



Instructor's Guide to Social Choice

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 the preparation, implementation, and classroom discussion of the family of social choice and agenda power activities 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

A collective decision requires more than counting people. Someone must determine which alternatives are considered, their order of comparison, and what happens when a proposal fails to attract enough support. This family lets instructors separate those elements. Identical individual payoff schedules can produce different final alternatives when the order of two ballots changes. Such an outcome need not reflect a counting mistake or a change of opinion: it can follow from the procedure organizing individually coherent decisions.

The teaching objective is to distinguish individual preferences, collective aggregation, and procedure. Before play, ask for a private prediction about whether order can matter; do not explain which agenda benefits each type. After play, reconstruct one actual sequence and compare it with another agenda. Students without previous training can then understand institutional influence through decisions whose immediate consequences they can calculate themselves.

The interactive unit is a committee of three voting members. Each person receives a stable payment schedule for alternatives A, B, and C. Two treatments add a fourth person who receives payments but casts no votes: that person chooses the agenda in one condition and has no agenda rights in its control. These are disclosed functions, not fictional participants or automatic votes. No demographic questionnaire is included. Spanish and English use the same application logic; selecting language does not change incentives or parameters.

For the instructor

A first class can use six tournaments with balanced agendas. Each alternative is reserved for the second comparison twice. Select one tournament to demonstrate the sequence without repetition. Ten tournaments allow learning comparisons with fixed committees or rematching, while retaining the distinction between a repeated decision and an independent observation.

Activity summary

Purpose	Understand majority cycles, voting order, anticipation, and institutional rights.
Experimental unit	Three voting members; four people for chosen versus random agenda comparisons.
Basic edition	One tournament; six balanced agendas; ten fixed or rematched tournaments.
Extended edition	Public preferences, agenda chooser and control, majority, veto, unanimity, amendments, and single peaks.
Decision	Choose an agenda or proposal when entitled; cast ballots between available alternatives.
Payoff	Final alternative's value in the participant's own table; 0 to 30 ECU per tournament at the default scale.
Topics	Social choice, agenda power, majority cycles, sophisticated voting, veto, legislative procedures.
JEL	A22, C72, C92, D71, D72.
Participants	Multiples of three; multiples of four for chosen agendas and their control; minimum six for basic rematching.
Suggested duration	Classroom estimate: 25–35 minutes for one tournament and discussion; 50–75 for a repeated comparison.

Duration is a planning estimate, not a measured pilot time with students. Participant requirements depend on the treatment: six people form two three-member committees but cannot fill a four-person configuration. Check the effective form before distributing links. Do not assume that all sessions require pairs because other games in the catalog happen to use them.

The codes refer to undergraduate teaching, noncooperative games, laboratory experiments, social choice, and political processes. Topic labels match the institutional catalog. There are 32 configurations: four basic and twelve extended configurations per language. A configuration selects language, edition, procedure, horizon, and grouping; instructors need not run all 32 to teach the paradigm.

1.1 Navigation from the laboratory website

Begin at <https://beer-lab.org/> and select **CLASSROOM** on the English website, or **CLASE** on its Spanish version. This opens the teaching catalog at <https://teaching.beer-lab.org/>. Search for *Social Choice and Agenda Power*; filters also allow searching by topic or JEL code. Clear filters from an earlier search if the card does not appear. The Spanish title is *Elección social y poder de agenda*. The catalog language and session language are separate choices.

Each card distinguishes Español and English. The extended-version selector changes the edition before following the relevant link. Each language and edition combination has its own room. Students receive only the room selected for their class session. They do not need to explore Demo, choose a configuration, or know administrative credentials. A room is a stable entrance. A session is a specific execution that stores its own participants, decisions, and outcomes.

The proposed instructor route is <https://socialchoice.beer-lab.org/demo>. Student routes are https://socialchoice.beer-lab.org/room/eleccion_social_es, https://socialchoice.beer-lab.org/room/social_choice_en, https://socialchoice.beer-lab.org/room/eleccion_social_extendido, and https://socialchoice.beer-lab.org/room/social_choic

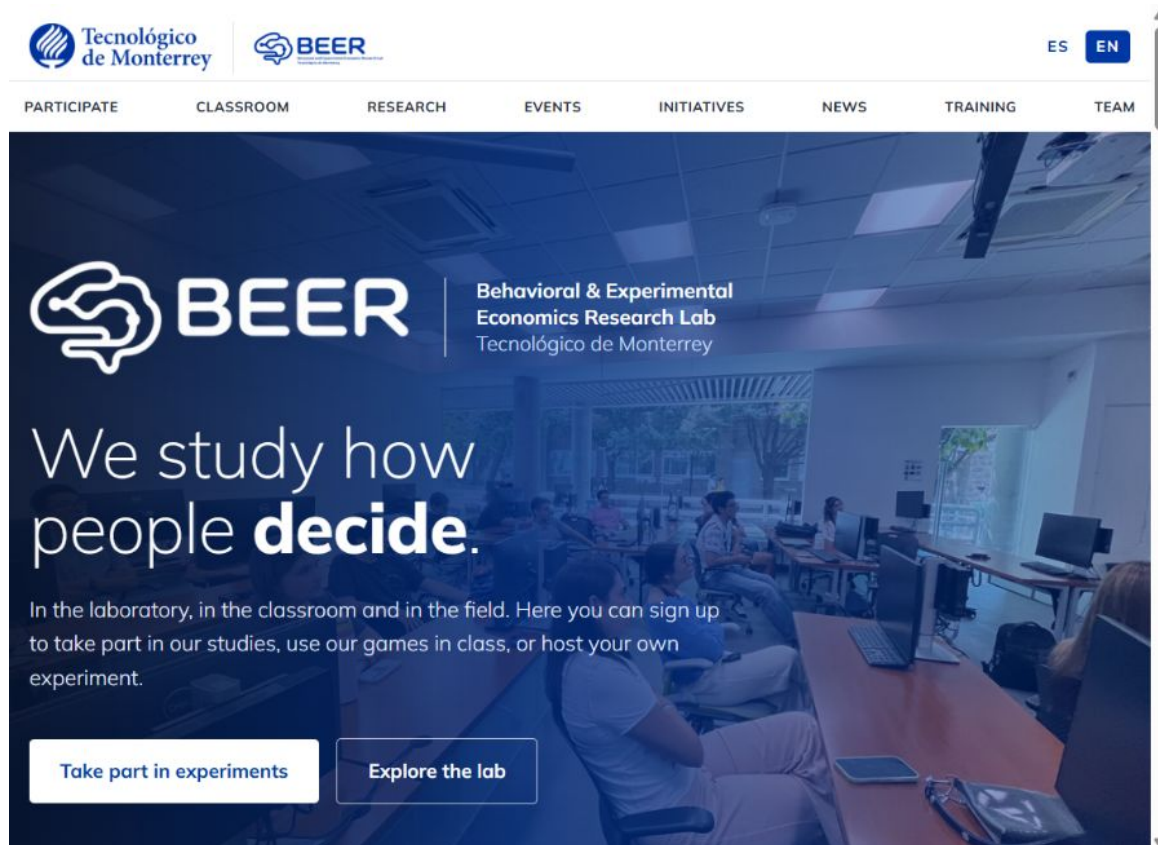


Figure 1.1: Current institutional website: the classroom menu opens teaching experiments. Screenshot from October 7, 2026.

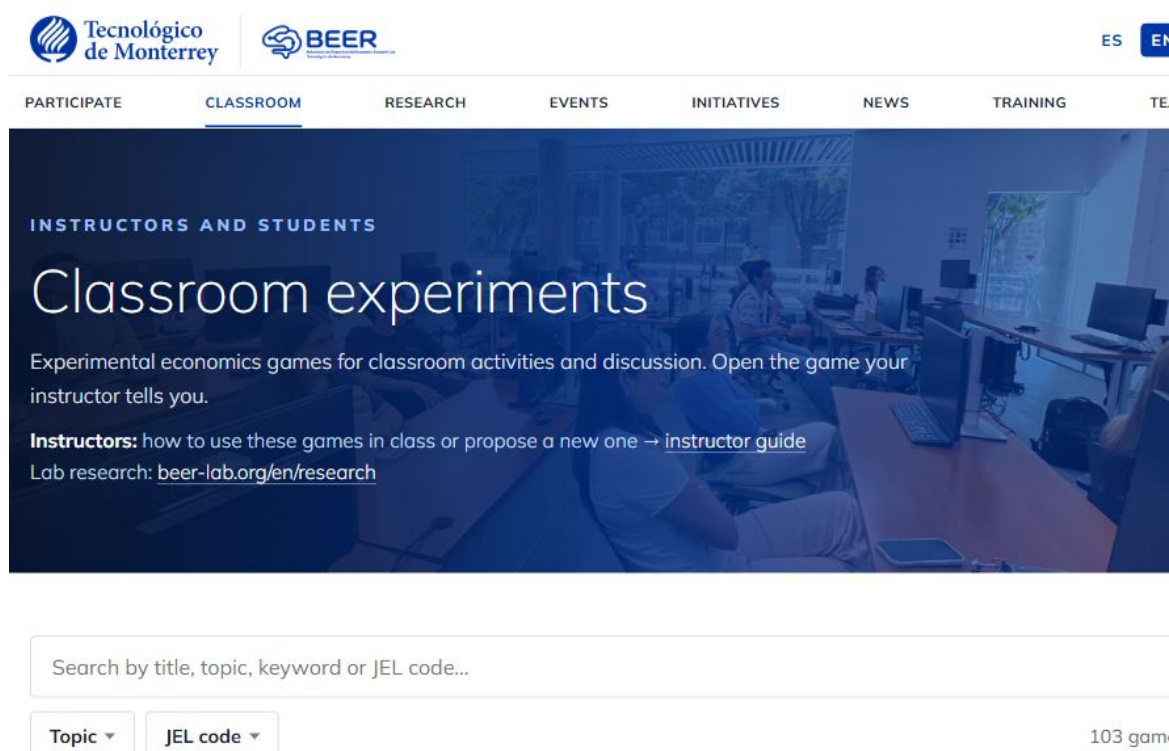


Figure 1.2: Institutional catalog: search by title, topic, or JEL and select language and edition.

e_extended. All four belong to this family. Demo contains 32 social-choice configurations and Rooms contains four rooms. Sessions and Data must also belong exclusively to this instance.

1.2 Creating a student session

Sign in using credentials assigned by the laboratory. Open Rooms, select the basic English room, and check that its creation form offers the four basic configurations. The initial choice should be one tournament rather than an extension. Select the treatment before creating the session. Do not change its rules after students start. For an instructor rehearsal, Demo provides individual test links for all three participants (four for the agenda-rights comparison); these links are useful for checking the sequence, not for distributing the teacher password.

Participant numbers must be multiples of three, or four for the agenda-rights treatments. Basic rematching requires at least six, providing two committees. Fixed three-member sessions accept three, six, or nine; four-person sessions accept four, eight, or twelve. Do not create fictional participants to complete a wait.

Checkpoint

Before sharing the student link, check language, edition, election horizon, and voting rule. Confirm complete groups of three (four for the agenda comparison) and the minimum of six for rematching. Confirm how ECU are defined and whether any monetary conversion has been announced. Open a test participant link and check the welcome screen. Keep instructor access separate from the room link given to students.

Prepare the projector for the aggregate report, but keep results hidden while students decide. Allow enough time to read instructions and answer comprehension questions. Require silence and no direct communication between participants. This protocol contains neither polls nor participant communication. Do not ask students to announce private payment schedules or reveal their preferred alternatives before voting.

1.3 A suggested classroom schedule

A fifty-minute class can allocate five minutes to introduction and access, ten to instructions and comprehension, fifteen to elections, fifteen to debriefing, and five to an individual written response. A ninety-minute class can compare two rules, with a short interval for preparing the second session. Maintain one central question for each comparison. Running several treatments without time to understand their differences can make a technically successful activity pedagogically uninformative.

oTree
Demo
Sessions
Rooms
Data
Server Check
Logout

Demo

[ES] Elección social y poder de agenda — Un torneo
[ES] Elección social y poder de agenda — Seis torneos, agendas equilibradas
[ES] Elección social y poder de agenda — Diez torneos, comité fijo
[ES] Elección social y poder de agenda — Diez torneos, reasignación
[ES] Elección social y poder de agenda — Extendido — Un torneo
[ES] Elección social y poder de agenda — Extendido — Seis torneos, agendas equilibradas
[ES] Elección social y poder de agenda — Extendido — Diez torneos, comité fijo
[ES] Elección social y poder de agenda — Extendido — Diez torneos, reasignación
[ES] Elección social y poder de agenda — Extendido — Preferencias públicas
[ES] Elección social y poder de agenda — Extendido — Agenda elegida por una cuarta persona
[ES] Elección social y poder de agenda — Extendido — Agenda aleatoria con cuarta persona
[ES] Elección social y poder de agenda — Extendido — Propuesta y mayoría
[ES] Elección social y poder de agenda — Extendido — Propuesta y veto
[ES] Elección social y poder de agenda — Extendido — Propuesta y unanimidad
[ES] Elección social y poder de agenda — Extendido — Enmiendas abiertas
[ES] Elección social y poder de agenda — Extendido — Preferencias de pico único
[EN] Social Choice and Agenda Power — One tournament
[EN] Social Choice and Agenda Power — Six tournaments, balanced agendas
[EN] Social Choice and Agenda Power — Ten tournaments, fixed committee
[EN] Social Choice and Agenda Power — Ten tournaments, rematching
[EN] Social Choice and Agenda Power — Extended — One tournament
[EN] Social Choice and Agenda Power — Extended — Six tournaments, balanced agendas
[EN] Social Choice and Agenda Power — Extended — Ten tournaments, fixed committee
[EN] Social Choice and Agenda Power — Extended — Ten tournaments, rematching
[EN] Social Choice and Agenda Power — Extended — Public preferences
[EN] Social Choice and Agenda Power — Extended — Agenda chosen by a fourth person
[EN] Social Choice and Agenda Power — Extended — Random agenda with a fourth person
[EN] Social Choice and Agenda Power — Extended — Proposal and majority
[EN] Social Choice and Agenda Power — Extended — Proposal and veto
[EN] Social Choice and Agenda Power — Extended — Proposal and unanimity
[EN] Social Choice and Agenda Power — Extended — Open amendments
[EN] Social Choice and Agenda Power — Extended — Single-peaked preferences

Elección social y poder de agenda / Social Choice and Agenda Power — BEER Lab

Selecione una variante de este juego. Select a version of this game.

Figure 1.3: The isolated instance lists this family’s Spanish and English configurations.

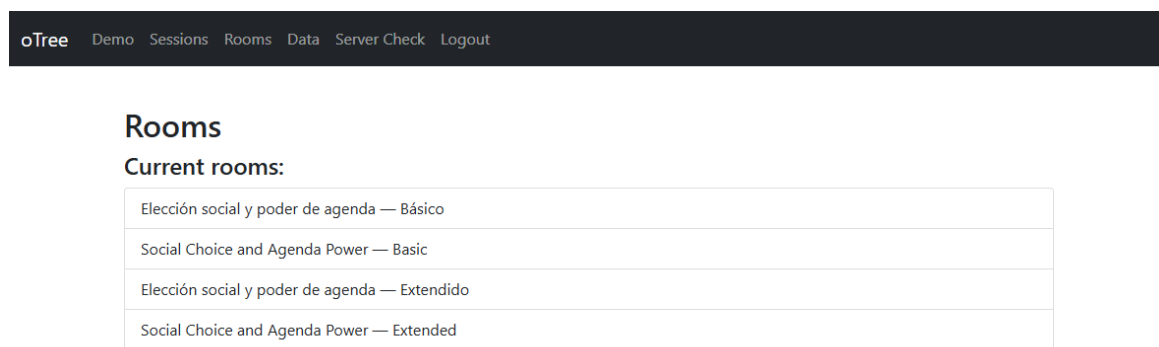


Figure 1.4: The four social-choice rooms: basic and extended editions in each language.

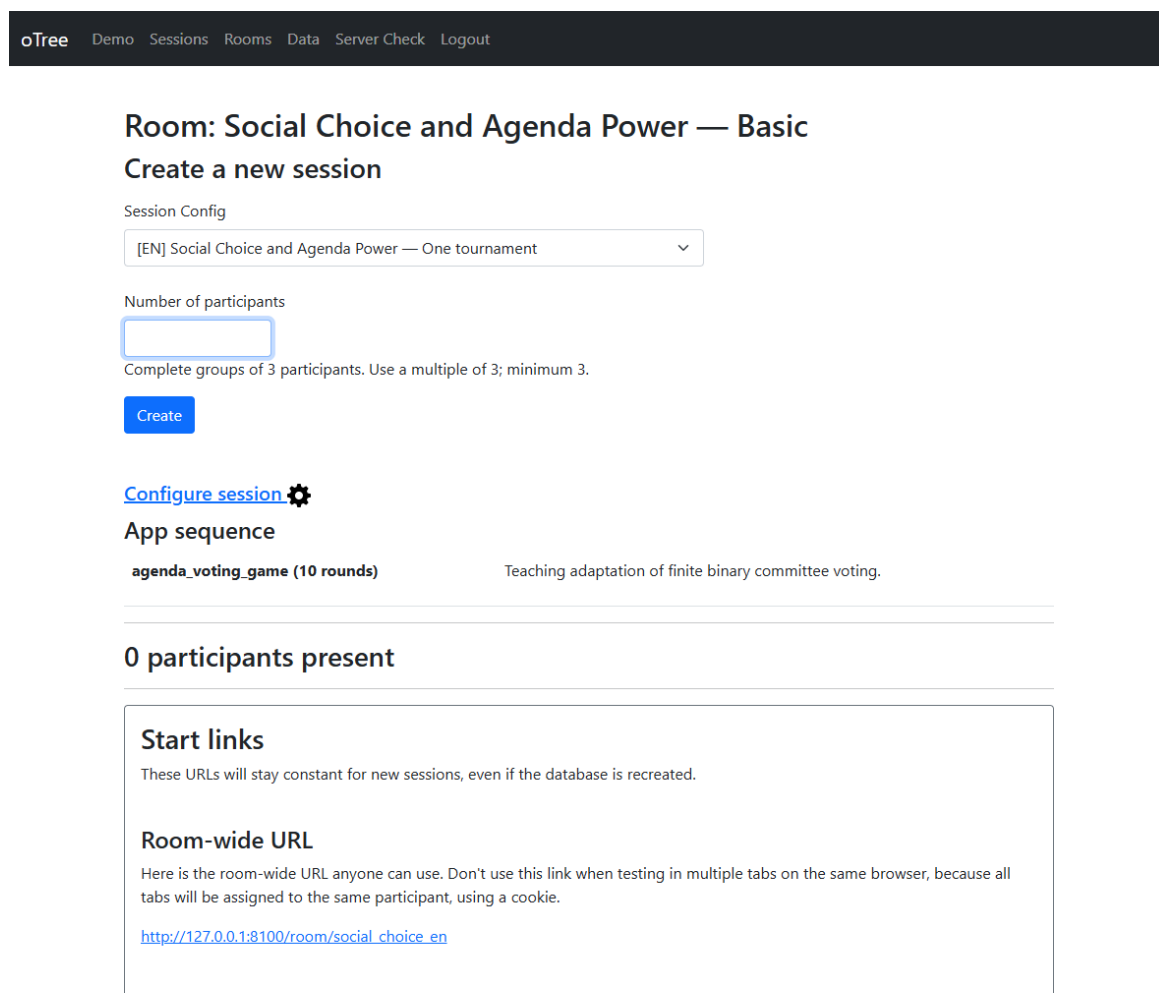


Figure 1.5: Basic English room: select a configuration and a valid participant number.

Rules and participant sequence

2.1 Payoffs and resources

In the central protocol, member 1 earns 30 for A, 20 for B, and 0 for C; member 2 earns 0, 30, and 20; member 3 earns 20, 0, and 30. Each committee contains exactly one table of each type. Type is assigned at session creation, remains stable across the horizon, and follows the person under rematching. A seat's physical location or arrival order should not be announced as the identity of a type.

These amounts are conditional payments, not an initial endowment to distribute. Voting does not withdraw resources from an account and entails no participation cost. ECU means *Experimental Currency Units*. It provides an accounting unit for comparing consequences within the activity, with no automatic equivalence to pesos or dollars. Any cash conversion must be announced separately by the laboratory before play. The software sums experimental earnings across all active tournaments.

The fourth person has table (30,20,0). Their interest in the outcome is induced in the same way as a voter's, but they cannot vote. Do not add their earnings to the three voters' total when comparing welfare across groups of different sizes. The single-peaked condition changes all three schedules. The interface always displays actual amounts, including the configured payoff scale, in prominent A, B, and C cards within the page body.

What participants will see

Participants see their function and three cards with large payoff amounts. Instructions explicitly state that there is no budget to distribute. The decision page repeats the schedule, avoiding dependence on a small number displayed only in a page corner.

2.2 Two stages, one outcome

An agenda identifies the alternative reserved for the second comparison. If C is reserved, members first vote between A and B. That winner subsequently faces C. The three voting members decide simultaneously at each stage. Partial votes are not displayed and abstention is unavailable. An alternative wins with two or three votes. Three voters and two options cannot produce a tie. When a fourth person is present, that person waits through both ballots.

The intermediate result generates no separate payment. Suppose A defeats B and C then defeats A. A person with table (30,20,0) earns 0 for the tournament, even if they supported A and A won the opening stage. The two ballots are parts of one institutional decision. Announcing the reserved alternative before voting allows anticipation of the continuation; it does not require choosing the

higher-paying option in the immediate comparison.

The agenda is announced at the start of each tournament. Across six tournaments every alternative is reserved twice, with order randomized separately by committee. Across ten, frequencies are four, three, and three; which alternative appears four times is also randomized. A single tournament draws its reserved alternative randomly. Randomization organizes agendas and turns; it never replaces an actual majority or systematically favors A when a decision becomes difficult.

Checkpoint

Ask what determines payment before play starts. The correct answer is the final implemented alternative and the participant's own schedule. Winning one stage, voting for the eventual winner, or belonging to a majority does not generate an additional reward.

2.3 Participant sequence

The welcome page includes the laboratory logo and explains the purpose of the Behavioral and Experimental Economics Research Lab in the Department of Economics at Tecnológico de Monterrey. Students accept rules requiring silence, private decisions, and individual contact with staff. This page is common across treatments. Specific instructions identify function, schedule, available information, and procedure. Central-condition participants see only their own schedules; public conditions display all three voting tables without associating them with names.

Three comprehension questions ask how many people vote, what determines payment, and whether a participant's own schedule changes during the session. An incorrect response preserves correct fields and explains the relevant rule. If someone answers four voters, feedback clarifies that the fourth person does not vote. Confusing final payment with a payment per stage produces an explanation that only the final alternative determines earnings. Corrections do not deduct ECU or recommend a strategy.

Each ballot page displays only the two alternatives available at that stage. Submission is final; waiting after submission means other committee responses are missing. Proposal pages appear only for the person whose turn it is. Results reconstruct the comparisons actually held and show individual earnings. The final screen explicitly confirms completion and asks participants to remain there; it has no next button leading to an empty page.



Welcome to the BEER Lab

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

Read every screen carefully and make your decisions individually. The instructor will present aggregate results for the class discussion after the activity.

Laboratory rules

- Remain quiet and avoid talking to other participants.
- Silence your phone and use only the assigned activity.
- Do not share your payment table or your decisions.
- If you have a question, raise your hand and wait for the instructor.

☐ I have read the rules and agree to follow them.

Start

Powered by [oTree](#)

Figure 2.1: Institutional welcome and laboratory rules.

BEER Lab · Election 1 of 1

How the decision is made

Resources and unit of account

Your committee implements A, B or C. Your payment depends on the final alternative and your own table, even if you vote for another. There is no budget to allocate. ECU means Experimental Currency Units; the instructor separately explains any conversion to real money.

Your payoff table is: A: 0.00 ECU, B: 30.00 ECU, C: 20.00 ECU

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

This session does not convert ECU into real money.

Your function in this session: Voting member · Table 2

Your committee implements A, B or C. Your payment depends on the final alternative and your own table, even if you vote for another. There is no budget to allocate. ECU means Experimental Currency Units; the instructor separately explains any conversion to real money.

People entitled to vote: 3

Your payment table

A 0.00 ECU	B 30.00 ECU	C 20.00 ECU
---	--	--

Figure 2.2: Instructions and function: first part.

0.00 ECU

30.00 ECU

20.00 ECU

This table is private. Other people may have different payments.

One alternative is reserved for the second ballot. The other two meet first. The first winner then faces the reserved alternative. Each ballot requires three simultaneous votes: an alternative wins with at least two. Abstention is unavailable. Only the final winner determines payments.

The system determines the order before voting. In six tournaments each alternative is reserved twice, in random order. In ten tournaments the frequencies are 4, 3 and 3, randomly assigned across alternatives.

Available information

Before deciding you know your table, the procedure and the number of people. Other tables are not shown.

The same people form your committee throughout all tournaments. Your table and rights remain fixed.

Hypothetical example: if A receives two votes and B one, A advances. This does not yet pay 30 ECU: payment uses the alternative implemented at the end and your own table.

Continue

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Figure 2.3: Continuation of the same participant instructions.

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

BEER Lab · Election 1 of 1

How many people cast votes in each committee?

How many people cast votes in each committee?

4

Your answer: 4. The correct answer is 3. Three people cast votes; when a fourth person is present, that person does not vote.

What determines your payment?

☒ The final alternative and your table determine your payment. Winning an intermediate ballot does not generate a separate payment.

☐ Every ballot

Does your own table remain fixed throughout the session?

☒ Yes

☐ No

Continue

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Figure 2.4: Comprehension: explicit feedback on an incorrect answer.

BEER Lab · Election 1 of 1

Cast your vote

Your function in this session: Voting member · Table 2

Your payment table

A 0.00 ECU	B 30.00 ECU	C 20.00 ECU
----------------------	-----------------------	-----------------------

This table is private. Other people may have different payments.

Stage 1 · B ↔ C

Choose one of the two alternatives at this stage

☒ B
☐ C

Continue

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

Powered by [oTree](#)

Figure 2.5: Opening ballot with the private payoff table still visible.

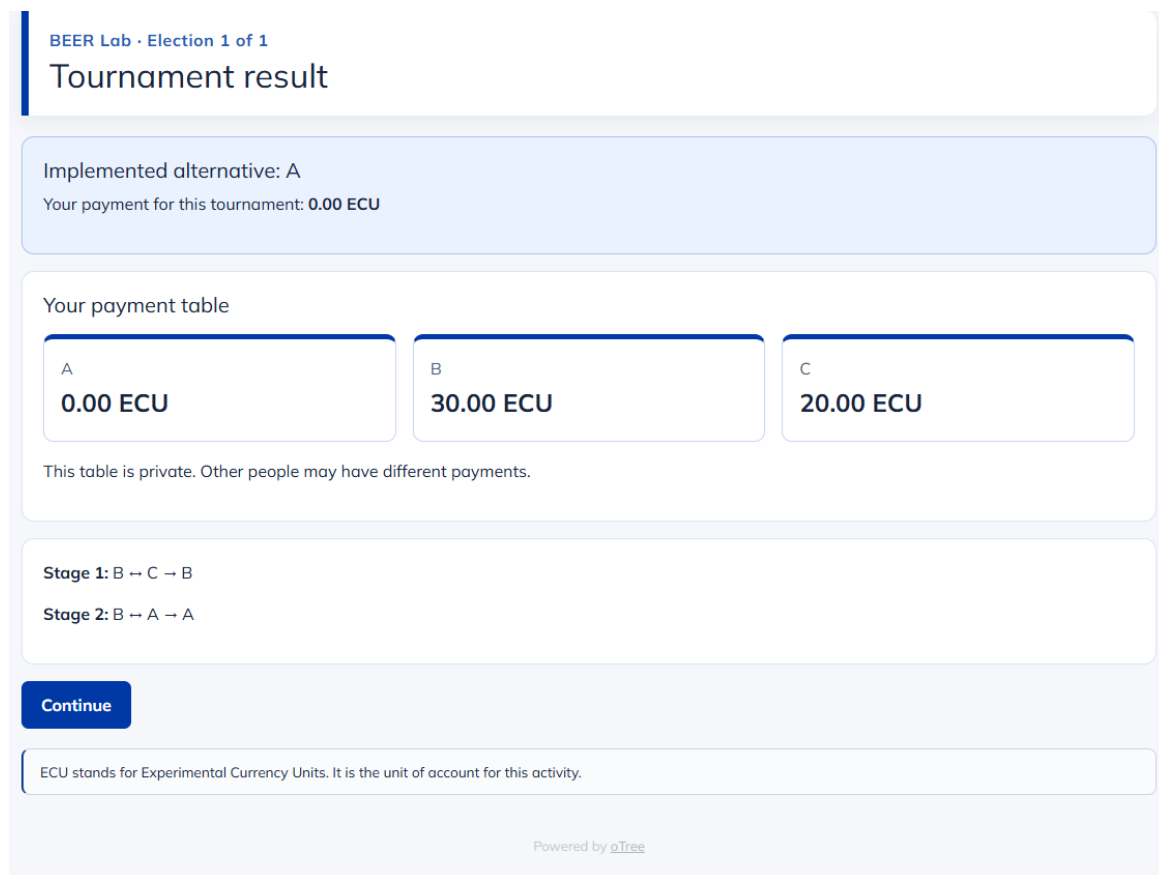


Figure 2.6: Tournament outcome, trajectory, and individual payment.

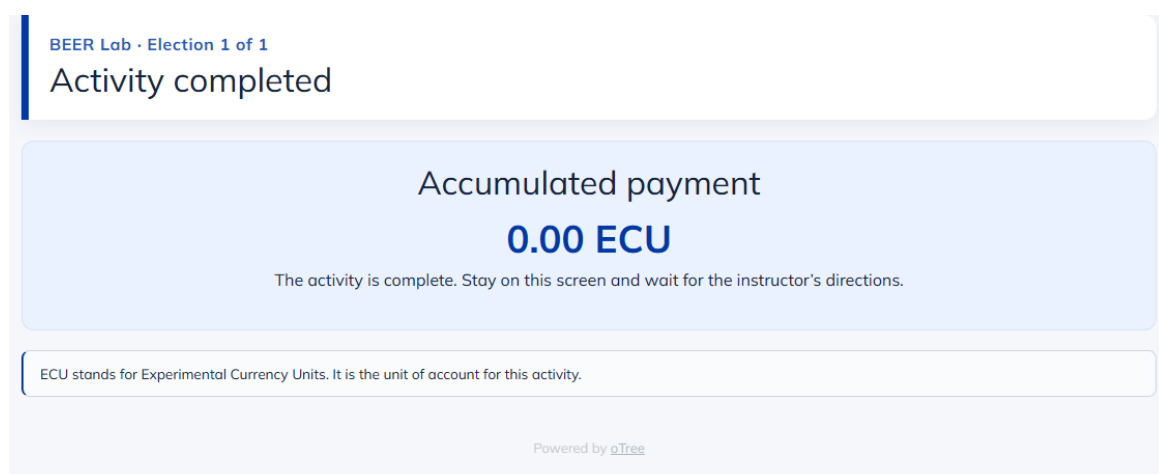


Figure 2.7: Explicit closure and cumulative earnings.

Theory and worked examples

3.1 The majority cycle

Individual preference is transitive when ranking A above B and B above C also implies ranking A above C. Every central schedule satisfies this condition: table 1 ranks A,B,C; table 2 ranks B,C,A; table 3 ranks C,A,B. Aggregating pairwise comparisons by majority can nevertheless generate a cycle. In A against B, tables 1 and 3 prefer A, which wins 2–1. In B against C, tables 1 and 2 prefer B, which wins 2–1. In C against A, tables 2 and 3 prefer C, which wins 2–1.

Thus A defeats B, B defeats C, and C defeats A. No alternative defeats both others in sincere pairwise comparisons. This absence of a Condorcet winner does not make individual participants inconsistent. Majority preference belongs to the collective and need not inherit each individual's transitivity. Draw three arrows and ask which two tables support each arrow. Different coalitions sustain different comparisons.

The induced tables generate this cycle as a calculation; its existence does not require first observing actual ballots. The calculation supplies a known benchmark against which behavior can be analyzed. A committee may cast votes that fail to reproduce the cycle because members anticipate later stages, make mistakes, care about someone else's earnings, or interpret the activity differently. Preserve the distinction between the calculated preference cycle and the observed sequence when explaining the report.

Theoretical foundation

Majority rule resolves a comparison; it does not guarantee a transitive collective ranking. This example establishes that a cycle can exist even with transitive individuals. It does not establish that every democracy cycles or that every majority decision is arbitrary.

3.2 Agendas and sincere voting

Sincere voting means selecting the higher-paying alternative among the two options on the current ballot. It is a local behavioral rule, not yet a strategic solution of the entire tournament. If A is reserved, B first defeats C and A then defeats B: the sincere result is A. Reserving B makes C defeat A first and B defeat C later, yielding B. Reserving C makes A defeat B first and C defeat A later, yielding C.

These three paths show that each alternative can be implemented through a different agenda while schedules and majority requirements remain unchanged. Reserving an alternative gives it no formal veto; it simply lets it face the opening winner. In the balanced protocol each alternative is reserved twice. A fully sincere committee would therefore implement A, B, and C twice each, and

each table's mean earnings would be $(30+20+0)/3$, approximately 16.67 ECU per tournament.

This benchmark is not a promise about behavior. Students may choose a different initial ballot when they realize that winning the opening comparison leads to a poor final outcome. Explain the sincere-voting algorithm before comparing its matches with the report. A divergence does not invalidate the cycle's arithmetic; it shows that the local behavioral rule does not describe every observed decision. Conversely, a matching outcome can arise for reasons other than sincerity.

3.3 Sophisticated benchmark

Consider an agenda reserving C. If A wins the opening ballot, the final A–C comparison implements C under sincere final voting. If B wins first, the final B–C comparison implements B. A person anticipating those continuations compares outcomes B and C when choosing the opening vote, although the current ballot lists A and B. Tables 1 and 2 prefer outcome B to C; both support B initially and B ultimately wins. Table 1 votes B even though implementing A directly would pay more.

This calculation uses backward induction: solve the final decision first, then use its outcome to evaluate an earlier action. It assumes full information about schedules, compatible reasoning about continuations, and majority choice in the final stage. Supporting one's preferred alternative in the final binary comparison is weakly dominant with respect to the outcome: it may not be pivotal when both other members agree, but cannot worsen the outcome under strict, self-interested preferences. The calculation does not identify a unique equilibrium profile of every ballot; it supplies the sophisticated-voting benchmark selected by this reasoning.

Applying the same reasoning to the other agendas, reserving A yields C and reserving B yields A. The report lists reserved A: sincere benchmark A, sophisticated C; reserved B: sincere B, sophisticated A; reserved C: sincere C, sophisticated B. Do not announce the sophisticated benchmark as an unconditional prediction for private information. Nor does every departure from the immediately preferred option establish sophistication by itself.

3.4 Welfare and single peaks

For the central schedules, the three voters' total payoff is always 50: A gives $30+0+20$; B gives $20+30+0$; C gives $0+20+30$. Changing the implemented alternative changes distribution without changing this total. Consequently, mean voter earnings in every complete central committee equal $50/3$. A flat aggregate-payoff trajectory is mechanical, not evidence that institutions have no influence. Examine payments by type and the implemented alternative as well.

The single-peaked condition uses $(30,20,0)$, $(20,30,20)$, and $(0,20,30)$. Along the order A,B,C each member has one peak and utility does not recover as alternatives move away from it. B defeats both A and C under sincere majority voting and is a Condorcet winner. Both calculated benchmarks yield B under every agenda. B now gives total earnings of 70, while A and C give 50. Acknowledge that schedules and attainable totals change together: this condition illustrates a restriction eliminating the cycle, not a pure order effect with constant payoffs.

The exercise also does not replicate McKelvey's general chaos theorem, which concerns multidimensional spaces and broader assumptions. The finite menu provides intuition about procedural dependence and about restrictions changing the problem. Summed ECU do not measure real social welfare or independently justify a constitutional rule; they support discussion of an explicitly stated experimental criterion.

Institutional variants

4.1 Repetition and composition

The four basic modes retain schedules and majority rule. One tournament studies the sequence without prior history. Six keep the committee fixed and balance the agenda: every alternative is reserved twice. Ten with a fixed committee reveal learning among the same people. Ten with rematching re-form groups while retaining one schedule of each type and every student's individual schedule. Encounters may repeat; the program does not guarantee continually new partners.

Rematching requires at least six people, providing two available committees. All groups must finish a round before the next tournament. This global wait preserves temporal order when new partners come from groups progressing at different speeds. Fixed committees require only internal synchronization. Do not interpret waiting longer for another participant as a preference difference.

Compare implemented alternatives and stage-level ballots, rather than only mean payments, which are constant for the three voters under the central schedules. Movement toward the sophisticated benchmark over ten rounds is compatible with learning, but also with changing expectations about other members. A few committees cannot separately identify those mechanisms. The same person appears ten times in the long export; ten decisions do not become ten independent individuals.

4.2 Public preferences

This condition retains three voting members, central schedules, two stages, and six balanced agendas. Only initial information changes: everyone sees all three schedules and knows there is one of each type. Names and codes are absent. A participant can therefore calculate other members' votes under a sincere-behavior assumption, but does not know their strategies or actual social preferences. Full information about induced payoffs is not perfect knowledge of behavior.

The relevant comparison is six private central tournaments against six public tournaments. Comparing with one private interaction changes information and history simultaneously. Explaining the sophisticated solution before the second condition also changes instruction. Acknowledge these changes in within-class descriptive comparisons. To attribute an effect specifically to information, use parallel committees assigned to each condition, or counterbalance order while recording its limitations.

The report retains sincere and sophisticated benchmarks. The latter is more directly applicable here because its knowledge-of-schedules assumption is available. Nevertheless, following the immediate payoff should not automatically be labeled irrational. A person may expect others to reason differently. Ask what they expected in the last ballot and which information would have made them confident. Beliefs are not formally elicited, and retrospective discussion is not a predecision

belief measurement.

4.3 Chosen agenda and control

The fourth person selects the reserved alternative while the other three cast ballots. Everyone sees voting members' schedules and the fourth role's function. The fourth schedule (30,20,0) pays 30 for A, 20 for B, and 0 for C. The random-agenda control retains the fourth person, information, schedules, horizon, and payments; it only transfers agenda selection to the system. A private three-person committee would introduce additional information and size differences.

Under sincere voting, an agenda chooser wanting A reserves A. Under the sophisticated benchmark, they reserve B because that agenda implements A. The recommendations do not contradict each other: they depend on different expectations about voters' behavior. Selecting an agenda that works with sincerity does not guarantee A when the committee anticipates. Agenda power influences the available sequential menu; it neither replaces ballots nor directly selects the final outcome.

Examine chosen-agenda frequencies and their realized outcomes. Concentration on B with outcomes A would be compatible with sophisticated reasoning; concentration on A with outcomes A would be compatible with sincerity. Compare with the random control before attributing earnings to agenda rights. Fourth-role payments must remain separate from voter payments: adding them produces totals of 80 for A, 70 for B, and 50 for C, unlike the central voters' constant total of 50.

Attention

A chosen agenda is endogenous. Do not treat every selection of A or B as random experimental assignment. The institutional contrast concerns the right to choose versus a comparable random control; agendas inside the chosen condition can reflect expectations and experience.

4.4 Proposal under majority rule

This condition replaces the tournament and makes C the status quo protected by the closing rule. The person holding table 1 proposes A or B, and all three vote between the proposal and C. Two proposal votes suffice for approval; otherwise C remains. Schedules are public. C cannot be submitted as a distinct proposal because it already represents the outcome when change fails.

Under sincere voting A loses to C because only table 1 supports A. B defeats C because tables 1 and 2 prefer it. A proposer anticipating those ballots chooses B and earns 20, rather than proposing A, obtaining C, and earning 0. Their favorite alternative A is not acceptable to the majority. This example introduces the difference between one's own desire, the feasible set of proposals, and selection of a bill.

Tournament benchmarks are not computed for this procedure because there are no longer two comparisons with a reserved alternative. The report displays final decisions and payments. Reconstruct approval using the proposal and three votes in the export. An approved proposal does not establish universal support for change or an increase in total ECU. This mechanism illustrates how a status quo and proposal rights restrict collective choice without introducing bargaining over transfers.

4.5 An individual veto

The proposal menu remains A or B against C, with table 1 retaining proposal rights. Two votes are still necessary, but table 3's approval is added. That person casts one ordinary ballot, and the same ballot determines whether the veto requirement is satisfied. There is no second secret veto decision or veto cost. A vote for C blocks the proposal even when the other two members support it.

Under central schedules, table 3 prefers C to both A and B. Thus both proposals are rejected with self-interested preferences and sincere final voting, retaining C. In particular, B can receive two supporting votes and still fail because of the veto. Comparison with majority is especially transparent: the additional approval requirement changes while menu, information, and proposer remain constant. A tournament reserving C is not the same institution; C simply participates in the last comparison without an individual veto right.

Observed approval by table 3 may reflect concern for others, mistakes, different expectations, or expressive support. It does not mean the veto rule stopped functioning: check the ballot and outcome first. Veto research also studies private information and signal aggregation. This protocol has neither an unknown state nor quality signals, so its connection to those papers concerns institutional structure rather than replication of their welfare results.

4.6 Unanimity

Unanimity requires all three votes for the proposal. C is the rejection outcome, not an alternative excluded from payment. The contrast retains the proposer, A/B menu, public schedules, and six rounds used under majority and veto. Any member can prevent change by voting C. This formal symmetry distinguishes unanimity from the veto assigned exclusively to table 3.

With central schedules, veto and unanimity both yield C under sincere final voting. Tables 2 and 3 oppose A, while table 3 opposes B. Matching outcomes do not make the rules identical. Demonstrate this with an off-equilibrium example: tables 2 and 3 vote B, and table 1 votes C. Majority approves B; veto also approves it because table 3 supports it; unanimity rejects it. This is a calculation for a possible ballot profile, not a prediction that such ballots will spontaneously occur.

The protocol has no compensation mechanism to buy consent and no unlimited bargaining before voting. A high frequency of C may mechanically reflect schedules and thresholds; it does not establish that unanimity is inferior in every setting. Ask which values an institution should protect before judging performance: minority protection, possibilities for change, information, participation, and distribution can conflict.

4.7 Amendments and closure

The initial bill is A. Each member receives one proposal turn in a random order announced at the start. They can propose A, B, or C. Selecting the current bill passes the turn without a ballot. A different amendment faces the current bill under majority rule, and the winner becomes the new bill. After three turns, the bill faces C. If it already is C, C is implemented without another ballot. There are therefore at most three amendment ballots and one final ballot.

For example, take order 2,3,1 and proposals B,C,A. B loses against A under sincere voting, retaining A. C defeats A and becomes the bill. A then loses against C, retaining C. Closure implements C without voting C against itself. All three proposal turns took place, but not every turn produces

a new majority or a bill change. Exports retain turn order, each person's proposal, and the comparison trajectory.

This is a finite bounded adaptation, not a chamber allowing unlimited amendments or a model of all parliamentary procedures. Turn order can affect proposals when members anticipate later responses. Do not assert a universal sincere outcome without conditioning on actual proposals. Compare paths and final bills; tournament benchmarks are intentionally omitted. Passing a turn is a valid action and must be distinguished from a missing response.

4.8 Preference contrast

The final extension retains three voting members, balanced agendas, and two stages, but changes schedules to make them single-peaked over A,B,C. Table 2 earns 20 for either A or C and 30 for B. Indifference between the extremes is genuine: do not turn it into a prediction of exclusively voting A or exclusively voting C. The report excludes equal-payoff comparisons from the denominator of departures from immediate preference.

B defeats both extremes by two votes, supported by the central member and the extreme opposite the opponent. Against A, tables 2 and 3 support B; against C, tables 1 and 2 support B. Both benchmarks therefore yield B regardless of the reserved alternative. If another outcome appears in class, reconstruct ballots, information, and expectations; do not change the program to force B.

Black offers the classic reference for understanding why restrictions on preferences can make majority outcomes more stable. This three-option demonstration illustrates that idea rather than replicating every assumption of the general result. Changing schedules also changes monetary incentives and potential total earnings. Rigorous causal comparison must specify which preference dimension is manipulated. In a classroom, acknowledge the changes and ask why the cycle disappeared.

BEER Lab · Election 1 of 6

Choose the order

Your payment table

A	B	C
30.00 ECU	20.00 ECU	0.00 ECU

This table is private. Other people may have different payments.

The fourth person chooses the reserved alternative. Their own table determines their payment; they cast no votes.

Alternative reserved for the second ballot

A ▾

Continue

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

Powered by oTree

Figure 4.1: Fourth person selects the reserved alternative.

BEER Lab · Election 1 of 6

Submit a proposal

Your function in this session: Voting member · Table 1

Your payment table

A 30.00 ECU	B 20.00 ECU	C 0.00 ECU
----------------	----------------	---------------

This table is private. Other people may have different payments.

Stage 1 · Current bill: A

Proposed alternative

A ▾

Continue

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

Powered by [oTree](#)

Figure 4.2: Proposal against C under the veto rule.

BEER Lab · Election 1 of 6

Submit a proposal

Your function in this session: Voting member · Table 2

Your payment table

A 0.00 ECU	B 30.00 ECU	C 20.00 ECU
---------------	----------------	----------------

This table is private. Other people may have different payments.

Stage 1 · Current bill: A

Proposed alternative

C ▾

Continue

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

Powered by [oTree](#)

Figure 4.3: Amendment: the active proposer has the exclusive turn.

Report and interpretation

5.1 Reveal and denominators

The report belongs to the instructor's administrative access. Open the session and select Admin Report, rather than a student's individual link. On entry, the report displays participants, completed committee-tournaments, and pending committee-tournaments. Aggregate outcomes are hidden and the reveal button stays disabled while any active tournament is unfinished. Once all finish, the instructor can reveal figures to start debriefing. Hide closes the aggregates again; reloading also restores an initially hidden state.

Expected observations equal committees multiplied by active rounds. Two three-person committees and six tournaments generate twelve committee-tournaments and thirty-six payoff records. They are not thirty-six independent committees. Adding a fourth person to the same twelve committee-tournaments generates forty-eight records, thirty-six of which belong to voters. If only one committee has finished one tournament, three or four payoff records are complete and the rest remain pending.

Statistics include only settled committee-tournaments. A member submitting an intermediate ballot while awaiting closure does not yet contribute a completed payoff. During play, use progress indicators rather than averages of provisional earnings. The report remains correct when oTree opens it from the tenth technical period but the activity has only one or six active periods: it explicitly traverses every active period. This prevents a short session's results from disappearing when the administrator opens the final technical view.

5.2 Distributions and payoffs

The outcome distribution counts committee-tournaments ending in A, B, or C. Its denominator is completed committee-tournaments; one final decision contributes one observation, not three ballots. The payoff histogram counts completed individual records at the session's actual payoff values. Central schedules use 0, 20, and 30 ECU, with labels adjusted to any configured scale. A zero-person bar is not missing information; blank payment in a pending export is.

The table-level chart shows distribution across different induced interests. Blue denotes table 1, purple table 2, orange table 3, and green the fourth person. Labels and sample sizes accompany every bar, so projection need not rely on color alone. Frequent implementation of A benefits tables 1 and 3 relative to table 2. The overall mean for three voters can remain identical despite these distributional changes.

When the fourth role is added, the global mean includes their earnings. Compare voters through the three relevant table bars, rather than through an aggregate whose composition has changed. A

payoff difference between the chosen agenda setter and the fourth person in the random control can illuminate agenda rights because their schedules and committee sizes match. These earnings are neither a salary nor a tax: both receive the value of the final outcome under the announced procedure.

5.3 Agendas and evolution

The agenda table separates the reserved alternative, tournament count, A/B/C outcomes, and calculated benchmarks. Each benchmark also shows how many outcomes match out of that agenda's total tournaments. A match is a fact about the final alternative, not a diagnosis of every individual's strategy. Different ballot profiles can produce the same result. This table is absent for proposals and amendments because a tournament benchmark does not fit their sequence.

The departure measure uses comparisons actually voted on by the three voting members. Each ballot is compared with the strictly higher immediate-payoff alternative; equal-payoff comparisons are excluded. Its numerator is differing ballots and its denominator is comparable ballots with a strict preference. Passed turns and the fourth person are excluded. Six central tournaments in one committee have thirty-six possible ballots: three people times two ballots times six tournaments. In amendments, the count depends on which comparisons were activated.

The time chart has integer rounds and a common payment scale. Its accompanying table adds complete tournaments, mean payment, and departure percentage by round. Missing observations must not become fabricated zero points. Interpret a rising or falling line together with realized agendas and functions. In the central condition, mean voter earnings are constant by construction; behavioral change is better visible in ballots and agenda-specific outcomes. Under single peaks, implementing B does change the attainable total.



Figure 5.1: Distribution of final alternatives.

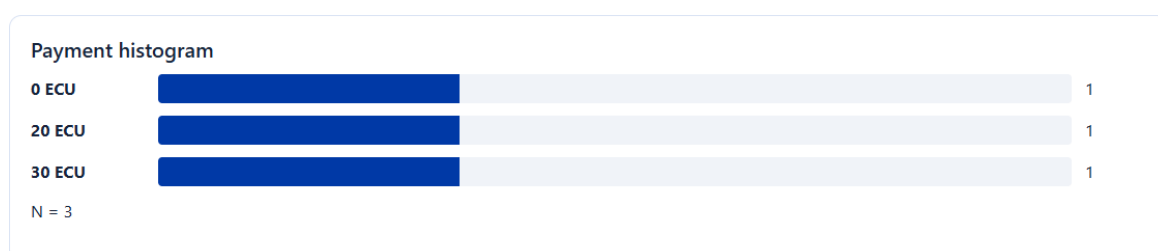


Figure 5.2: Individual payoff histogram.

5.4 Evidence and interpretation

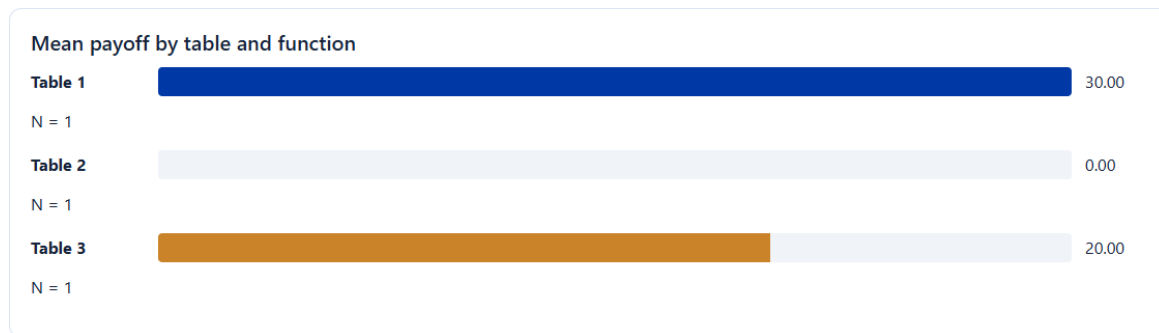


Figure 5.3: Payoffs by table and function with sample sizes.

Observed outcome and benchmarks by agenda

Reserved alternative	N	A	B	C	Sincere-voting benchmark	Sophisticated-voting benchmark
A	1	1	0	0	A · 1/1	C · 0/1

Benchmarks are calculated for two-ballot tournaments using the realized agenda and actual tables. Sophisticated voting assumes complete information and majority choice in continuations. These are not empirical findings or predictions for veto or amendments.

Figure 5.4: Observed agendas and calculated benchmarks.

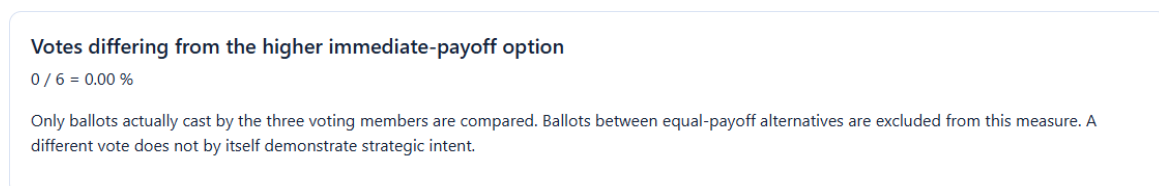


Figure 5.5: Departures from immediate preference with an explicit denominator.

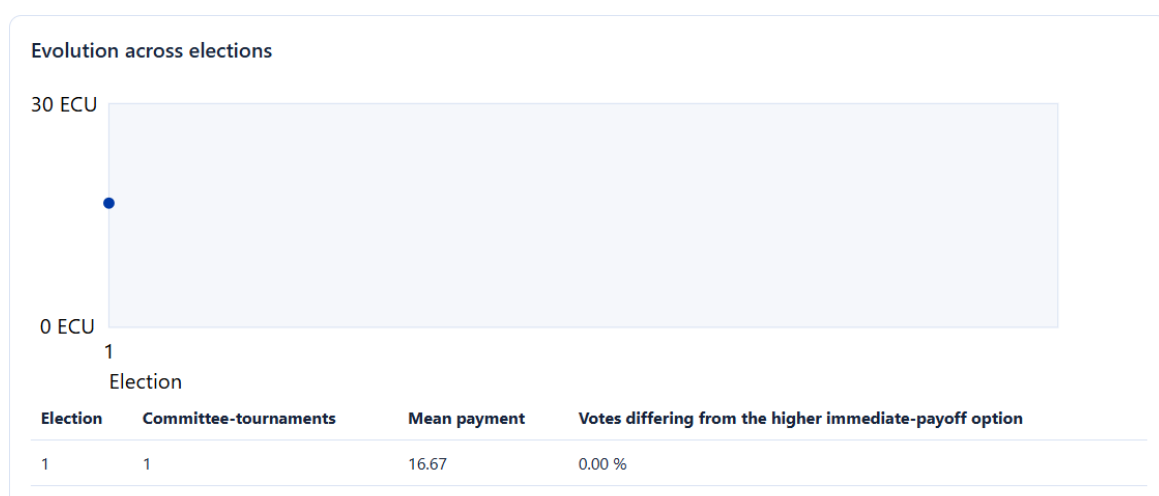


Figure 5.6: Tournament evolution and numerical table.

Sources and adaptations

Plott and Levine (1978) provide an agenda-influence model and an experimental reference for studying committee procedures. Levine and Plott (1977) discuss how narrowing and ordering alternatives can influence collective decisions. These sources motivate the institutional question. This application's three-person schedules, six balanced agendas, and fourth-role comparison are an original teaching adaptation. Our students' A/B/C frequencies are not attributed to those authors, nor is the activity promised to replicate their quantitative results.

McKelvey and Niemi (1978) develop a multistage representation of sophisticated voting for binary procedures. Their framework helps explain the difference between evaluating an immediate option and evaluating the continuation it produces. McKelvey (1976) supplies the broader framework of intransitivity and agenda control in multidimensional spaces. Black (1948) supports comparison with single-peaked restrictions. These are theoretical results, not evidence that particular students used backward induction.

Bouton, Llorente-Saguer, and Malherbe (2017) compare unanimous rules and majority with veto in an information-aggregation experiment. They find better veto performance within that environment and protocol. Our activity has neither private signals nor an unknown common state, so it does not adopt that ranking as its own prediction. The paper supports discussion of why institutional performance may change with information and interests. Explain these design differences when assigning it.

Observation and interpretation

An observation is an implemented alternative, ballot, or trajectory. Explaining it requires linking information, preferences, and expectations. If table 1 votes B against A when C is reserved, the ballot matches the sophisticated calculation. One choice alone cannot distinguish anticipation from concern for table 2, a mistake, or following someone else. First reconstruct each continuation's payoff; then ask which additional evidence would separate the interpretations.

Do not demand public explanations from individuals receiving low earnings. A losing table may have voted consistently with its interests yet lacked a favorable coalition. The activity illustrates institutional power and distributional conflict, not a contest for identifying intelligent students. Grades should not depend on earnings. Assess learning by asking students to explain a trajectory, distinguish majority from unanimity, or identify an assumption supporting a prediction.

Agenda selections and proposals are endogenous decisions. Comparing committees choosing different agendas is not equivalent to randomly assigning agendas. Repetition connects decisions by the same people, and rematching connects committees within a session. Distributions and transparent examples suffice for a classroom demonstration. Formal research requires assignment, sample size, and analysis recognizing dependence; the report does not automatically establish causality or statistical significance.

Class plan and exercises

6.1 Classroom sequence

A fifty-to-seventy-five-minute class can combine introduction, six tournaments, and debriefing. Allocate about five minutes to access and purpose, ten to instructions and comprehension, fifteen to twenty to decisions, fifteen to twenty to results, and five to ten to an individual written response. These are planning estimates; allow more reading time for inexperienced groups. Before starting, check links and the room, project only common instructions, and explain how to request help without talking to other participants.

At completion, leave students on their final screens and open the instructor report. Begin with progress and sample sizes. Reveal results and ask which alternative appears most. Reconstruct one specific tournament before displaying every comparison. Then present the three central tables, calculate the three pairwise majorities, and draw the cycle. Only then change order on the board and ask whether payoffs or preferences changed. Procedure can change the result even though the example's schedules remain fixed.

Next ask what happens when an opening winner subsequently faces a worse option for the person casting a ballot. Reserving C illustrates continuation A leading to C and continuation B leading to B. Compare that benchmark with observations without treating every divergence as an error. Finish with one alternative institution, such as veto or single peaks. One clear extension can teach more than several rushed comparisons, while the package retains all extensions for other courses.

Feedback script

“Every individual can coherently rank three options while the majority forms a cycle. Which two members support each comparison? What happens if we change only their order? Now consider the final ballot: how does it change the value of winning the opening one?”

6.2 Exercises: paths and payments

Exercise 1. Reserve B and assume sincere voting. Identify comparisons, coalitions, and payments.

Answer guidance: A first faces C, which wins with tables 2 and 3. C then faces B, which wins with tables 1 and 2. Payments are 20,30,0, totaling 50. Table 3 helped win the opening stage but ultimately receives zero. An opening coalition does not guarantee a final benefit.

Exercise 2. Reserve C and allow anticipation under full information. What does table 1 compare when casting its opening vote? **Answer guidance:** outcome C if A advances versus outcome B if B advances. B pays 20 and C pays zero. Supporting B can be an anticipatory best response even though A carries 30 in the schedule. The choice does not change A's intrinsic value; it changes

which final alternative the continuation implements.

Exercise 3. A tournament implements A, and a table-2 member voted A. Do they earn 30 for supporting the winner? **Answer guidance:** no; they earn A's value in their own schedule, which is zero. Supporting the winner or correctly predicting the outcome generates no additional ECU. This checks comprehension without telling anyone which ballot to choose.

Exercise 4. For six balanced tournaments with sincere voting, calculate each table's total and mean earnings. **Answer guidance:** each alternative wins twice, giving each table $2(30+20+0)=100$ ECU, or $100/6$ per tournament. Three distinct alternatives are implemented, but six collective decisions occur. Explain both counting units before dividing and distinguish the number of outcomes from the number of observations.

6.3 Exercises: rights and measures

Exercise 5. Table 1 proposes B and ballots are B,B,C. Compare majority, table-3 veto, and unanimity. **Answer guidance:** majority implements B, while veto and unanimity retain C. Change the profile to C,B,B: majority and veto now implement B, while unanimity retains C. The second profile distinguishes rules even though it is not the sincere profile induced by these schedules.

Exercise 6. Four people finish six tournaments. What are the winner and payment denominators? **Answer guidance:** six committee-tournaments and twenty-four individual records. Each table's mean uses six. The fourth person casts no ballots, so twenty-four should not be used as a ballot denominator. A numerator and denominator must refer to the same observational unit.

Exercise 7. An amendment tournament holds two comparisons and passes one turn, followed by a closing ballot. How many ballots occur? **Answer guidance:** nine: three members times three ballots. A passed turn is a proposal retaining the bill, not three abstentions. If closure already compares C with C, it too is omitted, leaving six. Use the recorded trajectory rather than the technical maximum of four comparisons.

Exercise 8. The fourth person earns more from A. What do they reserve under expected sincerity and under expected sophistication? **Answer guidance:** A under the first benchmark and B under the second. Knowing a schedule does not determine an agenda choice without expectations about others. Ask what additional pattern of ballots would help assess that explanation.

Exercise 9. A single-peaked report shows two differing ballots out of ten comparable ones; table 2 also cast two ballots between A and C. **Answer guidance:** the rate is $2/10$, or 20%. The two indifferent ballots are excluded from the denominator and are not labeled departures. Explain why counting every ballot without checking preferences would produce a different statistic.

Data and operation

7.1 Exporting and reconstructing rounds

Open Data within the selected session and download CSV or Excel CSV. The native file is wide: one row per participant with every round's fields in columns. Ten rounds do not create ten rows per person in this format. The project retains ten technical periods even for a one-tournament activity; use the declared active horizon to distinguish unplayed columns from missing decisions in active periods. The download link identifies the selected session and should not be confused with files from other sessions.

The custom export on the general Data page provides one row per participant and active tournament. That link includes this family's sessions in the database, so filter **session** before analyzing the intended session. Three people completing ten tournaments yield thirty long rows for that committee. Pending periods retain blank payments and a **completed** indicator showing they are unsettled. Do not recode blanks as zero earnings: zero can be a valid outcome and requires a final implemented alternative.

The minimum dictionary includes session, participant, round, committee, treatment, grouping, table type, A/B/C payments, reserved alternative, amendment order, agenda choice, proposal, four ballot fields, events, final outcome, tournament benchmarks, and earnings. A nonapplicable ballot can be blank in a completed committee. The fourth person has blank ballots by design. An amendment retaining the bill omits that stage's ballot. Read events to distinguish structural absence from a missing response.

The event field records stage, alternatives, votes ordered by table type, rule, and outcome. To reconstruct a tournament, select one group record per session, round, and committee; identical events appear in each member's row. Counting all three would triple the comparisons. Order stages and check majority, veto approval, or unanimity as appropriate. Then match the implemented alternative against every participant's schedule and earnings. This reconstruction identifies analysis errors without changing original data.

Comparisons and data

Record the intended contrast before play. For information, compare private central play with public schedules under the same horizon. For chosen agendas, use the four-person random control. For veto and unanimity, preserve proposal menu, status quo, and schedules. Single peaks change preferences and attainable totals; they are not another label for transparency. When several elements change together, describe an institutional package rather than attributing everything to one rule.

Keep an original export and an analysis copy. Collective outcomes use committee-tournament as

their unit; ballots use person and stage. Participant codes allow histories to be linked without identifying students publicly. Under rematching, committees change while types remain stable: do not join ten observations by committee number as if they always contained the same people. Use participant codes for individual trajectories and actual group membership for collective decisions.

Do not directly compare sessions with different ECU scales without normalization or an explicit explanation. The application accepts a common positive payoff scale with at most two decimal places, preserving preference rankings, but this does not establish behavioral invariance. Higher incentives may affect attention, perceived costs, or motivations. All worked examples use scale one. Record parameter changes together with horizon, information, grouping, and treatment order. Consistent labels help distinguish a substantive comparison from a clerical change in the data.

Attention

Worked examples and calculated benchmarks are protocol exercises. Screenshots document technical software tests; they are neither an empirical sample of students nor classroom pilot findings. Preserve that distinction when using figures in presentations or papers.

Waits and links

A long wait calls for checking whether every member submitted the required ballot and whether someone remains at comprehension. Ask students with errors to read their explanations; do not complete their votes from the teacher's computer. Check connection and the assigned link. Reopening the same participant link can resume the sequence while the session remains intact. Distributing another participant's link can instead create or enter a different participation.

A participant route from a deleted session may produce Not Found or a message that the user no longer exists. That does not necessarily mean the stable room URL is wrong. Open the appropriate room for a current session rather than reuse temporary rehearsal links. Do not reset the laboratory database to solve one link problem. Preserve registered decisions and involve the responsible technician when recovery requires changes beyond ordinary instructor operation.

If someone is absent before starting, select a valid number of complete electorates and create the correct session. If someone leaves afterward, document the incident: their electorate may remain pending. The application does not invent the missing vote or silently reduce group size from three to two. A classroom may discuss the incomplete group separately or use another prepared session, but exclusions must be explicit. Administrative handling of absence is not an institutional treatment.

Privacy and materials

The family requires an isolated instance with its own database. Its proposed hostname should point to that instance with administrative authentication and production protection. Local preparation checks logic and presentation; DNS, certificates, and a persistent service are deployment tasks for the laboratory. This guide's canonical URLs are product routes, not a claim that a newly prepared card is already available on the public website. Check deployment before scheduling a student session.

Project only anonymous aggregates. Participant codes link observations across elections in working files; they are not classroom labels for identifying students. Do not project individual start links or full exports. Keep the original download, an analysis copy, and debrief figures separate. If an analysis error is corrected, preserve the prior version and document the correction so that the comparison can be reconstructed from original records rather than rely on the latest spreadsheet

alone.

7.2 Bibliography

Begin with the finite example and worked paths in this guide. Use Plott and Levine for agenda questions, McKelvey and Niemi to formalize anticipation, Black for preference restrictions, and Bouton and coauthors to compare rules in another information environment. The papers do not replace this protocol: adaptations are explicitly stated in the variants chapter.

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