Attitudes Towards Inherited Inequality II - Pre-Analysis Plan

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1 Introduction

Inequality is often inherited: individuals are not involved in the process that generates inequality, yet end up with different amounts of resources or opportunities based solely on relations to other people. We have previously conducted an online survey experiment with a broadly representative sample of the US population to study individuals' redistributive preferences in situations featuring inherited inequality. This first study has been pre-registered at the AEA RCT Registry (RCT ID: AEARCTR-0007948).[1] We now plan to conduct a second replication study which includes some methodological improvements. This pre-analysis plan outlines the research design of the second study, its data collection process, and empirical strategy. In particular, it explicates our (confirmatory) hypotheses and how we test them. The instructions used in the survey experiment will be uploaded under „Supporting Documents and Materials“.

2 Experimental Design

Our experiment builds on the impartial spectator paradigm (Cappelen et al. 2013) and consists of two stages: an earnings stage in which an initial allocation of a fixed sum of \$10 among two stakeholders is determined, and a redistribution stage in which impartial spectators may redistribute earnings to determine the final allocation among these stakeholders. We are interested in spectators' redistribution decisions.

2.1 The Earnings Stage

We implement four versions of the earnings stage. In all versions workers work on a real effort task ("slider task", Gill and Prowse (2012)) before they are divided into pairs of two. Versions differ in two dimensions: the type of inequality—"classic" or "inherited",

[1] The registration can be accessed here: https://doi.org/10.1257/rct.7948-1.5000000000000004

$\omega \in \Omega = \{\mathrm{CI}, \mathrm{II}\}$—and the source of inequality—luck or merit, $\rho \in P = \{\mathrm{L}, \mathrm{M}\}$. The 2x2 variation in the earnings stage leaves us with the following types of situations:

- **CI-M:** Workers choose to complete between 0 and 40 tasks. \$10 are distributed between the two workers of a pair. The initial distribution corresponds to the relative number of completed tasks, rounded to the next 20-cent step.
- **CI-L:** Workers complete exactly 20 tasks. \$10 are distributed between the two workers of a pair. The initial distribution is determined by a random draw. Each distribution — in steps of 20 cents — is equally likely.
- **II-M:** Workers choose to complete between 0 and 40 tasks. Each worker choses a real-life friend and \$10 are distributed between the workers' friends. The initial distribution corresponds to the relative number of completed tasks, rounded to the next 20-cent step.
- **II-L:** Workers complete exactly 20 tasks. Each worker choses a real-life friend and \$10 are distributed between the workers' friends. The initial distribution is determined by a random draw. Each distribution — in steps of 20 cents — is equally likely.

Note that w.l.o.g. an initial distribution is described by $(s, 10 - s)$, where $s \leq 5$ is the share of the \$10 initially allocated to stakeholder 1.

2.2 The Redistribution Stage

Based on the four types of situations in the earnings stage, we implement a 2x2 within-subjects design. Spectators make redistribution decisions for a sequence of 24 situations $\sigma \in \Sigma_0 = \Omega \times P \times S$, where $S = (S_{\text{hypo}}, S_{\text{true}})$ is a set of five hypothetical initial allocations (constant across spectators) and one randomly drawn "true" initial allocation from a situation which has actually occurred in the earnings stage (not constant). Spectators make redistribution decisions for all 6 situations of a given type before they proceed to the next type of situation. We completely randomize the order of all four types of situations (CI-M, CI-L, II-M, II-L) for each subject and also the order of situations within each type of situation. Spectators learn the situation's type as well as the initial distribution before they make the redistribution decision for that situation, $s_i^r(\sigma)$, which describes the share of the \$10 finally allocated to stakeholder 1. In our main analysis we will only consider redistribution decisions for the 20 situations based on hypothetical initial allocations,

$\Sigma = \Omega \times P \times S_{\text{hypo}}$, because they are the same for all spectators. The redistribution decisions are (probabilistically) incentivized for all spectators.

2.3 Key Variables

Main Independent Variables

Important for our main analysis are the following independent variables which describe the situation $\sigma = (\omega, \rho, s)$ a spectator is confronted with:

- The **type of inequality**—classic or inherited—described by $\omega \in \{\text{CI}, \text{II}\}$.
- The **source of inequality**—luck or merit—described by $\rho \in \{\text{M}, \text{L}\}$.
- The initial **extent of inequality** described by $\Delta \coloneqq 5 - s$.

We will describe the type of inequality, source of inequality, and initial extent of inequality in situation σ by ω_σ, ρ_σ, and Δ_σ.

Main Dependent Variable

Based on the redistribution decisions, we define our main dependent variable as follows:

- The **extent of redistribution** implemented by spectator i in situation σ is given by
$$\theta_i(\sigma) \coloneqq \frac{s_i^r(\sigma) - s_\sigma}{5 - s_\sigma} \tag{1}$$
and describes the fraction of inequality in the initial allocation equalized.

Fairness Types

The within-subject variation in the type of situation spectators are confronted with allows us to categorize spectators into different fairness types. We will categorize spectators based on their decisions in situations with classic inequality and investigate which types of spectators drive the differences in redistribution decisions between situations with classic and inherited inequality. To that end, we define an additional set of variables.

- The **average extent of redistribution** implemented by spectator i in each of the four types of situations is given by

$$\bar{\theta}_i|_{(\omega,\rho)} \coloneqq \frac{1}{\sum\limits_{\sigma \in \Sigma|_{(\omega,\rho)}} 1} \sum_{\sigma \in \Sigma|_{(\omega,\rho)}} \theta_i(\sigma) \quad \forall \quad (\omega, \rho) \in \{\text{CI-L}, \text{CI-M}, \text{II-L}, \text{II-M}\}. \tag{2}$$

- Spectator i's **tendency to (not) equalize** at least half of the inequality in the initial allocation for a given type of situation (ω, ρ) is described by the binary variable

$$R_{i;\,\omega,\rho} \coloneqq \begin{cases} 1 & \text{if} \quad \bar{\theta}_i|_{(\omega,\rho)} \geq 0.5 \\ 0 & \text{if} \quad \bar{\theta}_i|_{(\omega,\rho)} < 0.5. \end{cases} \tag{3}$$

- A spectator's **fairness type** is described by

$$\tau_{i;\mathrm{CI}} \coloneqq \begin{cases} \text{Egalitarian (E))} & \text{if} \quad R_{i;\,\text{CI-L}} = 1 \;\&\; R_{i;\,\text{CI-M}} = 1 \\ \text{Libertarian (L)} & \text{if} \quad R_{i;\,\text{CI-L}} = 0 \;\&\; R_{i;\,\text{CI-M}} = 0 \\ \text{Meritocrat (M)} & \text{if} \quad R_{i;\,\text{CI-L}} = 1 \;\&\; R_{i;\,\text{CI-M}} = 0 \\ \text{Non-Classifiable (NC)} & \text{if} \quad R_{i;\,\text{CI-L}} = 0 \;\&\; R_{i;\,\text{CI-M}} = 1 \end{cases} \tag{4}$$

- A spectator's **pattern of redistribution** in situations with inherited inequality ($\tau_{i;\mathrm{II}}$) is defined analogously.

- Finally, we describe whether a spectator's redistribution pattern in situations with inherited inequality is—given his or her fairness type—**consistent with the theory** (not outlined here) with the following binary variable:

$$C_i \coloneqq \begin{cases} 1 & \text{if} \quad (\tau_{i;\,II} = \tau_{i;\,CI} \in \{\text{E, L}\}) \;\vee (\tau_{i;\,II} \in \{\text{E, M}\} \wedge \tau_{i;\,CI} = M) \\ 0 & \text{else,} \end{cases} \tag{5}$$

2.4 Data Collection

Workers (+ Friends)

We recruit four groups of workers who participate in the four versions of the earnings stage and serve to incentivize spectators via the BonnEconLab subject pool. Workers participate in the earnings stage online. Friends are entirely passive.

Spectators

We aim to recruit a sample of 550 spectators representative of the US general population in terms of age, gender and ethnicity via the survey provider Prolific. Small deviations from the target sample size may occur due to organizational constraints on the side of the survey provider. Spectators participate in the redistribution stage online.

2.5 Exclusion Criteria

We will not analyze data from subjects who fail both attention checks. Hence, the desired sample size of 550 subjects only includes those who pass at least one attention check. If a subject rushes through the instructions of a type of situation (defined as trying to submit responses to the respective set of control questions after less then 30 seconds) the redistribution decisions of that subject for that type of situation will be removed from our main sample too. However, such subjects will be included in the desired sample size of 550.

2.6 Restricted Sample

Our hypotheses below are specified not on the main sample, but on a restricted sample of spectators and their decisions. In the restricted sample, we

- disregard an individual decision $s_i^r(\sigma)$ if it implies an extent of redistribution $\theta_i(\sigma) \notin [0, 1]$, that is, if a spectator redistributes in favour of the already advantaged stakeholder ($\theta_i(\sigma) < 0$) or allocates more than \$5 to the initially disadvantaged stakeholder ($\theta_i(\sigma) > 1$), and
- entirely drop a spectator if we disregard three or more of his decisions within any of the four types of situations (ω, ρ).

3 Empirical Strategy

3.1 Hypotheses

Type & Source of Inequality

The first set of hypotheses regards the effects of the type of inequality (classic vs. inherited) and the source of inequality (merit vs. luck) on spectators' redistribution decisions:

- **Hypothesis 1:** In CI as well as II situations, subjects redistribute less if inequality is based on merit instead of luck.
- **Hypothesis 2:** There is more redistribution in II situations than in CI situations.
- **Hypothesis 3:** The higher extent of redistribution in II situations compared to CI situations is driven by the subset of situations in which inequality is based on merit.

Fairness Types

The final hypothesis regards the fairness type we expect to drive differences between redistribution decisions in situations with classic versus inherited inequality:

- **Hypothesis 4:** The higher extent of redistribution in II situations compared to CI situations, driven by the subset of situations in which inequality is based on merit, is driven by spectators who endorse a meritocratic fairness view towards classic inequality.

3.2 Analysis

We test hypotheses 1-4 on the restricted sample with OLS regressions, clustering standard errors on the spectator level.

Hypothesis 1

We will run the following regression separately for situations with classic and inherited inequality:

$$\theta_{i,\sigma} = \alpha + \alpha_M M_\sigma + \delta\Delta_\sigma + \epsilon_{i,\sigma}, \tag{6}$$

where M_σ is an indicator which takes value 1 if $\rho_\sigma = M$. Formally, we will test for both types of inequality H_0: $\alpha_M = 0$ against H_1: $\alpha_M \neq 0$ and interpret $\alpha_M < 0$ and the rejection of H_0 as evidence in favour of Hypothesis 1.

Hypothesis 2

To test this hypothesis, we will run the following regression:

$$\theta_{i,\sigma} = \beta + \beta_{II} II_\sigma + \delta\Delta_\sigma + \epsilon_{i,\sigma}, \tag{7}$$

where II_σ is an indicator which takes value 1 if $\omega_\sigma = \text{II}$. Formally, we will test H_0: $\beta_{II} = 0$ against H_1: $\beta_{II} \neq 0$ and interpret $\beta_{II} > 0$ and the rejection of H_0 as evidence in favour of Hypothesis 2.

Hypothesis 3

To test this hypothesis, we will run the following regression:

$$\theta_{i,\sigma} = \alpha + \alpha_M M_\sigma + \beta II_\sigma + \beta_M M_\sigma II_\sigma + \delta\Delta_\sigma + \epsilon_{i,\sigma}. \tag{8}$$

Formally, we will test H_0^a: $\beta = 0$ against H_1^a: $\beta \neq 0$ and H_0^b: $\beta_M = 0$ against H_1^b: $\beta_M \neq 0$. We will interpret the results as evidence in favour of Hypothesis 3 if $\beta_M > 0$ and we reject H_0^b but not H_0^a.

Hypothesis 4

After we categorized spectators into the different fairness types as described in subsection 2.3, we will run the following regression to test Hypothesis 4:

$$
\begin{aligned}
\theta_{i,\sigma} = \quad & \alpha && + \alpha^L L_i && + \alpha^M M_i && + \alpha^{NC} NC_i \\
& + \alpha_M M_\sigma && + \alpha_M^L M_\sigma L_i && + \alpha_M^M M_\sigma M_i && + \alpha_M^{NC} M_\sigma NC_i \\
& + \beta II_\sigma && + \beta^L II_\sigma L_i && + \beta^M II_\sigma M_i && + \beta^{NC} II_\sigma NC_i \\
& + \beta_M M_\sigma II_\sigma && + \beta_M^L M_\sigma II_\sigma L_i && + \beta_M^M M_\sigma II_\sigma M_i && + \beta_M^{NC} M_\sigma II_\sigma NC_i \\
& && && && \qquad + \delta \Delta_\sigma + \epsilon_{i,\sigma}
\end{aligned}
\tag{9}
$$

where L_i, M_i, and NC_i are indicators for spectator i's fairness type. We will formally test H_0^a: $\beta_M^M = 0$ against H_1^a: $\beta_M^M \neq 0$ and H_0^b: $\beta_M^M = \beta_M^L$ against H_1^b: $\beta_M^M \neq \beta_M^L$. We will interpret the results as evidence in favour of Hypothesis 4 if we find $\beta_M^M > 0$ and $\beta_M^M > \beta_M^L$ and reject both H_0^a and H_0^b.

Exploratory Analyses

Consistency of Theory and Observed Behaviour: To assess how well our theoretical framework captures the patterns in spectators' redistribution decisions, we plan to test how well our categorization of spectators into different fairness types allows us to predict the pattern in their redistributive choices in situations with inherited inequality. We will determine the (restricted) sample proportion of spectators whose redistribution pattern is consistent with the theoretical framework $\bar{C}_i$ as a point estimate of the population proportion and report the corresponding (Clopper-Pearson) exact confidence interval.

Heterogeneity in Fairness Types and Redistribution Decisions:

We plan to explore whether the distribution of fairness types differs by socioeconomic characteristics (gender, age, education, party affiliation, frequency of voting, income, wealth). To that end, for each sociodemographic characteristic we will construct a binary split of the (restricted) spectator sample (male/female; no college degree/college degree; Republican/Democrat; above/below median for age and voting frequency; in the two upper/lower categories for income and wealth) and determine the distribution over the following two-dimensional fairness types $(\tau_{CI}, \tau_{II}) \in \{(\text{E, E}), (\text{L, L}), (\text{M, M}), (\text{M, E})\}$ and a „residual“ type which encompasses all remaining spectators. We focus on this subset of types because we expect these types to be most prevalent based on theoretical considerations. For each binary split, we will test whether the distribution over types differs by means of a (two-sided) Fisher exact test. We will adjust for multiple hypothesis testing by applying the Benjamini-Hochberg procedure (1 test for each sociodemographic variable, i.e. 7 tests in total).

We further plan to explore whether there is heterogeneity in the treatment effects across any of the binary splits. To that end, we will run the following OLS regression on the restricted sample:

$$\begin{aligned}\theta_{i,\sigma} = \alpha + \alpha^D D_i + \alpha_M M_\sigma + \alpha_M^D M_\sigma D_i + \beta II_\sigma + \beta^D II_\sigma D_i \\ + \beta_M M_\sigma II_\sigma + \beta_M^D M_\sigma II_\sigma D_i + \delta\Delta_\sigma + \epsilon_{i,\sigma},\end{aligned}$$

where D_i is an indicator for spectator i being female (or having a college degree, ...), clustering standard errors on the spectator level. Formally, we will test H_0^a: $\beta^D = 0$ against H_1^a: $\beta^D \neq 0$ and H_0^c: $\beta_M^D = 0$ against H_1^c: $\beta_M^D \neq 0$ for each of the regressions with different sociodemographic indicators D_i. We will interpret the results as evidence of heterogeneous effects if we reject any of the null hypotheses, controlling for multiple hypothesis testing by applying the Benjamini-Hochberg procedure (2 tests for each of the 7 sociodemographic variables, i.e. 14 tests in total).

References

Cappelen, Alexander W., James Konow, Erik Sørensen, and Bertil Tungodden (2013): "Just Luck: An Experimental Study of Risk-Taking and Fairness", *American Economic Review* 103.4, pp. 1398–1399, ISSN: 00028282, DOI: 10.1257/aer.20100273.

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