

# Political Accountability and Democratic Institutions: An Experimental Assessment

## Appendix A Experimental instructions

### A.1 General instructions

Please read them carefully.

You should answer some questions to verify that you understand the instructions.

If you have any questions, raise your hand and the assistant will come to answer it.

During the session you may have to wait for a moment before the experiment continues. We thank you for your patience and cooperation. The earnings of this section will be calculated in points. The points will be converted into money with the following exchange rate:

$$1 \text{ point} = \text{US\$ } 0.02$$

This section has two phases. The following instructions explain the details of phase 1.

The instructions of phase 2 will be delivered later.

### A.2 Instructions Phase 1

Read these instructions carefully.

In this phase, all participants are randomly divided into groups of 5. That is, you will be part of a group with 4 other participants.

The members of the group will be the same throughout phase 1. No one knows the composition of the group, and no one will be informed of who participated in which group after the experiment.

## **YOUR DECISIONS**

Phase 1 includes 10 rounds. You will begin each round with 20 points. In each round you and the other 4 members of your group decide simultaneously how to assign your 20 points in two accounts:

- Group Account
- Private Account

Specifically, you will decide how many points to assign to the group account, using only integer numbers from 0 to 20. The remaining points are automatically assigned to your private account.

## **YOUR PROFITS**

Your earnings depend on the total number of points in the group account and the number of points in your private account.

Your total earnings in each round can be calculated with the following formula:

$$20 - (\text{points you assigned to the group account}) + 0.4 * (\text{sum of points assigned by all members of the group to the group account})$$

For each point assigned to the private account you get 1 point as profit. For example, if you assign 10 points to this account, your private account gain is 10 points.

Your group account earnings are equal to the total amount of points assigned to the account by all members, multiplied by 0.4.

For each point you assign to the group account, everyone in your group (including you) gets 0.4 points as profit. For example, if each member of the group, including you, allocates 10 points to the group account, the sum of points in the group account is 50 and therefore your earnings from this account are 20 points ( $20 = 0.4 * 50$ ).

Keep in mind that you receive 1 point for each point you assign to your private account. On the contrary, you, as well as the other group members, receive 0.4 points for each point assigned to

the group account. Another way to interpret this is that the aggregate points of the group account are multiplied by two and divided equally for each member of the group.

Also note that you earn profits from points assigned by other members to the group account.

### Example

Suppose you assign 10 points to the group account, the second and third members of your group assign 20 points to the group account, and the remaining two members assign 0 points to the group account.

Then the sum of the points to the group account is:  $10 + 20 + 20 + 0 + 0 = 50$  points.

Each member of the group receives profits of:  $0.4 * 50 = 20$  points of the group account.

Your total earnings are:  $20 - 10 + (0.4 * 50) = 10 + 20 = 30$  points.

The earnings of the second and third members of the group are:  $20 - 20 + (0.4 * 50) = 0 + 20 = 20$  points.

The gains of the fourth and fifth members of the group are:  $20 - 0 + (0.4 * 50) = 20 + 20 = 40$  points.

Please raise your hand if you have any questions, if not, click Next to continue.

### FEEDBACK

At the end of each period you will be informed about the number of points you have allocated to your private account and group account. You will also learn the total amount allocated to the group account in your group. Below this, you will see your total earnings, in points, for the round. You will also be shown the decisions by you and the decisions of all the other members of your group anonymously (letters are randomly assigned), from the current and previous periods.

### A.3 Instructions Phase 2 (“Leviathan”, name not show on the instructions)

Read these instructions carefully.

This phase includes 12 rounds in total. Similar to phase 1, you continue interacting with the same 4 participants in your group and in each round you make a decision about the allocation of 20 points to a group account. The remaining points are automatically assigned to the private account.

Your earnings are determined in the same way as in phase 1 of the experiment, that is, for each point assigned to your private account you get 1 point as profit. Your group account earnings are equal to the sum of all the points assigned by the 5 members, multiplied by 0.4.

However, in this phase, before beginning to make your decisions, ONE participant of your group will be chosen as administrator. An administrator will be selected every 3 periods, that is, during the second phase there will be several instances of the administrator's selection, according to the instructions described below.

### **HOW IS THE ADMINISTRATOR SELECTED?**

Before starting phase 2, you will be able to observe the allocation decisions in each round, as well as the average contribution, of each group member in phase 1.

The computer will choose an administrator based on a distribution that assigns a 75% probability that the group's largest contributor will be chosen. If the highest phase 1 contributor is not chosen (this happens with 25% chance), there is an equal chance of any other group member being chosen to play the role of administrator.

You will see who was chosen before starting phase 2. Note that the administrator will be chosen every three rounds.

The selection in the later rounds will be made based on the average contribution of phase 1, and also the information of the contributions of the 3 intermediate rounds. Specifically, in rounds 4, 7 and 10, you will see the average of phase 1 contributions to the group account and the total contribution of all group members in the 3 preceding rounds; the administrator will be selected based on this information.

### **YOUR DECISIONS IN THIS PHASE**

There are two stages in each round. In the first stage, you make your decision to assign points to the group account and then observe the decisions of the other members of the group, arranged in a random manner, along with your earnings.

In the second stage, 2 points are automatically deducted from each member of the group for the administrator's account. Therefore, each administrator has 10 points in each round.

**¿CÓMO SE SELECCIONA EL ADMINISTRADOR?**

Antes de iniciar la fase 2, usted podrá observar las decisiones de asignación, en cada ronda, así como el promedio de las contribuciones, de cada miembro del grupo en la fase 1. La información se presenta de manera anónima (las etiquetas son solo referencia y cambian en cada ronda).

**El computador elegirá un administrador** basado en una distribución que asigna una probabilidad del 75% de que el mayor contribusor del grupo sea elegido. Si el mayor contribusor de la fase 1 no es seleccionado (esto sucede con una probabilidad de 25%), cualquier otro miembro del grupo puede ser seleccionado como administrador con igual probabilidad.

Usted observará el resultado de la elección antes de iniciar la fase 2.

Tenga en cuenta que **el administrador será elegido cada tres rondas.**

La elección en las instancias posteriores se realizará en base al promedio de las contribuciones de la fase 1, y también de información de las contribuciones de las 3 rondas intermedias. Específicamente, en las rondas 4, 7, 10, usted observará el promedio de las contribuciones a la cuenta grupal de la fase 1 y el total de las contribuciones de todos los miembros del grupo en las tres últimas rondas; el administrador será elegido en base a esta información.

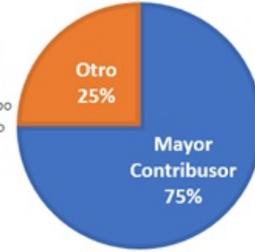


Figure 1: Screen-shot of original instructions for the leviathan treatment: how is the manager selected?

The administrator has the opportunity to use the points in this account to reduce the earnings of the participants that they choose within the group, except for themselves. The administrator can not reduce their own profits.

Suppose you are selected as an administrator. After the first stage of each round, you will observe the amount assigned to the group account by each member. At the same time, you will receive 2 points from each member of the group including you.

You will then choose the members of the group (one or several) and how many of the 10 available points you want to use to reduce the earnings of the selected members. For each point you wish to assign, the earnings of the selected participants are reduced according to the following table:

Points ASSIGNED	0	1	2	3	4	5	6	7	8	9	10
Points REDUCED	0	1	2	4	6	9	12	16	20	25	30

The administrator is free to leave the gains of all the members of the group intact, without changes, assigning zero (0) points or leaving empty the corresponding cell.

After the administrator makes their decisions, the remaining points of the administrator’s account, which are not allocated to reduce the profits of others, are returned to all the members of the group equally. The points assigned by the administrator to any group member are deducted from the account and therefore, are not recoverable by the group members.

The profits in each round correspond to the result of the administrators decisions, and the

decisions of each group member; however, if they are negative, you will assume the cost of the points assigned to you by the administrator (not their equivalent in reduced points) or the cost of your negative gain (loss); whichever is less in absolute terms.

Therefore, the gains in each round are calculated as follows:

**Total profits**

**If earnings  $\geq 0$ :**

= 20 - (points assigned to the group account) + 0.4 \* (sum of points assigned by all members of the group to the group account) - 2 - (reduced points in your earnings for the assigned points of the administrator, if selected) + (1/5) \* (remaining points not used by the administrator)

**If earnings  $< 0$ :**

= lower value between: points assigned to you by the administrator (if selected), or negative gain (loss)

Note that your earnings in this phase can be negative if the points reduced by the administrator are greater than your earnings in the first stage.

You can, however, avoid these losses through your decisions!

**Example**

Suppose you are the administrator of your group. In a round, you assign 20 points to the group's account, the second and third members of your group assign 10 points to the group's account, and the remaining members assign 5 points each to the group's account.

In the first stage, the gains are obtained in the following way:

The sum of the points to the group's account is:  $20 + 10 + 10 + 5 + 5 = 50$  points.

Each member of the group receives earnings of:  $0.4 * 50 = 20$  points, from the group account.

Your gross earnings are:  $20 - 20 + (0.4 * 50) = 0 + 20 = 20$  points.

The earnings of the second and third members of the group are:  $20 - 10 + (0.4 * 50) = 10 + 20 = 30$  points.

The gains of the fourth and fifth members of the group are:  $20 - 5 + (0.4 * 50) = 15 + 20 = 35$

points.

In the second stage, you receive as administrator 2 points from each member of the group, 10 points in total.

You decide to assign 5 points to reduce the profits, only from the fifth member of the group.

The remaining 5 points of the account will be returned to all the members of the group, that is, 1 point for each one.

Your net earnings are:  $20(\text{from the first stage}) - 2 + 1 = 19$  points.

The net earnings of the second and third members are:  $30 - 2 + 1 = 29$  points.

The net earnings of the fourth member are:  $35 - 2 + 1 = 34$  points.

The net earnings of the fifth member of the group are:  $35 - 2 - 9 + 1 = 25$  points.

Note that the 5 points assigned by the administrator reduce by 9 points the earnings of the selected participant, according to the conversion table indicated in the instructions.

Please raise your hand if you have any questions, if not, click Next to continue.

#### **A.4 Instructions Phase 2 (“Democracy”, name not show on the instructions)**

Read these instructions carefully.

This phase includes 12 rounds in total. Similar to phase 1, you continue interacting with the same 4 participants in your group and in each round you make a decision about the allocation of 20 points to a group account. The remaining points are automatically assigned to the private account.

Your earnings are determined in the same way as in phase 1 of the experiment, that is, for each point assigned to your private account you get 1 point as profit. Your group account earnings are equal to the sum of all the points assigned by the 5 members, multiplied by 0.4.

However, in this phase, before beginning to make your decisions, ONE participant of your group will be chosen as administrator. An administrator will be selected every 3 periods, that is, during the second phase there will be several instances of the administrator’s selection, according to the instructions described below.

## **HOW IS THE ADMINISTRATOR SELECTED?**

Before starting phase 2, you will be able to observe the allocation decisions, in each round, of each group member in phase 1.

Then you will have the opportunity to vote for any member of your group (except you) to be elected as administrator for the next three rounds. Whomever receives the most votes will be elected administrator. In case of a tie, the administrator will be selected at random from the tied members.

You will see who was elected as administrator before starting phase 2. Note that the administrator will be chosen every three rounds by vote, just as in round 1.

Before voting in later rounds, each group member will again see the average contributions from phase 1, and the information of the 3 intermediate rounds. Specifically, in rounds 4, 7 and 10, you will see the average of phase 1 contributions to the group account and the total contribution of all group members in the 3 preceding rounds. Thus, you will be able to vote for the manager of your preference.

## **YOUR DECISIONS IN THIS PHASE**

There are two stages in each round. In the first stage, you make your decision to assign points to the group account and then observe the decisions of the other members of the group, arranged in a random manner, along with your earnings.

In the second stage, 2 points are automatically deducted from each member of the group for the administrator's account. Therefore, each administrator has 10 points in each round.

The administrator has the opportunity to use the points in this account to reduce the earnings of the participants that they choose within the group, except for themselves. The administrator can not reduce their own profits.

Suppose you are selected as an administrator. After the first stage of each round, you will observe the amount assigned to the group account by each member. At the same time, you will receive 2 points from each member of the group including you.

You will then choose the members of the group (one or several) and how many of the 10

available points you want to use to reduce the earnings of the selected members.

For each point you wish to assign, the earnings of the selected participants are reduced according to the following table:

Points ASSIGNED	0	1	2	3	4	5	6	7	8	9	10
Points REDUCED	0	1	2	4	6	9	12	16	20	25	30

The administrator is free to leave the gains of all the members of the group intact, without changes, assigning zero (0) points or leaving empty the corresponding cell.

After the administrator makes their decisions, the remaining points of the administrator’s account, which are not allocated to reduce the profits of others, are returned to all the members of the group equally. The points assigned by the administrator to any group member are deducted from the account and therefore, are not recoverable by the group members.

The profits in each round correspond to the result of the administrator’s decisions and the decisions of each group member; however, if these are negative, you will assume the cost of the points assigned to you by the administrator (not their equivalent in reduced points) or the cost of your negative gain (loss); whichever is less in absolute terms.

Therefore, the gains in each round are calculated as follows:

**Total profits**

**If earnings  $\geq 0$ :**

= 20 - (points assigned to the group account) + 0.4 \* (sum of points assigned by all members of the group to the group account) - 2 - (reduced points in your earnings for the assigned points of the administrator, if selected) + (1/5) \* (remaining points not used by the administrator)

**If earnings  $< 0$ :**

= lower value between: points assigned to you by the administrator (if selected), or negative gain (loss)

Note that your earnings in this phase can be negative if the points reduced by the administrator

are greater than your earnings in the first stage.

You can, however, avoid these losses through your decisions!

**\*THE REST: EXAMPLE, TEST AND QUESTIONNAIRES, ARE SIMILAR TO BOTH TREATMENTS.**

## A.5 Additional experimental details

### FEEDBACK IN THE SELECTION PROCESS-DEMOCRACY

Before the second phase of the experiment there is a manager's selection instance for both treatments. In the democratic treatment, before round 11 starts, subjects observe the complete contribution behavior during the first phase (10 rounds), and the average contribution, for all group members. Anonymity is guaranteed during the election by randomizing the letters assigned to each group member in each round. Then, they elect the one they desire (see Figure 2). In the multiple selection treatment (i.e., political accountability), subjects elect the manager based on the information of contribution in the last three periods, total contribution, average contribution, and average contribution of phase 1. Again, labels are randomized. (see Figure 3)

#### Votación

Contribuciones de todos los participantes a la cuenta del grupo

Ronda	Usted	B	C	D	E	
1	16	5	10	20	12	
2	5	16	14	14	19	
3	12	17	14	15	1	
4	16	14	16	20	5	
5	10	0	17	16	20	
6	5	9	10	0	20	
7	2	6	10	9	7	
8	8	9	10	20	16	
9	12	15	11	10	15	
10	16	6	20	10	9	
<b>Contribución acumulada (puntos totales)</b>		<b>102</b>	<b>97</b>	<b>132</b>	<b>134</b>	<b>124</b>
<b>Contribución Promedio</b>		<b>10,20</b>	<b>9,70</b>	<b>13,20</b>	<b>13,40</b>	<b>12,40</b>
<b>Elegir Administrador</b>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

[Siguiente](#)

Figure 2: Feedback before manager's selection-Democracy

Once all votes are cast, subjects observe the results and who was elected as the manager for the corresponding period: the rest of the game for the single-selection treatment (i.e., no political accountability); and the next three rounds for the multiple-selection treatment (i.e., political accountability). See Figure 4 for details.

## Votación

Contribuciones de todos los participantes a la cuenta del grupo

Ronda	Usted	B	C	D	E
1	14	10	15	16	12
2	13	15	14	12	10
3	19	14	10	16	14
<b>Contribución acumulada (puntos totales)</b>	<b>46</b>	<b>39</b>	<b>39</b>	<b>44</b>	<b>36</b>
<b>Contribución Promedio</b>	<b>15,33</b>	<b>13,00</b>	<b>13,00</b>	<b>14,67</b>	<b>12,00</b>
<b>Contribución Promedio Fase 1</b>	<b>10,50</b>	<b>10,70</b>	<b>11,10</b>	<b>14,00</b>	<b>10,80</b>
<b>Elegir Administrador</b>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Siguiente

Figure 3: Feedback before manager's selection-Democracy + Multiple Selection

## Votación

Ronda	Usted	B	C	D	E
1	16	5	10	20	12
2	5	16	14	14	19
3	12	17	14	15	1
4	16	14	16	20	5
5	10	0	17	16	20
6	5	9	10	0	20
7	2	6	10	9	7
8	8	9	10	20	16
9	12	15	11	10	15
10	16	6	20	10	9
<b>Contribución acumulada (puntos totales)</b>	<b>102</b>	<b>97</b>	<b>132</b>	<b>134</b>	<b>124</b>
<b>Contribución Promedio</b>	<b>10,20</b>	<b>9,70</b>	<b>13,20</b>	<b>13,40</b>	<b>12,40</b>

Siguiente

Usted es el participante A

Participante A obtuvo 1 votos  
 Participante B obtuvo 2 votos  
 Participante C obtuvo 0 votos  
 Participante D obtuvo 1 votos  
 Participante E obtuvo 1 votos

**El administrador será el participante B**



Results: "The manager will be participant B"

Voting results

Figure 4: Feedback after manager's selection-Democracy

## FEEDBACK IN THE SELECTION PROCESS-LEVIATHAN

In the leviathan treatment feedback before selection is the same as in the democracy, in both accountability treatments (i.e., single and multiple selection), to avoid other confounding factors. As corresponds to the methodological approach, the only exception is that subjects do not make any decision in this treatment; the administrator is exogenously appointed by the computer, based

on the selection algorithm explain in the instructions. They only wait for everyone in the group to acknowledge the contribution information before the computer selects the administrator. Figures 5 and 6 show how the information is displayed in both cases, during the first selection and the consecutive selection in the multiple selection treatment.

## Resumen de contribuciones de la primera fase

Contribuciones de todos los participantes a la cuenta del grupo

Ronda	Usted	B	C	D	E
1	12	15	14	10	20
2	12	2	20	14	15
3	10	12	5	12	12
4	15	10	14	5	10
5	10	10	12	16	10
6	10	16	15	16	18
7	6	2	6	5	15
8	4	20	8	8	10
9	10	9	16	15	8
10	10	14	15	20	19
<b>Contribución acumulada (puntos totales)</b>	<b>99</b>	<b>110</b>	<b>125</b>	<b>121</b>	<b>137</b>
<b>Contribución Promedio</b>	<b>9,90</b>	<b>11,00</b>	<b>12,50</b>	<b>12,10</b>	<b>13,70</b>

Siguiente

Figure 5: Feedback before manager's selection-Leviathan

After the computer selects the manager, subjects receive the same feedback as in the democracy, except for the fact that no votes are casted (see Figure 7).

## Resumen de contribuciones de la segunda fase

Contribuciones de todos los participantes a la cuenta del grupo

Ronda	Usted	A	B	D	E
1	10	12	15	14	10
2	14	12	10	12	5
3	19	20	13	0	10
<b>Contribución acumulada (puntos totales)</b>	<b>43</b>	<b>44</b>	<b>38</b>	<b>26</b>	<b>25</b>
<b>Contribución Promedio</b>	<b>14,33</b>	<b>14,67</b>	<b>12,67</b>	<b>8,67</b>	<b>8,33</b>
<b>Contribución Promedio Fase 1</b>	<b>13,60</b>	<b>13,90</b>	<b>10,70</b>	<b>13,60</b>	<b>10,70</b>

Siguiente

Figure 6: Feedback before manager's selection-Leviathan + Multiple Selection

## Resultados de la elección del administrador

Ronda	Usted	A	B	C	D
1	20	12	15	14	10
2	15	12	2	20	14
3	12	10	12	5	12
4	10	15	10	14	5
5	10	10	10	12	16
6	18	10	16	15	16
7	15	6	2	6	5
8	10	4	20	8	8
9	8	10	9	16	15
10	19	10	14	15	20
<b>Contribución acumulada (puntos totales)</b>	<b>137</b>	<b>99</b>	<b>110</b>	<b>125</b>	<b>121</b>
<b>Contribución Promedio</b>	<b>13,70</b>	<b>9,90</b>	<b>11,00</b>	<b>12,50</b>	<b>12,10</b>

Siguiente

Usted es el participante E

**Usted es el administrador**



Results: You are the manager

Figure 7: Feedback after manager's selection-Leviathan

## FEEDBACK IN PHASE 2: TAX-PUNISHMENT MECHANISM

In the second phase, once the manager is selected, he observes the contribution behavior of all group members; in actuality he observes (Upper table in Figure 8): total points (i.e., the endowment); points directed to the group account and its percentage over the endowment, and; total points gained. He does not see any labels to avoid reputation. He also sees the total points of the group account. He then decides how many points he wishes to assign based on the punishment/cost function described in the instructions. He observes this information in the lower table in Figure 8. After decisions are made he gives way to the feedback within each round.

### Cuenta del administrador: puntos a asignar para reducir las ganancias

Instrucciones

Ronda 1 de 12

Usted es administrador, solo usted puede ver la información de los demás participantes

	Usted	Otro	Otro	Otro	Otro
Puntos totales	20	20	20	20	20
Aporte a cuenta grupal	17	4	20	15	17
Aporte a la cuenta grupal (en porcentaje)	85,00%	20,00%	100,00%	75,00%	85,00%
Puntos ganados	32,2	45,2	29,2	34,2	32,2
Ingrese puntos a asignar	<input type="text"/>				

El aporte total a la cuenta del grupo es: 73

#### Tabla de puntos

Ud dispone de 10 puntos para asignar. Recuerde, cada punto asignado reduce las ganancias según la conversión de la tabla:

Puntos Asignados	0	1	2	3	4	5	6	7	8	9	10
Puntos Reducidos	0	1	2	4	6	9	12	16	20	25	30

Siguiente

Figure 8: Manager's decision information, both treatments

In the second phase of the experiment subjects receive feedback based on the decisions made by all group members. Full information is disclosed; subjects observe: total points received (endowment); contribution to the group account and its percentage, and gains in each round (Table information in Figure 9). Additionally, they observe information from the manager's decisions

(text on the bottom left corner below the table in Figure 9): total points assigned within each round; points assigned to the subject reading the information (i.e., not to whom total points of the round were assigned), and; for how many points the incumbent subject's gains were reduced. Finally, they observe general information: total points contributed to the group account; gains from the group account; and total gains in the round(text on the bottom right corner below the table in Figure 9).

## Resultados

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Instrucciones

Ronda 2 de 12

	Usted	Otro	Otro	Otro	Otro
<b>Puntos totales</b>	20	20	20	20	20
<b>Aporte a cuenta grupal</b>	10	15	16	14	10
<b>Aporte a la cuenta grupal (en porcentaje)</b>	50,00%	75,00%	80,00%	70,00%	50,00%
<b>Ganancias en esta ronda</b>	25,40	29,40	28,40	29,40	32,40

Total de puntos asignados por el Administrador en esta ronda: 8

Total de puntos asignados por el Administrador a usted en esta ronda: 5

Sus ganancias en esta ronda se redujeron en: 9

El aporte total a la cuenta del grupo es: 65

Su ganancia de la cuenta del grupo: 26,0

**Su ganancia en esta ronda es: 25,4**

Siguiente

Figure 9: Feedback within each round, both treatments