



Instructor Guide to Taxation, Services and the Social Contract

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 taxation, services and social contract family 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

This guide was prepared by Stanislaw Maldonado, research professor in the Department of Economics at Tecnológico de Monterrey, Monterrey Campus. For questions or suggestions about its content, please contact the author at stanislao.maldonado@tec.mx.

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.

Contents

How to use this guide	i
1 Prepare the class and arrange access	1
1.1 The question behind the activity	1
1.2 From the laboratory website to a session	2
1.3 Preparation and scheduling	3
2 Rules, resources, and accounts	6
2.1 What each role receives	6
2.2 Accounts that students can reconstruct	7
2.3 Renewed accounts, accumulation, and unpaid examples	7
3 Follow the participant sequence	9
3.1 Welcome, instructions, and comprehension	9
3.2 Choices and synchronization	11
3.3 Outcomes, voting, and final completion	14
4 Interpret incentives and reciprocity	17
4.1 Solve the last decision first	17
4.2 What binding provision changes	17
4.3 Repetition, trust, and social preferences	18
4.4 Efficiency and distribution are different questions	19
5 Compare the extended institutions	20
5.1 Reference and binding provision	20
5.2 Strong enforcement	20
5.3 Tax origin and an external transfer	21
5.4 Exact information and an imperfect signal	21
5.5 Government continuity and induced experience	22
6 Read the report and work with the data	24
6.1 Reveal outcomes and establish denominators	24
6.2 Trends and a worked reading of the report	26
6.3 Export formats and pending observations	26
6.4 A practical field dictionary	27
7 Lead discussion and solve exercises	28
7.1 A usable classroom sequence	28
7.2 Exercises with solution guidance	28
7.3 Frequent problems and a final operational check	30
7.4 Academic foundations and adaptation boundaries	30

List of Figures

1.1	The laboratory website provides the CLASSROOM route to teaching experiments.	2
1.2	The teaching directory helps locate related taxation activities.	3
1.3	Demo lists the basic modes and the first extended conditions.	4
1.4	The remaining entries belong to the same isolated family.	4
1.5	Four rooms distinguish language and edition.	5
1.6	The English basic-room form starts with a basic English configuration.	5
3.1	Participants accept the laboratory rules before starting.	9
3.2	Instructions distinguish personal accounts from the treasury.	10
3.3	The remaining rules explain spending, renewal, and matching.	10
3.4	Field-specific feedback explains an incorrect answer and preserves the others. . . .	11
3.5	At round opening, check the current role and renewed resources.	12
3.6	Citizens submit private simultaneous declarations.	12
3.7	Waiting synchronizes the relevant stage within the group.	13
3.8	Government allocates the treasury after collection has occurred.	13
3.9	The outcome separates treasury resources, services, rent, and the person's own account.	14
3.10	Citizens vote privately on continuation for the next block.	15
3.11	The result confirms continuation and the participant's next role.	15
3.12	An explicit completion screen reports the accumulated outcome.	16
5.1	The noisy condition reports a signal while withholding monetary balances.	22
5.2	Initial examples are explicitly excluded from the accumulated balance.	23
6.1	The initial report displays progress without revealing aggregate choices.	24
6.2	Revealed metrics distinguish compliance, revenue, services, rent, and accounts. . .	25
6.3	Distributions show group heterogeneity rather than only means.	25

Prepare the class and arrange access

Purpose	Explain the relation between voluntary tax declarations, government provision and fiscal reciprocity.
Experimental unit	Four people: government and three citizens; separate accounts and treasury.
Participants	Multiples of four; minimum four, eight for reassignment; demo eight.
Basic edition	One round; ten rounds with fixed group; ten with reassignment preserving roles.
Extended edition	Ten conditions per language, six rounds: reference, binding provision, strong audits, two revenue origins, two information rules, elections and two histories.
Decision	Citizens pay 25 or report zero; government allocates an integer budget; citizens vote when applicable.
Payoff	Citizen $100 - \text{tax} - \text{fine} + 0.6g$; government $50 + \text{budget} - g$; external-source net resources 75; initial history examples excluded.
Topics	tax compliance; public provision; reciprocity; political rents; tax enforcement; accountability
JEL	A22, C92, D73, H26, H41
Suggested duration	15–20 minutes introductory round; 30–45 minutes repeated block, planning estimates.

1.1 The question behind the activity

The starting point is a familiar relationship in public economics: citizens finance a budget and an authority decides how to use it. Audits can make reporting zero more costly without ensuring that collected money becomes public services. Conversely, receiving services can change both the monetary return to paying and a person's willingness to cooperate with that authority. This game separates those decisions so that students can explain how they interact.

The experimental unit is a group of four people: one government and three citizens. Government has a personal account and controls a separate treasury. Citizens simultaneously choose between paying the entire obligation and reporting zero. After independent audits, government observes the aggregate budget and chooses service spending. Every citizen receives the same service benefit; government retains the unspent budget. Fines leave the activity and never enter the government's personal account or treasury.

The learning objective is to explain choices, constraints, and incentives before attributing motives.

Students should be able to calculate collected taxes, distinguish collection from voluntary compliance, and compare provision, appropriation, and joint accounts. They should also recognize that responding to past services is compatible with reciprocity, learning, or future monetary incentives without establishing which mechanism caused the response.

This family complements Tax Compliance and Audits. In that individual activity fiscal returns are fixed by a rule; here another person chooses provision after collection. It also complements fiscal-capacity games: participants do not build a future collection technology. They decide how to finance and allocate resources that are currently available. Explain these differences so that students see a new strategic relationship rather than a change in institutional labels.

For the instructor

For a first class, use one round to establish the accounts and then a repeated condition to discuss responses to experience. Compare one institution at a time. A short session can teach the full mechanism without running every configuration in the catalog.

1.2 From the laboratory website to a session

Start at <https://beer-lab.org/en/> and select CLASSROOM in the upper navigation menu. The catalog at <https://teaching.beer-lab.org/en/> supports searches by title, topic, and JEL code. Once this new family is incorporated into the directory, its card distinguishes Spanish and English access and provides a control for the extended edition. Catalog language and session language are separate choices. Check both before distributing a room link.

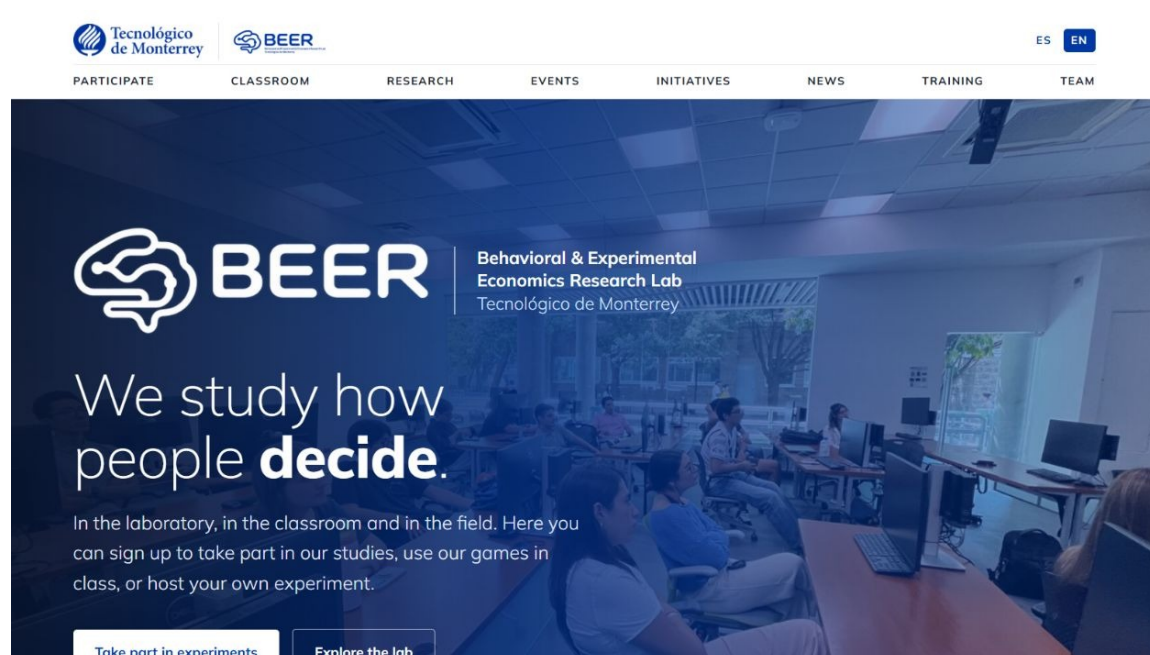


Figure 1.1: The laboratory website provides the CLASSROOM route to teaching experiments.

The canonical family address is <https://taxcontract.beer-lab.org/>. English participants use https://taxcontract.beer-lab.org/room/tax_contract_en for the basic edition or https://taxcontract.beer-lab.org/room/tax_contract_extended for the extended edition. Instructors prepare sessions through <https://taxcontract.beer-lab.org/demo>. The operational table also lists the Spanish rooms. These addresses identify the product; checking the local delivery is distinct from publishing its new public domain.

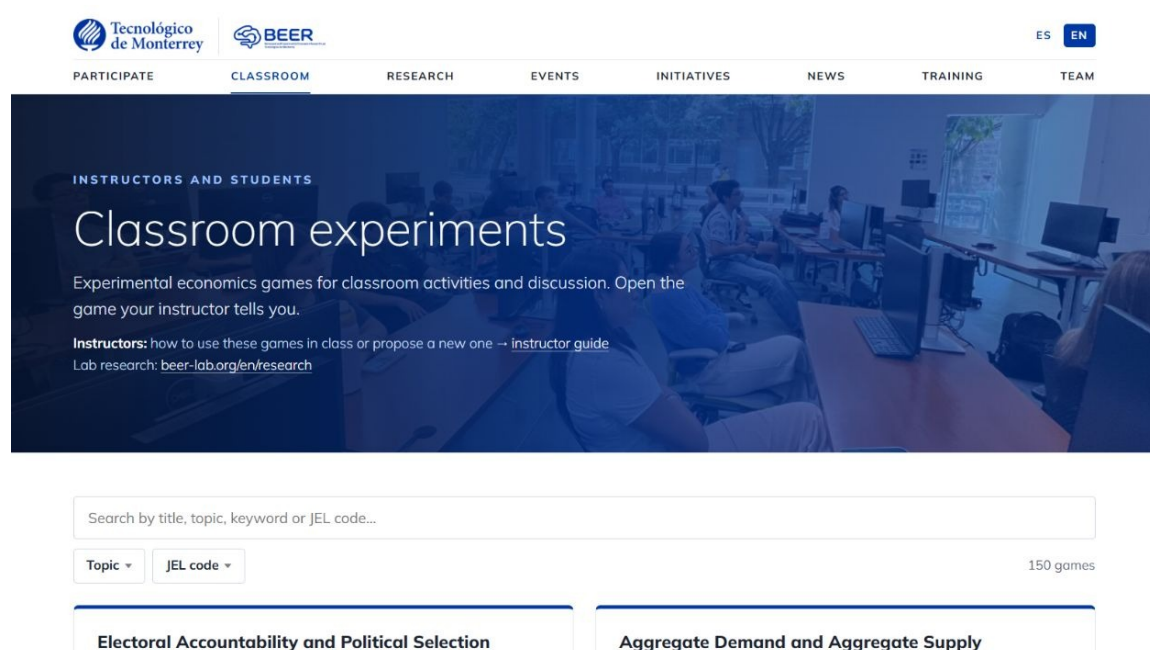


Figure 1.2: The teaching directory helps locate related taxation activities.

Demo should contain only this family’s twenty-six configurations. Rooms should contain four rooms: basic and extended in each language. The English basic room offers one round, ten rounds with a fixed group, and ten rounds with reassignment. The extended room offers ten six-round conditions. If another game appears or a basic room initially selects an extended treatment, stop preparation and ask the laboratory to check the configuration.

Use a multiple of four participants. A fixed-group session can run with four; reassignment requires at least eight so that two groups exist. Twelve or twenty participants form three or five complete groups. Do not add an isolated person merely to complete a class list: some interaction would lack a required role. Nonparticipants can join the later discussion without advising private choices or impersonating an absent participant.

Create the session before sharing access. Room links support organized entry; individual links belong to particular participants within that session and must remain private. The report link is for the instructor. Do not project the list of individual links or a screen that connects a participant code with a seat. Classroom discussion needs only the aggregate report after the instructor deliberately reveals it.

1.3 Preparation and scheduling

Allow approximately fifteen to twenty minutes for an introductory round, including reading, comprehension, and discussion. A repeated block will often require thirty to forty-five minutes, depending on students’ familiarity. These are planning estimates rather than measured completion times. Leave room for private questions and for explaining the distinction between the government’s own account and the treasury, a common source of initial confusion.

Before class, run a trial session, check that all four roles advance, and inspect the empty report. Confirm connectivity and decide which comparison will structure the discussion. Write down the denominators you will need: citizens with voluntary declaration choices, settled group-rounds, and positive treasury budgets. Preparing these definitions prevents a striking average from displacing the economic question that motivated the exercise.

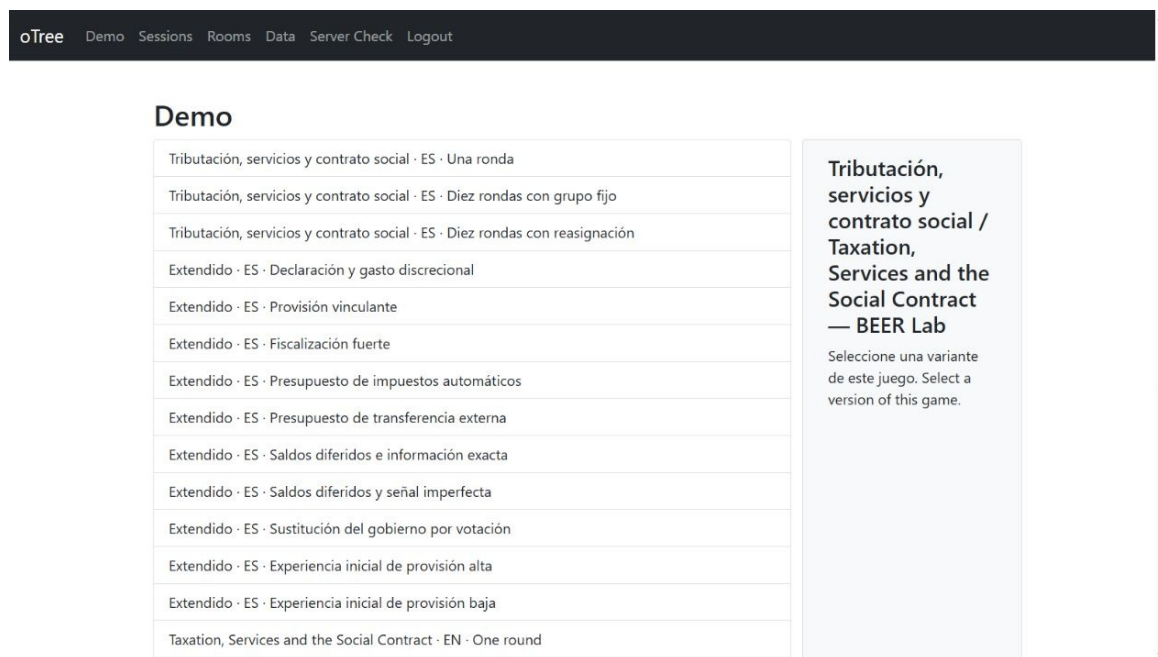


Figure 1.3: Demo lists the basic modes and the first extended conditions.

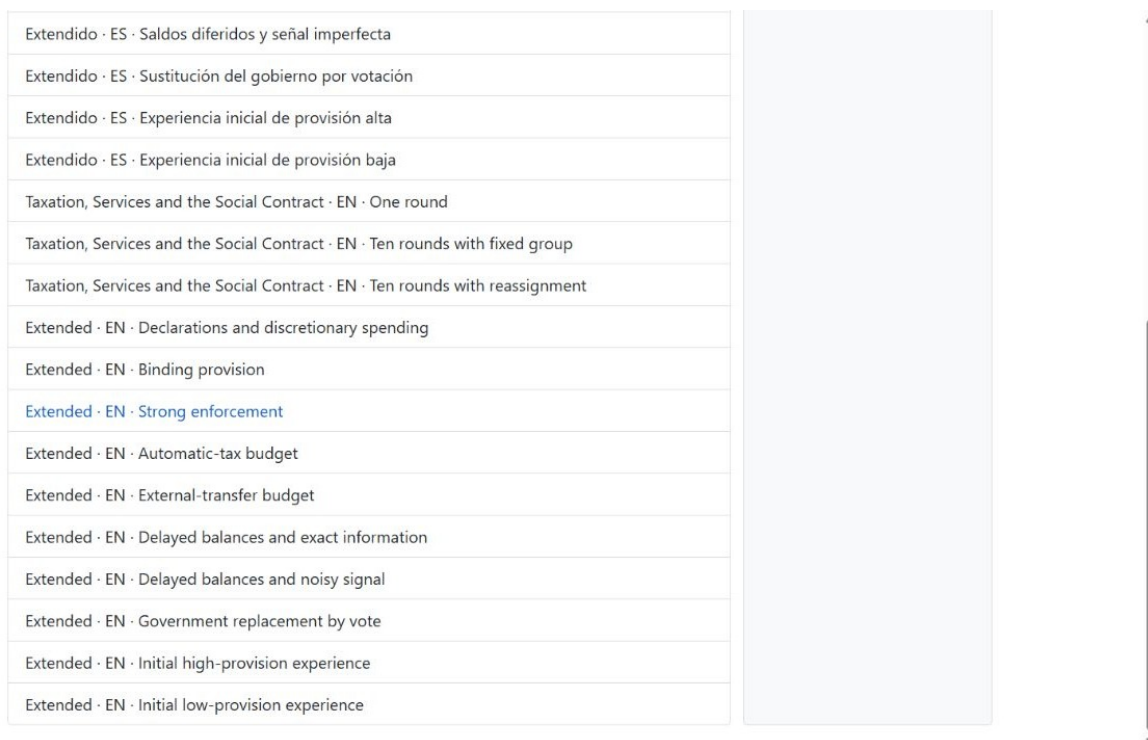
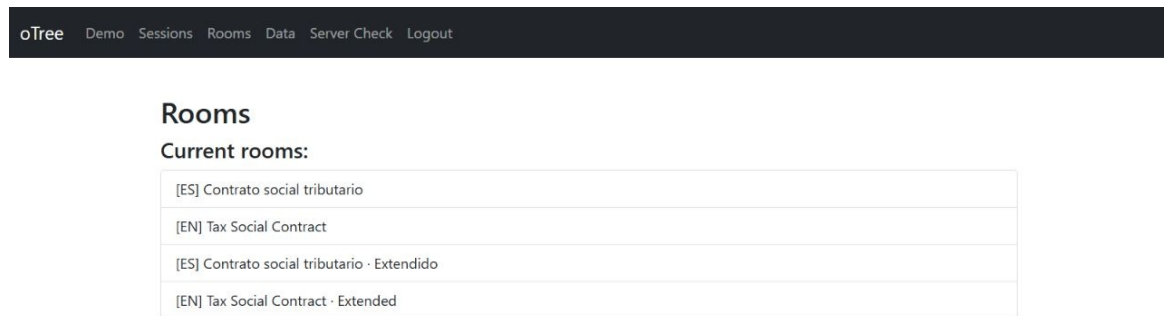


Figure 1.4: The remaining entries belong to the same isolated family.



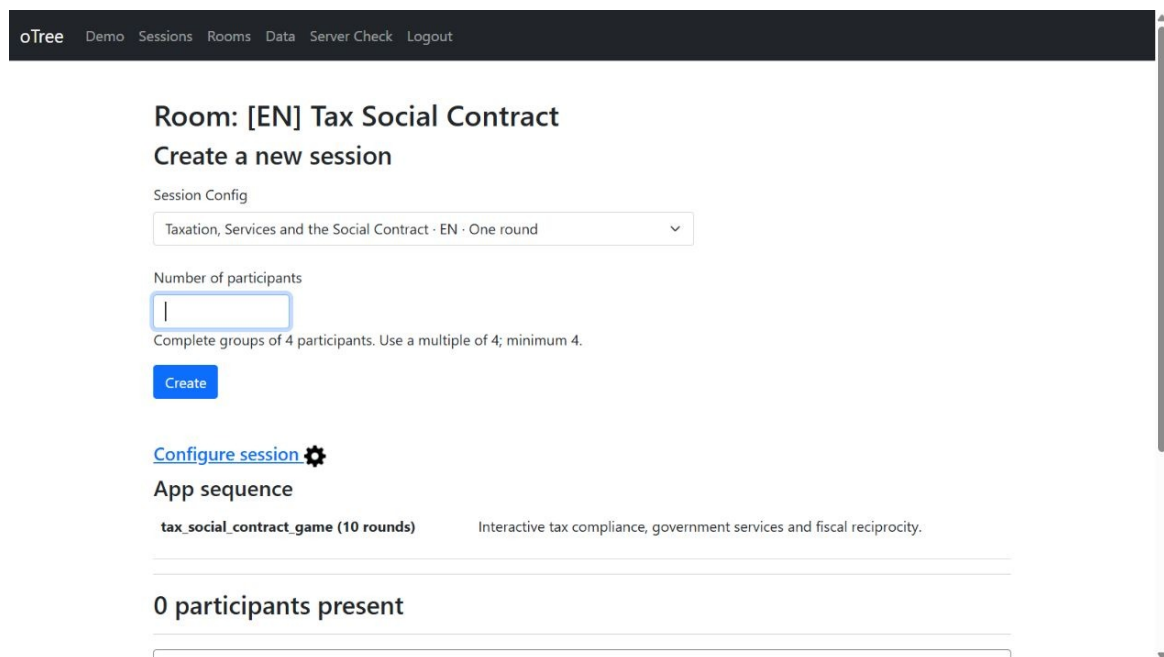
oTree Demo Sessions Rooms Data Server Check Logout

Rooms

Current rooms:

[ES] Contrato social tributario
[EN] Tax Social Contract
[ES] Contrato social tributario · Extendido
[EN] Tax Social Contract · Extended

Figure 1.5: Four rooms distinguish language and edition.



oTree Demo Sessions Rooms Data Server Check Logout

Room: [EN] Tax Social Contract

Create a new session

Session Config

Taxation, Services and the Social Contract · EN · One round

Number of participants

1

Complete groups of 4 participants. Use a multiple of 4; minimum 4.

Create

[Configure session](#) ⚙️

App sequence

tax_social_contract_game (10 rounds) Interactive tax compliance, government services and fiscal reciprocity.

0 participants present

Figure 1.6: The English basic-room form starts with a basic English configuration.

Rules, resources, and accounts

2.1 What each role receives

ECU means Experimental Currency Units. The activity uses these units to compute outcomes and announces no real-money conversion. Each citizen starts an ordinary round with 100 ECU; government receives 50 ECU of its own. The treasury initially has no revenue and is funded by taxes actually collected. The four starting private accounts therefore sum to 350 ECU. Government's spending authority depends on the treasury, not on its personal account of 50.

The obligation is 25 ECU per citizen. Paying transfers 25 to the treasury. Reporting zero avoids that initial payment but creates exposure to an independent audit with probability 20%. Detected evasion causes two separate deductions: a tax payment of 25 enters the treasury, and a fine of 25 leaves the economy of the activity. A citizen who already paid faces no additional charge if audited.

Audits are drawn independently for every citizen and round. There is no group detection quota: zero, one, two, or three evasions may be detected. A probability of twenty percent does not require exactly one audit in every five rounds for each person. Nor does an audit without a fine imply that somebody else reported zero. The private data retain declarations, audits, taxes, and fines as separate events.

Once collection is complete, government sees the aggregate budget rather than a list of individual declarations, audits, or fines. It chooses integer spending between zero and the available budget. The program rejects negative, fractional, or over-budget spending. Government cannot use its own account to raise the limit. Any amount not spent on services is added to its personal account.

Each ECU of spending produces 0.6 ECU for each of the three citizens. Their combined return is 1.8 per unit, although each individual receives only 0.6. Government receives no additional service benefit. This distinction between individual and social returns creates a distributive conflict: spending one unit reduces government rent by one and raises citizens' total benefit by 1.8. The classroom technology is not an assumption about the productivity of every real public program.

What participants will see

The resource screen states the effective accounts for the selected condition. Citizens see income, obligation, audit probability, and fine. Government sees the available treasury when choosing spending. Nobody should have to infer available resources from a decorative number in the page header.

2.2 Accounts that students can reconstruct

Let R denote collected tax revenue, F total fines, and g service spending. In the ordinary game the budget equals R . For an individual citizen, t is tax actually paid and f is the fine. The accounting identities are:

$$\begin{aligned}\pi_C &= 100 - t - f + 0.6g, \\ \pi_G &= 50 + R - g, \\ \sum \pi &= 350 + 0.8g - F.\end{aligned}$$

The first identity follows one person's account. The second distinguishes the treasury from government rent. The third checks the group's total. Taxes cancel from the final expression because they are internal transfers: the same amount leaves the citizen and enters the treasury. Fines remain negative because nobody in the group receives them. Spending creates a net surplus of 0.8 per unit by adding 1.8 to citizens while removing one unit from the retainable budget.

If all three citizens pay, the treasury receives 75. Spending 75 produces a service benefit of 45 per citizen, giving each a closing account of 100 minus 25 plus 45, or 120. Government closes with 50. The total is 410, matching 350 plus 0.8 times 75. This calculation shows why paying a tax need not reduce the payer's net resources when services deliver a sufficiently valuable return.

With the same three payments and zero spending, citizens each close with 75 and government with 125. The total is 350. The difference of sixty from the previous case is neither a fine nor an administrative cost: it is the additional surplus that services could have produced. Government gains 75 by withholding spending while citizens collectively lose 135. The difference between those figures is exactly sixty.

If everyone reports zero and nobody is audited, the treasury remains empty. Spending must be zero; citizens each retain 100 and government retains 50. This observation combines evasion, no detection, and no available budget. It does not show that government chose to appropriate a positive treasury. The report excludes that round from the spending-to-budget ratio because dividing by a zero budget would have no meaningful interpretation.

Now suppose one citizen reports zero and is detected while the other two pay. The treasury again receives 75, but the group also pays a fine of 25 to an external sink. If government spends 35, every citizen receives 21 in services. The detected citizen closes with 71, the other two with 96 each, and government with 90. Their total is 353: the starting 350, plus 28 in net service surplus, minus 25 in fines. Equal revenue can therefore accompany different conduct and different social costs.

Checkpoint

Check one complete row before discussing means: budget equals collected taxes plus external revenue; rent equals budget minus spending; each service benefit equals 0.6 times spending; joint accounts reconcile after external fines. Resolve an accounting discrepancy before interpreting preferences.

2.3 Renewed accounts, accumulation, and unpaid examples

Starting accounts renew every round. The final outcome adds closing accounts from paid rounds; an earlier loss does not reduce the resources available for the next decision. Citizens cannot exhaust their future choice budget by having been fined earlier. Renewal does not erase memories,

expectations, or responses to past behavior. Those are among the phenomena that repeated interaction makes available for classroom discussion.

The history conditions begin with two example rounds. Collection is automatic and provision follows an announced high or low rule. Participants experience the resulting accounts, but these examples are excluded from the final balance. From round three everybody receives the same renewed resources and faces the same discretionary institution. The separation allows an induced-history comparison without mechanically carrying forward different monetary wealth.

The report includes examples in the round table while excluding them from paid-block averages. The round export preserves the illustrative closing account, its example flag, and a native payoff of zero. Keep these three objects distinct when working with data: observing an account of 120 does not mean that 120 was added to the final outcome. The final screen explicitly distinguishes illustrative outcomes from amounts that enter the accumulated balance.

Follow the participant sequence

3.1 Welcome, instructions, and comprehension

The opening screen displays the BEER Lab logo, institutional introduction, and laboratory rules. Participants must remain silent, avoid communication outside the activity's options, choose individually and privately, follow instructions, and keep the page open. Problems should be reported privately by raising a hand or contacting staff. These rules preserve role-specific information and prevent an informal agreement from replacing the implemented mechanism.

Round 1 / 1 · Your role this round: Government

Taxation and service provision

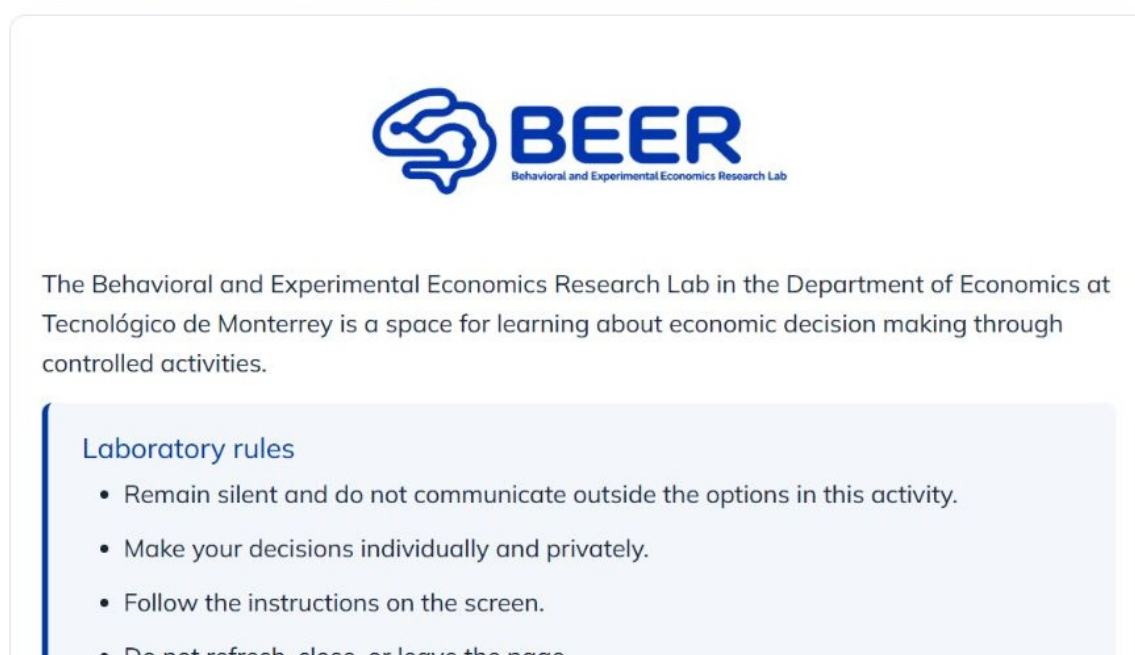


Figure 3.1: Participants accept the laboratory rules before starting.

Each participant then answers three comprehension questions. The first computes a hypothetical account: 100 minus 25 plus 15 equals 90. The second adds three tax payments to obtain 75. The third asks whether a fine increases government's budget; the correct answer is no. These checks establish accounting rules rather than advise compliance, evasion, or service provision. Their numerical answers adjust to effective parameters.

An incorrect answer produces an explanation next to the relevant question and retains the other

Round 1 / 6 · Your role this round: Citizen

Activity rules

Resources and unit of account

Each round, the three citizens receive 100 ECU each and the government receives 50 ECU of its own. The treasury is a separate account funded by collected taxes.

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

This session does not convert ECU into real money.

1. The three citizens simultaneously choose to pay 25 ECU or declare zero. They do not see each other's choices. The government does not observe individual declarations.
2. Each declaration faces an independent audit with probability 20%. If it reported zero and is audited, 25 ECU enters the treasury and a 25 ECU fine leaves the activity. If the tax was paid, nothing additional is collected.
3. After collection, each ECU spent on services produces 0.6 ECU for each citizen. The government receives its own account plus any budget it does not spend on services.
4. The government observes the aggregate budget and chooses integer spending from zero

Figure 3.2: Instructions distinguish personal accounts from the treasury.

paid, nothing additional is collected.

3. After collection, each ECU spent on services produces 0.6 ECU for each citizen. The government receives its own account plus any budget it does not spend on services.
4. The government observes the aggregate budget and chooses integer spending from zero to that budget. The remainder is added to its own account.
5. Starting accounts renew every round. Outcomes from paid rounds are added to the final balance. The final round is known from the start.
6. The group stays together. Roles remain fixed except for changes explicitly determined by a vote.
7. Round monetary balances and the accumulated balance are shown only after the final round. Before then, your monetary outcome is not reported.
8. Citizens receive a high or low signal. If spending is at least half the budget, the signal is high with probability 80%; if lower, it is high with probability 20%. The signal does not change payoffs. A zero budget generates no signal. Exact spending is revealed at the end of the activity.

Continue

Powered by gTree

Figure 3.3: The remaining rules explain spending, renewal, and matching.

submitted answers. Correcting a comprehension mistake does not reduce ECU. Instructors can ask someone to reread the calculation without recommending a later strategy. If several people share the same misunderstanding, clarify the rule publicly without revealing individual answers. A comprehension error is not evidence of a moral attitude.

Round 1 / 1 - Your role this round: Government

Check the rules

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.

Hypothetical example: you start with 100 ECU, pay 25 and receive 15 from services. What is your balance?

Your answer: 80. The correct answer is 90. The calculation is $100 - 25 + 15 = 90$ ECU. The benefit is added after tax.

If all three citizens pay 25 ECU each, how many tax ECU enter the treasury?

Figure 3.4: Field-specific feedback explains an incorrect answer and preserves the others.

After the questions, participants wait until all four roles are ready. Waiting does not disclose who took longer or why. The following screen identifies the current role and resources. Elections may change that role between blocks; other conditions keep it fixed. A person moving from government to citizen uses the resources and choices attached to the new role beginning in the next round.

3.2 Choices and synchronization

The three citizens submit declarations without observing one another. Government has no personal tax declaration and waits during this stage. The button commits a choice; it does not send a promise that can be revised after seeing others. Wait pages preserve submitted decisions and advance only when the current group has completed the necessary stage.

Once declarations have arrived, audits occur and the treasury is calculated. Government observes the total and chooses spending. Its form accepts only an admissible integer. Zero spending can be a choice with positive resources, or it can be the only feasible outcome with an empty treasury. The same displayed number expresses different constraints, so distinguish these cases when explaining the report.

Binding provision has no government spending form: the whole budget is allocated automatically. The first history rounds also apply an announced automatic rule, which can prescribe full or zero spending. An absent form is neither an unsubmitted choice nor noncompliance. That decision stage does not apply to the institution. The export retains the applied spending outcome while leaving inapplicable personal choices blank.

Groups advance through their own wait pages rather than waiting for the entire class to finish a round. This reduces idle time but naturally produces partial reports. One group can have a

Round 1 / 1 · Your role this round: Citizen

Resources and role

Each round, the three citizens receive 100 ECU each and the government receives 50 ECU of its own. The treasury is a separate account funded by collected taxes.

Your role this round: **Citizen**

Continue

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

Powered by [oTree](#)

Figure 3.5: At round opening, check the current role and renewed resources.

Round 1 / 6 · Your role this round: Citizen

Your declaration

100 ECU · Tax obligation: 25 ECU

20% · Fine if a zero declaration is detected: 25 ECU

Choose your declaration

Continue

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

Powered by [oTree](#)

Figure 3.6: Citizens submit private simultaneous declarations.

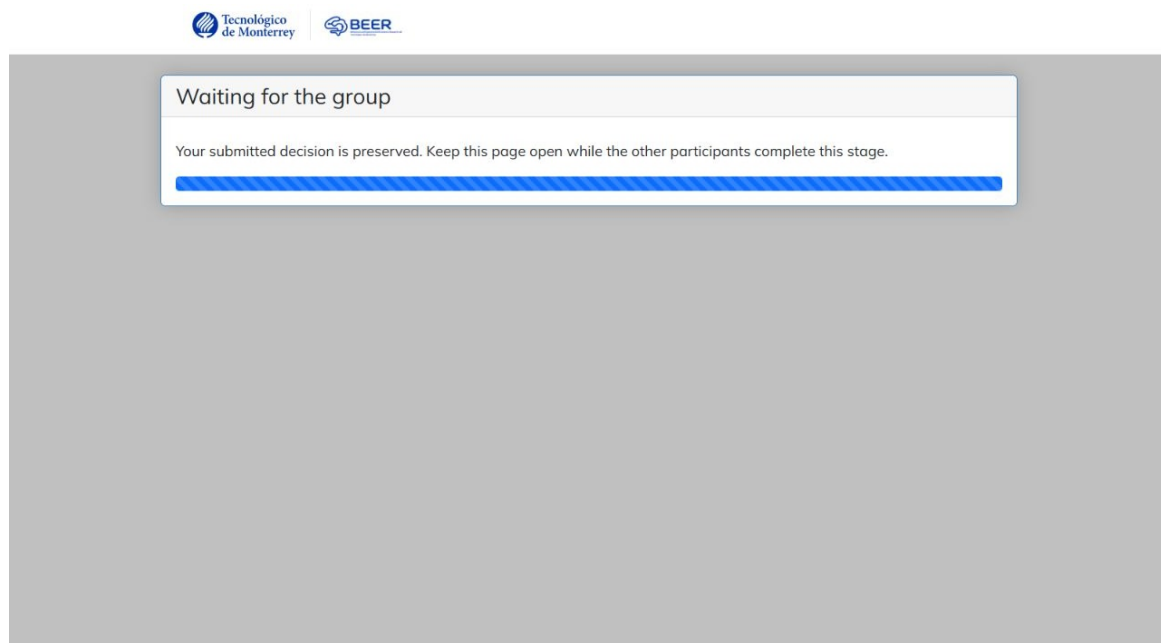


Figure 3.7: Waiting synchronizes the relevant stage within the group.

Round 2 / 6 · Your role this round: Government

Budget allocation

Treasury budget: **75 ECU**

Government: 50 ECU

Benefit per citizen: $0.60 \times \text{Service spending}$

Service spending (integer ECU)

Continue

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

Figure 3.8: Government allocates the treasury after collection has occurred.

settled round while another is still declaring. Aggregates use only settled groups and show the remaining planned observations as pending. Never treat someone who has not decided as a person who chose zero.

3.3 Outcomes, voting, and final completion

In the ordinary condition each person sees the treasury, service spending, rent, and per-citizen benefit together with their own account. Nobody sees the other citizens' individual taxes or fines. Government knows what it retained because it chose spending, but it receives no identified list of evaders. This information supports discussion of provision and experience without revealing other people's private conduct.

Round 1 / 1 - Your role this round: Citizen

Round outcome

Tax revenue	75 ECU
External revenue	0 ECU
Treasury budget	75 ECU
Service spending	35 ECU
Budget retained by government	40 ECU
Benefit per citizen	21 ECU
Your tax payment	25 ECU
Your fine	0 ECU
Your closing account	96 ECU
Continue	

Figure 3.9: The outcome separates treasury resources, services, rent, and the person's own account.

In the delayed-information pair, citizens receive the specified spending information while monetary outcomes are withheld until final completion. The clear control reports exact spending; the noisy condition reports a high or low signal. No interim accumulated balance provides an alternative route to reconstruct the hidden service benefit. Government knows its own spending choice and therefore does not share citizens' informational uncertainty.

Voting occurs after rounds two and four. The three current citizens vote to retain or replace government; two replacement votes are sufficient. If replacement wins, one current citizen is drawn uniformly to become government, and the previous government becomes a citizen. All four people remain active in the same group. Settled accounts are unchanged. The election-result page tells each person which role they will hold next.

The last round is known in advance. After its outcome, an explicit final screen displays the accumulated balance and a round-by-round ledger. Delayed conditions reveal exact spending and monetary accounts here, when no further choice can use that information. History conditions

Round 2 / 6 · Your role this round: Citizen

Continuation for the next block

Your vote is private. It does not change outcomes already obtained. If the government is replaced, its replacement is drawn from the three current citizens.

Your vote for the next block

Continue

Powered by [oTree](#)

Figure 3.10: Citizens vote privately on continuation for the next block.

Round 2 / 6 · Your role this round: Citizen

Voting outcome

The government is replaced for the next block.

Your role next round: **Citizen**

Continue

Powered by [oTree](#)

Figure 3.11: The result confirms continuation and the participant's next role.

separate illustrative accounts from amounts actually accumulated. Participants should keep the page open and wait for the instructor's directions.

Round 1 / 1 - Your role this round: Citizen

Activity completed

Your final accumulated outcome: 96 ECU

The activity has ended. Keep this page open and wait for the instructor's directions.

Round outcomes revealed at the end

Round	Your role this round	Service spending	Your closing account	Amount added to balance
1	Citizen	35	96	96

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

Powered by [oTree](#)

Figure 3.12: An explicit completion screen reports the accumulated outcome.

If somebody closes a tab, use the current individual link to recover their state. If the link belongs to an earlier database, do not invent a participant or erase the database to make it work. Create a new session and distribute its current links. During an active session, consult the laboratory before restarting anything that could interrupt decisions. Technical continuity is also part of executing a credible institutional comparison.

Interpret incentives and reciprocity

4.1 Solve the last decision first

A benchmark prediction requires explicit assumptions. Consider people who maximize only their monetary outcome, know the rules, are neutral toward risk, and anticipate that others reason similarly. In an isolated round, government compares spending an additional ECU with retaining it. Spending reduces its own account by one and provides it with no direct service return. Its best response is zero spending whenever the treasury is positive. An empty treasury leaves no effective allocation choice.

This later decision matters for the earlier declaration. If citizens anticipate zero spending, paying costs 25 with certainty. Reporting zero costs 50 only if audited: 25 in tax and 25 in fines. With an audit probability of twenty percent, that expected cost is ten. The expected monetary advantage of evasion is fifteen, so reporting zero is the benchmark choice under these assumptions. This is an analytical prediction, not advice about conduct or a description of every participant.

The benchmark does not predict that revenue must always equal zero. Audits can detect some evasions even when all citizens report zero. Each citizen then pays five ECU in expected collected tax and five in expected fines. Group tax revenue averages fifteen and external fines average fifteen. Government's expected account is sixty-five; each citizen's expected account is ninety. The expected joint account is 335. Equating complete evasion with no public revenue would remove the enforcement mechanism from the analysis.

Risk neutrality matters because paying replaces an uncertain loss with a certain one. A risk-averse person might prefer paying even when evasion has a lower expected monetary cost. Someone might also misunderstand the probability or overweight a recent detection. Students can identify these possibilities without claiming to have measured them. Distinguishing them would require additional risk choices, belief measurements, or designs that this activity does not add by default.

Theoretical foundation

For the monetary benchmark, solve government spending before citizen declarations. Higher observed revenue does not prove higher voluntary compliance: it can come from detected evasion. Keep citizens' choices, audit realizations, and government's allocation choices analytically separate.

4.2 What binding provision changes

When the whole treasury is automatically spent, a citizen considers the service generated by their own tax. Paying 25 reduces private income by 25 but creates a private service benefit of fifteen.

Its net marginal cost is ten, holding others' taxes constant. Detected evasion costs thirty-five net: the citizen loses fifty in tax and fines but receives fifteen in services generated by the collected tax. At a twenty-percent audit probability, that expected cost is seven.

Consequently, even with guaranteed full provision, paying costs three ECU more in expectation than reporting zero for a selfish risk-neutral citizen. Binding provision reduces evasion's expected advantage from fifteen to three without eliminating it. The point is useful in class: receiving something for taxes can increase willingness to comply without making compliance the unique monetary best response. Do not automatically attribute an observed increase to a new moral obligation.

Let p denote audit probability, T the tax, M the fine, and b the citizen's return per unit of binding spending. The expected advantage of paying rather than evading is:

$$\Delta = -T(1 - b) + p\{T(1 - b) + M\}.$$

A positive Delta favors paying in expected monetary terms; a negative Delta favors evasion; zero gives indifference in that calculation. The formula holds others' choices fixed and assumes that every collected tax unit becomes services. It cannot be applied to discretionary spending by simply assuming that government returns everything. With T and M equal to twenty-five, b equal to 0.6, and p equal to 0.2, Delta equals minus three.

Strong enforcement raises audit probability to eighty percent while retaining discretionary spending. Expected evasion costs forty rather than the certain twenty-five payment. Paying now has an expected advantage of fifteen. The benchmark predicts compliance even if government continues to retain the entire treasury. High collection and low service provision can therefore coexist under an institution that makes noncompliance sufficiently costly.

4.3 Repetition, trust, and social preferences

Ten fixed-group rounds allow students to observe responses to shared experience. A citizen may pay after generous provision and stop after low provision. Government may spend to encourage future payments. These patterns can reflect reciprocity, reputation, or intertemporal calculation. Repetition makes those hypotheses discussable, but a correlation between previous spending and the next declaration does not establish which mechanism operated.

The last round is announced in advance. Under complete information, exclusively monetary preferences, and common reasoning, its final government choice is again to retain the treasury. Applying this logic backward means that finite repetition alone does not create a credible obligation to cooperate. This guide does not present sustained cooperation as the unique selfish equilibrium. Uncertainty about preferences, norms, or errors may change predictions, but those are additional assumptions that must be stated.

Reciprocity means responding to the perceived conduct or intentions of another person. It is distinct from the financial return to services, which directly enters the account. Citizens might value a generous government's behavior and therefore pay more; they might also pay because they expect sufficiently valuable services. A careful comparison asks which explanation remains possible after acknowledging the material incentive.

Trust usually refers to an expectation about another person's discretionary behavior. The program observes declarations, spending, and outcomes; it does not directly ask which probability each citizen assigned to generous provision. It therefore produces no direct trust measure. An isolated choice also does not identify civic culture, which concerns more persistent patterns of shared obligations and expectations. Use these concepts to organize discussion rather than automatically

label participants.

Attention

Do not turn a choice into a personal diagnosis. Reporting zero does not identify a dishonest person outside the activity; spending everything does not establish stable altruism. Choices depend on rules, information, expectations, risk, and history. Discuss aggregate patterns and alternative explanations.

4.4 Efficiency and distribution are different questions

The group can gain from service spending even when the official controlling it would lose personally. This divergence does not depend on citizens misunderstanding multiplication. A government that retains the treasury may understand exactly that services raise the joint account. Its incentives assign the cost to its own account and the benefits to other people. Ask students to identify who gains and who pays before proposing that better information alone would solve the conflict.

Full compliance and full provision maximize the joint account under the reference resources and no audit fines. That statement compares feasible outcomes; it does not establish an equilibrium or an individually attractive move for every role. A citizen who pays when others evade may finance benefits received by nonpayers. A government that spends everything gives up resources that it was allowed to retain. Efficiency must therefore be distinguished from both private incentives and a judgment about legitimate authority.

Fines are another important distinction. They can deter evasion and thereby change choices, while realized fines reduce the group's accounts because the recipient lies outside the activity. The game does not model the social value of financing courts, audit administration, or other external recipients. Accordingly, the joint-account metric is a defined classroom welfare measure, not a complete social-welfare calculation for a national tax system.

Compare the extended institutions

5.1 Reference and binding provision

The ten extended conditions all use six rounds with fixed groups. The extended reference reproduces voluntary declarations, twenty-percent audits, and discretionary spending. Its purpose is to supply a block of comparable duration. It is not an additional economic mechanism beyond the basic game, even though a separate configuration makes classroom assignment easier.

Binding provision automatically allocates the entire treasury to services. Government remains present and receives its own fifty ECU, but it cannot appropriate the treasury. Citizens still choose declarations. Compare compliance, fines, revenue, and citizen accounts with the reference. The change combines a provision guarantee with a different marginal financial return to paying. It does not identify a pure trust effect while leaving every reward unchanged.

Spending under a binding rule is an institutional consequence rather than a sample of the official's generosity. A histogram concentrated at one hundred percent may reflect an imposed allocation. The program retains the applied outcome even without a spending form. To study discretion, use conditions in which government actually could choose and keep this difference visible throughout the feedback.

5.2 Strong enforcement

This condition changes only audit probability, from twenty to eighty percent. The obligation, fine, endowments, and government's discretion remain the same. The material benchmark changes from evasion to payment. Inspect voluntary declarations first, then revenue and fines. Fewer fines can accompany stronger enforcement if deterrence reduces evasion sufficiently.

Revenue alone is an incomplete deterrence measure because it combines voluntary payments with detected-tax collection. Two groups can raise identical revenue while paying different external fines. Successful deterrence in the compliance sense can generate less fine revenue than weak enforcement. The activity also omits the administrative cost of audits, so it cannot calculate the optimal real-world enforcement budget.

Ask students to separate three questions: which option offers the higher expected monetary account, which was chosen, and how much was collected after the audit draw. When conduct differs from the benchmark, review comprehension and risk before invoking nonmonetary motives. The comparison is well defined; explaining its outcome still requires careful interpretation.

5.3 Tax origin and an external transfer

The revenue-origin pair fixes the treasury at seventy-five in both conditions. Under tax origin, each citizen receives one hundred and automatically pays twenty-five, leaving seventy-five before services. Under external revenue, each begins directly with seventy-five and the treasury receives seventy-five from outside. Government has the same personal account and chooses spending under the same rule. Net citizen resources and public budgets are therefore comparable.

There is no voluntary declaration, audit, or fine in this pair. Compliance must appear missing rather than as zero or one hundred. The contrast asks whether the visible source of an otherwise equivalent budget affects government provision. It cannot estimate an evasion response when evasion was never available. Gross-versus-net framing remains part of the institution and should be explained.

This adaptation connects with the literature on taxation and demand for accountability but does not reproduce its protocol. There is no earned-income task, ownership obtained through work, or costly citizen punishment. Discuss those dimensions as boundaries and possible research extensions. Accounting equivalence avoids confounding source with available budget size; it does not make every subjective experience identical.

The source comparison should also be kept separate from the voluntary-tax reference. In the reference, revenue depends on citizens' declarations and audit draws. In the source pair, revenue is fixed automatically. Comparing external revenue directly with endogenous tax revenue could mix source, budget size, enforcement, and perceived government behavior. The matched pair is deliberately narrower and easier to interpret.

5.4 Exact information and an imperfect signal

The information pair differs only in what citizens receive after a round: exact spending or a signal. Both conditions delay monetary outcomes and the accumulated balance until the final screen. This delay is necessary because knowing one's tax and service benefit would otherwise allow a citizen to reconstruct hidden spending. Hiding a label while displaying equivalent information would not create a valid informational difference.

The noisy signal classifies spending as high when it reaches at least half the treasury. If true spending is high, the high signal arrives with probability eighty percent; if spending is low, it arrives with probability twenty percent. The signal is neither an audit nor a payment shock. No signal is generated for an empty treasury because there is no spending composition to classify. The interface states that case explicitly.

A low signal after high provision is a possible error, not a software inconsistency. A high signal does not guarantee generous spending either. Translating it into a belief requires a prior probability about government's conduct. With a prior of one half, a high signal implies a posterior probability of 0.8; another prior produces another posterior. The activity does not elicit that prior, and the report does not invent individual beliefs.

Feedback script

Ask which additional information would allow citizens to reconstruct spending. Then compare exact and noisy conditions, which share the same balance delay. A comparison with the immediate-feedback basic game could also reflect timing; the appropriate control is inside the information pair.

Government still knows the spending that it personally chose. The intervention changes citizen

Round 1 / 6 · Your role this round: Citizen

Round outcome

Monetary outcomes will be shown on the final screen, after all decisions.

Signal received: low.

Continue

Powered by [oTree](#)

Figure 5.1: The noisy condition reports a signal while withholding monetary balances.

monitoring, not the official's understanding of its own action. This role asymmetry matters when students discuss accountability: the uncertainty is about what the authority did, not whether the authority remembers its own choice. At final completion exact outcomes are disclosed only after all subsequent declarations have ended.

5.5 Government continuity and induced experience

The electoral condition holds votes after rounds two and four. Two of the three current citizens can replace government. Participants do not choose between platforms or privately informed candidate types; they decide whether to retain the person currently occupying an office. A replacement is drawn from citizens, and the previous official remains active as a citizen. Nobody is excluded and the group is not reformed.

Compare spending before a vote, replacement choices, and later provision while remembering that one person can occupy different roles. Replacement does not establish selection of a better induced type, because the design supplies no such types or committed platforms. The possibility of taking office can itself affect voter incentives. This complexity supports useful reasoning without implying that homogeneous elections guarantee good government.

The high- and low-experience conditions start with two automatic-tax examples. High experience allocates all treasury resources to services; low experience fixes spending at zero. The remaining four rounds are identical: renewed accounts, voluntary declarations, weak audits, and discretionary spending. Example accounts do not enter the accumulated balance. Observe conduct from round three onward rather than averaging across phases governed by different rules.

A later difference is compatible with persistence after induced experience. It does not demonstrate cultural transmission or a stable civic norm. Participants know the initial provision rule was imposed, so the authority did not voluntarily earn a reputation by choosing those first outcomes. The contrast studies exposure to service outcomes under an announced rule. Preserve this distinction even when classroom conversation informally uses the language of trust.

For a clean discussion, ask students to state the counterfactual for each comparison in a sentence: the same net budget from another source, the same feedback delay with less precise information, or the same current institution after different example outcomes. A comparison becomes informative when the maintained features are clear. Listing several simultaneous differences cannot identify

Round 1 / 6 · Your role this round: Government

Resources and role

Each round, the three citizens receive 100 ECU each and the government receives 50 ECU of its own. The treasury is a separate account funded by collected taxes.

Your role this round: **Government**

Example excluded from balance

This balance is illustrative and is excluded from the final outcome.

This round the entire budget is automatically spent on services.

Continue

Figure 5.2: Initial examples are explicitly excluded from the accumulated balance.

which one changed behavior.

Read the report and work with the data

6.1 Reveal outcomes and establish denominators

The instructor report initially hides outcomes. Before revelation it displays participants, settled group-rounds, and planned observations still pending. The reveal control allows the instructor to choose when discussion begins. Hiding results again protects a projected screen from accidental consultation, but it does not erase information students already saw. While choices remain open, avoid transmitting other groups' outcomes in ways that could change expectations.

Instructor report: taxation and services

Declarations and discretionary spending



Means exclude pending groups and examples excluded from the balance. Compliance uses voluntary decisions only; automatic collection and external revenue are not observed compliance. Spending shares exclude zero budgets. Role accounts pool rounds, not distinct people. The trend table separates examples and paid rounds.

Figure 6.1: The initial report displays progress without revealing aggregate choices.

A settled group-round contains four mutually consistent closing accounts. It is the observation underlying mean revenue, spending, rent, and joint accounts. Mean citizen accounts use three observations from each such round; government accounts use one. Compliance uses only citizens who actually had a voluntary declaration choice. Eight people in two completed groups can contribute six declaration choices but only two government spending choices in one round.

The compliance percentage is one hundred times paid declarations divided by observed voluntary declarations. Automatic tax collection, external transfers, and examples are excluded. In those conditions a missing rate means the choice did not exist. A zero rate means applicable choices did exist and none selected payment. Preserve the distinction in projected slides and subsequent spreadsheets; replacing blanks with zero changes the meaning of the statistic.

A spending share divides services by treasury resources. Zero budgets are excluded from this ratio, and their number is displayed. The mean of shares gives equal weight to every settled group-round with a positive treasury. It differs from total services divided by total budgets when budget sizes

Voluntary compliance (%) 100	Tax revenue 75 ECU	External revenue 0 ECU
Service spending 35 ECU	Budget retained by government 40 ECU	External fines 0 ECU
Government 90 ECU	Citizen 96 ECU	Joint account 378 ECU
Spending / budget (%) 46.67 · N=1	Resolved votes 0	Replacements 0

Zero budgets excluded from the share: 0

Distribution of compliant citizens

Observed voluntary decisions: 3 · Observations = 1

0 / 3 · N=0

1 / 3 · N=0

2 / 3 · N=0

Figure 6.2: Revealed metrics distinguish compliance, revenue, services, rent, and accounts.

1 / 3 · N=0

2 / 3 · N=0

3 / 3 · N=1

Distribution of spending shares

Observations = 1

0-25% · N=0

25-50% · N=1

50-75% · N=0

75-100% · N=0

Evolution by round

Round	Round type	N	Voluntary compliance (%)	Tax revenue	Service spending	Budget retained by government	Joint account
1	Paid round	1	100	75	35	40	378

Figure 6.3: Distributions show group heterogeneity rather than only means.

vary. Spending twenty-five out of twenty-five in one group and zero out of seventy-five in another gives a fifty-percent mean share but only a twenty-five-percent share of pooled resources.

The first histogram counts how many of three citizens complied within each applicable group-round. The second classifies spending shares into intervals of twenty-five percentage points, with the final interval including one hundred. Its denominator is positive budgets rather than all groups. Empty bars are unsurprising in a small class. The graphs reveal heterogeneity hidden by a mean; they do not turn several rounds from the same people into independent observations.

6.2 Trends and a worked reading of the report

The trend table has one row per active round, reporting phase, settled groups, compliance, revenue, services, rent, and joint accounts. In history conditions the first two rows are identified as examples and subsequent rows as paid rounds. Begin trajectory comparisons with the common block. Averaging the full sequence would mix the initial intervention with the later response that the comparison was designed to examine.

Suppose a one-round session has two groups and only the first has finished. Everyone in that group paid; government spent thirty-five; no fines were imposed. The partial report shows compliance one hundred, revenue seventy-five, services thirty-five, rent forty, government account ninety, and mean citizen account ninety-six. Its joint account is 378. The pending second group does not halve those averages. Denominators and statistics update only when its real outcomes become available.

These figures describe a software-verification path and a classroom example, not research findings. If the second group also collects seventy-five but spends the full amount, mean services become fifty-five and mean rent twenty. Mean government accounts become seventy and mean citizen accounts 108. Mean joint accounts become 394. Compliance remains one hundred because all six declarations paid. The mean spending share is 73.33 percent.

A high government account may arise from retained resources, but rent has a precise operational meaning here: budget minus spending. The activity does not measure a legal corruption violation, because instructions explicitly allow retention. A high citizen account can come from services, undetected evasion, or both. Reconstruct the components before introducing a normative evaluation. The same account can summarize quite different economic paths.

A replacement count is also distinct from an evaluation of government quality. The report records how often a vote was resolved and how often replacement occurred. It does not infer which candidate was more competent or which voter was public spirited. Group membership remains unchanged, but role membership can change. Role means describe accounts earned while occupying a function, not an immutable class of people.

6.3 Export formats and pending observations

Download this session includes the selected session identifier in the request. The native wide file contains one row per participant and columns for ten technical rounds. A one-round condition activates only the first; the other columns are not nine missing behavioral observations. The custom round export retains active rounds only and leaves legitimate missing values for an inapplicable decision or an unfinished stage.

Declaration and audit fields apply to citizens in voluntary-tax conditions. Tax paid and fines paid are separate results. Revenue, external income, budget, service spending, rent, benefit, and joint accounts are group variables. Current and next government positions support role transitions without treating an office as a permanent person. Prepared, collected, and completed flags record

which stages have actually occurred.

A person's final ECU adds native payoffs from paid rounds. Initial examples retain illustrative closing accounts but contribute a native payoff of zero. Delayed conditions retain real monetary results privately for analysis even while participants cannot see them. A high signal must not replace actual spending in an accounting identity: the fields describe different objects. The data allow reconstruction of information received without modifying financial outcomes.

Technical participant codes link rounds within a session and require private instructor handling. The projected report does not display them. Do not merge exports with names or student numbers to judge personal behavior. Shared classroom tables should aggregate by condition, round, and current role, state observation counts, and remove identifiers. A small group can remain recognizable even when names are absent, so avoid inviting public identification.

Checkpoint

Before computing a rate, filter active and settled rounds, separate examples, verify that the relevant choice existed, and state the denominator. For a joint-account identity use one observation per group-round rather than counting a budget four times because it is repeated on individual rows.

6.4 A practical field dictionary

The source field identifies voluntary taxation, compulsory tax, or external transfers. It determines whether a declaration choice was available and which starting account applies. The example flag identifies outcomes excluded from the final balance. Language and edition describe presentation and catalog placement; neither should be interpreted as a separate treatment mechanism when economic rules are identical.

The compliance field is a binary choice, not an inferred attitude. The audit field records a realized review, not a belief about its likelihood. Tax paid includes amounts collected after detection, whereas fine paid records only the external penalty. Their separation supports a direct decomposition of treasury revenue and the cost of realized enforcement. Government has no citizen declaration, so its missing value is appropriate.

The budget field is the amount available for allocation. Spending is the applied allocation, including outcomes imposed by binding rules. Rent is the residual credited to government. Benefit is the per-citizen service return, and joint account sums all four closing accounts. A separate final ECU belongs to the person across paid rounds; it is not a group surplus or a repeated copy of the current closing account.

High signal records information generated by the program, while replacement votes and the replacement flag record an electoral institution. A pending vote has no resolved outcome; a completed vote against replacement is a genuine zero replacement result. Keeping these states separate prevents unfinished elections from being mistaken for decisions to retain government. Read stage flags together with optional fields rather than silently filling all blanks.

Lead discussion and solve exercises

7.1 A usable classroom sequence

For a fifty-minute class, allocate roughly eight minutes to resources and rules without announcing the solution. Use around ten minutes for the first round and comprehension, another ten for a repeated block or selected institutional comparison, and the remaining time for accounts, the material benchmark, and observed choices. Adapt these estimates to the group. Discussing one contrast carefully is preferable to executing many without feedback.

Begin with a completely solved account. Ask which payments entered the treasury and which left the group economy. Then ask why government chose its spending and what citizens anticipated. Reveal compliance only after those questions are clear. This order prevents the discussion from classifying people as cooperators or evaders before understanding the constraints and incentives they faced.

For public economics, contrast the reference with strong enforcement and binding provision. For political economy, emphasize discretionary allocation, elections, and revenue origin. For behavioral economics, compare the information pair and induced histories while naming alternative mechanisms. An advanced class can derive expected advantages and discuss what additional assumptions could sustain cooperation under a known finite horizon.

Differences between groups in one class do not automatically have random assignment or sufficient statistical power. Different groups may differ in composition; a single group playing two conditions can learn or respond to their order. Record that order and present the exercise as teaching evidence. An isolated significance calculation cannot turn a small demonstration into a causal evaluation of national tax policy.

For the instructor

Before revealing results, ask students to write a prediction and its assumptions privately. After revelation, distinguish an incorrect calculation from a correct benchmark with limited descriptive reach. A prediction can fail without its accounting being wrong, and an accurate classroom pattern need not identify the proposed psychological mechanism.

7.2 Exercises with solution guidance

Exercise 1. All citizens pay and government spends fifty. Compute each account and the joint total. The treasury receives seventy-five; rent equals twenty-five; government closes with seventy-five. Each citizen receives thirty in services and closes with 105. The sum is 390, matching the starting 350 plus forty in net service surplus. Tax cancels from the total because it is an internal transfer.

Exercise 2. Two citizens pay while the third reports zero and is not audited. Government spends the whole treasury. The budget is fifty, each service benefit is thirty, and government retains its own fifty. Payers close with 105 each, while the nonpayer closes with 130. The total is 390. Equal access to a service does not imply equal contributions to its financing.

Exercise 3. Keep the same declarations, but detect the evasion and let government spend fifty. The budget rises to seventy-five; an external fine of twenty-five appears; rent is twenty-five. The two initial payers receive 105 each, the detected evader receives eighty, and government receives seventy-five. Total accounts equal 365. More revenue did not mean more voluntary compliance, and the fine reduced the joint account.

Exercise 4. Find the audit probability that makes a risk-neutral citizen indifferent when discretionary spending is zero. Equating the certain payment of twenty-five with p times fifty gives one half. With full binding provision, equating ten with p times thirty-five gives two sevenths, about 28.57 percent. The difference follows from the private service return to one's own tax rather than an assumed moral preference.

Exercise 5. Compare spending forty in the matched-source pair. Under compulsory tax each citizen retains seventy-five before services; under external revenue each starts with seventy-five. Both receive twenty-four in benefits and close with ninety-nine. Government closes with eighty-five. Total accounts are 382. Visible financing differs, but the monetary incentives at the spending stage are equivalent.

Exercise 6. A citizen receives a high signal and initially assigns probability one half to high spending. The joint probability of high spending and a high signal is 0.4; the joint probability of low spending and a high signal is 0.1. Dividing 0.4 by 0.5 gives a posterior of 0.8. If the prior were one quarter, the posterior would be 0.6. One signal therefore does not imply a universal belief.

Exercise 7. Two citizens vote for replacement and one votes to retain government after round two. Explain the transition. Government is replaced starting in round three; the replacement is drawn from current citizens; the old official becomes a citizen. Earlier accounts are not recalculated and nobody is excluded. New roles determine resources and available choices in subsequent rounds.

Exercise 8. Two high-history examples generate citizen accounts of 120 each. The four common-block rounds generate ninety-six each. The final accumulated outcome is 384 rather than 624, because initial example accounts do not count. Compare high and low history using the four common rounds when interpreting later behavior. Adding example accounts would introduce precisely the wealth difference the design excludes.

Exercise 9. Two groups have positive budgets. The first spends twenty-five from twenty-five; the second spends zero from seventy-five. Explain why mean spending shares and pooled resource shares differ. The first statistic averages one hundred and zero to obtain fifty percent. The second divides twenty-five total services by one hundred total resources to obtain twenty-five percent. Neither calculation is inherently wrong, but each answers a different question.

Exercise 10. An empty report shows eight participants, zero settled group-rounds, and two pending observations in a one-round session. Explain why mean compliance should be missing. Six citizens will eventually have applicable choices, but no complete group has yet entered the aggregate sample. Their unobserved decisions cannot be assigned zero. Once one group settles, the report uses three voluntary declarations and clearly states that one planned group-round remains pending.

Feedback script

Close with three questions: which decision generated revenue, who controlled its allocation, and what evidence would distinguish material incentives from a reciprocal response? Ask for a specific comparison and the features that must stay constant. A strong explanation

also states what classroom data cannot establish.

7.3 Frequent problems and a final operational check

If a wait seems stuck, check that all four people are connected and have submitted the relevant stage. Do not replace an absent declaration with zero to accelerate the class. If a participant sees a different page than expected, verify the current role and condition. Binding provision correctly omits government's spending form; the source pair correctly omits citizen declarations. An institution can change the page sequence without any participant being lost.

If means are absent, inspect settled counts and whether only examples have ended. If a rate is missing, verify that voluntary choices or positive budgets actually existed. If the final balance differs from an expected number, separate fines, unpaid examples, and the sum of paid rounds. These checks resolve common misunderstandings without changing the rules after students have already chosen.

At completion, confirm that participants reached the final page, reveal aggregates when pedagogically appropriate, and download the selected session. Record condition, language, matching mode, order, and any relevant incident. Store private files securely and document which comparisons were discussed. Another instructor should be able to understand the class exercise without guessing how it was run.

7.4 Academic foundations and adaptation boundaries

Besley (2020) develops reciprocal obligations between taxation and public provision within a model of evolving civic culture. This activity takes that strategic relationship as a teaching question. It does not reproduce preference evolution or turn six rounds into evidence of cultural formation. Its contribution is to make financing and returning services separate observable decisions within one interaction.

Sjursen (2023) experimentally examines how work and prior possession of tax revenue affect demand for accountability. The main result highlights their combination. Our matched-source pair includes neither induced work nor costly punishment of the official. It supports discussion of a related mechanism and why instructors must not describe an unimplemented protocol as an exact replication.

Allingham and Sandmo (1972) provide a starting point for studying evasion under uncertainty. This activity uses a binary declaration and independent audits with classroom parameters. Alm, Jackson, and McKee (1992) supply experimental evidence about declarations, enforcement, and returns from spending. Their findings motivate comparisons; they do not calibrate this implementation's probabilities or payments.

These references distinguish theoretical reasoning, external empirical findings, and observations generated in one's own class. Keep those levels separate in conclusions. An accounting identity can be checked exactly; a prediction depends on assumptions; an observed behavioral pattern requires additional evidence to identify its mechanism. Maintaining those distinctions is part of the exercise, even when a class result initially appears obvious.

References

Besley (2020)

State Capacity, Reciprocity, and the Social Contract. *Econometrica*, 88(4), 1307–1335. <https://doi.org/10.3982/ECTA16863>.

Sjursen (2023)

Accountability and taxation: Experimental evidence. *Journal of Economic Behavior & Organization*, 216, 386–432. <https://doi.org/10.1016/j.jebo.2023.10.015>.

Allingham and Sandmo (1972)

Income tax evasion: A theoretical analysis. *Journal of Public Economics*, 1(3–4), 323–338. [https://doi.org/10.1016/0047-2727\(72\)90010-2](https://doi.org/10.1016/0047-2727(72)90010-2).

Alm, Jackson and McKee (1992)

Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*, 45(1), 107–114. <https://doi.org/10.1086/NTJ41788949>.