

WEB APPENDIX FOR

**“SOCIAL PREFERENCES, BELIEFS, AND THE DYNAMICS OF FREE
RIDING IN PUBLIC GOOD EXPERIMENTS”**

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INSTRUCTIONS FOR THE EXPERIMENT

This is a translation of the original German version. We present the instructions of the P-C experiments here; those of the C-P experiments were adapted accordingly. They are available upon request.

Instructions for the P-Experiment

You are now taking part in an economics experiment financed by the Swiss Science Foundation. If you read the following instructions carefully, you can – depending on your decisions – earn some more money in addition to the 10 Francs, which you can keep in any case. The entire amount of money which you earned with your decisions will be added up and paid to you in cash at the end of the experiment. These instructions are solely for your private information. **You are not allowed to communicate during the experiment.** If you have any questions, please ask us. Violation of this rule will lead to the exclusion from the experiment and all payments. If you have questions, please raise your hand. A member of the experimenter team will come to you and answer them in private.

We will not speak of Francs during the experiment, but rather of points. Your whole income will first be calculated in points. At the end of the experiment, the total amount of points you earned will be converted to Francs at the following rate:

1 point = 35 centimes.

All participants will be divided in groups of four members. **Except for us - the experimenters - no one knows who is in which group.**

We describe the exact experiment process below.

The decision situation

You will learn how the experiment will be conducted later. We first introduce you to the basic decision situation. You will find control questions at the end of the description of the decision situation that help you to understand the decision situation.

You will be a member of a group consisting of **4 people**. Each group member has to decide on the allocation of 20 points. You can put these 20 points into your **private account** or you can invest them **fully or partially** into a project. Each point you do not invest into the project, will automatically remain in your private account.

Your income from the private account:

You will earn one point for each point you put into your private account. For example, if you put 20 points into your private account (and therefore do not invest into the project) your income will amount to exactly 20 points out of your private account. If you put 6 points into your private account, your income from this account will be 6 points. **No one except you earns something from your private account.**

Your income from the project

Each group member will profit equally from the amount you invest into the project. On the other hand, you will also get a payoff from the other group members' investments. The income for each group member will be determined as follows:

$$\boxed{\text{Income from the project} = \text{sum of all contributions} \times 0.4}$$

If, for example, the sum of all contributions to the project is 60 points, then you and the other members of your group each earn $60 \times 0.4 = 24$ points out of the project. If four members of the group contribute a total of 10 points to the project, you and the other members of your group each earn $10 \times 0.4 = 4$ points.

Total income:

Your total income is the sum of your income from your private account and that from the project:

<i>Income from your private account (= 20 – contribution to the project)</i>
<i>+ Income from the project (= 0.4 × sum of all contributions to the project)</i>
<i>Total income</i>

Control questions:

Please answer the following control questions. They will help you to gain an understanding of the calculation of your income, which varies with your decision about how you distribute your 20 points. *Please answer all the questions and write down your calculations.*

1. Each group member has 20 points. Assume that none of the four group members (including you) contributes anything to the project.
What will *your* total income be? _____
What will the total income of the *other* group members be? _____
2. Each group member has 20 points. You invest 20 points in the project. Each of the other three members of the group also contributes 20 points to the project.
What will *your* total income be? _____
What will the total income of the *other* group members be? _____
3. Each group member has 20 points. The other 3 members contribute a total of 30 points to the project.
 - a) What will *your* total income be, if you – in addition to the 30 points – invest 0 points into the project?
Your Income _____
 - b) What will *your* total income be, if you – in addition to the 30 points – invest 8 points into the project?
Your Income _____
 - c) What will *your* total income be, if you – in addition to the 30 points – invest 15 points into the project?
Your Income _____
4. Each group member has 20 points at his or her disposal. Assume that you invest 8 points to the project.
 - a) What is your total income if the other group members – in addition to your 8 points – contribute another 7 points to the project?
Your Income _____
 - b) What is your total income if the other group members – in addition to your 8 points – contribute another 12 points to the project?
Your Income _____
 - c) What is your income if the other group members – in addition to your 8 points – contribute another 22 points to the project?
Your Income _____

The Experiment

The experiment includes the decision situation just described to you. You will be paid at the end of the experiment based on the decisions you make in this experiment. The experiment will only be conducted **once**. As you know, you will have 20 points at your disposal. You can put them into a private account or you can invest them into a project. Each subject has to make **two types** of decisions in this experiment, which we will refer to below as the **“unconditional contribution”** and **“contribution table”**.

- You decide how many of the 20 points you want to invest into the project in the **unconditional contribution**. Please indicate your contribution in the following screen:

A screenshot of a computer dialog box titled "Period" with "1 of 1" indicated. The main area contains the text "Your unconditional contribution to the project" followed by a blue rectangular input field. At the bottom right is a red "OK" button. Below the input field is a "Help" section with the instruction: "Please enter your unconditional contribution to the project. Press \"OK\" when you are done."

After you have determined your unconditional contribution, please click “OK”.

- Your second task is to fill in a “contribution table” where you indicate how many tokens **you want to contribute** to the project **for each possible average contribution of the other group members** (rounded to the next integer). You can condition your contribution on that of the other group members. This will be immediately clear to you if you take a look at the following table. This table will be presented to you in the experiment:

A screenshot of a computer dialog box titled "Period" with "1 of 1" indicated. The main area is titled "Your conditional contribution to the project (Contribution schedule)" and displays a 7x4 grid of input fields. The columns are labeled 0, 7, 14, and 20. The rows are labeled 1 through 6, with row 0 being empty. Each cell contains a blue rectangular input field. At the bottom right is a red "OK" button. Below the input grid is a "Help" section with the instruction: "Enter the amount which you want to contribute to the project if the others make the average contribution which stands to the left of the entry field. When you have completed your entries, press \"OK\"."

The numbers are the possible (rounded) average contributions of the **other** group members to the project. You simply have to insert how many tokens you will contribute to the project into each input box – conditional on the indicated average contribution. **You have to make an entry into each input box.** For example, you will have to indicate how much you contribute to the project if the others contribute 0 tokens to the project, how much you contribute if the others contribute 1, 2, or 3 tokens, etc. You can insert **any integer numbers from 0 to 20** in each input box. Once you have made an entry in each input box, click “OK”.

After all participants of the experiment have made an unconditional contribution and have filled in their contribution table, a random mechanism will select a group member from every group. **Only the contribution table will be the payoff-relevant decision for the randomly determined subject.** Only the **unconditional contribution** will be the payoff-relevant decision for the **other three group members** not selected by the random mechanism. You obviously do not know whether the random mechanism will select you when you make your unconditional contribution and when you fill in the contribution table. You will therefore have to think carefully about both types of decisions because both can become relevant for you. Two examples should make this clear.

EXAMPLE 1: Assume that **the random mechanism selects you. This implies that your relevant decision will be your contribution table.** The unconditional contribution is the relevant decision for the other three group members. Assume they made unconditional contributions of 0, 2, and 4 tokens. The average contribution of these three group members, therefore, is 2 tokens. If you indicated in your contribution table that you will contribute 1 token if the others contribute 2 tokens on average, then the total contribution to the project is given by $0+2+4+1=7$ tokens. All group members, therefore, earn $0.4 \times 7 = 2.8$ points from the project plus their respective income from the private account. If, instead, you indicated in your contribution table that you would contribute 19 tokens if the others contribute two tokens on average, then the total contribution of the group to the project is given by $0+2+4+19=25$. All group members therefore earn $0.4 \times 25 = 10$ points from the project plus their respective income from the private account.

EXAMPLE 2: Assume that **the random mechanism did not select you**, implying that **the unconditional contribution is taken as the payoff-relevant decision** for you and two other group members. Assume your unconditional contribution is 16 tokens and those of the other two group members are 18 and 20 tokens. Your average unconditional contribution and that of the two other group members, therefore, is 18 tokens. If the group member whom the random mechanism selected indicates in her contribution table that she will contribute 1 token if the other three group members contribute on average 18 tokens, then the total contribution of the group to the project is given by $16+18+20+1=55$ tokens. All group members will therefore earn $0.4 \times 55 = 22$ points from the project plus their respective income from the private account. If, instead, the randomly selected group member indicates in her contribution table that she contributes 19 if the others contribute on average 18 tokens, then the total contribution of that group to the project is $16+18+20+19=73$ tokens. All group members will therefore earn $0.4 \times 73 = 29.2$ points from the project plus their respective income from the private account.

The random selection of the participants will be implemented as follows. Each group member is assigned a number between 1 and 4. As you remember, a participant, namely the one with the number 11, was randomly selected at the very beginning of the experiment. This participant will throw a 4-sided die **after** all participants have made their unconditional

contribution and have filled out their contribution table. The resulting number will be entered into the computer. If participant 11 throws the membership number that was assigned to you, then your contribution table will be relevant for you and the unconditional contribution will be the payoff-relevant decision for the other group members. Otherwise, your unconditional contribution is the relevant decision.

Instructions for the C-Experiment

We will now conduct another experiment. This experiment lasts **10 periods**, in which you and the other group members have to make decisions. As in the other experiment, every group consists of **4 people**. The formation of the group changes at random after every period. **So your group consists of different people in all 10 periods.** The whole experiment is finished after these 10 periods.,.

The decision situation is the same as that described on page 2 of the instructions of the previous experiment. Each member of the group has to decide about the usage of the 20 points. You can put these 20 points into your private account or you can invest them fully or partially into a project. Each point you do not invest into the project is automatically placed into your private account. Your income will be determined in the same way as before. Reminder:

$$\begin{aligned}
 & \text{Income from your private account} (= 20 - \text{contribution to the project}) \\
 & + \text{Income from the project} (= 0.4 \times \text{sum of all contributions to the project}) \\
 & \hline
 & \text{Total income} \\
 & \hline
 & \textbf{1 point = 7 centimes!}
 \end{aligned}$$

The decision screen, which you will see in every period, looks like this:

As you can see, you have to make two inputs:

1. First you have to **decide on your contribution to the project**, that is, you have to decide how many of the 20 points you want to contribute to the project, and how many points you want to put into your private account. This decision is the same as the unconditional contribution of the previous experiment. You only make unconditional decisions in this experiment. There is **no contribution table**.
2. Afterwards you have to estimate the average contribution to the project (rounded to an integer) of the other three group members of this period. You will be paid for the accuracy of your estimate:
 - If your estimate is exactly right (that is, if your estimate is **exactly** the same as the actual average contribution of the other group members), you will get **3 points** in addition to your other income from the experiment.
 - If your estimate deviates by one point from the correct result, you will get 2 additional points.
 - A deviation by 2 points still earns you 1 additional point.
 - If your estimate deviates by 3 or more points from the correct result, you will not get any additional points.

After these 10 periods are over, the whole experiment is finished and you will receive:

- + your income from the first experiment
- + your income from the second experiment (including your income from your correct estimates)
- = total income from both experiments
- + 10 Francs show up fee !