

2. Simulated Data

true

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```
knitr::opts_chunk$set(echo = FALSE)
library(data.table)
library(magrittr)
library(stringr)
library(glue)
library(DescTools) # gini coefficient
library(kableExtra)
library(downloadthis)
```

Background

In an attempt to incorporate uncertainty to Gächter et al. (2017)’s dynamic public goods game (DPGG), I plan to run a series of remote online experiments using oTree (Chen, Schonger, and Wickens 2016). The first experiment will replicate Gächter et al.’s NOPUNISH 10-period version as close as possible (given the remote circumstances). The current demo version of the experiment can be found here. Click here to visit the corresponding Github repository.

This report is the second in a series of reports covering this project. It explains how simulated data is processed and prepared for analyses.

Replication Data

First round

Eventually, we’ll be interested in the participants’ first round’s behavior, as it indicates their willingness to cooperate before they interact with one another. As a consequence, 120 participants yield 120 observations that shall be stored in a data table called **replicationFirstRound**. This table carries information on a participant’s group members’ contributions **othersContribution**, the participant’s **ownContribution** and a trust measure¹ obtained from the personality test at the end of the experiment.

The data is saved in two formats (**csv** and **rda**) in `../.../data/processed/`. If you have not downloaded the repository and access the html file, you can also obtain a csv-file by clicking on the button above (HTML-only feature).

All rounds

Because we are most interested in the dynamics of the game, the most important data frame shall reflect the interactions within groups over time. I’ll subset the data using a regular expression such that one obtains the

¹“Generally, others can be trusted.” Likert scale ranging from 0 (do not agree) to 6 (agree).

initial belief as well as endowments, contributions, gains and stocks for each individual (preliminarily).²³

Because the the endowments are dynamic, the contributions may vary within and across groups. For this reason, a **share** (reporting the share of a respondent's current endowment contributed) is calculated. The first few rows of the data table look as follows:

To obtain a long (instead of a wide) table that reports these variables for independent observations over time, the data has to be transformed and aggregated. Instead of listing individuals, it shall list groups over time.⁴

This process takes a few steps:

Also, the Gini coefficient has to be calculated to measure inequality within groups.

Finally, the data that was stored in a list will be reduced to a single data table.

Next, we'll flag groups that are richer and poorer than the median group.

The result contains `NROW(DT)/4` observations in 10 rounds and is saved as a **csv** and as a **rda** file in `../../../../data/processed/`.

The first few rows look as follows. The full data set can be downloaded with a click on the button below (in case you only have access to this **html** file).

Covariates

Outlook

The next step is to reproduce Gaechter et al.'s figures and tables and to compare our results to their results. This will be done in the third report.

Chen, Daniel L., Martin Schonger, and Chris Wickens. 2016. "oTree-an Open-Source Platform for Laboratory, Online, and Field Experiments." *Journal of Behavioral and Experimental Finance* 9: 88–97. <https://doi.org/10.1016/j.jbef.2015.12.001>.

Gächter, Simon, Friederike Mengel, Elias Tsakas, and Alexander Vostroknutov. 2017. "Growth and Inequality in Public Good Provision." *Journal of Public Economics* 150: 1–13. <https://doi.org/10.1016/j.jpubeco.2017.03.002>.

²³There will also be information on the respondent's self stated comprehension of the task as well as a dummy indicating whether a bot was active (which implies that some group member dropped out.)

³In addition the data table contains a **participant.code**, a **session.code** as well as some group and individual ID for identification and merging purposes.

⁴These steps are eliminating lots of information. If one desires an extensive data table containing individual- and group-level information over time, one can merge the resulting table with the small grained data.