



Collective Information and Deliberation

Laboratory implementation, theoretical foundations,
experimental evidence, and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



Revised edition | October 2026

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

How to use this guide

This guide supports the preparation, implementation, and classroom discussion of the family of Collective Information and Deliberation available through the Behavioral and Experimental Economics Research Lab (BEER Lab) at the Department of Economics of Tecnológico de Monterrey. It is intended for instructors with different levels of familiarity with experimental and behavioral economics.

The document offers three reading paths. The **quick guide** is enough to launch a session. The operational chapters explain each screen used by instructors and students. The conceptual chapters present the theories, predictions, and empirical findings needed to lead the post-game discussion.

Access instructions and common screens are explained once. Each variant then focuses only on what changes relative to the basic game: configuration, group size, decisions, predictions, relevant outcomes, and academic literature.

Author

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For the instructor

This guide follows the English-language interface. Spanish configurations use the same logic. Never project individual codes or connect outcomes to names, student identification numbers, or seats in the room.

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Preparation and access

1.1 Family summary

Purpose	Committees receive information about a state and make a collective decision. Preserves the five-person core, deliberation, and voting rules. Adds costless abstention, exact information versus no signal, partisans, private signal quality, and a three-state module with different interests. Reports distinguish participation, accuracy, potential decisiveness, state-specific errors, and accounts.
Experimental unit	Five people in the core; one in the individual control; two in paired modules and three in the three-state module. Rematching requires at least two complete groups.
Basic edition	One round; ten with fixed groups; ten with rematching.
Extended edition	29 extended configurations per language: 27 treatments and two additional paired modes.
Decision	A or B; abstention available only in designated versions. Messages or conversation only in their original treatments.
Payoff	ECU: experimental currency units; role-specific accounts and renewed resources.
Topics	information aggregation; voting; deliberation; correlated signals; informative abstention; conflicting interests
JEL	A22; C72; C92; D71; D72; D83
Participants	Five people in the core; one in the individual control; two in paired modules and three in the three-state module. Rematching requires at least two complete groups.
Suggested duration	35–55 minutes; estimate to be checked in a pilot.

1.2 Navigation from the laboratory website

Open <https://beer-lab.org/en/>, select **CLASSROOM** and enter <https://teaching.beer-lab.org/en/>. Find this family card and choose language and edition. Institutional captures are dated October 9, 2026; availability of the new card depends on publication.

Instructor route: <https://informationvoting.beer-lab.org/demo>. Local preview: <http://localhost:8144/demo>.

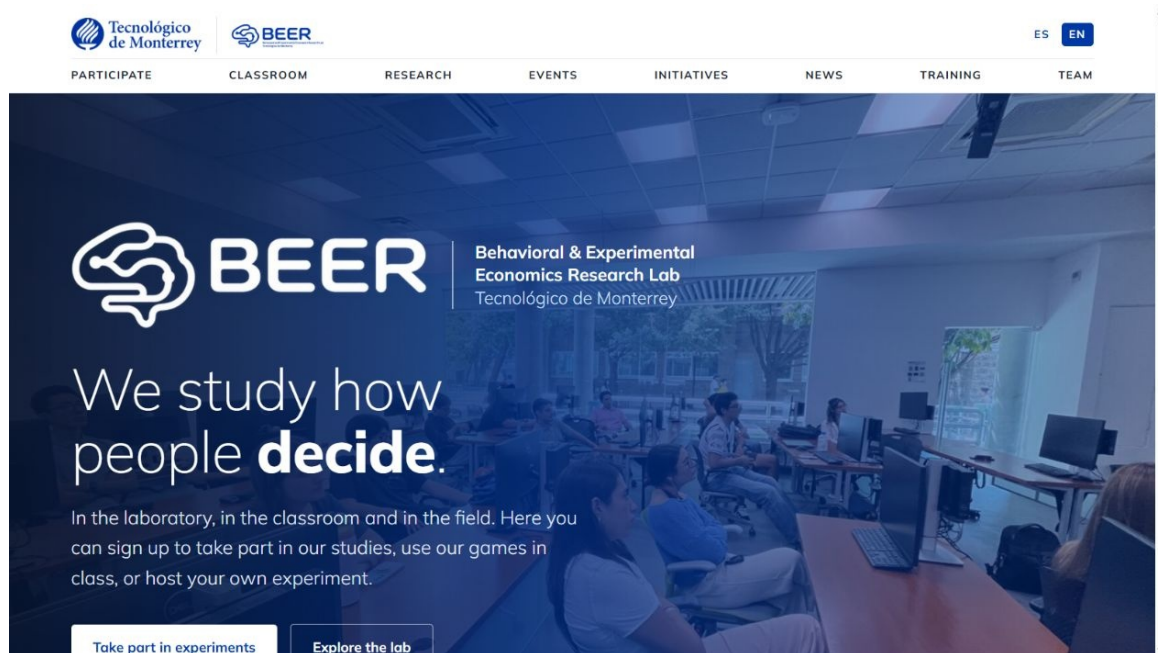


Figure 1.1: Institutional website: access to teaching.

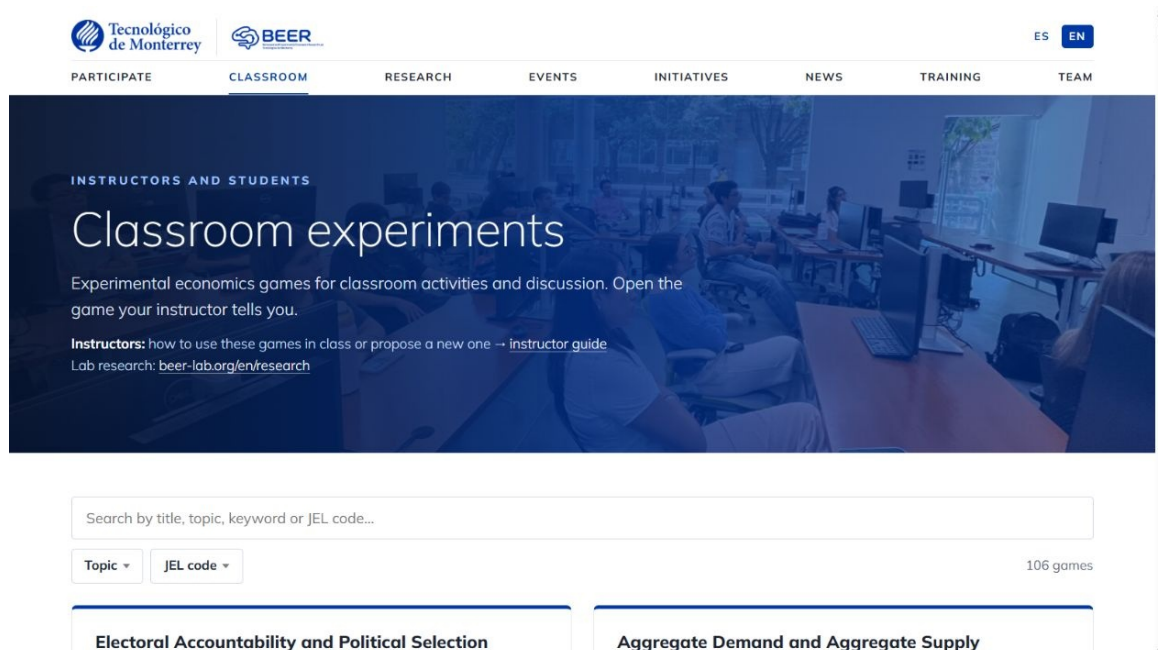


Figure 1.2: Catalog: select language and edition.

The four room routes are https://informationvoting.beer-lab.org/room/deliberacion_es, https://informationvoting.beer-lab.org/room/information_voting_en, https://informationvoting.beer-lab.org/room/deliberacion_extendido, https://informationvoting.beer-lab.org/room/information_voting_extended.

1.3 Sessions, rooms and private access

This family contains 64 configurations and four rooms. Each basic room offers three configurations; each extended room offers 29.

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.

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.

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.

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.

Session plan and follow-up assignment

For a sixty-minute class, allow ten minutes for access and rules, ten for comprehension and one account, fifteen for play, fifteen for report discussion and ten for written synthesis. Adjust play to actual reading; do not sacrifice payoff reconstruction to show more variants. Ninety minutes can include a second treatment with an explicit control and documented order. For follow-up work, choose two exercises from different branches and one report table: ask why denominators differ and which theoretical comparison they permit. A good answer distinguishes rules, accounts, behavior and interpretation.

Checkpoint

Check family, language, edition, horizon and attendance requirements before distributing access.

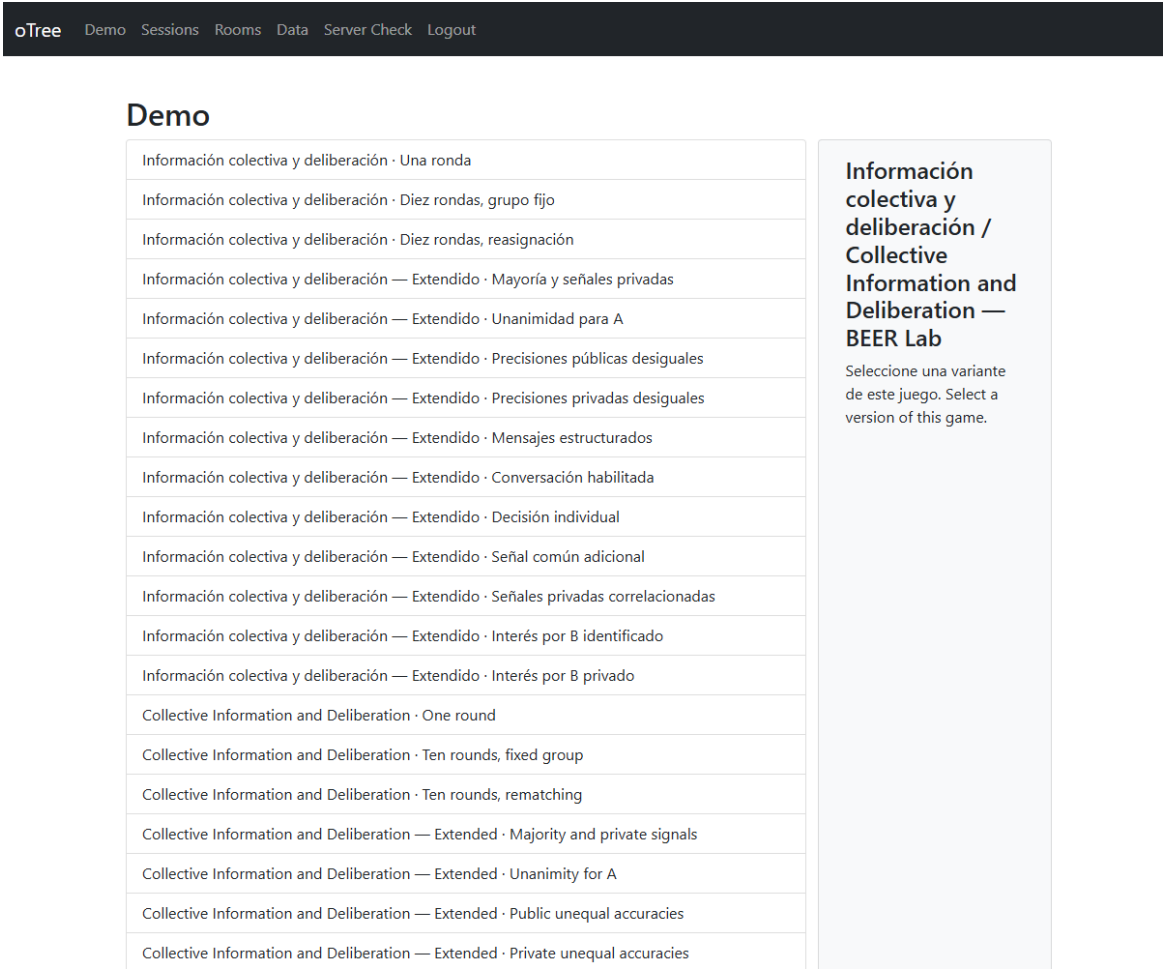


Figure 1.3: Demo displays this family only.

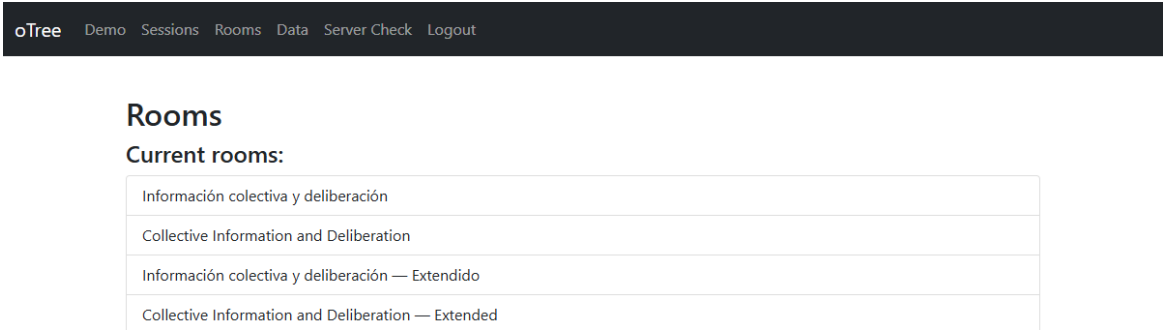


Figure 1.4: Four rooms: basic and extended, Spanish and English.

oTree Demo Sessions Rooms Data Server Check Logout

Room: Collective Information and Deliberation

Create a new session

Session Config

Collective Information and Deliberation · One round

Number of participants

Complete groups of 5 participants. Use a multiple of 5; minimum 5.

Create

[Configure session](#) ⚙️

App sequence

information_voting_game (10 rounds)

0 participants present

Start links

These URLs will stay constant for new sessions, even if the database is recreated.

Room-wide URL

Here is the room-wide URL anyone can use. Don't use this link when testing in multiple tabs on the same browser, because all tabs will be assigned to the same participant, using a cookie.

http://127.0.0.1:8105/room/information_voting_en

Figure 1.5: Basic-room form with its initial configuration.

Mechanism and participant experience

2.1 Rules and accounts

The following rules describe the original five-person core. The abstention extension uses groups of two, three, or five and starting accounts of 100 ECU; the final chapter develops it.

Five people receive signals about a state A or B, initially equally likely. A new state is drawn each round.

Each signal is correct with probability 70%. In the reference signals are independent conditional on the state. A signal is not a preference.

Each person privately votes A or B. A is selected with at least three votes and B otherwise. There is no abstention.

Everyone receives 20 ECU if the selected alternative matches the state and 0 otherwise. The state and aggregate votes are revealed at the end.

Five-person committees; one person per unit without waits in the individual control.

What participants will see

Screens state the role's own resources and information. Discuss theoretical meaning after the block ends.

2.2 Common flow and comprehension

Before continuing, students calculate each role's outcomes in an example and verify the number of rounds and the matching procedure. When an answer is incorrect, feedback appears beside that question: it identifies the submitted answer, the correct answer, and the rule or calculation behind the outcome. Previously submitted fields are retained; the student corrects only what is necessary and continues again.

2.3 Decisions, outcome and closure

In sequential choices, one role submits before the next can act. A passive role's empty field is not a zero choice. Waits reflect rule dependencies, and Monitor identifies the missing form. The final screen confirms recorded decisions and the active-round total rather than asking for another choice.



BEER Lab · Round 1 of 1

Welcome to the BEER Lab

Your role: Payoff for accuracy

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

Read the rules and decide privately. We will discuss aggregate results afterwards.

Laboratory rules

- Remain quiet and do not talk to other participants.
- Use only the communication enabled on screen.
- Do not close or refresh the page.
- Raise your hand if you need help.

☐ I have read the laboratory rules.

Start

Powered by [oTree](#)

Figure 2.1: Welcome and laboratory rules

BEER Lab · Round 1 of 1

Instructions

Your role: Payoff for accuracy

Resources and unit of account

Your starting balance is 0 ECU. You receive 20 ECU if the selected alternative matches the true state and 0 otherwise.

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

This session does not convert ECU into real money.

Five people receive signals about a state A or B, initially equally likely. A new state is drawn each round.

Each signal is correct with probability 70%. In the reference signals are independent conditional on the state. A signal is not a preference.

Each person privately votes A or B. A is selected with at least three votes and B otherwise. There is no abstention.

Everyone receives 20 ECU if the selected alternative matches the state and 0 otherwise. The state and aggregate votes are revealed at the end.

Resources renew each round; accumulated payoffs do not fund later choices.

The group stays the same throughout the block. People retain their identities; office changes occur only where the rules specify them.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your signal: B

Your signal accuracy: 70.00 %

[Continue](#)Powered by [oTree](#)

Figure 2.2: Instructions and reference account

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

BEER Lab · Round 1 of 1

Check the rules

Your role: Payoff for accuracy

Resources and unit of account

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

This session does not convert ECU into real money.

How many people form this activity unit?

Your answer: 6. The correct answer is 5. Use the unit size shown in the instructions for this version; it differs from total class attendance.

What is your starting balance or reference fund this round? (ECU)

Do resources renew each round?

☒ Yes

☐ No

Continue

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Figure 2.3: Specific feedback on an incorrect answer

BEER Lab · Round 1 of 1

Your decision

Your role: Payoff for accuracy

Your resources and payoff rules

Your starting balance is 0 ECU. You receive 20 ECU if the selected alternative matches the true state and 0 otherwise.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your signal: B

Your signal accuracy: 70.00 %

Your vote

☐ A

☒ B

Continue

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

Powered by [oTree](#)

Figure 2.4: Decision form in the basic flow.



Please wait

Other people in your group are completing this stage. Their decisions remain private.



Figure 2.5: Waiting for the required stage

BEER Lab · Round 1 of 1

Round result

Your role: Payoff for accuracy

Group outcome

True state: B

Votes for A: 0

Selected alternative: B

Your signal: B

Your outcome

20.00 ECU

Continue

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

Powered by [oTree](#)

Figure 2.6: Account for the completed round



BEER Lab · Round 1 of 1

Activity completed

Your role: Payoff for accuracy

Your decisions have been recorded. Remain quiet and wait for the instructor.

Cumulative outcome

20.00 ECU

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

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Figure 2.7: Explicit activity closure

Theory, predictions and evidence

3.1 From the mechanism to economic reasoning

The activity separates information from preferences. An A signal is evidence about the state, not a desire for A. In the reference everyone receives the same accuracy payoff and observes seventy-percent-accurate signals. With prior one half, an A signal gives posterior probability 0.7 of A and a B signal gives 0.3. The more likely alternative can still be wrong in a round. Reconstruct this step before calling a vote a mistake or attributing political preferences that were never elicited. Monetary objectives, signals and actual choices should remain separate in the explanation.

If all five people sincerely voted their independent signals, majority accuracy would sum binomial terms with three, four and five correct signals: 0.83692. This is a deduction for that behavior and information process, not an exact classroom frequency. Improvement over 0.7 depends on conditional independence, accuracy above one half and aggregation rules. Under the application's correlated mixture, the same behavior would give 0.5 times 0.7 plus 0.5 times 0.83692, or 0.76846. Counting five copies of one realization as five independent observations exaggerates information. Inspect the generating process before interpreting the vote distribution.

Strategic voting requires considering what being pivotal would reveal. Under majority with homogeneous signals and a symmetric prior, a tie among the other four is compatible with balanced evidence. Under unanimity for A, being pivotal means the other four support A, a potentially informative event. The rule also makes B the default rather than providing neutral unanimity between A and B. Instructors can explore this logic without prescribing a calculated strategy during play. Guarnaschelli, McKelvey and Palfrey study jury rules, while Feddersen and Pesendorfer show how strategic voting modifies institutional comparisons.

Heterogeneous accuracy changes the informational weight of an observation. With a symmetric prior, posterior odds combine likelihood ratios: an A signal with accuracy 0.9 contributes ratio nine, whereas accuracy 0.6 contributes one and a half. Three less precise signals may fail to outweigh one highly precise contrary signal. Public accuracies identify whose signal has each quality; private accuracies reveal only composition and own quality. Votes do not automatically communicate all this information, and a participant-chosen message need not match the underlying signal. Information pooling and counting votes are consequently distinct operations.

Goeree and Yariv find in their protocol that deliberation improves efficiency and reduces institutional differences. Our teaching comparison distinguishes one structured announcement from free conversation lasting up to ninety seconds. Structured messages permit counts of truthfulness and withholding; free text needs later coding rather than automatically measuring honesty. A common signal adds information while making part of the environment shared. A member paid for B creates conflicting interests: their vote can express an incentive rather than a belief about the likely state. None of these adaptations should be treated as a literal replication of the published

protocol.

The report distinguishes decision accuracy, signal-following, truthful messages among revelations, signal accuracy and state-conditional errors. Selecting A in state B and selecting B in state A have different denominators. The individual version pays own choice and has no waits; it provides an aggregation control with the same signal accuracy. Comparing its percentage with a committee's requires recognizing different units. Results do not assess ideology or civic competence; they examine relationships between rules, information and observable choices. Explain those limits while retaining enough detail for students to reconstruct an actual decision.

(Guarnaschelli et al., 2000; Feddersen and Pesendorfer, 1998; Goeree and Yariv, 2011).

Theoretical foundation

A prediction depends on information, objectives and behavior assumptions. Worked accounts below are deductions from teaching parameters rather than observed article results.

3.2 What to inspect during discussion

A Nash equilibrium is a combination of decisions in which nobody increases their payoff by changing alone, taking the other people's decisions as given. The definition compares alternatives; students need not know its name when playing. It does not establish that an equilibrium is fair, efficient or morally desirable. Teaching this family works best by checking concrete deviations before introducing the label. A material benchmark assumes participants care only about their own ECU payoff and understand the rule correctly. When those assumptions do not hold, behavior can differ without representing a technical error.

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.

Variants and comparisons

4.1 Choose a contrast without repeating general rules

Each configuration activates one variant rather than the entire edition. Use controls with matching size, resources and horizon where available. The extended reference facilitates comparisons within the same room. Basic modes distinguish one encounter, fixed groups and rematching; individual tasks replace interaction with separate items.

Extended configurations have eight rounds; the individual control has eight decisions without waits.

For the instructor

Prepare comparisons before observing outcomes. Do not change a started session's parameters: create another block and document experience and order.

Unanimity for A

Each person votes A or B without abstention. A is selected only with five A votes; otherwise B is selected.

A is chosen only with five votes for A; otherwise B is chosen. The rule is asymmetric.

Public unequal accuracies

Two signals have 90% accuracy and three have 60%; they are independent conditional on the state. A signal is not a preference.

Positions 1 and 2 have 90%-accurate signals; the other three have 60%. Everyone knows accuracies by position.

Private unequal accuracies

Two signals have 90% accuracy and three have 60%; they are independent conditional on the state. A signal is not a preference.

Two people have 90% accuracy and three have 60%. Only own accuracy is revealed; everyone knows that composition.

Structured messages

Before voting, choose to announce A, B or withhold. You have up to 90 seconds. Everyone then sees the five messages. They are nonbinding and need not be truthful.

Time left to complete this page: **1:21**

BEER Lab · Round 1 of 8

Your decision

Your role: Payoff for accuracy

Your resources and payoff rules

Your starting balance is 0 ECU. You receive 20 ECU if the selected alternative matches the true state and 0 otherwise.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your signal: B

Your signal accuracy: 70.00 %

Message about the signal (need not be truthful)

- ☐ A
☒ B
☐ Withhold

Continue

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

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Figure 4.1: Decision or stage unique to this variant.

Enabled conversation

There is a group conversation of up to 90 seconds before voting. Messages are nonbinding; use only on-screen communication without identifying yourself.

Identified interest in B

Your payoff rule appears in the resource box. Four people receive accuracy payoffs and one receives payoffs for choosing B regardless of the state. State and vote counts are revealed at the end.

One person receives 30 if B is chosen and 0 if A, regardless of the state. Everyone knows it is position 1. The other four receive 20 for accuracy.

Private interest in B

Your payoff rule appears in the resource box. Four people receive accuracy payoffs and one receives payoffs for choosing B regardless of the state. State and vote counts are revealed at the end.

One person receives 30 for B and 0 for A, regardless of the state. Everyone knows the composition, but each person knows only their own payoff. The other four receive 20 for accuracy.

Individual decision

The unit has one person. Your own A or B choice determines your 20 ECU accuracy payoff; there is no committee, messaging or waiting for others.

A fresh equally likely state is drawn each round.

Additional common signal

Along with private signals, everyone sees a common signal that is 70% accurate. It is independent of private signals conditional on the state.

Correlated private signals

Each signal has marginal accuracy 70%, but all five may copy one realization. A signal is not a preference.

With probability 50%, all five signals copy one 70%-accurate signal. Otherwise they are generated independently. Which process occurred is not revealed before voting. Each marginal accuracy remains 70%.

Time left to complete this page: **1:22**

BEER Lab · Round 1 of 8

Message exchange

Your role: Payoff for accuracy

Your resources and payoff rules

Your starting balance is 0 ECU. You receive 20 ECU if the selected alternative matches the true state and 0 otherwise.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your signal: B

Your signal accuracy: 70.00 %

You have up to 90 seconds. Do not write names or personal data. Messages are nonbinding and need not match private information.

Position 5 (Me) ECU are experimental currency units.

Send

Continue

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

Powered by [oTree](#)

Figure 4.2: Decision or stage unique to this variant.

Report, worked exercises and assessment

5.1 Private report and observation units

The report opens hidden. Revelation is enabled after all active units and rounds complete. Pending units retain their count and missing outcomes are not zero observations. It can be opened from the last technical round: tables explicitly traverse active rounds. Every measure shows its denominator, distributions show counts and payoffs separate roles. Payoff evolution does not automatically represent learning: it can reflect states, roles, draws or rewards concentrated at the end.

oTree Demo Sessions Rooms Data Server Check Logout

Collective Information and Deliberation · One round: session 'px4rytpq' (demo)

[New](#) [Links](#) [Monitor](#) [Data](#) [Payments](#) [Report](#) [Description](#)

App Name Round Number

information_voting_game (10 rounds) 10 [Go](#)

BEER Lab

Instructor report

Majority and private signals

Completed group-rounds

0 / 1

[Reveal results](#) [Hide results](#)

Pending group-rounds

1

Aggregates become available when this session has completed its entire block.

Figure 5.1: Initial report: aggregates hidden.

Measure		
Measure	Value	N
Decision accuracy	100.00 %	1
Votes following own signal	100.00 %	5
Truthful messages among revealed messages	—	0
Correct signals	100.00 %	5
A selected in state B	0.00 %	1
B selected in state A	—	0

Figure 5.2: Measures and denominators



Figure 5.3: Histogram with counts

Outcomes by role		
Your role	N	Mean · ECU
Payoff for accuracy	5	20.00

Figure 5.4: Payoffs by role

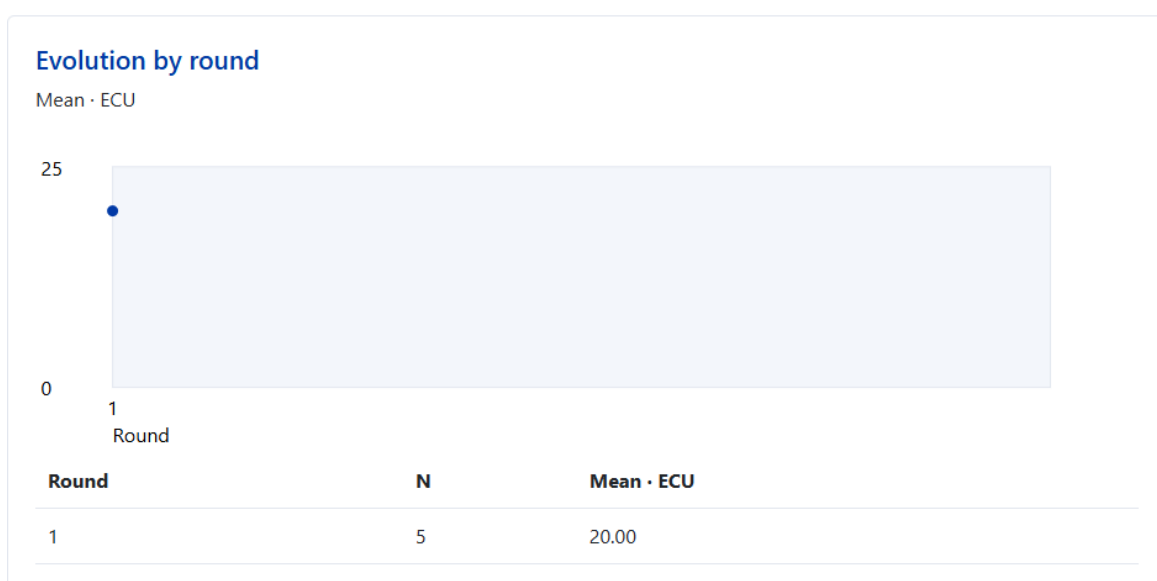


Figure 5.5: Evolution across rounds

Feedback script

Reconstruct an account, describe the distribution and present two compatible mechanisms.
Request a comparison distinguishing them before concluding.

5.2 Workshop on accounts, choices and counterfactuals

The following are board exercises rather than student records. Realizations and choices are selected to check different branches. A stated policy or ballot is not assumed optimal. Solve first without the answer, then compare each term. Amounts are in ECU except probabilities and scores. Belief exercises assume one selected elicitation without an additional bonus.

Worked example 1

Situation: Votes: A, A, A, A, A; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 2

Situation: Votes: A, A, A, B, B; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 3

Situation: Votes: A, A, A, B, B; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 0.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the

outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 4

Situation: Votes: A, A, B, B, B; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 5

Situation: Votes: A, A, B, B, B; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 0.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 6

Situation: Votes: B, B, B, B, B; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 7

Situation: Votes: A, A, A, A, A; State: A; Unanimity for A: yes; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

B is the default unless five vote A. That asymmetry matters even with a symmetric prior. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 8

Situation: Votes: A, A, A, A, B; State: A; Unanimity for A: yes; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 0.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

B is the default unless five vote A. That asymmetry matters even with a symmetric prior. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 9

Situation: Votes: A, A, A, A, B; State: B; Unanimity for A: yes; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

B is the default unless five vote A. That asymmetry matters even with a symmetric prior. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 10

Situation: Votes: B, B, B, B, B; State: A; Unanimity for A: yes; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 0.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

B is the default unless five vote A. That asymmetry matters even with a symmetric prior. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 11

Situation: Votes: A, A, A, A, B; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 20.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 100.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the

outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 12

Situation: Votes: A, A, A, A, B; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 0.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The rule counts votes rather than unobserved signals. A correct outcome does not reveal whether votes were sincere. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 13

Situation: Votes: B, A, A, A, A; State: A; Unanimity for A: no; Position paid for B: 1; Selected alternative: A.

Answer: payoffs in role order are 0.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 80.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The first position is paid for B and may receive zero when others are accurate. Collective accuracy is not its payoff function. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 14

Situation: Votes: B, A, A, B, B; State: B; Unanimity for A: no; Position paid for B: 1; Selected alternative: B.

Answer: payoffs in role order are 30.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 110.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The first position is paid for B and may receive zero when others are accurate. Collective accuracy is not its payoff function. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 15

Situation: Votes: A, A, A, B, B; State: A; Unanimity for A: no; Position paid for B: 1; Selected alternative: A.

Answer: payoffs in role order are 0.00, 20.00, 20.00, 20.00, 20.00 ECU. The total is 80.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The first position is paid for B and may receive zero when others are accurate. Collective accuracy is not its payoff function. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 16

Situation: Votes: B, B, B, B, B; State: A; Unanimity for A: no; Position paid for B: 1; Selected alternative: B.

Answer: payoffs in role order are 30.00, 0.00, 0.00, 0.00, 0.00 ECU. The total is 30.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The first position is paid for B and may receive zero when others are accurate. Collective accuracy is not its payoff function. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 17

Situation: Votes: A; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 20.00 ECU. The total is 20.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The unit is individual. Do not interpret its choice as a committee count or add a wait. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 18

Situation: Votes: A; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: A.

Answer: payoffs in role order are 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The unit is individual. Do not interpret its choice as a committee count or add a wait. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 19

Situation: Votes: B; State: B; Unanimity for A: no; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 20.00 ECU. The total is 20.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The unit is individual. Do not interpret its choice as a committee count or add a wait. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Worked example 20

Situation: Votes: B; State: A; Unanimity for A: no; Position paid for B: none; Selected alternative: B.

Answer: payoffs in role order are 0.00 ECU. The total is 0.00 ECU. Reconstruct each amount from funds, actions and announced consequences before checking the total. Individual payoffs and the joint sum answer different questions.

The unit is individual. Do not interpret its choice as a committee count or add a wait. Change one ballot while holding the others and state constant. Does the outcome change? This counterfactual does not predict how votes would change under another institution.

Teaching implementation, data and troubleshooting

6.1 Preparation, recovery and archiving routines

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.

A Nash equilibrium is a combination of decisions in which nobody increases their payoff by changing alone, taking the other people's decisions as given. The definition compares alternatives; students need not know its name when playing. It does not establish that an equilibrium is fair, efficient or morally desirable. Teaching this family works best by checking concrete deviations before introducing the label. A material benchmark assumes participants care only about their own ECU payoff and understand the rule correctly. When those assumptions do not hold, behavior can differ without representing a technical error.

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.

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.

Before continuing, students calculate A's and B's outcomes in an example and verify the number of rounds and the matching procedure. When an answer is incorrect, feedback appears beside that question: it identifies the submitted answer, the correct answer, and the rule or calculation behind the outcome. Previously submitted fields are retained; the student corrects only what is necessary and continues again.

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.

When no session is active, participants may remain on a waiting screen. This is normal. If waiting continues after activation, check that the correct room was opened, that capacity remains, and that the browser is not reusing an obsolete session tab.

Verify that Report shows zero pending decisions. Reveal aggregate results, begin with distributions, and ask for interpretations. Export data before closing if a follow-up assignment is planned. Never connect codes to names. For fixed groups, aggregate at the relationship level or use methods that account for dependence. In a small class, treatment comparisons should remain descriptive.

Use oTree codes rather than names. Do not publish Monitor or Data screenshots containing codes. Project aggregate results only. If the activity becomes research rather than teaching, follow the relevant consent and ethics-review procedures. Classroom administration alone does not authorize research use.

After the last case, an explicit final screen confirms recorded decisions and shows the sum of results from all active cases. It does not display a button to leave the activity or end on a generic page without directions. Students remain there until discussion. Restarting the server must preserve sessions. If connectivity is interrupted, recover through the current individual link; do not create fictitious identities to rescue an old code. Reinitializing the database breaks old link associations and requires a new session. Such a reset is not part of an ordinary server update, and should not be used to refresh the preview after changes to presentation or instructions.

Source, precision, and review extensions are original comparisons whose predictions follow from explicit parameters. We do not attribute empirical findings to articles that did not test them. A classroom pattern can fit a mechanism; a causal claim requires comparable variation, sufficient independent observations, and control of order. Documenting these conditions connects institutions, behavior, and inference without turning a demonstration into a universal conclusion.

During discussion, distinguish a theoretical prediction from an empirical finding and an adaptation parameter. A prediction follows from assumptions; a finding concerns participants in a particular design; a parameter such as the budget ceiling specifies our teaching activity. Ask which category each claim belongs to before assessing it. Students should not infer an empirical effect from a formula, nor treat a field estimate as an equilibrium condition. This reading procedure is especially useful when the course combines political institutions with economic reasoning and participants have different levels of technical preparation.

Do not alter language, treatment, or group size after a session starts. Create a new session for a different comparison and retain the previous one. Do not clear a database to release a waiting student; first inspect Monitor and pending decisions. Do not share the instructor password with participants as a way of resolving access. Laboratory administrators manage deployment, credentials, and connectivity; instructors control explanations, result revelation, and feedback. Keeping these responsibilities clear preserves both a usable workflow and the interpretation of the decisions collected during class.

Before giving students a data exercise, provide one correctly solved row and ask them to reconstruct another. Let them calculate conditional support with counts and explain what additional information would be required for a causal claim. Share aggregate or appropriately prepared records, not a roster linking participants to ballots. The instructional purpose is to learn accounting, institutional comparison, and careful inference; access to personal identities adds no value to those tasks. The resulting worksheet can support a follow-up assignment while preserving the separation between classroom feedback and administrative records.

6.2 Method for preparing and discussing a session

Prepare a question the laboratory can answer

A teaching session needs a concrete question before it needs a prediction. Choose a difference between two rules and specify the decision through which it can be observed. Then describe which outcome would be compatible with each explanation. This small exercise avoids entering the laboratory with a predetermined interpretation. When a variant changes who knows some information, the question can concern its use; when it changes available choices, the question can concern responses to the new incentive. Do not assume that differences between groups express stable characteristics of students. The same person may choose differently when the situation changes.

A configuration specifies an experience. Language changes how a rule is communicated; treatment changes a rule or an explicitly described bundle; horizon determines the number of opportunities to choose. Selecting the extended edition does not automatically activate every variant. Instructors select one configuration for each session. To compare two conditions, create two sessions and retain separate files. A class can study one comparison carefully while other instructors use different variants of the same catalog. Flexibility comes from complete, clearly described options, rather than from touring every option during the same hour. Establish the instructional question before deciding which configuration to launch.

Organize people, roles and devices

Count actual attendance before creating the session. Check the multiple and minimum required by the selected version in the room form. Experimental unit size can be smaller than total attendance. Some comparisons require several complete units for rematching or balanced conditions. Spare classroom places do not imply enough people for a configuration. If students remain outside complete units, prepare an observation or analysis task outside the session. Do not create an abandoned participant place: choices by that role may be necessary for others to advance. Attendance and role assignment are elements of implementation, not merely administrative details.

Each person retains their access throughout the block. A browser window is not an additional person, and opening different access links can occupy multiple places. In a technical rehearsal an assistant can operate the required windows; in class each student makes only their assigned choices. Check that devices show resource boxes and buttons legibly without excessive scrolling. Avoid projecting private decisions while others are still playing. Monitor locates pending stages; the aggregate report supports discussion. These pages serve different purposes even when they belong to the same session. A practice session should test dependencies as well as whether each page loads.

Explain resources without prescribing strategies

Introduce starting accounts, permitted actions and consequences before interpreting behavior. ECU means experimental currency units. Starting funds, decision limits, prizes and cumulative earnings are distinct concepts. Ask students to reconstruct a simple account using the visible rules. Remembering only a prize can lead someone to omit a cost paid even when the outcome is unfavorable. Remembering only an endowment can lead them to confuse fresh round resources with a balance funding the entire block. A short accounting explanation clarifies these distinctions without recommending a choice. Refer to the selected treatment rather than carrying reference amounts into a version that changes resources.

Participant instructions use neutral roles and alternatives. Conceptual catalog names help instructors select an activity; they should not become an exhortation before play. Explain that several choices are possible and that discussion will concern rules and aggregate outcomes. Do not announce that the class must confirm a theory or that an option proves a virtue. An instructor's intervention can change what people think is expected of them. Understanding a rule and preferring an action are different dimensions; correcting the former does not require directing the latter. Classroom explanations should make consequences understandable while preserving the student's opportunity to choose privately.

Resolve comprehension difficulties

Initial questions check an account or rule rather than willingness to make a particular choice. When an error appears, read the field's feedback with the student: their answer, the answer required by the rule and the calculation supporting it. Preserve other valid answers. If several people miss the same point, pause admission to the block and repeat a neutral example with different numbers. Do not replace explanation with dictating every answer. The objective is to help students interpret resource boxes during later choices, especially when a variant changes their function or available information. Checking a rule should support participation rather than hold up the class unnecessarily.

Distinguish a question about an amount from a question about the payment rule. A person can correctly compute a sum while believing every item is remunerated when only one is selected, or believing a signal always identifies the state. Ask them to explain the answer in words. First-attempt accuracy is not a measure of the economic mechanism of interest; it describes familiarity with the interface and understanding of the explanation. Record important incidents for interpretation, but do not code comprehension mistakes as strategic choices or as final responses to the game. The record should distinguish assistance with rules from intervention in choices.

Separate randomness, information and choice

A computer-generated state is an environmental condition. A signal is imperfect information about that condition. A decision is a participant's choice. An outcome combines rules, choices and randomness where applicable. These components can appear at different moments. Before choosing, students know only permitted information; afterwards they may learn the realized state to reconstruct their payoffs. A correct signal in one round does not imply announced accuracy is one hundred percent. An unfavorable result does not prove that the action was poor given available probabilities at the time of choice. Identify what was known when decisions were made before judging them retrospectively.

Discuss expected and realized outcomes separately. A winning probability is not a fractional victory automatically paid out; a score used to draw a prize is not cash deposited directly. Follow the selection rule through to final payment. Over several rounds a frequency can approach a probability without equaling it exactly. Do not selectively repeat a round because a draw failed to produce the example you wanted. Keep the outcome and use it to discuss the difference between anticipating a distribution and observing a realization. Connecting these ideas to the actual account is more useful than describing every adverse outcome as a mistake.

Design an interpretable comparison

A comparison requires specifying what changes and what stays constant. Record resources, decision rules, information, horizon, composition and previous experience. If several dimensions change,

describe a treatment bundle rather than attributing the difference to one component. A control with additional resources can be necessary when a variant introduces a cost. A control with a passive role can be necessary when an affected person is added. These controls make the comparison explicit. Two differently named buttons do not guarantee that their contrast isolates a single institution. State the intended contrast in plain language before exposing students to either condition.

When the same people participate in two blocks, the second carries experience even if accounts renew. Counterbalancing order means some groups begin with one condition while others start with the alternative. That organization helps distinguish learning from rule differences, but a short class can still have few independent units. Record the actual order on the session sheet. If order cannot vary, explain the limitation during discussion. A transparent design allows learning from an imperfect comparison without presenting its results as an estimate the exercise cannot support. The aim is to inspect mechanisms and make assumptions visible, rather than to force a particular conclusion.

Read distributions and means

A mean describes an average across included units. A histogram describes their distribution. Two sessions can have equal means with different concentrations: one around an intermediate value and another at the extremes. Read the axis name, each bar's interval and the number of observations first. Do not confuse a person's chosen amount with a group's aggregate outcome. Nor should count-bar heights be compared without sample sizes. A taller bar can simply reflect more completed units. Interpretation starts with the represented unit rather than a visual impression. Ask students to state what each observation contributes to the figure before interpreting its shape.

Histogram intervals group complete values of the displayed variable. The report retains counts allowing each bar to be checked. Use compatible intervals and scales when comparing sessions, and preserve the original table. A difference in means can reflect decisions, composition or realized states. Where roles differ, examine their outcomes separately before pooling payoffs. An overall mean can hide a gain for one function and a loss for another. Ask what additional information would distinguish proposed explanations; a figure supports reasoning rather than automatically identifying motives. When the variable is discrete, check that intervals neither overlap nor leave out feasible observed values.

Count observations and recognize dependence

Display the denominator with every percentage. A measure about actions counts people making that action in completed units. A measure about collective accuracy or success counts completed decisions. A measure calculated only after acceptance or a positive transfer uses a conditional sample. A zero denominator means the measure is undefined; it does not mean an observed frequency of zero. These distinctions prevent comparisons between percentages that coincide numerically but describe different events. Ask students to write the definition before inserting numbers. The raw count and the percentage answer different questions and should remain available together in the report.

Choices within a group share rules, history and sometimes the same state realization. A person's rounds also share experience. Rematching does not erase that history or automatically make every row independent. For advanced analysis, identify the treatment-assignment unit and sources of dependence before selecting a statistical procedure. In a small teaching session, a descriptive table with clear assumptions can be more informative than a test presented without acknowledging its sample. Retain session, round and group so later analysis can reconstruct those relationships. A

large number of decisions may come from very few persistent units and should not obscure their shared context.

Archive and reconstruct outcomes

Download data from the selected session. The general export has one row per participant and columns across rounds; the family's own export retains long records with round, role and relevant choices. Ten rounds do not necessarily imply ten rows in the general file. Check the last active round and session identifier before merging files. Preserve an unmodified original and perform transformations on a working copy. An empty cell can indicate a pending choice, an inapplicable field or an inactive round. Document which situation applies before replacing or excluding values. This distinction is necessary for reproducing the report rather than inadvertently creating artificial observations.

To reproduce the report, retain active rounds and completed units and use the stated definitions. First check one manually solved observation; then check record counts and an aggregate sum. When combining sessions, preserve treatment, language, horizon, matching and exposure order. A screenshot shows what was projected but does not replace data needed to reconstruct a table. Share a prepared student exercise file retaining economically relevant information. Administrative identifiers should not become names or public classifications of individual behavior. Maintain separate raw and teaching files so that later corrections to analysis do not overwrite the original record of the session.

Lead discussion and assess learning

Reserve time to reconstruct an outcome before introducing interpretations. Request an account, a description of the distribution and an explanation compatible with the rules. Then request a second explanation and a design change that could distinguish them. This sequence works both when behavior resembles a material prediction and when it departs from it. Agreement does not prove people reasoned as the model assumes; a deviation does not identify a psychological explanation. Learning comes from linking assumptions, observed choices and inferential limits to an experience students have just had. Avoid judging participants retrospectively using information unavailable when they chose.

A short assessment can request a table and two paragraphs. The table identifies unit, rule, resources, relevant data and calculation. The first paragraph explains an observed outcome; the second proposes an alternative interpretation and specifies missing information. Grade accounts and reasoning rather than a particular economic choice. Add a counterfactual or formal derivation for advanced students. For an introduction, keep the same problem with simple numbers and familiar language. A common guide allows different levels of difficulty without changing rules retrospectively or presenting the activity as a test of personal character. Learning can improve even when a student's own preferred action stays unchanged.

Attention

A wait requires locating the pending form. Restarting preserves the database; resetting removes associations and is not an ordinary update.

Informative abstention and pivotal voting

7.1 What this extension adds

The extension puts information and abstention in the same game. Having a turnout experiment and a separate signal experiment does not implement their interaction: a useful decision depends on what others may know when one's vote matters. New treatments retain simultaneous choices, independently redrawn states across rounds, and private signals. All twenty-eight original configurations and all four rooms remain available.

New accounts start with 100 ECU and add 20 for a favorable binary outcome. The previous core keeps its base of 0 and prize of 20. The added constant accommodates the distributional example without negative total accounts; do not directly compare income levels between protocols. Compare gains over the base, participation, or decision quality. New modules have no voting cost, chat, or messages. Those mechanisms already have their own treatments in the family.

7.2 Two people: a ballot that harms when it matters

In the opening example, one person knows the exact state A or B and the other receives no signal. Both want the selected option to match the state. The prior probability of A is 90%. Each may vote A, vote B, or abstain. The option with more cast ballots wins. A tie, including no ballots at all, pays the average of both accounts: 110 ECU to each person. No winner is drawn after a tie.

Suppose the informed person votes for the observed state. The other receives 120 ECU by abstaining, 119 in expectation by voting A, and 111 by voting B. Although A is highly likely, voting A changes the outcome only in state B: it turns B's correct victory into a tie. The relevant comparison uses the outcome produced by other people, rather than an isolated choice between alternatives. The mandatory control preserves information, probabilities, and accounts while removing abstention. The equally likely control changes only the prior.

7.3 Equilibria, coordination, and larger committees

The preceding solution is not the example's only Nash equilibrium. Another has the informed person abstain in A and vote B in B, while the person without a signal always votes A. The latter does not want to abstain: doing so would create a tie in the highly likely state A. The informed person's strategy is weakly dominated. The book later uses a refinement that compares deviations when small numbers of others fail to vote; distinguish that refinement from ordinary



BEER Lab · Round 1 of 8

Your decision

Your role: Exact information

Your resources and payoff rules

Your account starts with 100 ECU. The selected option adds 20 if it matches the state and 0 otherwise. A tie pays 110 ECU: the average of the two possible accounts.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your private information: A

Your vote

- ☐ A
- ☐ B
- ☐ Abstain

Continue

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

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Figure 7.1: Native extension screen: Two people: a ballot that harms when it matters.

Nash equilibrium.

Five-person committees separate information from influence. One treatment has two informed people and three without signals; another has one informed person and four without signals. In the latter, an uninformed majority can sustain an incorrect outcome that no single deviation changes. The application records choices and realized counterfactuals; it does not simulate accidental nonparticipation or automatically identify the theoretical refinement. One observed ballot does not identify a complete contingent strategy or select among equilibria.

7.4 Fixed preferences and offsets

Partisan treatments assign induced preferences for A or B regardless of the state. A partisan account receives 120 when its favored option wins, 100 when the other wins, and 110 in a tie. Independent accounts retain the accuracy prize. Roles by position are public, while ballots remain private. The balanced composition has one A account, one B account, one informed person, and two people without signals.

The unequal composition has two A accounts, one informed person, and two without signals. Under the book's reasoning, uninformed independents can vote B to offset the imbalance and leave information decisive. Hence the prediction is not that every uninformed person abstains. In the strong-bloc version, three A accounts outnumber the informed and uninformed independents combined: even participation by all independents cannot ensure the state-matching option. Distinguish preference conflict, knowledge of the state, and numerical strength.

7.5 Private quality and a participation threshold

The quality module has two people, equally likely states, and individual accuracy independently uniform between 50% and 100%. Each observes only their own quality and signal. Signals are independent conditional on the state. Qualities are redrawn every round. Both abstention and voting remain free. The mandatory control preserves the draws and removes abstention.

If both use threshold t , probabilities of a correct-state ballot, an incorrect-state ballot, and abstention are respectively $1 - t^2$, t^2 , and $2t - 1$. Indifference for the person with quality t yields interior threshold $2/3$. Under those strategies, expected individual participation is $2/3$ and expected collective accuracy, assigning half credit to each tie, is $43/54$. If both always followed their signals, expected accuracy would be $3/4$. These calculations require the pair, uniform distribution, symmetric prior, and stated strategies. They are not general predictions for every committee or every observed round.

7.6 Three states and different interests

This mechanism retains the ban on abstention in the book's Exercise 7.4. There are three people and equally likely states S_1 , S_2 , and S_3 . A pays everyone 100. B pays 91 to the person whose number matches the state and 106 to the other two. Each independently receives exact state information with probability λ , and otherwise receives no signal. Nobody observes who received information before deciding. The option with two or three ballots is applied.

Without information, B's expected account is 101 for everyone: one third of 91 plus two thirds of 106. With full information, the two beneficiaries can vote B while the harmed person votes A, again selecting B. With sparse information, however, an equilibrium can have only informed beneficiaries vote B and everyone else vote A. B then requires both beneficiaries to be informed,



BEER Lab · Round 1 of 8

Your decision

Your role: Account for accuracy

Your resources and payoff rules

Your account starts with 100 ECU. The selected option adds 20 if it matches the state and 0 otherwise. A tie pays 110 ECU: the average of the two possible accounts.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your private information: A

Your signal accuracy: 56.8465 %

Your vote

- ☐ A
- ☐ B
- ☐ Abstain

Continue

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

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Figure 7.2: Native extension screen: Private quality and a participation threshold.

giving probability λ^2 . This is not a common-accuracy measure: people disagree about which policy is desirable in each state.



BEER Lab · Round 1 of 8

Your decision

Your role: Your position 2 · No signal

Your resources and payoff rules

Everyone starts with 100 ECU. A preserves 100. B pays 91 ECU to the position whose number matches the state and 106 ECU to each other position.

ECU means Experimental Currency Units. No conversion to real money is specified for this session.

Information available to you

Your position: 2

Your private information: No signal about the state

Accounts for positions 1, 2, 3: A: (100, 100, 100); B in S1: (91, 106, 106), S2: (106, 91, 106), S3: (106, 106, 91).

Your vote

- ☐ A
☐ B

Continue

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

Powered by oTree

Figure 7.3: Native extension screen: Three states and different interests.

7.7 Why the boundary is one third

Consider an uninformed person under that strategy profile. Their ballot matters when the other two choose different options. Conditional on that event, the probability that B harms them is $(1 - \lambda)$ divided by $(2 - \lambda)$. The conditional expected gain from B over A is $6 - 15\lambda$ times that probability. This expression is nonpositive when λ is at most one third.

With λ equal to 0.20, the reference gives probability 0.04 of B and expected account 100.04 per person. The boundary treatment uses one third, where the uninformed person is indifferent.

Zero-information and full-information controls have a reference selecting B with probability one; do not mechanically extend the sparse-information strategy to lambda zero. Instructions recommend no ballot. Reports retain accounts by position and B selection; an overall average does not replace the distribution of harms.

7.8 Comprehension, data, and counterfactuals

The new comprehension check covers group size, the base of 100, either a tie account of 110 or a harmed account of 91, and privacy before voting. Each error retains the answer and explains the correction. Questions verify rules and arithmetic rather than an optimal strategy. Rematched pairs require at least four people and preserve informational roles. One encounter needs only one pair.

The long CSV includes every active round of the selected session. X means confirmed abstention; an empty ballot means a pending response. Pending outcomes, states, and signals stay empty. Participation uses people in completed groups, while accuracy uses completed groups: these denominators differ. Potential decisiveness means some allowed action would change the outcome while holding others' choices fixed. Outcome alteration compares the chosen action with abstention, or with the opposite ballot when abstention is prohibited. These are realized-data counterfactuals rather than estimates of subjective probabilities.

7.9 Teaching sequence and evidence

A class can begin with one person's choice between A and B under a 90% prior. Then introduce the asymmetrically informed pair and reconstruct accounts 120, 119, and 111. Compare the same structure with mandatory ballots without simultaneously changing the prior. Another session can add partisans, or private quality with a stated threshold reference. Reserve the distributional example until students can distinguish preferences, information, and conditional decisiveness.

Osborne provides the models and examples used here. Feddersen and Pesendorfer develop informative abstention in a more general setting. Battaglini, Morton, and Palfrey conduct an experiment varying information, partisans, and priors; their findings are not this class's results and do not automatically validate every adaptation. McMurray studies aggregation with private qualities in an environment more general than this pair. Ask for a conditional conclusion: who knows what, which preferences are shared, when a ballot matters, and what actually changes between treatments.

7.10 New configuration selection

Basic rooms retain the original core. In the extended room select the relevant mechanism, group size, and horizon. Names ending in one and random are modes of the same paired treatment, not distinct games.

Two people: perfect information and no signal
`information_voting_extended_abstention_pair`

Two people: equally likely states
`information_voting_extended_abstention_pair_balanced`

Two people: mandatory-ballot control

information_voting_extended_abstention_pair_forced

Committee: two informed and three without signals

information_voting_extended_abstention_panel

Committee: uninformed majority and nondecisive choices

information_voting_extended_abstention_nonpivotal

Committee with a more likely state A

information_voting_extended_abstention_prior

Balanced fixed preferences

information_voting_extended_abstention_partisans

Unequal fixed preferences: offset possible

information_voting_extended_abstention_imbalance

Fixed bloc larger than the independent group

information_voting_extended_abstention_strong_bloc

Everyone knows the state

information_voting_extended_abstention_all_informed

Two signals with private quality

information_voting_extended_abstention_quality

Private quality with mandatory ballots

information_voting_extended_abstention_quality_forced

Three states: nobody receives information

information_voting_extended_diverse_no_information

Three states: information with probability 20%

information_voting_extended_diverse_sparse_information

Three states: one-third boundary

information_voting_extended_diverse_boundary_information

Three states: full information

information_voting_extended_diverse_full_information

Two people: one encounter

information_voting_extended_abstention_pair_one

Two people: ten rematched encounters

information_voting_extended_abstention_pair_random

BEER Lab

Instructor report

Two people: perfect information and no signal

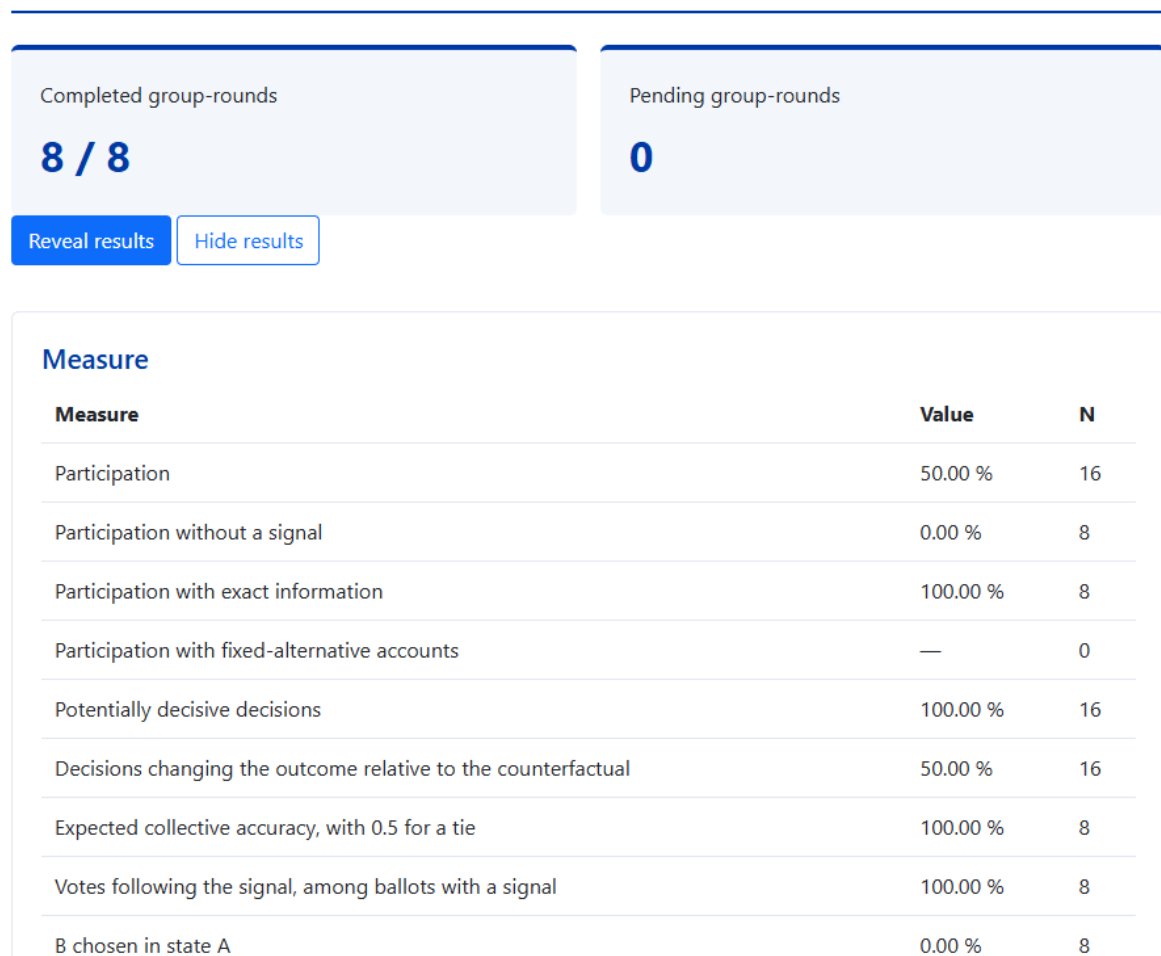


Figure 7.4: Native report detail: progress, measures, and denominators.

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