

Appendix 2: Instructions

Intro

Welcome, and thank you for participating!

You are taking part in a study on decision-making, where your own and others' decisions affect your own and others' payouts. The study consists of two rounds of two decisions.

For each of the two rounds, you will be endowed with 10 tokens (a token is worth 0.10 USD). Depending on how well you and your group members invest these tokens, you can more than triple your tokens, but you may also lose some of your tokens.

Before the game starts, you will receive detailed instructions about the decision-making context, followed by a quiz to control for your understanding of the instructions. Correct answer in the quiz will earn you 0.10 USD each. After the game, you will be presented a brief survey about yourself. Completion will be rewarded with an additional 0.50 USD.

Overall, we estimate that it will take you ca. 10-15 minutes to participate, and that average earnings will be around 3.50 USD. You will be paid individually and privately within 48 hours through MTurk.

Next, you will receive detailed instructions about the decision-making tasks. Please read these instructions very carefully as your payout is dependent on your understanding of the situation and on your own and others' decisions.

-Page Skip-

Detailed Instructions (1)

The decisions you have to make is to invest your token endowments. **Remember that 1 token is worth 0.1 USD.** Your total earnings will also be calculated in tokens and, at the end of the study, converted to USD (10:1) and paid out to you within a week.

As mentioned previously, the study consist of two rounds. After completing the first round, you will receive a new token endowment and take the same kinds of decisions again under slightly different conditions, for which you will receive new instructions. Each round consists of two stages (two decisions):

Stage 1: an allocation decision

Stage 2: a contribution decision

-Page Skip-

Stage 1: allocation decision

You are endowed with 10 tokens and randomly placed in a group with 19 other subjects recruited from Amazon's Mechanical Turk. Your and the others' identities will remain entirely anonymous. All participants in your group will face the same decision situation as you.

Your task in the first stage is how many of your 10 tokens you want to allocate to a group account. The remainder is automatically assigned to a private account. Your total earnings from the round include earnings from both your private and your group account.

- Your earnings from allocating tokens to the private account equal one-to-one what you allocated to the private account. Earnings from the private account do not depend on the decisions of others.
- Your earnings from the group account depend on the total number of tokens allocated to this account by you and by the 19 other members of your group. (Exactly how we explain in detail shortly).

-Page Skip-

Stage-2: contribution decision

Your task in stage-2 is to decide on contributing tokens to maintain / improve the productivity of the group account. Each additional token contributed by you and your group members in this stage increases the “productivity” of the group account. That is, it will increase the earnings for tokens allocated to the group account in Stage 1 for you and your group members, but the contribution you make here is subtracted from your total earnings at the end of the round. Everybody will be suggested to contribute a “fair share” of 20% of the tokens you allocated to the group account in Stage 1. However, that contribution is voluntary, and may range from 0 to 4 tokens.

Therefore, your total earnings from a round of decisions equals

Earnings from the individual account

+ Earnings from the Group account

– Contributions made to the group account

Next, we explain in detail how the groups’ Stage-1 and Stage-2 decisions affect the earnings from tokens allocated to the group account.

-Page Skip-

The effect of Stage-1 decision on the productivity of the group account

Both Stage-1 and Stage-2 decisions affect the earnings from tokens allocated to the group account.

Regarding Stage-1 allocations; the productivity of group account is best when tokens allocated in Stage 1 meet the accounts “capacity”. The so-called capacity of the group account is 160 tokens (or 80% of the group endowment). At this level the group account has a productivity of 1.5. That is, it returns 1.5 tokens per token allocated. However, for group allocations below and above the capacity, productivity reduces by 0.2 points per 10% deviation, as detailed in the table below.

| Stage-1 allocation | |
|--------------------|----------------|
| Tokens | Productivity 1 |
| 200 (100%) | 1.1 |
| 180 (90%) | 1.3 |
| 160 (80%) | 1.5 |
| 140 (70%) | 1.3 |
| 120 (60%) | 1.1 |
| 100 (50%) | 0.9 |
| 80 (40%) | 0.7 |
| 60 (30%) | 0.5 |
| 40 (20%) | 0.3 |
| 20 (10%) | 0.1 |
| 0 (0%) | 0 |

-Page Skip-

The effect of Stage-2 decision on the productivity of the group account

Productivity of the group account is further dependent on Stage-2 contributions. That is each additional token contributed in Stage 2 improves the productivity of the collective account. A total of 32 tokens are needed to maintain the accounts productivity. This equals the suggested 20%-contributions when Stage-1 allocations match the accounts capacity. If contributions fall below/exceed the required level of 32 tokens, productivity of the account drops/increases by 0.25 points per 8 tokens.

| Stage-2 contribution | |
|----------------------|----------------|
| Tokens | Productivity 2 |
| 80 | 2.5 |
| 72 | 2.25 |
| 64 | 2 |
| 56 | 1.75 |
| 48 | 1.5 |
| 40 | 1.25 |
| 32 | 1 |
| 24 | 0.75 |
| 16 | 0.5 |
| 8 | 0.25 |
| 0 | 0 |

Finally, the **earnings from group account** are calculated by multiplying the resulting productivities from Stage-1 and Stage-2 decisions (**Productivity 1 x Productivity 2**). Given this setting, the productivity of the group account will take a value between 0 and 3.75. That is, the tokens you allocated to group account you may get no return or almost 4 times the tokens that you allocated in the group account.

For example, if total group allocations in Stage 1 match the capacity of 80% and everybody contributes the suggested 20% of the tokens he earlier allocated to the group account, it will result in Stage-2 contributions of 32 tokens. In this case, the earnings from a token invested in the group account will be 1.5 token, as the total productivity calculates as 1.5 (Productivity 1) x 1 (Productivity 2).

--Page skip--

In the following we provide 3 examples for illustrative purposes.

Example 1. Assume that you have allocated 5 tokens to the Group account. Suppose that each of the other group members (remember you are in a group of 20) have also allocated 5 tokens to the Group account in Stage 1. Further assume that you have contributed 1 token for the productivity of the group account in Stage 2, and everybody else also contributed 1 token. Then, the total of 100 tokens allocated in stage-1, together with 20 tokens contributed in Stage 2 results in the productivity of the group account of 0.5625 (0.9×0.625). **In this scenario your earnings for this round will be 6.8 tokens** (5 tokens from the individual account + 2.8 tokens ($5 \text{ tokens} \times 0.5625$) from the group account – 1 token contributed in stage 2).

Example 2. Assume that you have allocated 8 tokens to the Group account. Suppose that each of the other group members (remember you are in a group of 20) have also allocated 8 tokens to the Group account in Stage 1. Further assume that you have contributed 2 tokens for the productivity of the group account in Stage 2, and everybody else also contributed 2 tokens. Then, the total of 160 tokens allocated in stage-1, together with 40 tokens contributed in Stage 2 results in the productivity of the group account of 1.875 (1.5×1.25). **In this scenario your earnings for this round will be 15 tokens** (2 tokens from the individual account + 15 tokens ($8 \text{ tokens} \times 1.875$) from the group account – 2 tokens contributed in Stage 2).

Example 3. Assume that you have allocated 10 tokens to the Group account. Suppose that each of the other group members (remember you are in a group of 20) have also allocated 10 tokens to the Group account in Stage 1. Further assume that you have contributed 4 tokens for the productivity of the group account in Stage 2, and everybody else also contributed 4 tokens. Then, the total of 200 tokens allocated in stage-1, together with 80 tokens contributed in Stage 2 results in the productivity of the group account of 2.75 (1.1×2.5). **In this scenario your earnings for this round will be 21 tokens** (0 tokens from the individual account + 25 tokens ($10 \text{ tokens} \times 2.5$) from the group account – 4 tokens contributed in stage 2).

--Skip--

Overview Setting “Baseline”

Group size = 20

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of group account = 160

Expected contributions = 20% of your investment into the group account

Control questions

C1: Given this setting, what average individual investments into to group account would be best for iits productivity?

- 0 tokens
- 5 tokens
- 8 tokens
- 10 tokens

C2: For someone investing 5 tokens into the group account, what would you say is a “fair” contribution to group account?

- 0 token
- 0.4 tokens
- 0.5 tokens
- 1 token
- 2 tokens

C3: If all group members allocate 80% of their endowment to the collective account, and on average exceeded their expected contributions, how much would the group account return per token invested?

- More than 1.5 tokens
- 1.5 token
- 1 token
- 0.5 token

--skip--

Instruction T2

In this round, you are now in a smaller group of 10 individuals. The capacity of the collective account is reduced to 80 tokens, and now requires only 16 contributed tokens to maintain its productivity. All other factors remain equal.

Overview

Group size = 10

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 80

Expected contributions = 20% of your investment into the group account

Instruction T3 (in this treatment a token is equal to 5 Cents)

For this round, you are now in a smaller group of 10 individuals, but all of you are now endowed with 20 tokens. All other factors remain equal.

Overview

Group size = 10

Endowment = 20

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 160

Expected contributions = 20% of your investment into the group account

Instruction 4 (in this treatment a token is equal to 5 Cents)

For this round, you are now endowed with 20 tokens and the capacity of group account is 320 tokens, and it now requires 64 contributed tokens to maintain its productivity. All other factors remain equal

Overview

Group size = 20

Endowment = 20

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 320

Expected contributions = 20% of your investment into the group account

Instruction 5

For this round, the initial productivity of the group account increases up to the factor 2. All other factors remain equal

Overview

Group size = 20

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 2

Capacity of collective account = 1600

Expected contributions = 20% of your investment into the group account

Instruction 6

For this round, you are now expected to contribute 40% of the tokens invested into the group account. All other factors remain equal.

Overview

Group size = 20

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 800

Expected contributions = 40% of your investment into the group account

Instruction 7

This round introduces a rewarding mechanism for those contributing more than their expected share. If you exceed the suggestion, you have a 50% chance of being picked for reward. In that case, we will increase your return from tokens invested into the group account by the same factor you have exceeded your expected contributions. All other factors remain equal.

For example, if you allocate 5 tokens to the group fund in stage-1, and then decide to contribute 1.5 tokens (30%), instead of the suggested one token (20%), you “over-contribute” by the factor 1.5. In that case, you have a 50% chance of being randomly selected for the rewarded. If selected, the tokens you have allocated to the group account will not just return with resulting productivity – let’s say that would be 1.2 – but instead, the resulting productivity is multiplied by the factor you have overcontributed ($1.2 * 1.5$). This will leave you with a return of 1.8 for each of the five tokens invested in the group account.

Overview

Group size = 20

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 800

Expected contributions = 20% of your investment into the group account

Instruction 8

This round introduces a sanctioning mechanism for those contributing more than their expected share. If you contribute less than your expected contribution, you have a 50% chance of being detected and sanctioned. In that case, we will decrease your return from tokens invested in the group account by the factor you fell below your expected contributions. All other factors remain equal.

For example, if you allocate 5 tokens to the group fund in stage-1, and then decide to contribute 0.5 tokens (10%), instead of the suggested one token (20%), you (under-)contribute with a factor 0.5. In that case, you have a 50% chance of being randomly detected and sanctioned. If selected, the tokens you have allocated to the group account will not return with resulting productivity – let's say that would be 1.2 – but instead, the resulting productivity is multiplied by the factor you have (under-)contribution factor ($1.2 * 0.5$). This will leave you with a return of 1.8 for each of the five tokens invested in the group account.

Overview

Group size = 20

Endowment = 10

Productivity of private account = 1

Initial productivity of group account = 1.5

Capacity of collective account = 800

Expected contributions = 20% of your investment into the group account
