.

2. An alternative measure of inequality

Another referee suggested that we consider an alternative measure of inequality. In the main text we present evidence concerning the tendency of subjects to target above-average earners for taking and below-average earners for giving. However, even if subjects care about inequality, it is not obvious what reference point subjects might use to choose whom to target for taking and giving, and it is quite possible that some subjects might key their decision on their own income instead of the group average income. To compare these two different reference points, we present two tables of relative frequencies below:

Frequencies of Taking and Giving Using Sender's Income as Reference

	Relative Frequency of Taking	Relative Frequency of Giving
Target Higher Than Sender	28.2%	17.2%
Target Lower Than Sender	13.6%	31.7%

Frequencies of Taking and Giving Using Group Average Income as Reference

	Relative Frequency of Taking	Relative Frequency of Giving
Target Above Group Average	29.4%	16.8%
Target Below Group Average	12.6%	32.1%

First, notice that both types of reference point suggest subjects are more likely to take from the rich and give to the poor. Thus, the finding that egalitarian motives are exerting a strong influence on behavior is robust to varying specifications.

Second, notice that the frequencies using group average income as the reference generate more *discrimination* in all four categories. That is, subjects above the group average are more likely to be the target of taking and less likely to be the target of giving than subjects with higher income than the sender; subjects below the group average are less likely to be the target of taking and more likely to be the target of giving than subjects with lower income than the sender. This suggests that the group average income performs slightly better than own income as the reference point for egalitarian behaviour. The implication is that inequality aversion models with penalties for total inequality in the group may be more appropriate than models with penalties for the distance between one's own payoff and the average group payoff.

3. Text of the Instructions to Subjects

These instructions are adapted from instructions used by Fehr and Gächter (2002) for «Altruistic Punishment in Humans.»

You are now taking part in an economic experiment which has been financed by various foundations for research. If you read the following instructions carefully, you can, depending on your decisions, earn a considerable amount of money. It is therefore very important that you read these instructions carefully.

The instructions which we have distributed to you are solely for your private information. **It is prohibited to communicate with the other participants during the experiment.** Should you have any questions please ask us.

During the experiment we will not speak of Dollars but rather of tokens. During the experiment your entire earnings will be calculated in tokens. At the end of the experiment the total amount of tokens you have earned will be converted to Dollars at the following rate:

1 token = 4 cents.

At the end of the experiment your entire earnings from the experiment and the 10 dollar show up fee will be immediately paid to you in cash.

The experiment is divided into periods. In total, the experiment has five periods. In each period the participants are divided into groups of four. That is, your group has three other participants in it aside from you. Group composition will change in each period. **In each of the five periods your group of four is composed of different people. Therefore, in each of the five periods you will form a group with three different people.**

First Stage

At the beginning of each period the computer will randomly choose a number of tokens to give to each person in your group. The income of each group member from the project is calculated in the same way. An *income screen* will show you how many tokens you have earned at the first stage.

After the first stage concludes, we will begin the second stage.

Do you have any questions?

Second stage

You will see how much the individual group members have earned in the first stage. Please note that who is in your group is randomly determined in each period; the individuals in your group are likely to change over the course of the experiment.

You will now have the opportunity to **change** or **leave unchanged** the income of each of the other group members. You can either decrease their income by allocating negative tokens or you can increase their income by allocating positive tokens. The other group members can also reduce or increase your income, if they so wish.

You must decide how many negative or positive tokens to give to each of the other three group members and then enter a number for each of them in the boxes labeled "positive tokens" and "negative tokens". If you do not want to change the income of a particular

group member, you enter 0 in each box. If you do want to distribute negative tokens, enter the number you want to allocate into the box labeled "negative tokens". If you do want to distribute positive tokens, enter the number you want to allocate into the box labeled "positive tokens". You can move from one input field to the other by pressing the tab-key or by using the mouse.

If you distribute negative tokens, you must pay a cost for each of the negative tokens you allocate. **Negative tokens are integers between 0 and 10.** The more negative tokens you allocate, the higher your costs. The following formula indicates how much it costs to allocate negative tokens:

$$\text{Cost of negative tokens} = \text{Sum of allocated negative tokens.}$$

Each negative token therefore costs you 1 token. If, for instance, you allocate 2 negative tokens to one group member, you must pay a cost of 2 tokens. If you allocate 9 negative tokens to another member, it will cost you an additional 9 tokens; if you allocate 0 negative tokens to the last group member, there will be no additional cost. Therefore, you have allocated a total of 11 negative tokens and your **total costs** are 11 tokens (2+9+0).

Each negative token you allocate to a group member reduces his or her income by 3 tokens. If you allocate 0 tokens to a certain group member, you do not change the income of this group member. If, however, you allocate **one negative token** to a group member, you reduce his or her income by **3 tokens**. If you allocate **2 negative tokens** to a group member, you reduce his or her income by **6 tokens**.

If you distribute positive tokens, you must pay a cost for each of the positive tokens you allocate. Positive tokens are integers between 0 and 10. The more positive tokens you allocate, the higher your costs. The following formula indicates how much it costs to allocate positive tokens:

$$\text{Cost of positive tokens} = \text{Sum of positive tokens.}$$

Each positive token therefore costs you 1 token. If, for instance, you allocate 2 positive tokens to one group member, you must pay a cost of 2 tokens. If you allocate 9 positive tokens to another member, it will cost you an additional 9 tokens; if you allocate 0 positive tokens to the last group member, there will be no additional cost. Therefore, you have allocated a total of 11 positive tokens and your **total costs** are 11 tokens (2+9+0).

Each positive token you allocate to a group member increases his or her income by 3 tokens. If you allocate 0 positive tokens to a certain group member, you do not change the income of this group member. If, however, you allocate one positive token to a group member, you increase his or her income by **3 tokens**. If you allocate **2 positive tokens** to a group member, you increase his or her income by **6 tokens**.

Whether or by how much the income at the end of the period is in total increased or decreased depends on the total of the received positive or negative tokens. If somebody

receives a **total of 3 negative tokens** (from all other group members in this period), then his or her income would be decreased by **9 tokens**. If somebody receives a total of 4 **negative tokens**, his or her income is reduced by **12 tokens**. Likewise, if somebody receives a total of 3 positive tokens (from all other group members in this period), then his or her income would be increased by 9 tokens. If somebody receives a total of 4 positive tokens, his or her income is increased by 12 tokens. Your total income from the two stages is therefore calculated as follows:

Total income (in tokens) at the end of the period = period income =

$$\begin{aligned}
 &= \text{income from first stage (1)} \\
 &\quad - 3 * (\text{sum of received } \textit{negative} \text{ tokens}) \text{ (2)} \\
 &\quad + 3 * (\text{sum of received } \textit{positive} \text{ tokens}) \text{ (3)} \\
 &\quad - \text{costs of your } \textit{negative} \text{ tokens allocated to others (4)} \\
 &\quad - \text{costs of your } \textit{positive} \text{ tokens allocated to others (5)} \\
 &\quad \text{if } (1) + (2) + (3) + (4) + (5) \geq 0; \\
 &= \mathbf{0} - \text{costs of your distributed tokens} \\
 &\quad \text{if } (1) + (2) < 0
 \end{aligned}$$

Please note that your income in tokens at the end of the period can be negative, if the costs of your distributed (negative or positive) tokens exceed your income in tokens minus the cost of received negative tokens plus the cost of received positive tokens. **You can however avoid such losses with certainty through your own decisions!** After all participants have made their decision, your income from the period will be displayed on the screen.

Do you have further questions?

Control questions: Please answer all questions and write down how you have calculated the result! If you have questions please ask us!

1. At the second stage you distribute the following negative tokens to your three other group members: 9, 5, 0. What are the total costs of your distributed tokens?.....
2. What are your costs if you distribute a total of 0 negative and 0 positive tokens?.....
3. By how many tokens will your income from the first stage be reduced, when you receive a total of 0 negative tokens from the other group members?.....
4. By how many tokens will your income from the first stage be increased, when you receive a total of 4 positive tokens from the other group members?.....
5. By how many tokens will your income from the first stage be reduced, when you receive a total of 15 negative tokens from the other group members?.....