



Instructor's Guide to Protest, Concessions, and Citizen Coordination

Laboratory implementation, theoretical foundations,
experimental evidence, and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



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<https://beer-lab.org/>

How to use this guide

This guide supports preparation, implementation, and discussion of the protest, concessions, and citizen coordination family at BEER Lab.

It is intended for instructors in political science, political economy, and institutions, including those new to laboratory experiments.

Operational chapters explain access, decisions, and results; conceptual chapters develop incentives, coordination, and evidence. Variants present only what changes relative to the common rules.

Author

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For the instructor

This is an original teaching protocol inspired by collective action problems. It does not literally reproduce a field experiment or collect personal political opinions. Participant roles and decisions are abstract. Institutional routes are proposed for the laboratory; the local instance supports testing before deployment.

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Preparation and access

1.1 Access through the updated laboratory website

Start at <https://beer-lab.org/en/>. Select **CLASSROOM** in the top navigation menu; it opens <https://teaching.beer-lab.org/en/>. In the **Classroom experiments** catalog, use the search box to locate the activity by name. You can also filter by **Topic** or **JEL code**. Clear any filters left from an earlier search before looking for another game.

Each family's card distinguishes **Español** and **English** access links. The **Show extended version** checkbox selects that edition before following a link. Catalog language and session language are separate choices: verify both. Students use the room specified by the instructor; the instructor prepares and monitors the session through this family's own administrative pages.



Figure 1.1: Current institutional website. Select **CLASSROOM** in the top navigation menu to open the teaching experiments. Captured on October 7, 2026.

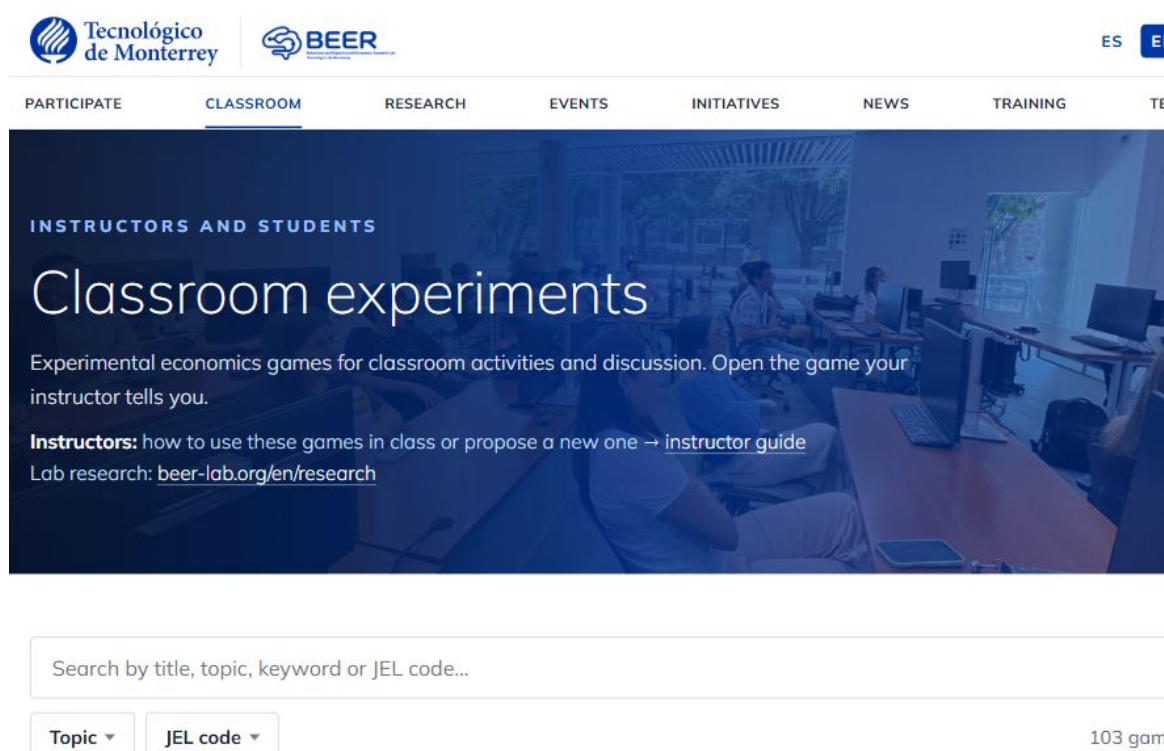


Figure 1.2: Current catalog: search by title, topic, or JEL code. Then locate this family's card and select language and edition. Captured on October 7, 2026.

Checking resources, comprehension, and participant requirements

Before opening the room, check the selected configuration and the number of students present. The session-creation form states the group size and minimum required by that configuration. An individual activity accepts any positive participant count; an interactive activity must satisfy its stated requirement: complete groups when size is fixed, or a minimum participant count when size is flexible. Requirements may change across treatments, for example when adding a third party or changing an institution's size. If you edit a grouping parameter, check the requirement for the edited configuration, rather than relying only on the demo's suggested count.

In the instructions, ensure that students can identify what each role receives, what they can decide, and how the outcome is calculated. An initial account, a distributable budget, and final earnings need not be the same amount. Refer to the resources panel and the example for the selected treatment. Do not carry the basic edition's endowment into a treatment that changes accounts or introduces additional positions.

ECU stands for *Experimental Currency Units*: the activity's unit of account. An outcome of 100 ECU does not automatically equal 100 pesos or 100 dollars. Conversion depends on the session configuration. Before announcing a payment, confirm with the laboratory whether money is paid, the conversion rate, and which decisions count for payment. In hypothetical modules, describe amounts as outcomes in the stated situation.

When a comprehension check is included, an incorrect response receives an explanation beside that question, identifying the submitted answer and the correct answer. Other answers remain in the form. Ask the student to return to the example, locate the relevant rule, and redo the calculation before correcting the response. Avoid revealing answers to the entire class for an individual error, and do not interpret a comprehension mistake as an economic choice in the game.

ones y coordinación ciudadana — Una interacción	Protesta, concesiones y coordinación ciudadana / Protest, Concessions, and Citizen Coordination — BEER Lab Seleccione una variante de este juego. Select a version of this game.
ones y coordinación ciudadana — Mismo grupo y roles estables	
ones y coordinación ciudadana — Reasignación por ronda con roles estables; encuentros	
ones y coordinación ciudadana — Extendido: Reglas de referencia	
ones y coordinación ciudadana — Extendido: Comunicación pública	
ones y coordinación ciudadana — Extendido: Meta de dos integrantes	
ones y coordinación ciudadana — Extendido: Meta de cuatro integrantes	
ones y coordinación ciudadana — Extendido: Costo adicional aleatorio	
ones y coordinación ciudadana — Extendido: Costos individuales privados	
ones y coordinación ciudadana — Extendido: Costos individuales públicos	
ones y coordinación ciudadana — Extendido: Transferencias individuales	
ons, and Citizen Coordination — One interaction	
ons, and Citizen Coordination — Same group and stable roles	
ons, and Citizen Coordination — Rematching each round with stable roles; repeat	
ons, and Citizen Coordination — Extended: Reference rules	
ons, and Citizen Coordination — Extended: Public communication	
ons, and Citizen Coordination — Extended: Target of two members	
ons, and Citizen Coordination — Extended: Target of four members	
ons, and Citizen Coordination — Extended: Random additional cost	
ons, and Citizen Coordination — Extended: Private individual costs	
ons, and Citizen Coordination — Extended: Public individual costs	
ons, and Citizen Coordination — Extended: Individual transfers	

Figure 1.3: Demo contains only the configurations of this game family, in both languages and editions.

Rooms

Current rooms:

Protesta, concesiones y coordinación ciudadana — Básico
Protest, Concessions, and Citizen Coordination — Basic
Protesta, concesiones y coordinación ciudadana — Extendido
Protest, Concessions, and Citizen Coordination — Extended

Figure 1.4: Rooms contains the four rooms for this family: basic and extended editions in Spanish and English.

Room: Protest, Concessions, and Citizen Coordination — Basic

Create a new session

Session Config

Protest, Concessions, and Citizen Coordination — One interaction

Number of participants

Complete groups of 6 participants. Use a multiple of 6; minimum 6.

Create

[Configure session](#) 

App sequence

protest_game (10 rounds)

An original teaching game of concessions, costly collective action, and information.

Figure 1.5: Session-creation form for the basic English room. Check the selected configuration and participant requirement before creating the session.

Downloading a session with several rounds

For the instructor

Open **Data** within the relevant session and use that session's CSV or CSV-for-Excel download link. The general export has one row per participant and columns for the different rounds. Ten rounds do not necessarily mean ten rows per person. When the family provides its own long-format export, observations may instead be organized by participant and round or another unit defined by the design.

Save the original file together with the configuration name, session code, and active-round count. Check that columns for the last active round are present and that the data belong to the selected session. Empty cells can represent inactive rounds, a pending decision, or a field that does not apply to a role; do not automatically recode them as zeros. To compare learning, preserve round and group identifiers alongside participant identifiers. Share only anonymous aggregates in class, and record session incidents before constructing derived tables.

1.2 Family summary

Purpose	Understand how concessions, costs, and expectations about other people affect collective action and its outcome.
Experimental unit	One group of six: one allocator and five members.
Basic edition	One interaction; ten fixed-group rounds; ten rematched rounds with stable roles.
Extended edition	Six-round reference; communication; targets of two or four members; random additional cost; private or public individual costs; selective transfers.

Decision	The allocator distributes resources; members simultaneously choose whether to participate.
Payoff	A base of 10 ECU per person; a fund of 50 ECU; individual participation costs; the remaining fund changes recipient when the target is reached.
Topics	collective action; citizen coordination; concessions; communication; private information; participation costs.
JEL	A22; C72; C92; D72; D74.
Participants	Multiples of six. Demo opens twelve links, corresponding to two groups.
Suggested duration	45–60 minutes; 70–90 minutes for treatment comparisons.
Basic room	https://protest.beer-lab.org/room/protest_en .

1.3 What students should learn

The central objective is to distinguish a shared interest in an outcome from individual incentives to help produce it. A group may value receiving the fund and still fail to reach the target. It may also reach the target while some people receive benefits without paying a participation cost. Both outcomes should first be interpreted through rules and expectations, before being attributed to moral dispositions or political opinions.

After the activity, students should be able to reconstruct accounts for each role, identify when a decision is pivotal, explain why an advance concession does not impose an obligation to abstain, and compare a stated intention with an actual decision. They should recognize that coordination can improve while participation decreases if a group stops unnecessarily exceeding the threshold. The participation measure and the target-reached measure answer different questions.

Participant screens use neutral labels: allocator and member. During the instructor's analysis these roles support a discussion of authority and citizens, respectively. This wording allows students to experience the mechanism without being told which behavior the instructor expects and without reporting actual political positions. The connection to protest and concessions should be introduced during the discussion after decisions have been recorded.

1.4 Starting at the laboratory website

Open <https://beer-lab.org/> and enter the directory at <https://teaching.beer-lab.org/en/>. Select Protest, Concessions, and Citizen Coordination. The proposed institutional address is <https://protest.beer-lab.org/>. Instructors enter at <https://protest.beer-lab.org/demo>; students use a room such as https://protest.beer-lab.org/room/protest_en. These routes guide laboratory deployment; their inclusion does not establish that the hostname has already been published.

To inspect the package before deployment, use <http://localhost:8097/demo>. The local instance has its own database and displays only this family. Localhost works on the computer running the server; typing it on another computer refers to that second computer's local address. For a classroom session, distribute the institutional participant link confirmed by laboratory staff. A successful page load on the instructor's computer does not prove that other workstations can reach it.

Demo opens a demonstration and provides links for all people in the same session. Do not distribute

Demo to students: they might open separate sessions and wait indefinitely for participants who never join their groups. Open the room assigned to the intended session and share that link or its QR code. Keep administrative access on the instructor's computer and project only material intended for classroom discussion.

1.5 Selecting a room and configuration

There are 22 configurations: eleven in Spanish and eleven in English. Each language has three basic configurations and eight extended configurations. Basic rooms contain three options; extended rooms contain eight. The four rooms are **protesta_es**, **protest_en**, **protesta_extendido**, and **protest_extendido**. The room identifies language and edition; the instructor chooses a treatment within it.

The extended reference lasts six rounds and provides a comparison for extensions with the same horizon. The basic edition offers either one interaction or ten rounds. Institutional comparisons should use blocks with equal numbers of rounds. Comparing a single interaction with six rounds may capture experience, duration, and reputation alongside the institutional rule of interest. Explain that distinction when selecting configurations and again when interpreting the report.

Groups require six active people. Twenty-four students form four groups; with twenty-five, the remaining student can complete an observation task outside the session. Do not add a seventh role or ask a member to operate the allocator's screen as well. Confirm actual attendance and the treatment before creating the session. A twelve-link demonstration consists of two groups rather than twelve independent experiments. For testing, each link must be opened and completed by somebody.

Checkpoint

Check family, language, edition, treatment, horizon, and attendance. Confirm that Demo has 22 configurations, Rooms has four rooms, and the basic room has three choices. Other families and extended variants should not appear in the basic selector.

1.6 Preparing before students arrive

Test a session using one tab per participant or collaborators covering all six roles. Confirm that the allocator's decision releases the participation page and that results wait for all five members. For communication, also confirm that everybody submits a message option, including no message, before the board appears. A waiting page requires actual submissions; merely keeping tabs open does not complete the pending stage.

Inspect instructions, comprehension, results, and the closing screen in the selected language. Keep the report hidden and check how to reveal it afterwards. Prepare a short explanation of ECU: these are experimental units, and the guide does not promise monetary conversion or external payments. If the laboratory uses real incentives, announce the payment rule before the first decision and keep it constant across treatments intended for comparison. Do not introduce a different incentive scheme after seeing outcomes.

Establish a procedure for individual questions. Ask students to raise a hand and provide private assistance without recommending participation, nonparticipation, or a particular transfer. Technical help explains controls and rules. Strategic advice changes the exercise. Prepare an incident record for interrupted connections, late arrivals, or misunderstandings that persist after comprehension checks. Such information supports a more accurate interpretation of incomplete groups and unusual

choices.

1.7 Demonstration scope and distributing access

A demonstration teaches the sequence; it does not provide evidence about students' behavior when the instructor entered all choices in multiple tabs. When opening it, retain the session name and inspect individual links. Roles are randomized during group formation, so the first link is not necessarily the allocator. Check the role on the round-opening screen before looking for an allocation form. A member tab waiting for the allocator can be operating correctly rather than missing its own decision control.

During testing, give tabs private labels so you remember which link you operate. This organization should not appear in public projection or be inserted into participant instructions. After submitting an allocation, check that the five screens in that group advance. Another group can remain waiting because its own allocator has not finished. Groups synchronize with their own members; one allocator's decision does not automatically release the entire session. This is particularly useful to understand when reviewing a twelve-link demonstration alone.

For class, create the session with the final attendance and verify its association with the room. Check the room form: the selected configuration should match the language and edition announced to students. Open a participant test access only if you can complete its role or staff have arranged that trial; occupying a place and abandoning it leaves a pending decision. Distribute access after completing the administrative check, rather than asking students to diagnose an unassigned room themselves.

Do not share instructor passwords or a screen of administrative links as a way to allocate participants. The room is the intended student entry point, while the report requires instructor authorization. When asking a colleague to test, provide the relevant role or access and explain whether it is practice or a classroom session. This keeps data and screenshots interpretable and separates intended demonstrations from sessions accidentally opened during preparation. Record which session will supply the results used in feedback.

For the instructor

Create a new classroom session, associate it with the intended room, and verify participant access. Separate practice demonstrations from the session you will analyze. Do not reuse old participant links after a database change or reset the database to refresh a screen.

Rules, screens, and game accounts

2.1 A complete round

In the reference treatment, the system forms groups of six and assigns one person the allocator role; the other five are members. Roles remain stable throughout the session, including when groups are rematched. Every round gives each person a base of 10 ECU and provides a fund of 50 ECU administered by the allocator. The personal base is separate from the fund and is not distributed through the allocator's decision.

The allocator selects a total transfer of 0, 10, or 20 ECU. It is divided among the five members, yielding respectively 0, 2, or 4 ECU per person. The transfer is committed before participation and is retained regardless of the later decision. The allocator cannot demand repayment or revise it after observing the outcome. The remaining fund equals 50 minus the total transfer. The term concession in the classroom discussion refers to this advance distribution.

The five members simultaneously choose whether to participate. Participation costs 3 ECU in the reference; nonparticipation carries no such cost. If at least three participate, the remaining fund is divided equally among all five members. A person who did not participate also receives a share. If fewer than three participate, the allocator retains the remaining fund. Everybody keeps the base of 10 ECU; only a person choosing participation pays its cost.

The system reveals the number participating, the target, and each person's settlement. It does not publish a list of decisions by alias. Individuals receive enough information to check their own accounts without identifying another person's action. Instructors can examine aggregates in the private report and export records for analysis, but this does not make the report a participant-facing page. The distinctions between private access, projection, and export should be maintained throughout the session.

2.2 Welcome, instructions, and comprehension

The welcome page displays the institutional logo, the general purpose of the activity, and laboratory rules. Selecting Start requires confirming that those rules have been read. The common introduction names the Department of Economics at Tecnológico de Monterrey. It does not present a research hypothesis or suggest that students should choose a particular action. This preserves the distinction between explaining a rule and steering a decision.

Instructions separate the allocator's fund, individual decisions, and session rules. They explain the horizon, matching, and an example explicitly labeled as using the basic rules. In an extension, highlight the rule currently in force: the basic example provides an accounting reference but does not override a different target or additional cost. Avoid reading only the example while ignoring



Welcome to BEER Lab

The Behavioral and Experimental Economics Research Lab, Department of Economics, Tecnológico de Monterrey, is a space for learning about economic decision making through controlled activities.

Read the rules and decide individually. After the activity, the instructor will discuss aggregate results.

Laboratory rules

- Keep quiet and do not talk to other people.
- Decide individually and privately; use only messages enabled on screen.
- Follow the instructions and keep the page open.
- Do not refresh or close the window while waiting.
- If there is a problem, raise your hand and ask for help privately.

☐ I have read the laboratory rules.

Start

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Figure 2.1: Institutional welcome and laboratory rules precede the activity-specific instructions.

the box identifying the treatment. Ask students to check their own decision page for the quantities applicable to that round.



BEER LAB · ROUND 1 OF 1

Allocation and Collective Action

Resources and unit of account

Fresh resources each round: each person receives a base account of 10 ECU. The allocator also controls a fund of 50 ECU; transfers come from that fund.

ECU stands for Experimental Currency Units. It is the unit of account for this activity.

This session does not convert ECU into real money.

Each group has one allocator and five members. Every round starts with fresh resources. All amounts are expressed in ECU (Experimental Currency Units).

A fund to allocate

The allocator has a fund of 50 ECU and a personal base of 10 ECU. They can transfer a total of 0, 10, or 20 ECU; the transfer is divided equally among five members.

An individual decision

Each member receives a base of 10 ECU and their transfer. They then choose to participate or not participate. Participation has a cost even if the target is not reached.

Rules for this session

Equal transfers; participation cost of 3 ECU; target of three members; no messages.

If at least 3 of the five members participate, the remaining fund is divided equally among all five, including those who did not participate. If the target is not reached, the allocator keeps that fund.

One interaction · 1 scheduled rounds

Figure 2.2: Current instructions for the basic edition: initial resources, decision rules, and experimental units. Continuation 1/2.

The comprehension check covers three elements: the required minimum number of members, who receive available information when the target is reached, and whether a participating person pays the cost even when the group falls short. Correct answers are the current target, all five members, and yes. An incorrect answer allows review and another attempt; it does not generate a decision or alter payoff parameters. Provide private assistance when a misunderstanding persists.

What participants will see

A member must understand that the advance transfer is retained, that participation costs money even when collective action fails, and that somebody who did not participate may still receive a share of the fund. All three conditions apply simultaneously. Misunderstanding any one of them changes the problem the person believes they are solving.

Example under the basic rules

With a total transfer of 10 ECU, each member receives 2 ECU. If two people participate, each participant earns 9 ECU and each nonparticipant 12 ECU; the allocator earns 10 ECU. If four people participate, each participant earns 17 ECU and each nonparticipant 20 ECU; the allocator earns 10 ECU. This example uses cost 3, target 3, and additional spending 0.

2.3 Decisions and waiting pages

At the beginning of each round, the screen confirms the role, target, and relevant rules. The allocator receives a form containing the three possible total transfers. After submitting, the allocator waits for members. A waiting page indicates that a necessary decision is pending; it is not evidence of failure and does not mean the allocator should distribute the fund again. In particular, pressing refresh repeatedly does not replace a missing member's submission.

Resources and unit of account

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One interaction · 1 scheduled rounds

Available information

Each member's decision is private. During the round nobody sees others' actual decisions. At the end, the total number of participants is shown without identifying who participated.

Round sequence

1. The allocator sets transfers and, when applicable, spending.
2. Each member learns their transfer, cost, and the target.
3. If messages are enabled, they are sent and displayed before decisions.
4. The five members decide simultaneously and privately.
5. Decisions are counted, the fund is settled, and earnings are shown.

Example under the basic rules

With a total transfer of 10 ECU, each member receives 2 ECU. If two people participate, each participant earns 9 ECU and each nonparticipant 12 ECU; the allocator earns 50 ECU. If three participate, each participant earns 17 ECU and each nonparticipant 20 ECU; the allocator earns 10 ECU. This example uses cost 3, target 3, and additional spending 0.

Continue

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Figure 2.3: Current instructions for the basic edition: initial resources, decision rules, and experimental units. Continuation 2/2.

Review the marked questions. Each shows your answer and an explanation; your other answers are retained.

BEER LAB · ROUND 1 OF 1

Check your understanding

What is the minimum number of members needed to reach the target?

Your answer: 4. The correct answer is 3. Review the target, who receives the fund, and when the cost is paid; then try again.

If the target is reached, who receives a share of the remaining fund?

☒ All five members
☐ Only those who participated

If someone participates and the target is not reached, do they pay the participation cost?

☒ Yes
☐ No

[Continue](#)

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Figure 2.4: Current comprehension check with an incorrect answer, its specific explanation, and retained responses.

BEER LAB · ROUND 1 OF 1

Allocate the fund

The transfer is paid before decisions. Who receives the remaining fund depends on whether the target is reached.

Total transfer (ECU)

☐ 0 ECU
☒ 10 ECU
☐ 20 ECU

[Continue](#)

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Figure 2.5: The allocator selects the total transfer before individual participation decisions.

Each member sees their transfer, participation cost, target, and the share they would receive if the target is reached. Cards explain participation and nonparticipation without recommending either. With private costs, only the person's own cost is shown; with public costs, a table lists all five aliases. Under selective transfers, each member knows their own transfer and the total allocated, but not other members' individual transfers. This information boundary is part of the treatment.

Figure 2.6: The individual decision page presents costs and benefits without revealing others' actions.

After submission, members wait for their group to finish. Keeping a window open or closing a tab does not count as participation. Every relevant form must be submitted. When testing with multiple tabs, one forgotten tab can block the group. During class, consult Monitor and help the person who has not completed the stage. Do not announce other people's decisions as a way to encourage submission; this would change the information available before choosing.

2.4 Reference payoff formulas

Let a denote the total transfer, $d_i = 1$ when member i participates and $d_i = 0$ otherwise. Let $n = \sum_{i=1}^5 d_i$ and $S = \mathbf{1}\{n \geq m\}$, where $m = 3$ in the reference. Payoffs are:

$$\pi_i = 10 + \frac{a}{5} + S \frac{50 - a}{5} - 3d_i, \quad \pi_A = 10 + (1 - S)(50 - a).$$

Earnings are not simply the fund balance: they include an individual base. The transfer should not be subtracted from the member again. The allocator already funded it from the 50 ECU. When the target is reached, each member receives a total of 10 ECU from that fund, combining

the advance transfer and subsequent share, regardless of a . This property separates the timing of distribution from the target being reached.

With $a = 10$ and two participants, the remaining fund is 40 and is not transferred. The allocator earns $10 + 40 = 50$. Each participating member earns $10 + 2 - 3 = 9$; the others earn $10 + 2 = 12$. Total earnings are $50 + 2(9) + 3(12) = 104$. This equals the bases, 60, plus the fund, 50, minus the two participation costs, 6. Encourage students to reconstruct both individual accounts and the total before interpreting the outcome.

With the same transfer and three participants, the remaining fund is divided into five shares of 8. The allocator earns 10. Each participating member earns $10 + 2 + 8 - 3 = 17$; each nonparticipant earns 20. The total is $10 + 3(17) + 2(20) = 101$. Reaching the target changes who receives the fund, but does not create resources. The decrease from 104 to 101 reflects the cost of one additional participating person, not a loss caused by dividing the fund.

Theoretical foundation

The reference total is $110 - 3n$. It is not a complete measure of political welfare. The exercise represents redistribution of a rent between roles; it assigns no intrinsic value to rights, representation, or institutional change. Instructors should separate the monetary distribution in the model from a normative judgment about real protest.

2.5 Results, completion, and repetition

Individual results report whether the target was reached and decompose earnings. Members see the base, transfer, fund share, participation cost, and realized additional cost when applicable. Allocators see the total transfer, remaining fund, and their earnings. The random-cost variant distinguishes an announced probability from a realized cost; a draw generating no cost does not imply that the probability was zero. A person who did not participate is not subject to the additional-cost draw.

Repeated rounds accumulate earnings but renew resources. There is no debt, investment, persistent political capital, or balance financing the next decision. Fixed groups retain members and roles. Rematching keeps role categories stable and recombines members with allocators; encounters can repeat, and the procedure does not promise that every partner will always be unfamiliar. This matters when discussing experience and reputation across rounds.

After the final active round, Activity completed displays accumulated earnings. It has no button leading to an empty subsequent page. Ask students to keep it open while preparing the report. In ten rounds, accumulated earnings may be ten times those from a single interaction; compare round means rather than totals from sessions of different lengths. The terminal screen confirms completion, while the private report supplies aggregate evidence for the classroom discussion.

BEER LAB · ROUND 1 OF 1

Round result

Target reached
Number participating: 3 / 5 · Participation target: 3
Total transferred: 10 ECU · Remaining fund: 40 ECU

Your earnings this round

17 ECU

Round base	10 ECU
Your decision	Participate
Your transfer	2 ECU
Share received from the fund	8 ECU
Participation cost paid	3 ECU
Additional cost paid	0 ECU

Other participants' individual decisions are not shown.

Continue

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Figure 2.7: Settlement supports checking an individual account without identifying others' choices.

BEER LAB · ROUND 1 OF 1

Activity completed

The activity has ended. Keep this screen open and wait for the instructor's instructions.

Your total earnings

17 ECU

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Figure 2.8: The closing screen confirms completion and displays accumulated earnings.

Incentives, coordination, and theory

3.1 The collective action problem

A collective action benefits several people but requires individual decisions to occur. Everybody preferring to receive the fund does not imply that everybody wants to pay the cost. The reference makes this conflict observable without introducing differences in ideology, historical information, or the value of rights. An incentive to benefit from others' actions exists because the final distribution does not depend on having participated.

Use the public-good analogy precisely. Reaching the target provides a benefit shared among the five members and does not exclude somebody who abstained. Here, however, resources are transferred from another role: the game does not automatically produce a social surplus as a productive public good would. It is useful for studying the provision of an action and the distribution of rents, but this distinction matters when comparing it with the laboratory's voluntary-contribution activity.

Distributive conflict coexists with citizen coordination. Distinguish who receives resources from who pays to change their destination. Nonparticipation does not imply approval of the initial allocation.

3.2 A pivotal decision

Hold the transfer and the other four members' actions fixed. When there are exactly $m - 1$ other participations, a person's own action changes the outcome. In the reference, with $m = 3$, a member is pivotal when exactly two of the other four participate. Participation reaches the target; nonparticipation leaves the group short. The material gain from acting in that situation equals the remaining fund share minus the participation cost.

With $a = 10$, the individual share is 8 and the cost is 3. When exactly two others participate, participation raises the person's own earnings by 5 ECU. If three others already participate, the target is reached without the person's action, so participation reduces earnings by 3. If zero or one of the others participates, the individual action is insufficient to reach three and also reduces earnings by 3. The same action can therefore have different incentives in different profiles.

The difference between participation and nonparticipation is positive only near the threshold. This explains why no individual recommendation works for every possible combination of others' choices. Participation is not a dominant strategy, and neither is abstention in the reference. Students should identify the pivotal condition rather than memorize that collective action always requires participation. This comparison can be presented verbally before introducing its mathematical notation.

Theoretical foundation

With k other actions, remaining fund R , individual cost c_i , and probability q of an additional cost of 5 ECU, the expected difference under risk neutrality is

$$\Delta_i(k) = \frac{R}{5} \mathbf{1}\{k = m - 1\} - c_i - 5q.$$

In the reference, $q = 0$. The formula compares two actions while holding other decisions fixed; it does not assume that a participant knows k when choosing.

3.3 Equilibria in the citizen stage

A Nash equilibrium is a profile in which nobody can improve earnings by changing their decision alone, given everybody else's decisions. Under the basic rules and a fixed transfer, universal nonparticipation is an equilibrium: one action alone cannot reach a target of two, three, or four and costs 3. Profiles with exactly the required minimum are also equilibria because each participating member is necessary and receives a fund share exceeding their cost.

With a target of three, there are ten distinct sets of three members, since three people can be selected from five in ten ways. Any of these can sustain a successful equilibrium in the reference. A profile with four or five participants is not a pure material equilibrium: somebody can withdraw without preventing success and save their cost. A failed profile containing some participation is likewise unstable under these incentives, because a person already paying can stop without losing a share that was never received.

These conclusions concern the stage following the concession. The allocator chooses earlier and anticipates the group's response. Without a rule selecting among citizen equilibria, there is no unique prediction about the optimal concession or a subgame-perfect outcome of the complete game. Do not describe a zero transfer as the universal solution simply because retaining resources seems attractive: retaining them depends on the citizen outcome the authority expects.

Multiplicity also limits a mechanical interpretation of learning. A repeated session stabilizing at success does not establish that students learned a single correct equilibrium. Stabilization at failure does not prove they misunderstood. Both profiles can be consistent with individual best responses. Ask how students coordinated and what they expected, while distinguishing strategic explanations from the information actually recorded by the activity. A coordinated plan may require agreement on who bears the cost.

3.4 Expectations and mixed strategies

Before deciding, a person may assign probabilities to others' actions. Under risk neutrality, participation is attractive when the probability of being pivotal times the fund share exceeds the expected cost. The game does not elicit that belief. When enabled, intentions provide behavioral information, but they are not a numerical estimate of probability. A person can send the same message under quite different assessments of likely turnout.

An example illustrates the reasoning without requiring prior mastery of mixed strategies. Suppose each of the other four people independently participates with probability one half. The probability that exactly two do so is $6(1/2)^4 = 3/8$. With a transfer of 10, the fund share is 8, so the expected benefit of changing the outcome is $8(3/8) = 3$, equal to the cost. Under these assumptions the person is indifferent between the two actions.

Independence and probability one half are assumptions of the calculation, not facts established by the report. Repeated groups may have correlated expectations and plans to share costs. The same observed participation rate may arise from different equilibria, errors, or cooperation norms. An average does not identify the belief distribution or an individual's probability of being pivotal. Explain which assumptions would be needed before interpreting a participation rate as an equilibrium mixing probability.

3.5 Concessions and social preferences

A larger transfer increases a member's earnings if the group fails and reduces the additional share received from changing failure into success. With uniform distribution, successful earnings retain a total of 10 ECU from the fund. Thus the concession reduces the incremental benefit of triggering distribution of the remainder. This can discourage participation without creating an enforceable purchase of abstention. The concession is already retained under either individual choice.

Social preferences may change the evaluation of material payoffs. A person may value equality between roles, feel an obligation to cooperate, wish to avoid making others bear every cost, or respond to the intention attributed to the allocator. The game supports discussion of these possibilities but does not separately measure them. Reciprocity, inequality aversion, and participation norms can produce similar patterns. Avoid treating every choice outside a material benchmark as evidence of one particular motive.

For selective concessions, holding the total transfer fixed also holds fixed the material gain from being pivotal for members with the same cost. Individual income levels and transfer inequality change. Consequently, a difference between recipients may suggest distributional or reciprocal responses, but does not prove that a received transfer directly altered the cost of acting. This distinction is especially important when explaining how the model represents, and simplifies, attempts to divide opposition.

3.6 Reading and empirical evidence

[Olson \(1965\)](#) frames shared benefits and individual incentives. [Granovetter \(1978\)](#) explains why threshold distributions matter for aggregate outcomes. These provide conceptual foundations; this protocol specifies its own payoffs and does not reproduce a sequential diffusion model.

[van de Kragt et al. \(1983\)](#) study minimal contributing sets in public-good experiments. [Isaac and Walker \(1988\)](#) examine communication and voluntary contributions. They motivate comparing coordination and intentions, but our structured board differs from free conversation and is not a literal replication of their treatments.

[Cantoni et al. \(2019\)](#) find strategic substitutability in a field experiment on Hong Kong protest participation. [Bursztyn et al. \(2021\)](#) examine persistence and social interactions in that setting. Their findings challenge a universal complementarity interpretation; they are not calibrated predictions for our groups of five and do not causally validate classroom comparisons.

Feedback script

Compare earnings when two of the other four act and when three act. Responses change across the threshold; a rising participation rate does not characterize the entire game.

Variants and institutional comparisons

4.1 Using the extended edition

The eight extended configurations run for six rounds with fixed groups and stable roles. One reproduces the reference rules to provide a control with the same horizon; the other seven change communication, the threshold, spending connected to an additional cost, cost visibility, or transfer distribution. These are not eight disconnected games. They share the fund, bases, general sequence, and settlement, except for the changes specified in this chapter.

Before choosing a comparison, formulate a concrete question. For example: do messages help groups assemble exactly the required number, does a higher threshold increase failure, or does cost visibility help allocate participation to people who pay less? Then select configurations differing in that rule while maintaining horizon, group size, and incentives. Combining several extensions in a single contrast makes it difficult to attribute a difference to one mechanism. A well-chosen pair can support a full class discussion.

4.2 Public communication through intentions

After the allocator fixes the transfer, members receive an intention page. Options are intending to participate, intending not to participate, not yet decided, and sending no message. Everybody must submit the form to complete the stage, but sending a substantive message is voluntary. Selecting no message permits progress and indicates that there is no declaration. There is no free text or conversation outside the platform. This keeps communication standardized across groups.

The board shows the five aliases and their messages to everybody, including the allocator. It appears before actual decisions. Intentions are nonbinding: somebody declaring participation may abstain, and somebody declaring nonparticipation may act. Neither discrepancy creates an automatic penalty. The allocator cannot revise the transfer after seeing the board, preventing confusion between citizen communication and a new concession stage. Decisions remain simultaneous after the board has been read.

The appropriate comparison is the six-round reference without messages. Examine success, excess participation, failure, and followed intentions. Five participation declarations do not mean five committed decisions. Coordination may improve when only three follow an understood plan, even if a simple measure of compliance with individual declarations appears low. The report separates how many participation intentions were sent from how many were followed by actual participation. It does not treat undecided or silent messages as promised participation.

This institution models a limited form of public communication. It is not open bargaining, deliberation about policy, or ideological persuasion. Messages can coordinate expectations, express

BEER LAB · ROUND 1 OF 6

An intention message

Your transfer
2 ECU

Participation cost
3 ECU

Participation target
3 / 5

Individual share if the target is reached
8 ECU

You may send an intention or choose not to send a message. Your later decision is independent of this message.

Your message

☒ I intend to participate

☐ I intend not to participate

☐ I have not decided yet

☐ Send no message

Continue

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Figure 4.1: Members may state an intention or select the option to send no message.

BEER LAB · ROUND 1 OF 6

Group messages

These are intentions, not decisions. Nobody is required to follow their message.

Member 1
I intend to participate

Member 2
I intend to participate

Member 3
I have not decided yet

Member 4
I intend not to participate

Member 5
I intend to participate

Continue

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Figure 4.2: The board contains messages, never the actual decisions submitted afterwards.

willingness, or lack credibility. The activity does not automatically separate these explanations. To discuss trust in messages, ask students about reasoning during feedback and label their responses as retrospective interpretation rather than incentivized beliefs recorded by the system. Actual decisions remain distinct from the statement preceding them.

4.3 Targets of two and four members

These variants preserve cost 3, fund 50, and uniform concessions. Only the minimum changes: two of five or four of five. Instructions, comprehension, decision pages, and the report display the current target. A count of three is success with a target of two and failure with a target of four. The same observation changes meaning when the institution changes. Read the histogram together with the threshold rather than comparing counts without reference to the rule.

In the citizen stage, minimum successful profiles require two or four people, respectively. Both retain an equilibrium with nobody participating. A lower target reduces the required number but may also make somebody believe others already suffice. A higher target can raise the incentive to mobilize near its critical point while making the necessary set harder to assemble. Do not infer a universal direction for the effect on mean participation. Coordination and free riding operate together in both versions.

For feedback, draw the counts zero through five and mark each threshold. Ask students to identify failure, minimum success, and excess participation. Compare the frequencies of those three regions across treatments. With few groups, present the comparison as classroom evidence rather than declaring that one rule always produces greater mobilization. Responses depend on expectations, selected concessions, and coordination in addition to the arithmetic requirement. Keep the number of citizens unchanged when explaining the contrast.

4.4 A random additional cost

This extension abstractly represents an authority action making participation more costly. Alongside the uniform transfer, the allocator can spend 0, 5, or 10 ECU from the fund. The announced probability of an additional 5 ECU cost is respectively zero, one quarter, or one half. Draws are independent across members conditional on spending, and the cost applies only to people who participate. The outcome of another person's draw does not alter one's own probability.

Spending is deducted from the fund before collective action. It is not refunded when the group fails and does not directly increase the allocator's earnings. A member's additional cost is not paid to the allocator either: it leaves earnings. Thus this extension changes both the expected cost of acting and the share available after reaching the target. It is an explicit accounting package; comparison with the reference does not identify the effect of risk or threat alone.

With transfer 20 and spending 10, each member receives a transfer of 4, the remaining fund is 20, and the success share is 4. Expected participation cost is $3 + 0.5(5) = 5.5$. Even when pivotal, the expected increment is $4 - 5.5 = -1.5$. Under risk neutrality and material earnings, nonparticipation strictly dominates in that stage. With transfer zero and the same spending, the share is 8 and a pivotal member can have an expected increment of 2.5. The allocator's combination of choices therefore matters.

To check realized accounts, suppose transfer 10, spending 10, and three participating members. The success share is 6. A participant without an additional cost earns $10 + 2 + 6 - 3 = 15$; with the additional cost, earnings are 10; a nonparticipant earns 18. The allocator earns 10. Group accounting subtracts spending, participation costs, and realized additional costs from the initial

BEER LAB · ROUND 1 OF 6

Allocate the fund

The transfer is paid before decisions. Who receives the remaining fund depends on whether the target is reached.

Total transfer (ECU)

☐ 0 ECU
☒ 10 ECU
☐ 20 ECU

The allocator can spend 0, 5, or 10 ECU from the fund to set an additional-cost probability of 0%, 25%, or 50%. Each participating member faces an independent draw and may pay an additional 5 ECU. Spending reduces the remaining fund, and these additional costs are not paid to the allocator.

Spending on the additional cost

☐ 0 ECU · 0 %
☐ 5 ECU · 25 %
☒ 10 ECU · 50 %

Continue

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Figure 4.3: Allocator spending fixes the announced probability and reduces the available fund.

110 ECU. Do not subtract both expected and realized costs. Expected costs help explain choice; realized costs settle earnings.

Attention

Participant screens describe a random additional cost, with no physical harm or real coercive situation. Instructor analysis can relate this mechanism to abstract repression, but should not equate 5 ECU with a real experience or interpret risk preferences as normative positions about protest.

4.5 Private and public individual costs

In both treatments, each member's cost is independently drawn from 1, 3, and 5 ECU with equal probability at the start of every round. The distribution is known and the base remains 10. Draws do not depend on previous actions or receipt of transfers. With private costs, each member knows only their own value; the allocator knows the distribution but not individual realizations. With public costs, everybody sees the five alias-specific values.

The private-public comparison preserves cost generation, the threshold, and the concession menu. It is consequently more informative about visibility than comparison between private costs and the homogeneous reference cost of 3: that second contrast changes heterogeneity and information together. Costs are drawn again each round, so an alias does not designate a permanent low-cost or high-cost category. The public table is updated with the current realization rather than a person's past cost.

Consider costs 1, 1, 3, 5, 5. A minimum set composed of the three lowest costs spends 5 ECU; another comprising costs 3, 5, 5 spends 13. Both can reach the same target and transfer the same fund but produce different totals. Public information may facilitate a division of tasks; it does not

BEER LAB · ROUND 1 OF 6

Decide whether to participate

Your transfer
2 ECU

Participation cost
3 ECU

Participation target
3 / 5

Individual share if the target is reached
8 ECU

If at least 3 of the five members participate, the remaining fund is divided equally among all five, including those who did not participate. If the target is not reached, the allocator keeps that fund.

Choose privately. Participation costs the amount shown whether or not the target is reached. Nonparticipation carries no such cost.

Total transferred: 10 ECU · Remaining fund: 40 ECU

Participate

You pay your cost; if the target is reached, you receive your share of the fund.

Do not participate

You pay no cost; if the target is reached, you also receive your share of the fund.

Participation cost

Member 1: 5 ECU

Member 2: 3 ECU

Member 3: 5 ECU

Member 4: 5 ECU

Member 5: 3 ECU

Your decision

☐ Participate
 ☐ Do not participate

Continue

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Figure 4.4: The cost table appears only under public information.

impose one. There is no automatic selection of low-cost participants or mandatory compensation between people. Members still make private, simultaneous decisions after seeing the information applicable to their treatment.

The report displays decisions by cost with denominators. Higher participation at lower costs is consistent with cost sensitivity, but every decision also depends on the group and expectations. This version includes no independent public signal about political support or willingness to act. Do not confuse public costs with an intention survey: these are monetary values assigned by the system. A future signal treatment would require its own generating process and a clearly specified information comparison.

4.6 Selective concessions

The allocator chooses five nonnegative integer transfers whose sum cannot exceed 20 ECU. Resources may be left undistributed; spending the maximum is not mandatory. Members receive their amounts before choosing and know the total allocated, which is needed to calculate the remaining fund. Other aliases' individual transfers are not displayed. The distribution after success remains equal. The allocator can review all amounts before submitting, while members see only the information authorized for them.

BEER LAB · ROUND 1 OF 6

Allocate the fund

The transfer is paid before decisions. Who receives the remaining fund depends on whether the target is reached.

The allocator chooses an integer transfer for each member. The sum cannot exceed 20 ECU. Each member knows only their own transfer and the total allocated. If the target is reached, the remaining fund is divided equally.

Member 1	Member 2	Member 3	Member 4	Member 5
1	2	3	4	5

[Continue](#)

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Figure 4.5: The selective form validates the sum of the five individual transfers.

With transfers 8, 4, 4, 2, 2, the total is 20 and the remaining fund 30. If three participate, everybody receives a later share of 6. The first member earns 24 without participating or 21 with participation; the fourth earns 18 or 15. These differences reflect initial transfers. For both members, the material benefit of changing failure into success remains 6 and the cost remains 3. Selectivity changes income levels without automatically changing that incremental material incentive.

The relevant comparison uses uniform distribution and the same total limit. The report summarizes the total allocated and participation; the data file retains individual amounts for analysis of inequality. An association between receipt and action does not establish a purchase of abstention. Allocators can select amounts based on experience, and recipients may respond to distributive fairness or attributed intentions. Always explain which part of the incentive remains unchanged before connecting the pattern to political mechanisms.

4.7 Designing a classroom comparison

For a first class, choose a reference and one extension connected to the course objective. The family includes every variant to provide flexibility; instructors need not run all of them in one session. Assign groups to configurations before observing decisions. If groups play two treatments, alternate their order across groups and announce new resources in each block. Learning and interpersonal history do not disappear simply because a new session has a different name.

Record group counts, order, and incidents. An institution selected by students would involve endogenous selection; here the instructor assigns configurations. Keep results separated by session and compare equal units and horizons. A report for one session does not automatically combine data from other configurations. This separation protects family isolation and documents the comparison actually performed. Exported files can later be combined with an explicit session and treatment variable, retaining the original records. A comparison should also preserve how instructions are communicated. If one instructor explains the threshold extensively to one group but gives another only a link, differences can reflect comprehension and attention. Prepare a common script, allow equal reading time, and use comprehension checks in both conditions. Under communication, permit only the enabled messages; oral conversation during the control would erase the intended contrast. Procedural consistency matters alongside consistency of numerical parameters.

Decide before play which outcome is relevant. For coordination, use target attainment, partial failure, and excess participation. For distribution, inspect role earnings and transfers. For costs, compare participation by value and realized charges. An institution may improve one measure while worsening another. Reducing excess participation preserves success and saves costs, whereas lowering participation below the threshold changes the recipient of the fund. Do not call every cost reduction an improvement without checking the collective outcome accompanying it.

When presenting both sessions, use matching scales and report denominators. If one has more completed groups, a larger count bar does not necessarily indicate a higher frequency. Divide by comparable group counts and retain pending records. Ask students to propose at least two explanations and identify which would require observing expectations, which decisions are already recorded, and what exogenous assignment would distinguish them. This turns an informal comparison into an exercise in experimental reasoning without claiming precision the classroom cannot provide.

Reading the report and leading feed-back

5.1 Disclosure and progress

The report is private to the instructor. When opened, it displays attendance and progress while keeping results hidden. Reveal results displays aggregates; Hide results removes them again. If the page is refreshed, check its state before projection. Hiding results separates decisions from analysis, but does not replace protection of administrative access. Students should not receive the report's address. Use the projector only after deciding which aggregate sections are appropriate for the discussion.

Progress counts completed group-rounds, not clicks or people who opened a window. Two groups over ten rounds schedule twenty group-rounds. If one group finished a round while the other is pending, the report incorporates only the completed group. It does not fill the second with zeros or interpret it as five abstentions. Groups that stop can leave rounds pending at the end; document the cause before drawing conclusions from the available sample.

The screenshot shows the oTree interface for a session titled "Protest, Concessions, and Citizen Coordination — One interaction: session 'obvlfwx1' (demo)". The top navigation bar includes links for New, Links, Monitor, Data, Payments, Report, and Description. Below the navigation bar, there are input fields for "App Name" (protest_game (10 rounds)) and "Round Number" (10), with a "Go" button. The main content area is titled "BEER LAB" and "Instructor report: protest and coordination". It includes a "Reference rules" section stating "Aggregates by group and round. Results appear only after selecting Reveal." Below this, there are three progress bars: "Session participants" (12), "Completed group-rounds" (0 / 2), and "Pending group-rounds" (2). At the bottom, there are two buttons: "Reveal results" and "Hide results".

Figure 5.1: Progress is available before revealing aggregate decisions.

Checkpoint

Before projecting results, verify the session and treatment, and check completed and pending group-rounds. Practice results belong to their own session. Do not treat a combination of two different sessions as observations from a single treatment without explicitly documenting the comparison.

5.2 Two rates with different denominators

Participation rate divides participation decisions by individual decisions in completed group-rounds. Each such group-round contributes five citizen decisions. Target-reached rate divides successful group-rounds by completed group-rounds. Allocators are excluded from the participation denominator. Thus two completed group-rounds supply ten citizen decisions but only two observations of success. Keep these units visible when explaining the dashboard and when constructing comparisons outside the platform.

Consider one group with three participants and another with none. Participation is three of ten, or 30 percent, while the target is reached in one of two groups, or 50 percent. These percentages are not inconsistent. The first measures individual frequency; the second measures collective outcomes. Display numerators before comparing percentages and ask students to reconstruct both accounts. This is a useful check of whether they understand the experimental unit.

Mean transfer per member divides amounts received by the same citizen decisions. Mean total transfer refers to group-rounds. With uniform transfers, the first is one fifth of the second. Under selective transfers, the relationship still holds across complete groups although individual amounts differ. Do not compare an individual mean with a group total without adjusting the unit. The report uses descriptive labels so that instructors can identify the denominator instead of relying on the size of a displayed number.

5.3 Participation histogram

The histogram has six bars, from zero through five participating people. Each bar counts group-rounds and is accompanied by the current minimum. It distinguishes zero participation, partial failure, minimum success, and participation above the threshold. Sessions with the same mean can have different distributions: for a valid example, compare groups alternating between zero and four with groups consistently having two. Both average two, but their collective outcomes need not match.

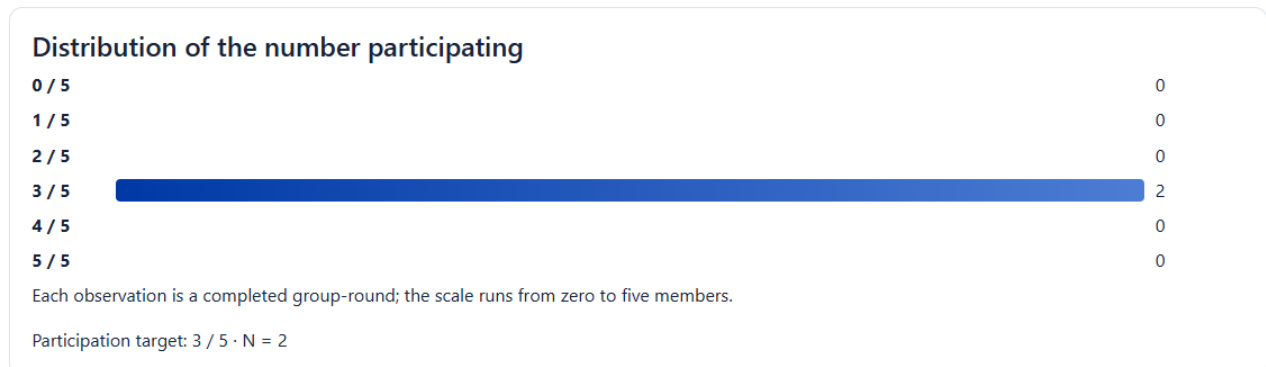


Figure 5.2: The distribution uses counts zero through five and identifies the current target.

With a target of three, the alternating example succeeds half the time whereas the constant-two example never succeeds. A mean therefore cannot fully describe coordination. If counts four or five are common, highlight that success can coexist with extra participation costs that do not change the outcome. Do not label such behavior an error without considering social preferences or arrangements for sharing participation costs. The histogram describes outcomes before those motives are discussed.

5.4 Transfers and conditional participation

The report also displays the distribution of total transfers and a table of participation conditional on that total. Reference categories are 0, 10, and 20 ECU. Selective transfers add the actual totals chosen, including intermediate amounts. Categories without observations have no estimated rate and show a zero denominator. Missing observations are not a zero participation rate. This distinction matters when an allocator repeatedly chooses only one amount throughout a session.

The table may suggest that groups receiving larger concessions act less, but allocators chose the amounts. Those expecting greater participation might respond with larger transfers; those observing failure might stop conceding. This selection prevents interpretation of the table's slope as a causal effect of the amount. Describe the pattern and ask which mechanisms are compatible with it. Causal comparison would require exogenous allocation of amounts or an additional design rather than re-labeling the observed association.

Participation by total transfer		
Total transferred	Completed groups	Participation rate
0 ECU	0	— % (0 / 0)
10 ECU	2	60 % (6 / 10)
20 ECU	0	— % (0 / 0)

Transfers are chosen by the allocator. These rates describe associations; they do not identify a causal effect of concessions by themselves.

Figure 5.3: Conditional participation includes denominators and a note about endogenous concessions.

5.5 Role earnings and changes across rounds

The earnings chart keeps a consistent role color: blue for members and orange for the allocator. Bars use a common scale from zero to 60 ECU. Means and sample sizes are shown instead of identifiable individual earnings. The allocator mean uses one observation per group-round; the member mean uses five. Differences describe monetary distribution in the model, not an evaluation of each person's legitimacy. This interpretation should accompany any comparison of who benefited from success or failure.

The time plot displays participation and target-reached rates by round. The table below supports checking counts and percentages. Pending rounds have no estimate rather than an artificial zero on the trajectory. Lines describe aggregate changes but do not explain learning by themselves. Fixed groups may also develop reputation or coordinate tasks. Rematched groups combine individual experience with changing composition. Compare horizons and group formation before explaining why one trajectory appears more stable than another.

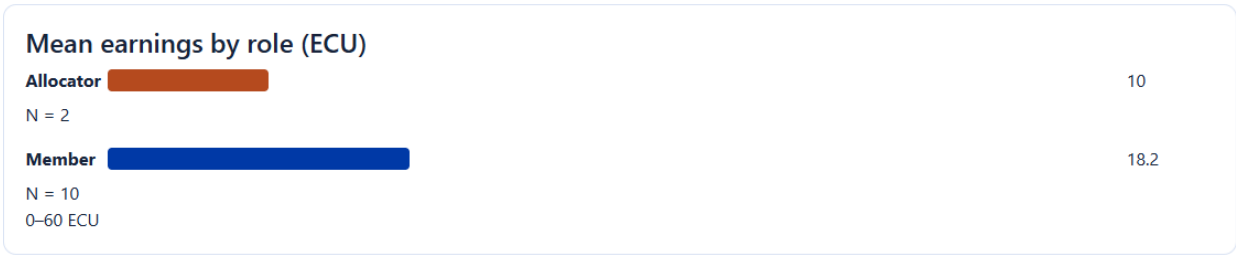


Figure 5.4: Earnings distinguish roles on a common monetary scale.

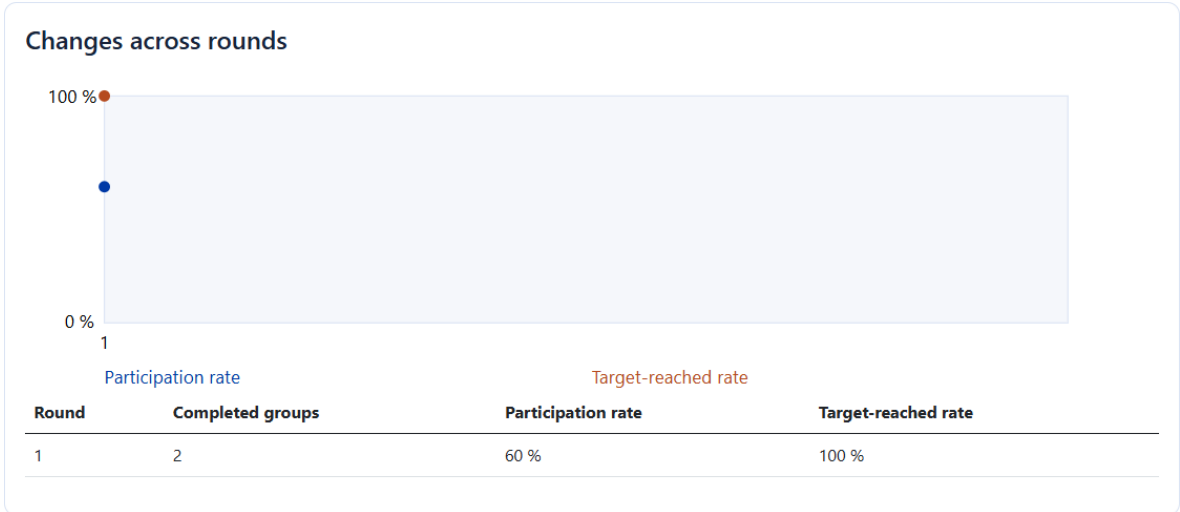


Figure 5.5: Changes across rounds separate individual behavior from collective outcomes and include a verification table.

5.6 Specific measures and limitations

Participation by cost distinguishes values 1, 3, and 5. In the reference, only the row for 3 contains observations; the other rows have no estimates. For random additional costs, the report adds mean spending, the number of participants charged, and total realized additional costs. These distinguish the announced rule from what happened in a small sample. An unusual realization is possible even when the generating process operates correctly. Check the stated probability before attributing an imbalance to malfunction.

Ex post pivotality asks whether changing one individual’s decision would alter attainment of the target, holding the other four fixed. With exactly three actions and target three, the three participating members are pivotal; with two actions, the three nonparticipants are pivotal. The measure does not establish awareness of pivotality or knowledge of others’ actions. It is a counterfactual computed after settlement, useful for explaining incentives without claiming to have observed beliefs.

In communication, the report counts participation intentions and actual participations among their senders. Positive-intention compliance excludes abstention, undecided, and silent messages from its denominator. It does not summarize every aspect of communication quality. The export permits comparisons between each category and actual action. Explain the subset described, especially when only a few participation intentions were sent. A ratio based on one declaration should not be presented with the same evidential weight as a much larger sample.

5.7 A discussion sequence

Begin with completed counts and then show the distribution and rates. Reconstruct an individual account before discussing motives. Consider a unilateral change near the threshold and another change when enough people already act. Introduce concessions and extensions afterwards. End by distinguishing what the platform observes from interpretations requiring further assumptions. This sequence helps nonspecialist instructors conduct feedback grounded in evidence while still allowing links to political institutions and social preferences. For a complete verification, consider a hypothetical example with twelve reference group-rounds. Suppose frequencies are two cases with zero participants, one with one, two with two, four with three, two with four, and one with five. Frequencies sum to twelve. Total participation decisions are $0(2)+1(1)+2(2)+3(4)+4(2)+5(1) = 30$. Since there are sixty citizen decisions, participation is 50 percent. With target three, seven group-rounds succeed: four, two, and one in the three upper bars. Success is $7/12$, approximately 58.3 percent.

The example has four minimum successes and three cases of excess participation. Its five failures comprise two cases of universal nonparticipation and three of insufficient participation. To compute pivotal decisions, the four cases with three actions contribute twelve participating decisions; the two cases with two actions contribute six nonparticipating decisions. The total is eighteen. This is not eighteen distinct people and does not establish that those individuals regarded themselves as necessary before choosing.

Aggregate accounting is $12(110) - 3(30) = 1230$ ECU, provided every case uses reference rules without spending or additional costs. Do not use the same identity for the random-cost treatment without subtracting its own entries. Ask one student to check frequencies, another to calculate rates, and a third to explain pivotality. This teaches the group to verify the report through independent accounts and detect unit mistakes before interpreting motives or differences between institutions. Label the example as hypothetical rather than as a result from the session just played.

Feedback script

How does three of ten people participating differ from one of two groups reaching the target? What does a person gain by acting when two others act? What if three already act? What changes when a larger concession is received? Use answers to move from accounts to incentives and then to institutions.

Class plans and practical exercises

6.1 A sixty-minute introductory session

Reserve the first ten minutes for access and rules. Confirm that everybody is in the same session and groups contain six members. Explain ECU and the abstract nature of the roles. Do not announce that the exercise will demonstrate selfishness, solidarity, or a politically preferred institution. The opening should establish the decision problem rather than a desired answer. Address comprehension questions individually before decisions begin, and keep procedural assistance distinct from strategic advice.

Allow approximately fifteen minutes for play. A first experience can use one interaction with more time for reconstruction; use repetition to observe adjustment. Pace depends on reading and attendance, so the timing is guidance rather than a compulsory countdown. During decisions, keep aggregates hidden, monitor progress, and avoid comments about groups participating too much or too little. Such statements can alter expectations and encourage students to target an instructor-imposed outcome.

Use the next ten minutes for accounting. Ask each student to reconstruct their own settlement without announcing individual decisions aloud. Present a common numerical case, such as transfer 10 and three participations, and verify participating members, nonparticipants, and allocator payoffs. This establishes shared rules before feedback. If accounting errors appear, resolve them before introducing strategies or empirical findings. Students need to know what an action changes before discussing why people selected it.

Allocate fifteen minutes to the report and ten to theory and closing. Show counts, the histogram, and both rates; explain pivotality using two different combinations of others' actions. Present equilibrium multiplicity and the distinction between shared interest and individual willingness. Finish with a short written response describing what was observed, which rule explains it, and what further hypothesis would be needed to discuss motives. This separates evidence, the model, and personal interpretation.

6.2 A ninety-minute comparison

Prepare two six-round configurations and parallel groups when attendance permits. Assign institutions before observing decisions. Some groups might receive the reference and others communication; another useful comparison is private versus public costs. Use twenty minutes for rules, twenty for decisions, fifteen for accounting, twenty for report comparisons, and fifteen for exercises and synthesis. Adjust pace without changing the number of rounds midway through a session. Consistent horizons support interpretable comparisons.

If all students need to experience both institutions, create two new blocks and counterbalance order across groups. Do not carry accumulated earnings from the first block into the budget financing the second. Announce new rules and bases before decisions. Explain that previous experience can affect the second block even when resources renew. Compare initial rounds and trajectories as well; improvement should not automatically be attributed to whichever institution came second.

Prepare a shared results sheet containing treatment, completed groups, rounds, participation, success, and mean transfer. Instructors can copy these aggregates from the report without projecting participant codes. With few groups, invite discussion of uncertainty. A large difference between two groups is not a precise estimate of a population effect. The teaching value comes from linking rules and incentives to observable patterns, identifying alternatives, and explaining what a better research comparison would require.

6.3 Worked undergraduate exercises

6.3.1 Reconstructing failure and success

An authority transfers 20 ECU under the reference rules and two members participate. Each received 4, and the remaining fund is 30. The allocator earns 40. Participating members earn 11; the other three earn 14. The total is $40 + 2(11) + 3(14) = 104$. If a third person participates, the allocator earns 10; the three participating members earn 17 and the other two earn 20. Total earnings become 101. One additional participation cost explains the group difference.

Ask why a participating member earns 17 under success with either transfer 10 or transfer 20. In both situations the advance transfer plus later share is 10, combined with base 10 and minus cost 3. The concession changes the failure option rather than the final amount of fund received under success. This observation explains marginal incentives without assuming gratitude or fear. It also provides a check against double-counting the concession in the final settlement.

6.3.2 Assessing a unilateral deviation

With transfer 10 and exactly three participants, somebody who participated considers withdrawing. The other two would be insufficient, and own earnings would fall from 17 to 12: a loss of 5. A nonparticipant considers acting; the target is already reached, so earnings would fall from 20 to 17. Nobody improves by changing alone. The profile is a pure material equilibrium of the citizen stage, given the concession already selected.

If four people participate instead, any of them can withdraw while preserving success and increase earnings from 17 to 20. Therefore four is not a pure material equilibrium. This does not mean the fourth person should be punished or lacks a reason; it means the unilateral material account creates an incentive to withdraw. Ask students to state the conclusion with its conditions rather than writing that cooperation is simply irrational. Distinguish a benchmark prediction from an evaluation of a person's choice.

6.3.3 Interpreting a random cost

With transfer 10, spending 5, and target three, the remaining fund is 35 and the individual share 7. Expected cost is $3 + 0.25(5) = 4.25$. Being pivotal yields an expected difference of 2.75; not being pivotal yields an expected loss of 4.25. A participating member charged the additional cost earns $10 + 2 + 7 - 3 - 5 = 11$ under success; one who is not charged earns 16. Keep the expectation before choice separate from settlement afterwards.

Ask why observing no additional costs among three participants does not imply malfunction. With probability one quarter and independence, that outcome has probability $(3/4)^3 = 27/64$. It is fairly common in a small group. Before questioning the generator, students should distinguish realized frequencies from the probability governing the process. The report accumulates more observations but does not guarantee exact correspondence in a brief session. Independent chance draws can generate visibly uneven outcomes without deliberate differences between members.

6.4 Questions for advanced courses

Consider the indifference equation with target three and independent other actions of probability p :

$$6p^2(1-p)^2 \frac{50-a}{5} = 3.$$

For transfer 10, $p = 1/2$ satisfies the equality. For transfer 20, the left side has a maximum of $6(1/2)^4(6) = 2.25$, below 3. There is no symmetric interior mixture satisfying that condition, although asymmetric pure equilibria with minimum successful participation remain. Absence of a symmetric solution does not remove every successful equilibrium. Students should distinguish existence of an equilibrium from symmetry of the particular strategy proposed.

Next discuss equilibrium selection in the sequential game. The allocator must anticipate a response to every possible concession. Different coordination expectations can sustain different initial choices. A theory of the complete game requires strategies in all relevant subgames, rather than merely observing the combination that occurred. The platform supports outcome analysis but does not select the criterion an instructor should prefer. Classroom observations can motivate comparison of competing expectations without establishing one unique prediction.

For empirical analysis, identify within-group and between-round dependence. Five simultaneous choices share the same fund and threshold; ten rounds involving repeated people contain common history. Treating every row as an independent observation exaggerates precision. Students should identify the treatment-assignment unit and appropriate clustering before proposing a statistical test. With very few groups, prioritize plots and reasoning over conventional significance claims. A careful descriptive comparison is more defensible than precision unsupported by the design.

6.5 Data, privacy, and archiving

Export data from the instance of this family. The custom export contains active round, group, role, treatment, matching, threshold, transfers, costs, intentions, actions, outcome, chance draw, realized cost, pivotality, and earnings. Technical identifiers support joining records during authorized analysis; they should not be projected or included in public teaching material. Retain the original file and a working copy with transformations documented. This enables checking how a summary was constructed without modifying the original record.

Exclude inactive technical rounds and groups without settlement before reconstructing report aggregates. Do not treat an intention without an action as an actual abstention or a pending cell as zero earnings. When combining sessions, add a session variable and retain treatment labels. Document filters, denominators, and horizon so that a colleague can reproduce a table without relying on a screenshot. The raw export and the projected report serve different purposes and require different access decisions.

6.6 Common problems and their remedies

A waiting page on entry to a room may mean no session is assigned yet; check administrative association before requesting decisions. A waiting page inside the game normally indicates a missing form. Inspect the group and pending stage in Monitor. Under communication, people choosing not to send a message must still select that option and continue. Do not promise that waiting will disappear merely by closing and reopening the page. Find the actual incomplete stage.

A participant-not-found message usually concerns an old link after a database change. Create a new session and distribute current links. Do not fabricate outcomes or delete the database during class to fix a link. If a connection is interrupted, return to the current link for that person and inspect the stage before submitting another decision. Record the incident and consult technical staff if the blockage persists. Preserving the session is necessary for understanding what was completed.

If the report seems empty, verify the session and completed groups. If Demo shows other games, this is not the intended isolated instance. If a basic room offers extensions, stop admission and inspect configuration; the correct package separates three basic choices and eight extended choices. Differences between individuals' totals can reflect role, action, transfer, or costs. Check these against the settlement before describing them as errors. The same observed success does not imply identical individual earnings.

Attention

An instructor should not use a technical remedy to alter submitted decisions or reset data to conceal an unexpected result. Preserve the session and document the problem. A stopped activity needs diagnosis rather than replacing missing observations with invented behavior.

6.7 Conceptual closing

Ask students to distinguish three statements: there was a shared benefit, an individual had an incentive to act under certain conditions, and the group actually coordinated. The first does not guarantee the second for every person, and neither guarantees the third. Concessions, information, and messages alter different parts of this reasoning. A sound explanation identifies what changed and acknowledges information that was not measured. This is a useful bridge from classroom behavior to formal political models.

Assess learning through a correct account, a pivotality condition, and a cautious interpretation of a chart. These are more informative than asking only whether a student thinks protest is desirable. The laboratory turns abstract concepts into decisions and data; the guide supports that connection without confusing a monetary model with the full complexity of real political participation. Students can then explain both the mechanism illustrated and the elements that a more complete institutional analysis would have to add.

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