

APPENDICES FOR THE REFEREES (web repository)

Appendix 1: Instructions

These are the translated instructions for treatment LG. The instructions for the other treatments (SG and LG2) are available upon request.

Welcome

Introduction

You will participate in an experiment whose objective is to study individual and group decision-making. Before starting the experiment, we will ask you some questions to verify your understanding of the instructions. After we finish reading the instructions, you can ask us any question you may have.

16 people, randomly divided into two groups of eight, are involved in this experiment. So you are a member of one of these two groups of eight members. During the experiment you will interact anonymously with the members of your own group. The gains you realize depend both on your own decisions and on the decisions taken by the other members of your group. These gains will be recorded in points and converted into euros at the end of the experiment.

This experiment consists of at least 22 periods. The following instructions will inform you on how your gain at each period will be calculated. They also will explain the chronology of the experiment.

1. Your decision

At the beginning of each period, each member of your group, including yourself, has 20 tokens. Your task consists in investing an integer number of tokens between 0 and 20. Your earnings depend on the number of tokens invested by yourself and the other seven members of the group. It is possible that you will win nothing, and worse even, you can lose points.

The gain (or loss) you realize at each period consists of two parts:

- A gain that depends on your own investment.
- A loss that depends on both your investment and those of the seven other members of your group.

1.1. The gain due to your own investment

Each token you invest brings you a certain number of points, as shown in the Table below. It is composed of three columns. They respectively indicate the number of tokens you wish to invest, the additional earnings generated by the investment of your last token and your overall earnings.

- If you invest 0 token, your gain is 500 points
- If you invest 1 point, your gain is 582 points (500 +82)
- If you invest 2 tokens, your gain is 660 points (500 +82 +78)
- ...
- If you invest 20 tokens, your gain is 1380 points (500 + 78 + 82 ... + 14 +10 +6 = 1380)

Tokens	Earnings (in points)	Additional earnings generated by the last token
0	500	-
1	582	82
2	660	78
3	734	74
4	804	70
5	870	66
6	932	62
7	990	58
8	1044	54
9	1094	50
10	1140	46
11	1182	42
12	1220	38
13	1254	34
14	1284	30
15	1310	26
16	1332	22
17	1350	18
18	1364	14
19	1374	10
20	1380	6

You will notice that the more tokens you invest, the less points each of them generates. The un-invested tokens are lost. You cannot reuse them in the following periods.

Example: If you invest 9 tokens in one period, you will not have 31 tokens in the next period but 20.

1.2. The loss due to the group investment (your investment and those of your group-members)

Each member of your group, including yourself, incurs a loss if the total number of invested tokens is greater than 64. If the total number of tokens invested by your group is larger than 64, everyone loses 6.5 times the difference between the total number of tokens invested by your group and 64.

Example: The total number of tokens invested by your group is 100 tokens. This number is greater than 64 so each member of the group, including yourself, loses 234 points $((100-64)*6.5)$.

In summary, the loss depends on the total number of tokens invested by the group. If it is larger than 64, each member of the group incurs a similar loss. The more the number of tokens invested are further from 64, the greater the loss is.

2. Practical procedures

You can communicate with your other group-members before the 5th, 9th, 13th, 17th and 21st periods. During the discussion sessions, limited to three minutes, agreements to share gains after the experiment are prohibited. Apart from the discussion time allowed, it is forbidden to communicate during the experiment.

In each period, the computer asks you to enter the number of tokens you want to invest. You can enter any integer number between 0 and 20. The other members of your group do the same task on their side, but you do not observe their individual decisions. You will just know the total sum of their individual decisions at the end of a period. This is what to expect: once all members of your group have made their decisions, the computer calculates the gain or loss for that period. Then provides each participant with the total number of tokens invested by the seven other members of the group and its gain for the period. The next period begins when all members of your group are ready. At any time, you can view the history of the experiment. It reminds you for each historical period, your decision, the total number of tokens made by the other seven members of the group and your gain.

At the end of the experiment, your gain will be converted into Euros. The conversion rate to be applied is 1000 points equal to €1.

Before starting the experiment, you will proceed to a trial period. The aim is to enable you to familiarize yourself with the user interface of the computer. During this trial period the computer will play the other seven people. The sum of tokens invested by the other seven members will be equal to 70. The earnings received during this period will not be converted into euros.

Appendix 2: Analysis of efficiency rates

The average efficiency rates in treatments SG, LG and LG2 between periods 5 and 20 are 0.952 (S.D. 0.108), 0.787 (S.D. 0.215) and 0.894 (S.D. 0.161). Figure 4 depicts the efficiency rate in each treatment. The observations are similar to those performed on emissions: efficiency rates are higher in treatments SG and LG2 than in the LG treatment.

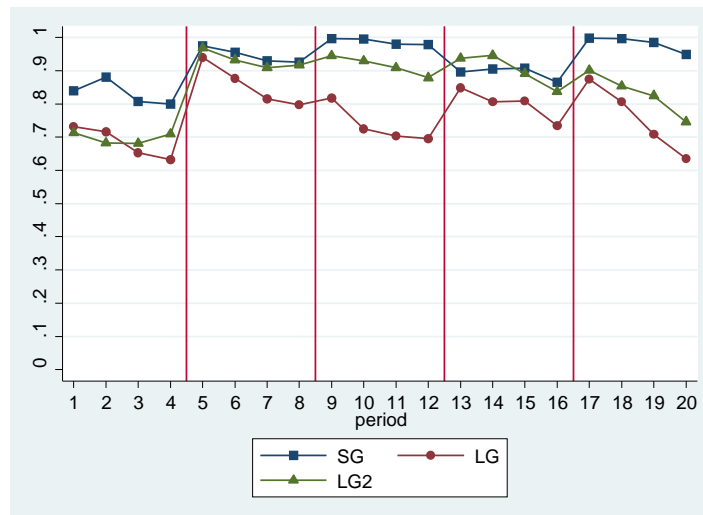


Figure 3: Average efficiency over time, per treatment

We conducted a regression on efficiency rates based on model (4), including the dummy variable LG2. As data are heavily right-censored (187 of the 384 observations are equal to 100%), a Tobit model is used. We observe that efficiency rates are significantly higher in treatments SG and LG2 than in treatment LG. There was no significant difference between treatments SG and LG2.

Table 5: Tobit regression on efficiency rates

Variables	Coefficients (S.E)
Intercept	1.187*** (0.098)
<i>LG</i>	-0.220* (0.130)
<i>LG2</i>	0.004 (0.134)
<i>t</i>	-0.008*** (0.002)
σ_{μ}	0.252
σ_{ϵ}	0.178
N. obs	384

Note: *** denotes that the estimation is statistically significant at the 1% level, ** at the 5% level; and * at the 10% level.