Supplementary Material for

Economic status and redistribution behaviors:

an experimental test of 3 mechanisms

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1. *Robustness of redistribution choices in an interested dictator game*

In the initial disinterested dictator game, participants had no vested interest in their redistribution choices. An interested version of the game was conducted, to evaluate whether the findings from the initial game were robust when self-interest was also at stake. We noted that relative to the initial disinterested dictator game (on average: R_{over} = .26, R_{under} = .43), redistribution in the interested dictator game reached much higher levels in the 'poor dictator' version (R_{over} = .62, R_{under} = .73), and lower in the 'rich dictator' version (R_{over} = 0.15, R_{under} = 0.20), consistently with self-interest of participants in both cases. Besides, an ANOVA indicated only main effects of status ($F(1,142)=10.13$, $p=.002$) and condition (poor vs. rich dictator, $F(1,142)=169.50$, $p<.001$), with no significant interaction ($F(1,142)=0.70$, $p = .40$). The effect of status on redistribution was thus observed also in conditions where self-interest of participants was at stake.

2. *Robustness of beliefs to incentives*

Participants also reported their beliefs regarding whether they were facing an easy task (E), and regarding whether their performance was higher (H) than others in their task condition. We note these beliefs P(E|S) and P(H|S), since these beliefs were reported after the status information S was revealed. Following Andreoni and Sanchez (2014), these beliefs were asked without and with incentives to evaluate whether participants' stated beliefs might be affected by their need to protect their social image, e.g. by understating P(E|S) or overstating P(H|S). We found no difference on average between stated and incentivized beliefs, for P(E|S) (0.47 vs. 0.46, $t(143)=0.26$, $p=.79$) or for P(H|S) (0.54 vs. 0.52, $t(143)=1.08$, $p=.28$). For both beliefs, the stated and revealed versions were also highly correlated across participants, even after the main effect of status was subtracted (all $r > .77$, $p < .001$). These analyses thus suggest that participants were sincere in their initial stated beliefs.

When considering the average of stated and incentivized beliefs, participants slightly underestimated the probability that they were in the easy condition, but this was not significant (mean P(E|S) = 0.46, t-test vs. 0.5: $t(143) = -1.44$, $p=.15$). Similarly, they slightly overestimated the probability that they outperformed others in the same difficulty condition, but this was not significant (mean P(H|S) = 0.53, t-test vs. 0.5: $t(143)=1.46$, $p=.15$).

3. A measure of fatalism based on beliefs about difficulty and relative performance

Beliefs about task difficulty and about relative performance are associated with internal factors and external factors that both contribute to the outcome of the task. Thus, we used these beliefs to build another measure of fatalism. Our goal here was to contrast for each participant the subjective probability of becoming an overachiever given that one has received an easy task but performed worse relative to others in that task vs. the subjective probability of becoming an overachiever given that one has received a difficult task but performed better than others in that task.

Formally, we note the following events:
E = the task is easy (task difficulty is low)
D = the task is difficult (task difficulty is high)
L = individual performance is lower than the median of others with the same task difficulty
H = individual performance is higher than the median of others with the same task difficulty
O = the participant is an overachiever (performance over the median of all participants)
U = the participant is an underachiever (performance below the median of all participants)

On the one hand, the two probabilities of interest are P(O|L,E) and P(O|H,D). On the other hand, the subjective probabilities we have elicited from participants are P(E|S) and P(H|S), which correspond to P(E|O) and P(H|O) for overachievers, and to P(E|U) and P(H|U) for underachievers.
For overachievers, using Bayes' rule we have:

$$P(E|O) = \frac{P(O|E) \times P(E)}{P(O)}$$

We can further develop $P(O|E)$ by considering the different difficulty levels:

$$P(O|E) = P(O|L,E)P(L|E) + P(O|H,E)P(H|E)$$

and similarly for $P(O)$ at the denominator:

$$P(O) = P(O|L,E)P(L|E)P(E) + P(O|H,E)P(H|E)P(E) + P(O|L,D)P(L|D)P(D) + P(O|H,D)P(H|D)P(D)$$

Assuming that relative performance and task difficulty are independent, such that *P(H|E)=P(H|D)=P(H)* and *P(L|E)=P(L|D)=P(L)*, introducing the notation *P(H)=h*, and given that *P(E)=P(D)=.5*, this becomes:

$$P(E|O) = \frac{P(O|L,E) \times (1-h) + P(O|H,E) \times h}{P(O|L,E) \times (1-h) + P(O|H,E) \times h + P(O|L,D) \times (1-h) + P(O|H,D) \times h}$$

Using a similar approach, for the belief about performance we have for overachievers:

$$P(H|O) = \frac{P(O|H,E) \times h + P(O|H,D) \times h}{P(O|L,E) \times (1-h) + P(O|H,E) \times h + P(O|L,D) \times (1-h) + P(O|H,D) \times h}$$

For underachievers, similar expressions can be derived for *P(E|U)* and *P(H|U)*, when considering that *P(O)=1-P(U)*.

As a result, the two beliefs P(E|S) and P(H|S) can be expressed from the following 5 parameters: *h*, *P(O|H,E)*, *P(O|H,D)*, *P(O|L,E)* and *P(O|L,D)*. To find the 5 parameter values at the individual level, we further constrained the search, and considered the following optimization problem:

- minimizing the sum of quadratic error between the predicted beliefs for P(E|S) and P(H|S) and the actual beliefs elicited from participants. For the actual beliefs, we considered the average of the belief elicited without incentive and with incentives, given the strong correlation between them see Appendix 2.
- minimizing the quadratic error between *P(O|H,E)* and 1, and between *P(O|L,D)* and 0. This constraint was given a weight of .001 relative to the first criterion.
- all parameter values are between 0 and 1. This constraint was incorporated implicitly by converting the parameterization to log-odds.

A Nelder-Mead optimization procedure was performed using the *optim* function in R. For each participant, the optimization was repeated 3^5 times with different starting points, and a maximum of 10^4 function iterations for each repetition.

The resulting parameter values were on average:

	h	P(O|H,E)	P(O|L,E)	P(O|H,D)	P(O|L,D)
overachievers	0.355	0.892	0.458	0.687	0.000
underachievers	0.663	1.00	0.474	0.486	0.104

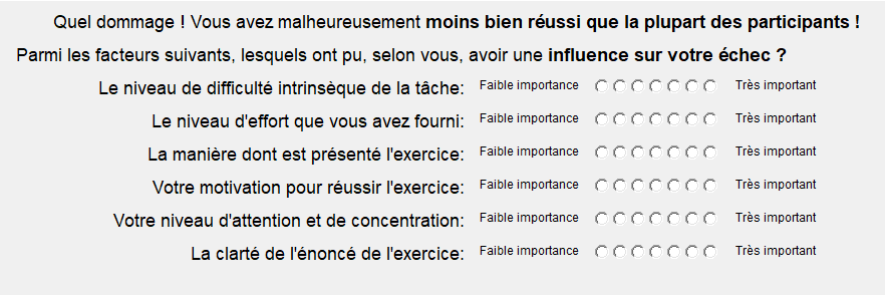
Finally, the new measure of fatalism was constructed as follows:

$$\frac{P(O|L,E) - P(O|H,D)}{P(O|L,E) + P(O|H,E) + P(O|L,D) + P(O|H,D)}$$

The numerator corresponds to the opposition between external and internal factors which is the purpose of the measure of fatalism. The denominator was introduced to compensate for occasional aberrant values in the parameters of interest.

4. *Screenshots of the experiment*

4.1.Questions for the fatalism score



English translation

For overachievers :
Congratulations ! You have done better than most of the participants !
Which of the following factors do you think may have influenced your success?

For underachievers :
What a pity ! Unfortunately you have been less successful than most of the participants !
Which of the following factors do you think may have influenced your failure?

For both groups:
The intrinsic difficulty level of the task
The level of effort you put in
The way the exercise is presented
Your motivation to succeed
Your level of attention and concentration
The clarity of the exercise instructions

All items had to be rated on a 7 point scale from weak importance to very important.
External factors correspond to items 1, 3, 6. Internal factors correspond to items 2, 4, 5.

4.2. *Elicitation of beliefs about task difficulty*

We are going to play a game in which you will have the possibility to win 55 Tokens.

We remind you that at the question "Do you think you were in the difficult or in the easy condition?" You answered: difficult

In this game, how do you prefer to be paid?

If you bet on your answer, you win 55 Tokens if your answer is correct (i.e. if you actually were in the difficult condition) and nothing otherwise.

At the end of the experiment, one over the 6 following situations will be randomly drawn to compute your earnings.

Bet on your answer ○ ○ Bet on a lottery with 100% chance of wining 55 Tokens and 0% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 90% chance of wining 55 Tokens and 10% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 80% chance of wining 55 Tokens and 20% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 70% chance of wining 55 Tokens and 30% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 60% chance of wining 55 Tokens and 40% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 50% chance of wining 55 Tokens and 50% of wining 0 Tokens

4.3. *Elicitation of beliefs about performance relative to others*

We are going to play a second game in which you have also the possibility to win 55 Tokens.

We remind you that to the question "among the player that were in the same difficult level as you were, do you think your performance was relatively higher than average?", you answered "no"

In this game how do you prefer to be paid?

If you bet on your answer you win 55 Tokens if your answer was correct i.e. if you answered yes (no) and your performance was effectively higher (lower) than the participants that were in the same difficulty level as you, you win nothing otherwise.

Bet on your answer ○ ○ Bet on a lottery with 100% chance of wining 55 Tokens and 0% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 90% chance of wining 55 Tokens and 10% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 80% chance of wining 55 Tokens and 20% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 70% chance of wining 55 Tokens and 30% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 60% chance of wining 55 Tokens and 40% of wining 0 Tokens

Bet on your answer ○ ○ Bet on a lottery with 50% chance of wining 55 Tokens and 50% of wining 0 Tokens

4.4. *Attitude towards redistribution 1: fairness ratings in an hypothetical scenario*

Thomas and Jules are on a desert island where their only food consists in bananas. They can pick up as many bananas as they want by climbing a tree. They both have the same physical and mental capacities. Thomas picks up 12 bananas and Jules 6. Thanks to luck, Jules can pick up two additional bananas that fall off a tree.

At the end of the day they choose how to share the bananas. On a scale from 1 to 7, to what extent do you find the following allocations fair?

Thomas and Jules keep the bananas they picked up from the tree and share equitably the bananas collected thanks to luck: Thomas takes 13 bananas and Jules 7.

Unfair ○ ○ ○ ○ ○ ○ ○ Fair

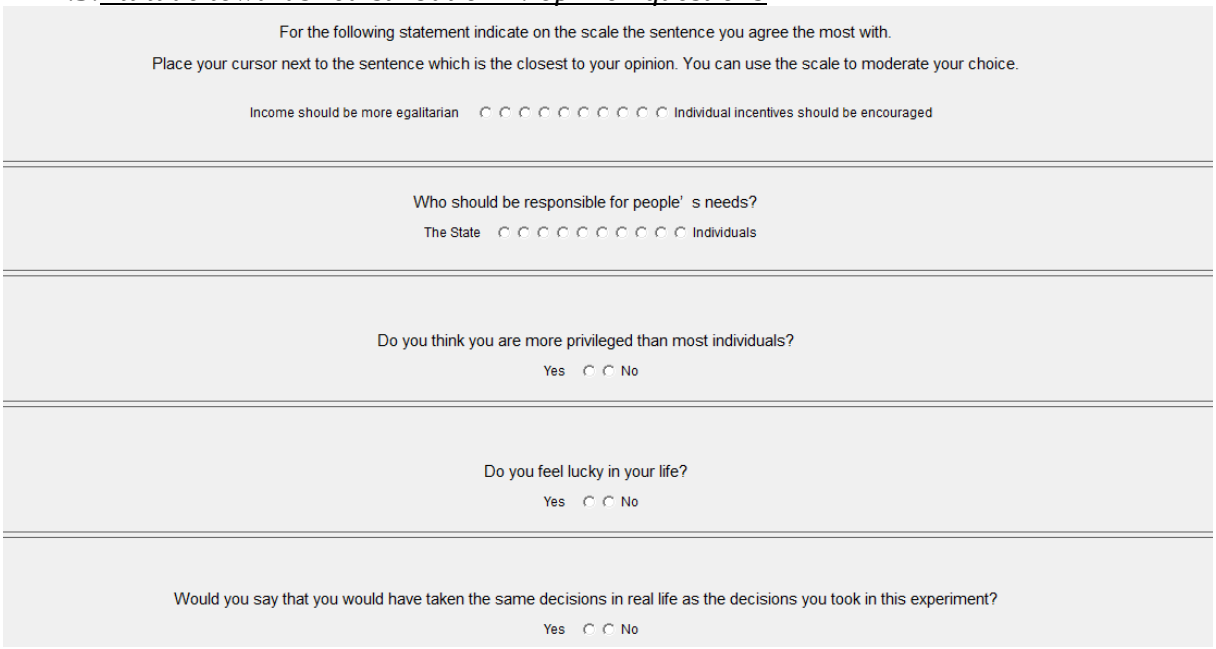
Thomas and Jules share the 20 bananas in equal parts: they each keep 10 bananas

Unfair ○ ○ ○ ○ ○ ○ ○ Fair

They each keep their bananas: Thomas takes 12 bananas and Jules 8.

Unfair ○ ○ ○ ○ ○ ○ ○ Fair

4.5.Attitude towards redistribution 2: opinion questions



5. Parameters for the 5 different hypothetical redistribution scenarios:

Scenario	Pick-up by	Individual 1	Individual 2
1	Effort	4	8
	Luck	8	0
	Total	12	8
2	Effort	12	6
	Luck	0	2
	Total	12	8
3	Effort	12	6
	Luck	2	0
	Total	14	6
4	Effort	10	6
	Luck	0	4
	Total	10	10
5	Effort	12	4
	Luck	0	4
	Total	12	8