



Instructor's Guide to Contracts, Investment, and Remedies

Laboratory implementation, theoretical foundations,
experimental evidence, and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



Revised edition | October 2026

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

How to use this guide

This guide supports the preparation, implementation, and classroom discussion of the family of contracts, investment, and remedies prepared for 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, access, and participant workflow

1.1 Access through the updated laboratory website

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

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

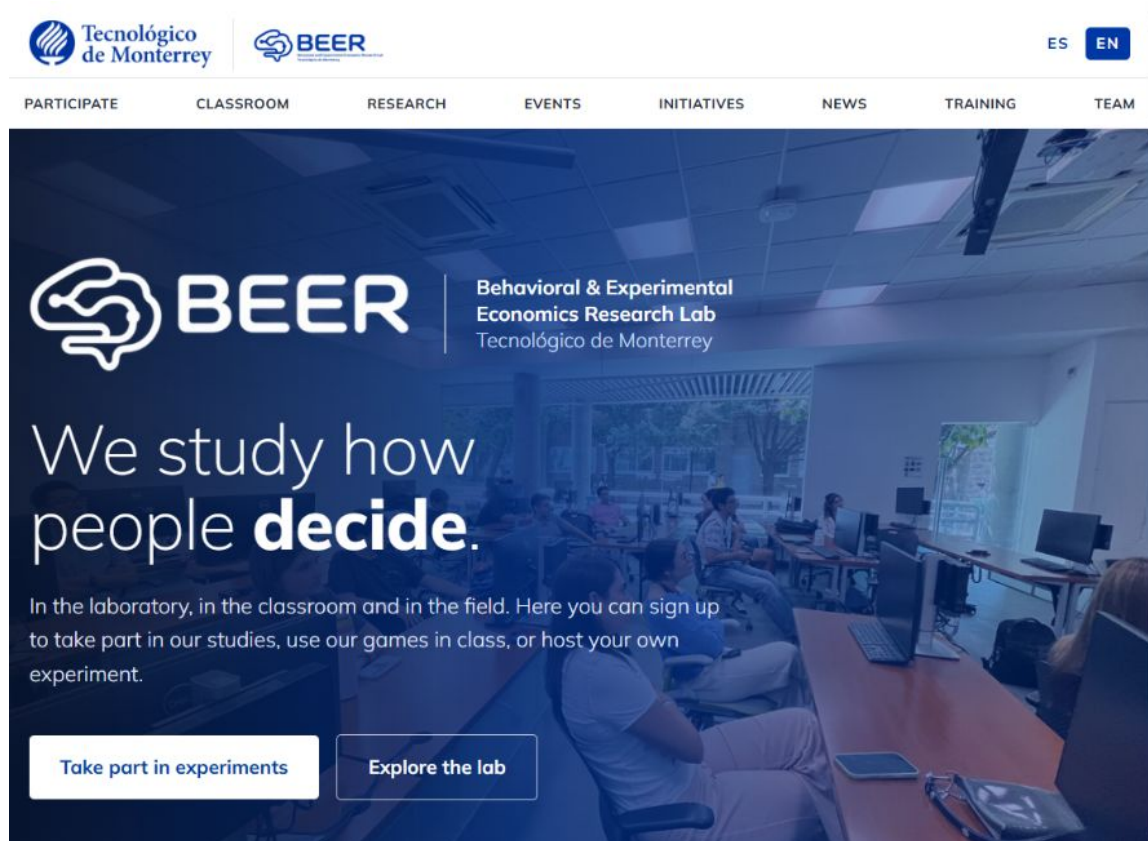


Figure 1.1: Current institutional website. Select CLASSROOM in the top navigation menu to open the teaching experiments. Captured on October 7, 2026.

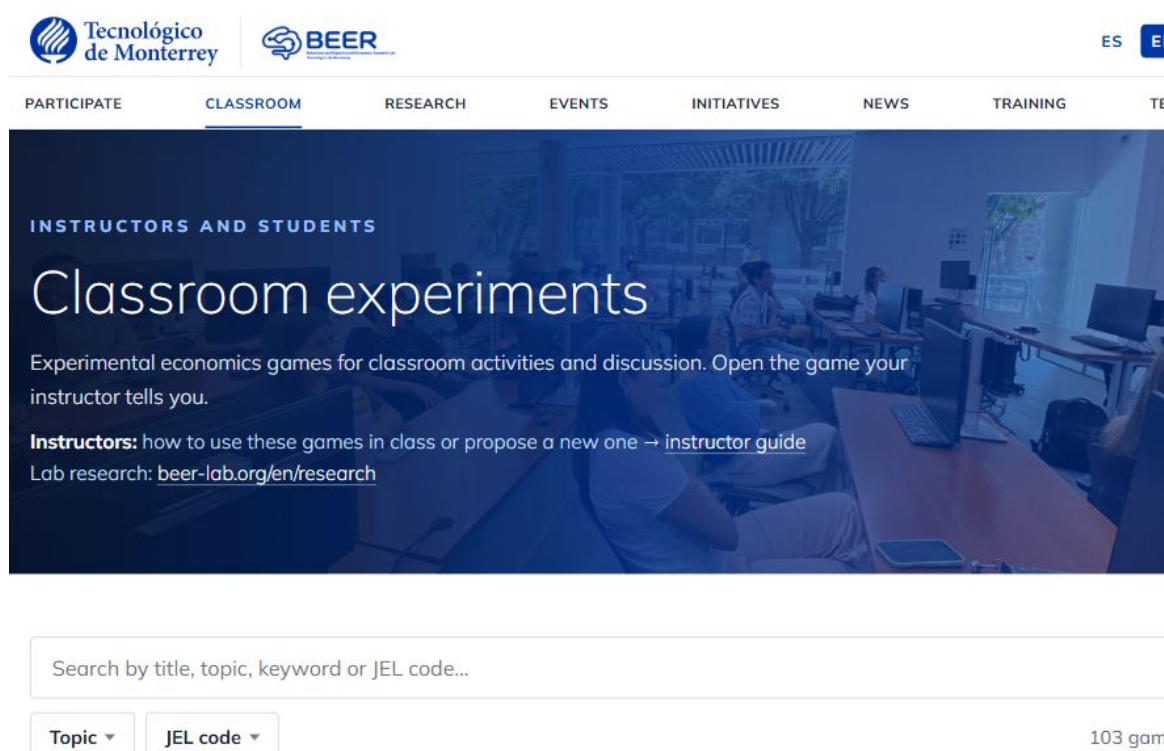


Figure 1.2: Current catalog: search by title, topic, or JEL code. Then locate this family's card and select language and edition. Captured on October 7, 2026.

Checking resources, comprehension, and participant requirements

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

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

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

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

0	
0s, pareja fija	
0s, parejas reasignadas	
0n	
0n de expectativa	
nfianza	
to específico	
20	
40	
jociada	
0n con expectativa	
0n con cumplimiento específico	
perfecta	
con pareja fija	
n historial	
ecuento sin reparación	
ecuento con expectativa	

Figure 1.3: Demo contains only the configurations of this game that have been used in previous editions. Continuation 1/2.

ers, fixed partner	
ers, reassigned partners	
damages	
nages	
formance	
ges 20	
ges 40	
damages	4
on with expectation damages	
on with specific performance	

Contratos,
inversión y
remedios /
Contracts,
Investment, and
Remedies —
BEER Lab

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

Figure 1.3: Demo contains only the configurations of this game family, in both languages and editions. Continuation 1/2.

perfecta
BE
con pareja fija
in historial
ecuenta sin reparación
ecuenta con expectativa
ter
ers, fixed partner
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damages
nages
formance
ges 20
ges 40
damages
on with expectation damages
on with specific performance
nforcement
damages with fixed partners
ers with history
gh cost without a remedy
gh cost with expectation damages

Figure 1.4: Demo contains only the configurations of this game family, in both languages and editions. Continuation 2/2.

Rooms

Current rooms:

[ES] Contratos y remedios: básica
[EN] Contracts and remedies: basic
[ES] Contratos y remedios: extendida
[EN] Contracts and remedies: extended

Figure 1.5: Rooms contains the four rooms for this family: basic and extended editions in Spanish and English.

Room: [EN] Contracts and remedies: basic

Create a new session

Session Config

[EN] one encounter

Number of participants

Complete groups of 2 participants. Use a multiple of 2; minimum 2.

Create

[Configure session](#) ⚙️

App sequence

contract_remedies_game (10 rounds)

Contract remedies, specific investment, performance, and renegotiation.

Figure 1.6: Session-creation form for the basic English room. Check the selected configuration and participant requirement before creating the session.

Downloading a session with several rounds

For the instructor

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

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

1.2 Purpose and catalog information

This interactive activity studies investment made before a contract is performed. A buyer can incur an irreversible expense that increases the value of receiving a delivery. A seller subsequently learns the cost of producing that delivery. The institution determines what happens if delivery does not occur: there may be no additional transfer, compensation, an agreed clause, a negotiated release, or automatic performance. These alternatives allow a class to separate three questions that are often combined in discussion: whether investment is worthwhile, whether production is worthwhile after the cost becomes known, and how the resulting value is distributed.

The unit of interaction is a pair with stable positions A and B. A chooses the investment; B bears the production cost. The investment is specific to this delivery because it has no alternative use in

the model. Receiving compensation can change A's account, but it does not restore the resources already spent. The activity therefore connects contract protection with incentives without requiring students to know a particular jurisdiction's rules. The interface describes positions, quantities, and available actions. The instructor introduces the legal names and evaluates economic predictions after the decisions have been made.

Purpose	Study specific investment, contractual performance, and remedies for nonperformance.
Experimental unit	Interactive A/B pair in each encounter; stable positions.
Suggested duration	35–50 minutes for an introduction; 50–75 minutes for repeated encounters. Classroom pilot pending.
Participants	An even number, with at least two people.
Basic edition	One encounter; ten with fixed partners; ten with reassigned partners.
Extended edition	Fourteen presets per language covering remedies, clauses, release bargaining, enforcement, history, and cost probabilities.
Decision	A invests; B delivers or uses the applicable alternative. Proposal, response, and automatic delivery stages appear when required.
Payoff	100 ECU per person and encounter, adjusted for investment, production, received value, and transfers.
Topics	contracts; specific investment; breach remedies; renegotiation; contract enforcement; reputation.
JEL	K12; D86; C78; C92.

K12 denotes contract law, D86 the economics of contract theory, C78 bargaining and matching theory, and C92 laboratory experiments involving group behavior. These codes were checked against the American Economic Association's official classification. The six topic labels also appear in the catalog metadata. Basic and extended versions in Spanish and English share one application, one accounting engine, and equivalent decision sequences. Choosing English changes the presentation language; it does not silently change the price, the probability distribution, the matching rule, or the damages formula.

1.3 Access through the laboratory's portals

Begin at <https://beer-lab.org/> and follow the teaching games link to <https://teaching.beer-lab.org/>. In a published catalog, locate the family by title, topic, or JEL code and open its page. The public incorporation of this family is pending when this package is prepared. A completed guide and a local repository commit are preparation artifacts; they do not establish that a new catalog card or public server is already available. The portal screenshots document the existing institutional entry route and must be read with that distinction in mind.

The proposed canonical address is <https://contractremedies.beer-lab.org/>. Its Demo page should list only the thirty-four configurations belonging to this family. Its Rooms page should list four rooms, with three basic configurations or fourteen extended configurations in the appropriate selector. Participants use the room supplied by the instructor. The instructor uses the authenticated administration panel to create and monitor a session. A public participant room is suitable for distribution to a class; administration links and individual participant addresses should remain private.

The canonical English basic participant route is https://contractremedies.beer-lab.org/room/contracts_en. The other room names are `contratos_es`, `contratos_extendido`, and `contracts_extended`.

The prepared local instance can be checked at <http://localhost:8078/demo> and <http://localhost:8078/rooms> on the host computer. Localhost always refers to the computer on which the address is opened. Students on other computers therefore need a deployed instance or an access arrangement established by the laboratory. The local service uses a separate database and displays this family's configurations. Its session list should not contain the entire laboratory catalog. Maintain that separation when checking the delivery, and retain the database when restarting the local service so that test sessions and completed decisions remain available.

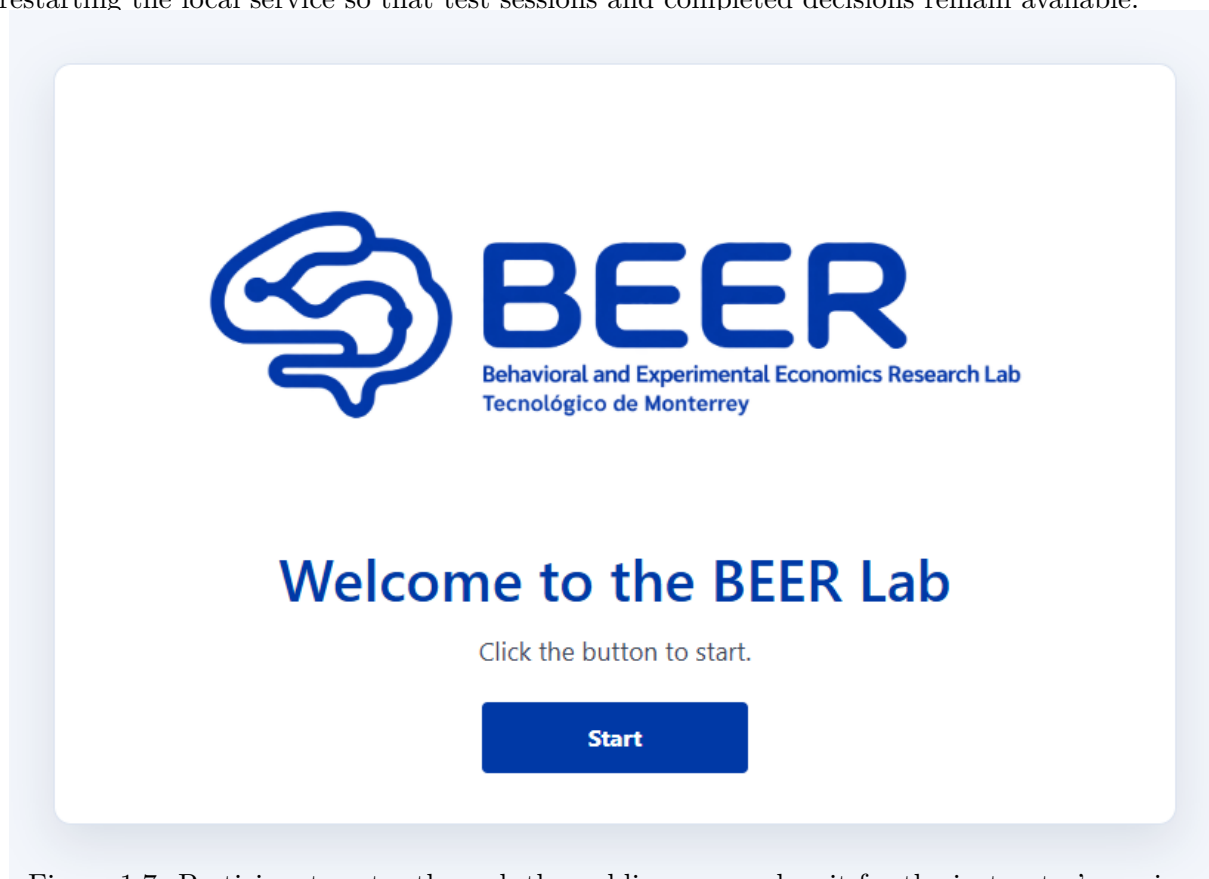


Figure 1.7: Participants enter through the public room and wait for the instructor's session.

1.4 Selecting and preparing a session

Choose the teaching question before choosing a preset. A single encounter without a remedy introduces sunk investment and the distinction between private incentives and joint value. Comparing that reference with expectation and reliance damages introduces different forms of protection. Comparing expectation damages with automatic performance isolates a difference in production after a cost shock. The release bargaining variants should be compared with their respective original remedies. Running every available variant during a short class can leave insufficient time to understand the accounts; the full menu instead supports different sequences across courses and sessions.

The basic English configurations are one encounter, ten encounters with fixed partners, and ten with reassigned partners. A fresh endowment is provided in every active encounter and all realized encounter payoffs are added to the individual total. This is not a capital accumulation model: earlier wealth neither finances nor restricts the next investment. Repetition supplies

additional observations and opportunities for learning under the same technology. Fixed partners can remember previous behavior. Reassignment avoids the immediately previous partner whenever the available role pools permit that change, but it does not guarantee that two people never meet again.

Use an even number of participants. There is no third role, court officer, or human judge. With two participants, reassignment cannot produce a new partner; with four, avoiding an immediate repeat still permits later encounters with the same person. Positions remain stable across encounters, which helps separate learning about investment from a change of role. A class should not describe reassignment as complete anonymity or treat the four-person case as a fresh population in every period. These limitations matter when discussing reciprocity, experience, and interpretation of differences between matching configurations.

Before class, open separate browser windows for both positions and follow the complete sequence. Check the rules confirmation, comprehension questions, investment, cost information, action stage, result account, and final page. In the negotiated clause variant, test acceptance and rejection. In release bargaining, test no offer, an accepted offer, and a rejected offer. In automatic performance, verify that B is not asked to make a fictitious delivery choice. Open the report before completing an encounter, then after completing one. These rehearsal sessions contain artificial decisions and should be identified as tests rather than combined with classroom observations.

Plan for access, comprehension, decisions, and discussion. A thirty-five to fifty minute introductory class could reserve approximately eight minutes for access and instructions, ten for play, and the remaining time for accounting and interpretation. Ten encounters require longer, especially when each encounter includes an offer and response. The suggested durations are preparation estimates, not results from a completed classroom pilot. If time is tight, select a shorter configuration beforehand. Do not invent missing decisions, interpret a disconnected browser as a refusal, or rush an unresolved response by substituting the instructor's preferred action.

For the instructor

Announce individual decisions, silence during play, private requests for help, and keeping the browser open. Explain how to read the account without suggesting that investment, delivery, acceptance, or rejection is the action expected for a good grade.

1.5 Welcome, instructions, and comprehension

The welcome page presents the BEER Lab as a setting for learning through controlled activities and displays the institutional logos. Each participant confirms having read the rules. The instructions describe the endowment of one hundred ECU, the price of forty, investment of zero or ten, delivery values of sixty or eighty, and production costs of twenty or ninety. The applicable transfer rule is displayed for the selected configuration. Read these instructions as a description of feasible actions and consequences. Terms such as efficient breach or overinvestment belong in the later analysis rather than in a recommendation made before play.

A pays the investment when the contract has formed and the investment is chosen. The expense remains in the account if delivery later fails. The value of eighty is created by receiving delivery; it is not a transfer sent by B. B receives the price and incurs the production cost if delivery occurs. With no delivery there is neither a price payment nor received value, although a compensation or release transfer may apply. Making this distinction clear prevents a common error: counting a transfer as new joint resources or treating the quoted delivery value as money paid by the other participant.

The comprehension questions ask for the price, the value of delivery with the larger investment,

and A's balance after spending ten without receiving delivery or any transfer. Under the reference parameters the answers are forty, eighty, and ninety. The last question explicitly describes a case with no transfer; it does not claim that every remedy produces the same nonperformance balance. An invalid response keeps the participant on the page and allows correction. The instructor can explain the account underlying a question while leaving the subsequent strategic investment and delivery choices to the participant.



BEER Lab
Encounter 1 / 1

Your position: A

Welcome to the BEER Lab

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

Keep silent and do not communicate with other participants. Decide individually and privately and follow the instructions. Do not refresh, close, or leave the page. If you need help, raise your hand or speak with the staff in private.

☐ I have read these rules and will follow them during the activity.

Continue

Powered by [oTree](#)

Figure 1.8: The institutional welcome asks participants to confirm the rules before continuing.

1.6 Investment, realized cost, and delivery

The case information page states the matching rule and the applicable alternative to delivery. In the basic reference, A chooses zero or ten before learning B's cost. The larger investment raises delivery value from sixty to eighty while the price remains forty. Only after the investment is recorded does the system draw the cost and inform both positions. A therefore invests using the announced distribution, not knowledge of that encounter's realized cost. This sequence is essential to the distinction between an ex ante investment decision and an ex post production decision.

B observes the investment, realized cost, delivery value, and transfer rule before acting. In the reference, B can deliver and pay the production cost or omit delivery without an additional transfer. Under expectation, reliance, or a fixed clause, the nonperformance alternative activates the stated account. The interface does not label an available action immoral or reveal a behavioral prediction. A waits for B's choice, and a wait is not itself a refusal. Once the choice is recorded, both positions see the same complete settlement. Automatic performance bypasses the voluntary action page and calculates the actual delivery account directly.



BEER LabEncounter 1 / 1

Your position: A

Instructions

Resources and unit of account

Each person receives **100 ECU** at the start of each encounter. Investment, production, damage and transfers are accounted for under the treatment's rules.

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

This session does not convert ECU into real money.

Each person receives 100 ECU at the beginning of each encounter. A may spend 0 or 10 ECU before learning the production cost. This expenditure is not returned. If B delivers, A receives a value of 60 ECU without investment or 80 ECU with investment; A pays 40 ECU to B. B pays a production cost of 20 ECU with probability 50% and 90 ECU otherwise. Cost is selected after investment and shown to both positions. Without delivery, no price is paid and no value is received. Additional transfers follow the rule below. Balances are added across encounters. The instructor will announce any conversion into real money.

One encounter.

If B does not deliver, there is no additional transfer to A.

Continue

Con tecnología de oTree

Figure 1.9: Current instructions for the basic edition: initial resources, decision rules, and experimental units.



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

BEER LabEncounter 1 / 1

Your position: B

Check your understanding

Resources and unit of account

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

This session does not convert ECU into real money.

How many ECU does A pay B as the price if delivery occurs?

Your answer: 41. The correct answer is 40. Check the price, value, and investment expenditure. You can consult the instructions and answer again.

What value does A receive after the maximum investment if delivery occurs?

After the maximum investment, no delivery, and no transfer received, what is A's balance?

Continue

Con tecnología de [oTree](#)

Figure 1.10: Current comprehension check with an incorrect answer, its specific explanation, and retained responses.

BEER LabEncounter 1 / 1

Your position: A

Choose investment

One encounter.

If B does not deliver, there is no additional transfer to A.

A's expenditure before learning the cost (ECU)

☐ 0 ECU

☐ 10 ECU

Continue

Powered by [oTree](#)

Figure 1.11: A chooses the expense before observing the production cost.



BEER LabEncounter 1 / 1

Your position: A

Cost and available information

A's investment	10 ECU
Selected production cost	20 ECU
Value of delivery to A	80 ECU
Transfer due if B does not deliver	0 ECU

One encounter.

If B does not deliver, there is no additional transfer to A.

Continue

Powered by [oTree](#)

Figure 1.12: The realized cost is revealed after investment and before the delivery decision.

BEER LabEncounter 1 / 1

Your position: B

Choose delivery

A's investment	10 ECU
Selected production cost	20 ECU
Value of delivery to A	80 ECU
Transfer due if B does not deliver	0 ECU

One encounter.

If B does not deliver, there is no additional transfer to A.

☐ Deliver and pay the production cost

☐ Do not deliver and apply the transfer rule

Continue

Powered by [oTree](#)

Figure 1.13: B sees the relevant amounts and chooses an available action.

1.7 Results and an explicit final page

The settlement distinguishes investment, received value, production cost, price, compensation due, compensation actually collected, and an agreed release transfer. A positive amount due is not necessarily collected under imperfect enforcement. An accepted release does not add the original compensation to the agreed amount. Automatic delivery creates the price, value, and production cost of the encounter even though B did not voluntarily choose delivery. The combined balance is useful for checking that transfers redistribute money while investment and production affect the resources represented by the model.

The one-encounter activity ends immediately after settlement. In a ten-encounter activity, another endowment and another cost draw follow each new investment. The final page displays the accumulated balance and asks participants to keep the window open. It has no onward button into a generic oTree completion page. Before opening the aggregate report for discussion, confirm that all pairs have reached results and address pending decisions without replacing them. Every active encounter contributes to the total; the software does not choose a single random encounter for payment. Any conversion from ECU to a classroom reward must be announced separately and applied consistently.



BEER Lab
Encounter 1 / 1

Your position: A

Encounter outcome

Delivery not completed

Your balance for this encounter: 90 ECU

A's investment expenditure	10 ECU
Value received by A	0 ECU
Cost paid by B	0 ECU
Price paid from A to B	0 ECU
Transfer due for nondelivery	0 ECU
Transfer actually collected for nondelivery	0 ECU
Transfer for agreed cancellation	0 ECU
A's balance	90 ECU
B's balance	100 ECU
Combined balance of A and B	190 ECU

Continue

Powered by [oTree](#)

Figure 1.14: The result account shows the components of both positions' balances separately.

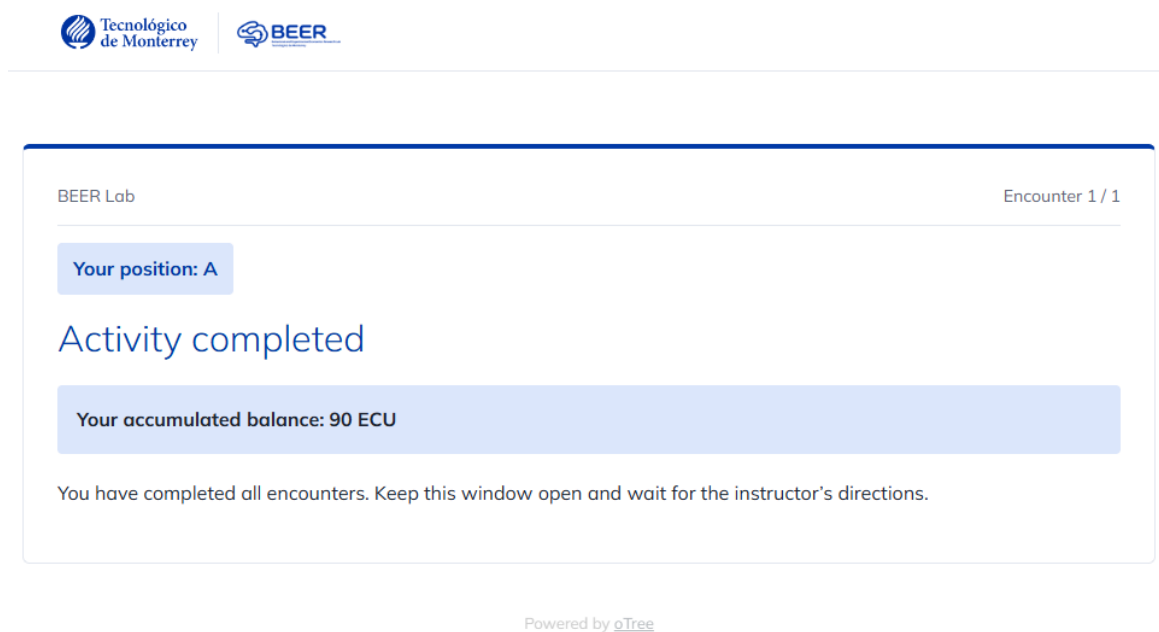


Figure 1.15: The explicit final page reports the accumulated balance and keeps the participant in the activity.

Economic model and the extended configurations

2.1 Sequence, notation, and the object of comparison

The reference encounter begins with one hundred ECU for each position. A chooses investment i equal to zero or ten. Delivery value is $v(i)=60+2i$, the price is $P=40$, and B's cost is either twenty or ninety. By default, the two costs are equally likely. The distribution is announced before investment; the realized cost is drawn afterward and shown to both positions before production. Cost is therefore uncertainty when A acts and public information when B acts. The design contains no private signal, strategic report of cost, chosen effort, or additional lottery over which encounter is paid.

Formation precedes investment in the negotiated clause variant. Rejection ends that encounter without an investment or a cost draw. In release bargaining, an offer and response occur after investment and cost information. An accepted release replaces the original delivery obligation and compensation account. A rejected offer or the absence of an offer preserves the original remedy. Under automatic performance, delivery follows directly when no release is accepted. In the other remedy variants, B chooses between delivery and the stated alternative. Keeping this sequence on the board prevents students from assigning information to a decision maker before it was available.

The extended menu contains fourteen presets in each language. The baseline repeats the no-remedy reference. Other presets apply expectation damages, reliance damages, specific performance, low and high fixed damages, a negotiated damages clause, release bargaining under expectation and specific performance, imperfect collection of expectation damages, expectation with fixed partners, expectation with fixed partners and displayed history, and two variants with infrequent low production costs. Each extension changes an identifiable mechanism or parameter. It is not a collection of legal scenarios whose numbers and decision sequence vary without a common accounting model.

Theoretical foundation

Separate investment efficiency before the cost draw from production efficiency after it. A transfer changes individual incentives and distribution; it cancels from the combined balance when the same amount leaves B's account and enters A's account.

2.2 Delivery and nonperformance accounts

When delivery occurs, A's balance is the endowment minus investment plus received value minus price. B's balance is the endowment plus price minus production cost. With the default numbers, delivery without investment gives A one hundred twenty. Delivery with investment ten gives A one hundred thirty. B receives one hundred twenty at the low cost and fifty at the high cost, independently of investment. The investment's twenty-unit increase in value partly offsets its ten-unit resource expense; the remaining ten-unit gain appears in A's delivered balance because the price does not change.

$$\begin{aligned}\pi_A^D &= 100 - i + v(i) - P, & \pi_B^D &= 100 + P - c. \\ \pi_A^N &= 100 - i + D_{\text{collected}}, & \pi_B^N &= 100 - D_{\text{collected}}.\end{aligned}$$

In the second account there is no delivery, no price payment, and no production cost. D collected is the compensation actually transferred rather than merely the amount specified by the rule. Without a remedy it equals zero. With certain enforcement it equals the applicable damages. Under imperfect collection it can equal zero even when the amount due is positive. The balance remains well defined because investment was already paid. Do not subtract the quoted delivery value from A's endowment; the value was never received in the nonperformance outcome.

An accepted release uses the same structure with the agreed transfer T in place of compensation, but the legal and procedural status differs. A receives $100-i+T$ and B receives $100-T$. The original compensation is not also collected, and the price is not paid. A rejected initial negotiated clause is different again: the contract never forms, neither party spends investment or production resources, and both retain one hundred. This no-formation outcome should not be recorded as breach, failed collection, or refusal to accept a later cancellation.

Outcome	A balance	B balance	Combined balance
Delivery	$100 - i + v - P$	$100 + P - c$	$200 - i + v - c$
Nonperformance	$100 - i + D$	$100 - D$	$200 - i$
Accepted release	$100 - i + T$	$100 - T$	$200 - i$
Rejected formation	100	100	200

The combined balance subtracts real expenses and adds received value. Price, damages, and release transfers cancel. This conservation property supplies a practical check on every result screen. If the sum appears to increase solely because B pays A a larger amount, the account has double-counted the transfer. If the sum includes both damages and a release amount, two mutually exclusive settlement paths have been combined. Students should reconstruct a delivered case and a non-delivered case by hand before using a report average to discuss efficiency.

2.3 Production efficiency after investment

Once investment is sunk, delivery creates additional joint value $v(i)-c$ relative to no delivery. At the low cost twenty, this increment is forty without investment and sixty with investment. Delivery is therefore efficient in both low-cost cases. At the high cost ninety, the increment is minus thirty without investment and minus ten with investment. Nonproduction is efficient in both high-cost cases. Sunk investment affects the delivery value, but its already incurred expense appears on both sides of the comparison and should not be charged a second time when deciding whether to produce.

Consider high cost and investment ten. Delivery produces $A=130$ and $B=50$, for a total of 180. Nonperformance under expectation damages produces $A=130$ and $B=60$, for a total of 190. The ten-unit difference reflects avoided production resources in excess of delivery value. It does not arise from a larger transfer to A, whose balance is identical in these two outcomes. Under specific performance the delivery is automatic, so observing that outcome does not identify a voluntary willingness to deliver at a loss. The report labels automatic and voluntary paths separately for this reason.

Allocation loss compares the realized production decision with the best production choice given the investment already made and the realized cost. Failing to deliver at low cost loses forty or sixty. Delivering at high cost loses thirty or ten. Correct production at either cost loses zero. This measure answers whether production resources were allocated well at the action stage. It does not answer whether investment should have occurred before the cost draw. That second question requires the announced distribution, the available investment options, and optimal production in each possible state.

Attention

A high-cost realization does not prove that the earlier investment was a mistake. Evaluate investment using the distribution known when A acted. Evaluate production using the cost known when the production decision was made.

2.4 Investment efficiency before the cost draw

Under efficient production, expected surplus above the two endowments is the probability-weighted positive delivery gain minus investment. With equal probabilities, investment zero gives one half of forty, or twenty. Investment ten gives one half of sixty minus ten, also twenty. Both choices maximize the default model's expected joint surplus. The marginal resource expense of ten exactly equals the expected additional delivery value of ten. This is a tie. It supports discussion of protection and redistribution, but it does not support a claim of strict inefficient overinvestment merely because one remedy increases A's frequency of choosing ten.

$$W(i; q) = q \max\{v(i) - 20, 0\} + (1 - q) \max\{v(i) - 90, 0\} - i.$$

$$W(0; 0.5) = 20, \quad W(10; 0.5) = 20.$$

The expected combined balance with efficient production is two hundred plus W. A's expected private balance need not equal W plus one hundred because the price and remedy distribute gains and losses between positions. The investment loss displayed in the report is the difference between the maximum W available under the announced probability and W for the investment actually selected. Both default choices have zero investment loss. This metric deliberately avoids evaluating an ex ante choice as though A could foresee the realized cost. Allocation loss and investment loss should remain separate even when the discussion ultimately connects them.

2.5 No remedy and expectation damages

Without a remedy, B's delivered balance is one hundred twenty at low cost and fifty at high cost, while nonperformance yields one hundred. A monetary comparison therefore predicts delivery at low cost and nonperformance at high cost. A's expected balance with no investment is one half of 120 plus one half of 100, equal to 110. With investment ten it is one half of 130 plus one half of 90, also 110. A is privately indifferent between the two investment options under these assumptions.

The prediction does not justify treating every positive investment as a deviation or expecting universal zero investment.

Expectation damages equal delivery value minus the price: twenty without investment and forty with investment. Certain compensation restores A's delivered balance when B does not deliver. A receives 120 with zero investment or 130 with ten regardless of the realized cost, assuming the monetary production response. B still delivers at low cost and avoids production at high cost. At high cost, nonperformance leaves B eighty or sixty, which is preferable to the delivered balance of fifty. The remedy protects A's contractual gain and preserves the efficient production pattern for these default values.

A now has a strict private preference for investment ten, receiving 130 rather than 120. Expected joint surplus remains twenty for either investment. The change in investment incentives is real, but the default technological comparison is tied. This is a useful example of why observed investment, private returns, and welfare cannot be used as interchangeable measures. Ask students to identify which balance increases, which balance absorbs the additional compensation, and whether any resources have been created by that transfer. The answer depends on investment and production, not on compensation considered in isolation.



BEER Lab
Encounter 1 / 10

Your position: B

Choose delivery

A's investment	10 ECU
Selected production cost	20 ECU
Value of delivery to A	80 ECU
Transfer due if B does not deliver	40 ECU

Partners are reassigned between encounters, with unchanged positions. Immediate repetition is avoided when alternatives exist. A single pair cannot be reassigned.

If B does not deliver, B must transfer to A the value A would have received minus the price. A's investment remains deducted.

☐ Deliver and pay the production cost

☐ Do not deliver and apply the transfer rule

Continue

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Figure 2.1: Under expectation protection, B sees the compensation associated with no delivery.

2.6 Reliance damages and automatic performance

Reliance damages equal the investment expense, zero or ten. In a high-cost nonperformance case, A returns to a balance of one hundred: the expense has been compensated, but the contractual gain has not been supplied. At low cost A receives 120 or 130 through delivery. Expected private balances are 110 without investment and 115 with investment, so A prefers ten. B's high-cost nonperformance balances are 100 or 90, both above fifty from delivery. Production remains efficient under the default monetary comparison. Reliance and expectation therefore differ in insurance and distribution even when their predicted investment choice is the same.

Specific performance is implemented as automatic delivery under the original obligation. This avoids presenting B with an apparent choice that cannot affect the outcome. A receives 120 or 130, and B's expected balance is 85 because half the encounters yield 120 and half fifty. Expected combined balances are 205 without investment and 215 with investment. Compared with efficient production at the same investment, automatic delivery creates expected allocation losses of fifteen and five. Investment makes high-cost delivery less wasteful, but it does not make production efficient when ninety still exceeds the value of eighty.

Rule	Expected A, $i = 0$	Expected A, $i = 10$	Monetary production prediction
No remedy	110	110	Low cost only
Expectation	120	130	Low cost only
Reliance	110	115	Low cost only
Specific performance	120	130	Automatic at both costs

These predictions assume participants compare their own monetary balances and use the announced probabilities. They are benchmarks for interpretation, not facts about preferences. Fairness, promises, reciprocity, uncertainty attitudes, or mistakes can change observed actions. The application does not elicit those motives separately. Explain an observed departure by first checking information and comprehension, then considering alternative behavioral accounts. A choice alone cannot identify a particular psychological mechanism. In particular, automatic delivery supplies no evidence about B's voluntary contract adherence, and identical predicted investments do not imply identical distributions of payoffs or exposure to uncertainty.

2.7 Fixed damages clauses

A fixed clause sets the compensation amount independently of investment. The low preset specifies twenty and the high preset forty. B compares the gain from delivery, $P - c$, with the loss from nonperformance, minus the clause. Delivery is monetarily weakly preferred when c is no greater than P plus the clause. Under either preset, B prefers delivery at cost twenty and nonperformance at cost ninety. Raising damages from twenty to forty therefore changes distribution and A's protection without changing the monetary production threshold enough to induce delivery in the high-cost state.

With the twenty-unit clause, A's expected balance is 120 at either investment. Without investment, both delivered and non-delivered balances equal 120. With investment ten, the corresponding balances are 130 and 110, again averaging 120. With the forty-unit clause, expected balances are 130 at either investment: delivery and nonperformance yield 120 and 140 without investment, or 130 and 130 with investment. Thus both presets leave the monetary investor indifferent under equal cost probabilities. The realized variance differs, however. The application does not elicit risk preferences,

so an observed investment difference cannot by itself establish whether reduced dispersion caused it.

The two clauses vary an amount while keeping participant wording neutral. They do not compare morally charged language with neutral language, a promise frame with a business frame, or court-assessed damages with an otherwise identical privately agreed amount. A class may discuss how contract wording could matter, but that discussion should distinguish a proposed additional experiment from the comparisons actually implemented. The clause presets also do not establish what a legal system permits as an enforceable amount. Their function is to expose a transparent incentive threshold within this teaching model.

Feedback script

Ask students why doubling the fixed clause does not change predicted production here. The threshold increases from sixty to eighty, while the high production cost remains ninety. A different amount can matter even when it does not cross the relevant decision threshold.

2.8 Negotiating the initial clause

In the negotiated clause preset, B proposes an integer compensation amount from zero to eighty before investment and before either position knows the realized cost. A accepts or rejects the proposed rule. Rejection leaves both positions with one hundred, ends the encounter, and prevents both investment and the cost draw. Acceptance creates the contract and activates the proposed amount for any later nonperformance. The outside option is therefore part of formation. It is not an opportunity to undo a completed investment or a late decision about whether the seller should produce.

With an accepted amount D no greater than forty-nine, the monetary production pattern remains delivery at low cost and nonperformance at high cost. At fifty, B is indifferent at high cost because both delivery and nonperformance yield fifty. Above fifty, B strictly prefers delivery even at high cost. The offered menu therefore includes amounts capable of inducing inefficient production. The boundary case should remain a tie in classroom calculations; the software allows either voluntary choice and does not insert a preferred action on B's behalf. Real participants may also choose differently from a purely monetary prediction at amounts away from the boundary.

To evaluate A's acceptance, compare the expected account under the proposed clause with the outside option of one hundred. To evaluate B's offer, account for A's response and the later action incentives. A high amount protects A if delivery does not occur, but can reduce B's gain or alter production. The actual amount and contract formation are endogenous outcomes. Comparing high accepted offers with low accepted offers is not equivalent to randomly assigning high and low remedies, since offers may reflect participants' preferences and acceptance selects which contracts reach investment. The instructor should present those selection issues before interpreting an amount-payoff correlation.

2.9 Release bargaining after the cost draw

Release bargaining offers B a choice after investment and cost information: continue under the original remedy or propose a transfer from zero to eighty to cancel delivery. If B makes an offer, A accepts or rejects it. Acceptance replaces the original obligation with that transfer, avoids production, and leaves investment sunk. Rejection preserves the original rule. An offer of zero is an actual offer and can be accepted or rejected; the absence of an offer is a distinct action. The

BEER LabEncounter 1 / 10

Your position: B

Propose a transfer rule

Partners are reassigned between encounters, with unchanged positions. Immediate repetition is avoided when alternatives exist. A single pair cannot be reassigned.

Before investment, B proposes a transfer between 0 and 80 ECU if delivery does not occur. A accepts or rejects the rule. Rejection ends the encounter with 100 ECU for each person, without investment or cost selection.

B-to-A transfer if delivery does not occur (ECU)

Continue

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Figure 2.2: B proposes a compensation rule before investment and before the cost draw.

BEER LabEncounter 1 / 10

Your position: A

Respond to the proposed rule

Proposed amount: 0 ECU

☐ Accept and proceed to investment

☐ Reject and end this encounter without investment

Continue

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Figure 2.3: A accepts the proposed rule or ends formation with the outside option.

report records these events separately because the acceptance rate requires a denominator of offers actually made.

Under specific performance, rejecting a release leads to automatic delivery. At high cost, A's delivered payoff exceeds its uncompensated non-delivery account by $v-P$. A therefore weakly accepts a release transfer of at least twenty without investment or forty with investment. B's automatic delivered balance is fifty, so B weakly benefits from cancellation at a transfer no greater than fifty. The weakly mutually beneficial intervals are consequently twenty through fifty without investment, and forty through fifty with investment. At their endpoints, one position can be indifferent. A prediction of certain acceptance at every endpoint would require additional behavioral assumptions.

The available joint gains are thirty without investment and ten with investment. For example, with investment ten and high cost, a transfer of forty-five produces $A=135$ and $B=55$, for a total of 190. Automatic delivery would have produced 130 and 50, totaling 180. The release avoids a resource loss of ten and divides that gain five and five relative to delivery. It does not eliminate the ten already invested. With no investment, a thirty-five-unit transfer yields 135 and 65 instead of 120 and 50, dividing the thirty-unit production gain equally. Other accepted amounts divide the same avoided loss differently.

At low cost, delivery produces positive joint value. A's minimum transfer remains twenty or forty, but B can retain one hundred twenty by producing. Paying any nonnegative cancellation transfer cannot improve B's monetary balance relative to that delivery. There is therefore no mutually beneficial nonnegative release interval at low cost under these parameters. Participants can still propose or accept such offers; the software permits the available actions rather than enforcing a theoretical bargain. Discussion should ask whether an accepted low-cost cancellation sacrificed resources and then consider distribution or behavioral motives, rather than treating agreement itself as proof of efficiency.

Under expectation damages, high-cost nonperformance is already the monetary response. A can obtain its protected balance through damages and B can avoid production by paying them. A weakly prefers release only at a transfer at least equal to the expectation amount; B weakly prefers release only at an amount no greater than that amount. The weakly acceptable intersection is the single transfer equal to damages. An accepted release at that amount changes the procedural label without generating a new production saving. This comparison shows why the gains from renegotiation depend on the entitlement from which bargaining begins.

The model implements one offer and one response, not alternating proposals, mediation, message exchange, legal fees, or a repeated bargaining clock. No production cost is paid when a release is accepted, and no second transfer is collected. The release variants should be discussed as a simplified cancellation protocol. Their comparison can illustrate the role of disagreement outcomes, but the program does not identify an unrestricted bargaining solution or prove that parties always exhaust available gains. If a class asks about bargaining power, start by calculating each position's outside account and the feasible surplus rather than assigning a label to the observed transfer.

2.10 Imperfect collection of expectation damages

The imperfect enforcement preset preserves the expectation amount due but collects it with probability one half following nonperformance. The amount due and the amount collected remain separate variables. The collection draw occurs once for a settled nonperformance event and is stored; reloading a result page cannot redraw it. Delivery requires no collection draw, and a release uses the agreed transfer rather than the imperfect damages rule. This implementation avoids making the result depend on browser refreshes or incorrectly describing a delivered encounter as a failed enforcement event.

BEER LabEncounter 1 / 10

Your position: B

Propose an agreed cancellation

A's investment	10 ECU
Selected production cost	20 ECU
Value of delivery to A	80 ECU
Transfer due if B does not deliver	0 ECU

Partners are reassigned between encounters, with unchanged positions. Immediate repetition is avoided when alternatives exist. A single pair cannot be reassigned.

Delivery is executed automatically, even when the cost is high. B cannot choose unilaterally to omit it.

After learning the cost, B may propose a transfer to A to cancel delivery. A may accept or reject. Acceptance pays only that transfer; there is no price, production, or additional payment. Rejection restores the initial procedure.

☐ Propose an amount

☐ Continue with the initial procedure

B-to-A transfer for canceling delivery (ECU)

Continue

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Figure 2.4: B can continue under the original rule or propose a release transfer after observing cost.

BEER LabEncounter 1 / 10

Your position: A

Respond to the cancellation proposal

A's investment	10 ECU
Selected production cost	20 ECU
Value of delivery to A	80 ECU
Transfer due if B does not deliver	0 ECU

Partners are reassigned between encounters, with unchanged positions. Immediate repetition is avoided when alternatives exist. A single pair cannot be reassigned.

Delivery is executed automatically, even when the cost is high. B cannot choose unilaterally to omit it.

After learning the cost, B may propose a transfer to A to cancel delivery. A may accept or reject. Acceptance pays only that transfer; there is no price, production, or additional payment. Rejection restores the initial procedure.

Proposed amount: 80 ECU

☐ Accept the transfer and cancel delivery

☐ Reject and continue with the initial procedure

Continue

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Figure 2.5: A decides whether to accept release. Rejection preserves automatic delivery in this preset.

B compares delivery with an expected loss of ten without investment or twenty with investment. Low-cost delivery still gives a gain of twenty relative to the endowment, while high-cost delivery loses fifty; monetary behavior therefore remains delivery at low cost and nonperformance at high cost. A's expected payoff is 115 without investment and 120 with investment. The ten-unit expense raises expected received value by ten and expected collected damages by another five, giving a private gain of five. Certain expectation damages instead yields a private gain of ten. These are expected accounts, not the realized payment in every encounter.

At high cost with investment ten, the forty due may be collected, giving A 130 and B 60, or not collected, giving A 90 and B 100. Both accounts total 190. This contrast is a useful exercise in distinguishing exposure to enforcement risk from resource efficiency. Average collected damages from a small class can differ from half the amount due because there are only finitely many collection draws. A descriptive rate is not proof that the configured probability changed. Check the number of eligible positive-damages nonperformance events, not all encounters or all high-cost draws, when interpreting collection frequency.

2.11 Fixed partners and displayed history

The fixed expectation preset uses the same damages rule as the standard expectation configuration while retaining partners across ten encounters. The reputation preset adds a table of that pair's completed earlier encounters. The table reports investment, realized cost, outcome, and balances. In the first encounter it is empty; in the second it contains one completed encounter. It should never show the current unresolved encounter, another pair's history, or a future cost draw. The figure below comes from the second encounter so that the guide shows actual historical information rather than an empty demonstration table.

This addition makes past behavior easier to recall and observe. It does not by itself create a market in which participants choose partners or terminate relationships. Fixed partners without the table can also remember earlier interactions, especially with only a few encounters. Comparing the two presets therefore studies an aid to memory and observability under fixed matching, rather than a clean switch from no reputation to reputation. No private messages, public rating, relationship termination choice, or third-party reputation score is collected. These boundaries should remain explicit when students connect the activity to longer-term commercial relationships.

2.12 Infrequent profitable delivery and strict investment loss

The final comparison changes the probability of the low cost from one half to one quarter, keeping values, expenses, and prices unchanged. Efficient production still occurs only at low cost. Expected surplus with investment zero is one quarter of forty, equal to ten. With investment ten it is one quarter of sixty minus ten, equal to five. Investment zero is now strictly efficient, and selecting ten causes an expected investment loss of five. This supplies the strict welfare comparison absent from the default tie, without changing the timing of information or inventing an investment cost after outcomes are observed.

Without a remedy, A's expected balances are 105 without investment and 100 with investment, so monetary incentives favor zero. With certain expectation damages, A still receives 120 or 130 regardless of cost under the predicted production response, so monetary incentives favor ten. Protection now creates a strict divergence between private and joint incentives. The two presets retain the same low-cost probability and reassignment rule so that their comparison concerns the remedy. Comparing rare-cost expectation with ordinary no-remedy baseline would simultaneously change two features and should not be presented as isolating one mechanism.



BEER Lab

Encounter 2 / 10

Your position: A

Preparing the encounter

The same partner for ten encounters; positions remain unchanged.

If B does not deliver, B must transfer to A the value A would have received minus the price. A's investment remains deducted.

Previous encounters of this pair

This mode displays your pair's previous encounters. It does not display other pairs' information.

Encounter	Investment	Cost	Outcome	A	B
1	10	90	Delivery not completed	130	60

Continue

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Figure 2.6: The history variant displays completed earlier encounters with the same partner.

Checkpoint

For each comparison, verify the investment menu, cost probability, matching rule, compensation rule, collection probability, and release protocol. Name the feature that changes and identify any additional difference before interpreting behavior.

The application also validates customized amounts and probabilities. A valid configuration must keep costs and balances within the permitted accounting bounds and provide an adequate endowment for the largest possible debit. Validation prevents invalid input from silently producing a negative balance or impossible probability. The prepared presets have fixed documented values; customizing them creates an additional classroom design whose predictions must be recalculated. The guide's numerical tables apply to the stated presets. Do not copy a threshold, an expected account, or a welfare conclusion into a customized session without first checking the corresponding parameters.

Reading the private instructor report

3.1 Access, progress, and revealing results

Open the report from the authenticated session administration panel. It is a private instructor view, not a participant page. Progress information remains available while aggregate results are hidden. The reveal control displays the numerical summaries for discussion; the hide control conceals them again. This separation allows the instructor to monitor completion without exposing a running behavioral aggregate that could influence remaining decisions. A hidden report is not an empty report, and an empty report is not evidence that every participant chose zero. Both distinctions should be checked before projecting the panel.

Only completed active encounters enter the outcome statistics. A pair awaiting investment, an offer response, delivery, or settlement is incomplete and contributes to progress rather than to realized balances. Both positions belong to one encounter; the report does not count them as two independent production decisions. The application explicitly collects every active round when assembling the report. This matters for the one-encounter configurations, whose report can be opened from a later technical round without losing the completed first encounter. Ten active encounters contribute ten observations per pair, not merely the round from which the panel was opened.

3.2 Denominators before percentages

Contract formation is measured among completed encounters in which formation could be recorded. In the negotiated preset, rejection is a legitimate completed no-contract outcome. Investment frequencies are computed among formed contracts, because rejected formation produces no investment decision. Production frequencies also use formed cases and preserve the realized settlement category. A completion rate instead refers to expected active encounters. These quantities answer different questions. An instructor should read the label and sample size attached to a percentage rather than treating every percentage as a fraction of all people who entered the session.

The voluntary breach rate uses cases with an actual voluntary production decision. Automatic delivery cannot supply such a decision, and an accepted release removes the later performance choice. These cases are excluded from that denominator. A high release frequency can therefore lower the number of voluntary decisions without indicating fewer high-cost encounters or fewer participants. The release acceptance rate uses offers actually made; no-offer cases belong in the offer frequency, not in the rejection count. Similarly, a failed collection rate should be interpreted among eligible compensation events, not among all encounters or every case with high cost.

The first panel reports formation, investment, delivery, nonperformance, release, balances, transfers, joint surplus, and the two distinct loss measures with their relevant counts. An undefined rate with

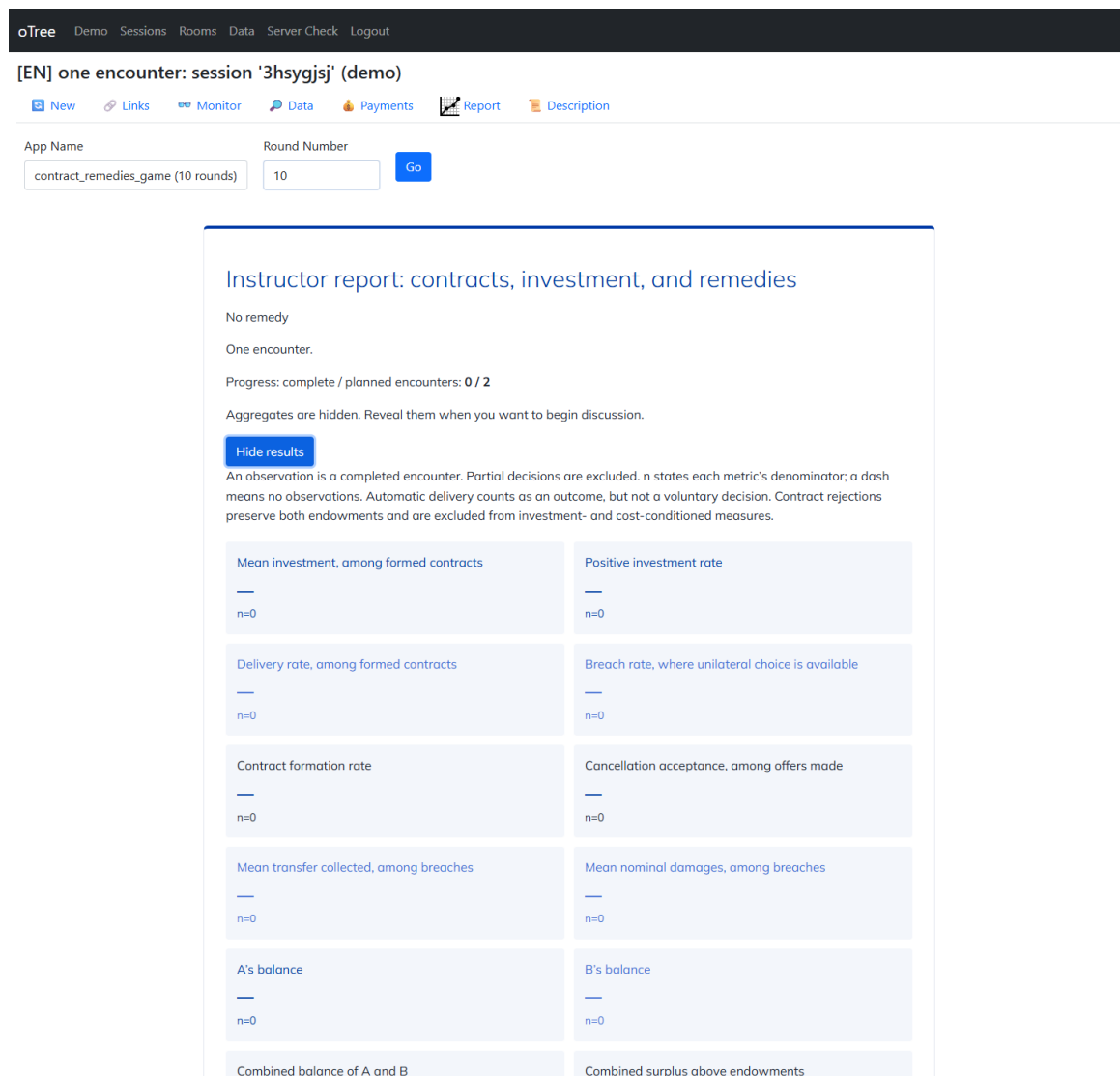
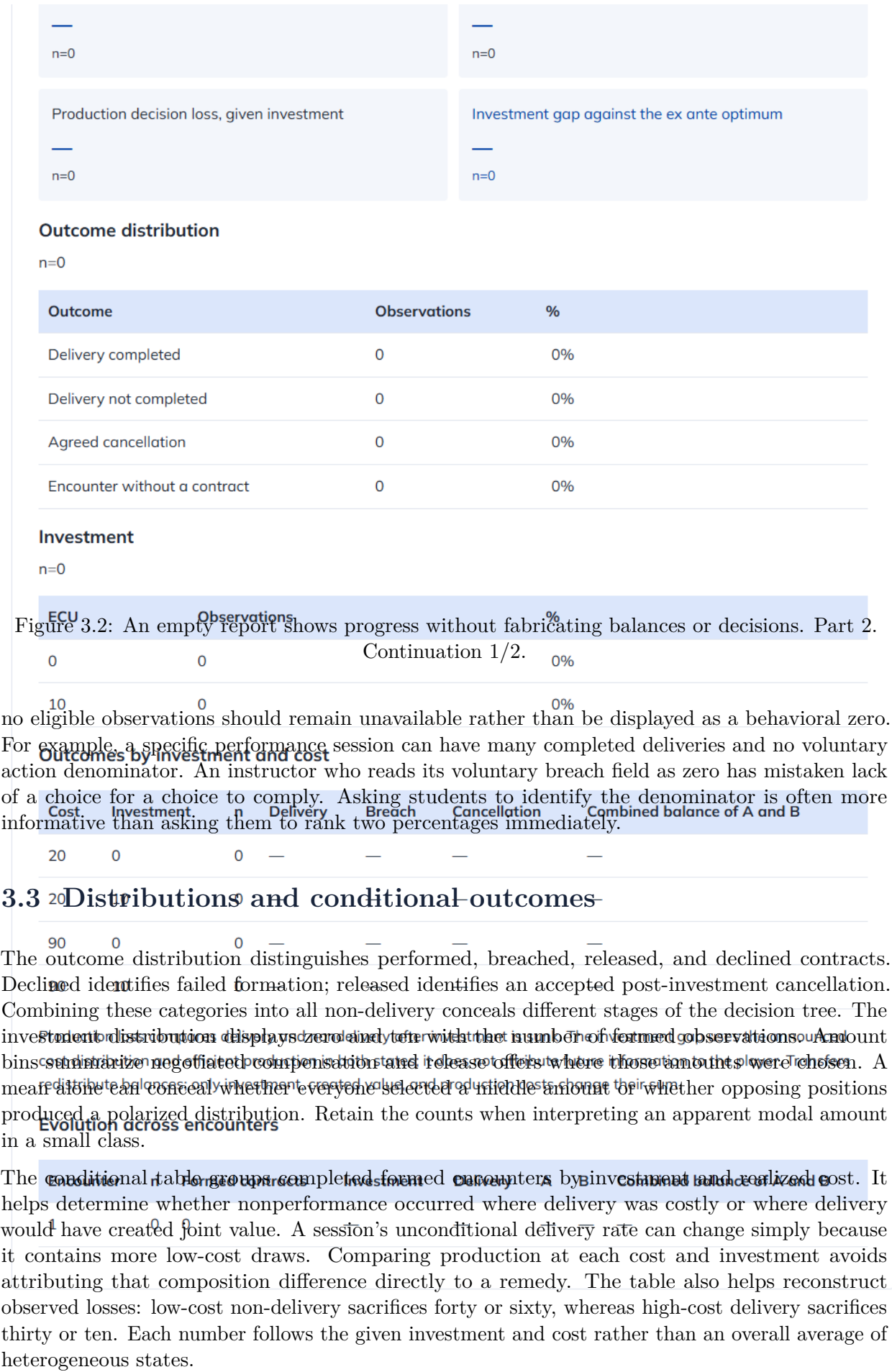


Figure 3.1: An empty report shows progress without fabricating balances or decisions. Part 1.



Agreed cancellation	0	0%
Encounter without a contract	0	0%

Investment
n=0

ECU	Observations	%
0	0	0%
10	0	0%

Outcomes by investment and cost

Cost	Investment	n	Delivery	Breach	Cancellation	Combined balance of A and B
20	0	0	—	—	—	—
20	10	0	—	—	—	—
90	0	0	—	—	—	—
90	10	0	—	—	—	—

Production loss compares delivery and nondelivery after investment is sunk. The investment gap uses the announced cost distribution and efficient production in both states; it does not attribute future information to the player. Transfers redistribute balances; only investment, created value, and production costs change their sum.

Evolution across encounters

Encounter	n	Formed contracts	Investment	Delivery	A	B	Combined balance of A and B
1	0	0	—	—	—	—	—

Figure 3.3: An empty report shows progress without fabricating balances or decisions. Part 2.
Continuation 2/2.

oTree
Demo
Sessions
Rooms
Data
Server Check
Logout

[EN] Expectation damages: session 'myufa8n7' (demo)

New
Links
Monitor
Data
Payments
Report
Description

App Name
Round Number

contract_remedies_game (10 rounds)
10
Go

Instructor report: contracts, investment, and remedies

Expectation damages

Partners are reassigned between encounters, with unchanged positions. Immediate repetition is avoided when alternatives exist. A single pair cannot be reassigned.

Progress: complete / planned encounters: 2 / 20

Aggregates are hidden. Reveal them when you want to begin discussion.

Reveal results

Figure 3.4: Progress remains visible while behavioral aggregates are hidden.

Mean investment, among formed contracts 5.00 n=20	Positive investment rate 50.0% n=20
Delivery rate, among formed contracts 50.0% n=20	Breach rate, where unilateral choice is available 50.0% n=20
Contract formation rate 100.0% n=20	Cancellation acceptance, among offers made — n=0
Mean transfer collected, among breaches 40.00 n=10	Mean nominal damages, among breaches 40.00 n=10
A's balance 125.00 n=20	B's balance 65.50 n=20
Combined balance of A and B 190.50 n=20	Combined surplus above endowments -9.50 n=20
Production decision loss, given investment 31.50 n=20	Investment gap against the ex ante optimum 0.00 n=20

Figure 3.5: Revealed metrics retain sample sizes and separate individual accounts from joint surplus.

Investment

n=20

ECU	Observations	%
0	10	50%
10	10	50%

Figure 3.6: The investment distribution displays both feasible choices and the formed-contract sample size.

Average balances describe distribution between A and B. The combined balance and surplus describe resources represented in the model. Price, damages collected, and release transfers describe redistribution. An increase in A's balance accompanied by a corresponding decrease in B's need not represent a joint gain. Likewise, a low combined balance under forced high-cost production is a resource issue even if A remains fully protected. Present these measures together and invite students to reconstruct one representative encounter. This makes the mechanism of a difference visible before any broad conclusion about a legal institution is proposed.

3.4 Evolution across encounters and export

The evolution table and figures collect completed observations in each active encounter and distinguish the two positions' average accounts. They show investment, outcomes, and joint results over the sequence. A later-round average may use fewer completed pairs while play is still progressing. Always examine that count before describing a trend as learning, reciprocity, or convergence. A ten-point line in a single class is a descriptive trajectory, not a statistical estimate of a general learning process. Fixed and reassigned partners also supply different histories, which must be considered alongside any change across periods.

Evolution across encounters

Encounter	n	Formed contracts	Investment	Delivery	A	B	Combined balance of A and B
1	2	2	10.00	0.0%	130.00	60.00	190.00
2	2	2	0.00	100.0%	120.00	50.00	170.00
3	2	2	10.00	0.0%	130.00	60.00	190.00
4	2	2	0.00	100.0%	120.00	85.00	205.00
5	2	2	10.00	0.0%	130.00	60.00	190.00
6	2	2	0.00	100.0%	120.00	50.00	170.00
7	2	2	10.00	0.0%	130.00	60.00	190.00
8	2	2	0.00	100.0%	120.00	85.00	205.00
9	2	2	10.00	0.0%	130.00	60.00	190.00
10	2	2	0.00	100.0%	120.00	85.00	205.00

Figure 3.7: Encounter evolution retains completed observations and separates the balances of A and B.

The custom export contains one row per person per completed active encounter. Group-level parameters, actions, and settlement variables therefore appear twice, once with each position. To analyze production, contracts, or joint surplus, deduplicate by session, round, and group. To analyze individual balances, retain both positions and identify their roles. The export records the cost distribution, remedy, collection probability, matching and history settings, investment, cost, formation, offers, responses, compensation, release, and final accounts. These fields allow a researcher to reconstruct settlement without inferring an unrecorded choice from a payoff alone.

Use an artificial rehearsal export to practice that reconstruction before handling classroom data. Check that rejected formation has no cost draw, accepted release has no additional compensation,

automatic delivery has no voluntary performance choice, and collection is recorded only where applicable. A repeated download should reproduce the same settled amounts. Do not append test and classroom rows without a session label, and do not treat duplicated group variables as additional observations. The main aggregate report avoids displaying individual identifiers; a projected discussion should use those aggregate views rather than individual links or a participant-level export.

For the instructor

Before projecting the report, wait for pending decisions, check completion and eligible denominators, and choose the panels that answer the class question. Reveal aggregated outcomes only when doing so will no longer influence unresolved choices.

Classroom discussion, exercises, evidence, and troubleshooting

4.1 A workable discussion sequence

Begin discussion with the chronological tree: formation if required, investment, cost draw, release bargaining if available, production when voluntary, and settlement. Ask participants what they knew at each decision. Then reconstruct one actual account from the session before presenting the monetary benchmark. This ordering makes it easier to distinguish a computational misunderstanding from a behavioral departure. A high investment frequency cannot establish overinvestment until the announced cost distribution and welfare calculation are supplied. A high delivery frequency cannot establish efficiency until the realized costs and investment values are considered.

Use comparisons in pairs. No remedy versus expectation addresses protection and investment incentives. Expectation versus reliance addresses what is insured. Expectation versus automatic delivery addresses ex post production. Automatic delivery versus its release variant addresses gains from cancellation. Ordinary expectation versus its fixed and displayed-history variants addresses matching and accessible information. Rare profitable delivery with and without expectation addresses strict investment inefficiency. Each comparison should begin by identifying unchanged parameters and the exact feature that differs. The negotiated clause variant is better introduced as endogenous formation and bargaining than as another randomly assigned compensation amount.

Invite students to describe reasons for their choices after the calculations, while keeping those statements separate from outcomes the software actually measures. Someone may mention promises, fairness, caution, trust, or misunderstanding. The game contains no independent elicitation that identifies these motives causally. A useful written task asks for the observed action, its monetary implication, and one alternative explanation that could be tested in a modified design. This encourages analytical restraint without dismissing behavioral questions. Grade the quality of the reconstruction and argument, not conformity with a particular strategic choice made during play.

4.2 Resolved exercises

Exercise one: A invests ten, cost is twenty, and delivery occurs. A has $100 - 10 + 80 - 40 = 130$; B has $100 + 40 - 20 = 120$. The combined balance is 250 and surplus above the two endowments is 50. Price cancels when balances are added. The production increment after investment is $80 - 20 = 60$, while total surplus also subtracts the ten spent earlier. An answer of 60 for total surplus has omitted the investment expense; an answer of ten treats the price as a resource cost instead of a transfer. These errors can be diagnosed using the same ledger.

Exercise two: keep investment ten but set cost ninety. Under expectation, nonperformance requires forty in damages, yielding A130, B60, and total190. Under automatic delivery, the balances are130 and50, totaling180. Automatic delivery sacrifices ten relative to no production at that investment. A is equally protected in these outcomes, so the efficiency difference concerns B's production resources. The exercise demonstrates that restoring one position's contractual return and implementing efficient production are logically different tasks even when a remedy happens to achieve both under some parameters.

Exercise three: compute efficient expected surplus with the default equal cost probabilities. Zero investment gives $0.5 \times 40 = 20$. Investment ten gives $0.5 \times 60 - 10 = 20$. Both are efficient. Under no remedy, A's expected balance is110 for either option; under expectation it is120 or130. Expectation creates a private preference for ten but no strict loss relative to zero in this technological benchmark. A complete answer states the tie rather than borrowing a general overinvestment argument and applying it without checking the marginal expected value of this particular investment.

Exercise four: change the low-cost probability to one quarter. Efficient expected surplus is10 without investment and5 with investment. Under no remedy, A receives105 or100 in expectation, favoring zero. Under expectation, A receives120 or130, favoring ten. The investment loss from ten is five. This is the strict private-social divergence supplied by the rare-cost pair of presets. The realized low-cost encounter can still benefit from investment; that fact does not overturn the ex ante calculation because A did not know which cost would be drawn when investing.

Exercise five: under specific performance, investment ten, and high cost, find the weakly mutually acceptable release interval. A requires at least40 to match130 from delivery. B can pay at most50 to match50 from delivery. The interval is40 through50. At45, A receives135 and B55; both gain five and the total rises by ten. If A rejects, delivery occurs automatically. Do not add40 in expectation damages to the45 release amount: the agreed cancellation replaces the obligation and compensation path. Nor should the ten invested disappear when release is accepted.

Exercise six: with imperfect expectation collection, investment ten, and high cost, list both possible nonperformance settlements. Collection gives A130 and B60; failure gives A90 and B100. Each total is190. With collection probability one half, expected high-cost balances are110 and80. Low-cost delivery gives130 and120. Averaging across equally likely costs gives A120 and B100. The collection probability concerns an eligible nonperformance event, not a second draw in every delivered encounter. The same completed event retains its collected amount when its result page is refreshed.

Exercise seven: a negotiated preset has eight completed encounters, two rejected formations, six investments, three release offers in a different release session, and two accepted offers. Formation is six over eight in the negotiated session; investment choices have a denominator of six. Acceptance in the release session is two over three offers, not two over all enrolled people. Combining these unrelated totals would be an additional error. Ask students to write the unit and eligible set next to every rate. This exercise can be repeated with the actual report after replacing the hypothetical counts with the class's own completed observations.

Feedback script

A complete exercise answer names the information available, writes each position's account, checks the sum, and states the relevant comparison. A correct isolated number with an incorrect denominator or timing interpretation is insufficient.

4.3 Evidence and the scope of the adaptation

Sloof, Oosterbeek, Riedl, and Sonnemans study breach remedies, reliance, and renegotiation experimentally. Their discussion connects investment to protection and the consequences of bargaining. This family uses those questions to motivate a transparent teaching structure; its amounts, discrete investment menu, matching presets, and one-offer release protocol are original classroom choices rather than a replication of their complete experiment. Students should distinguish a benchmark calculated from this application from an empirical finding reported in that paper. The source metadata records the verified author order and publication details.

Wilkinson-Ryan examines whether liquidated damages affect willingness to breach in a psychological experiment using hypothetical judgments. The present fixed-clause comparison varies actual payoff amounts while retaining neutral participant wording. It therefore does not reproduce that paper's wording or judgment manipulation. Brown, Falk, and Fehr study relational contracts in a setting with relationship formation and continuation decisions. The displayed-history preset here supplies accessible past outcomes under fixed matching; it does not implement their market or endogenous relationship termination. These distinctions preserve the contribution of the sources while making the implemented activity's narrower claims clear.

- Sloof, R., Oosterbeek, H., Riedl, A., and Sonnemans, J. (2006). *Breach remedies, reliance and renegotiation*. International Review of Law and Economics, 26(3), 263–296. <https://doi.org/10.1016/j.irl.2006.11.002>.
- Wilkinson-Ryan, T. (2010). *Do Liquidated Damages Encourage Breach? A Psychological Experiment*. Michigan Law Review, 108(5), 633. <https://repository.law.umich.edu/mlr/vol108/iss5/1/>.
- Brown, M., Falk, A., and Fehr, E. (2004). *Relational Contracts and the Nature of Market Interactions*. Econometrica, 72(3), 747–780. <https://doi.org/10.1111/j.1468-0262.2004.00511.x>.
- American Economic Association. JEL classification system. <https://www.aeaweb.org/econlit/jelCodes.php?view=jel>.

4.4 Practical problems and limits

If a room is waiting, confirm that the instructor created a session in that room and that participants opened the same instance. If a pair is waiting for a decision, check which position has the active page; do not treat waiting as nonperformance. If no production choice appears under specific performance, that is the intended automatic path. If a negotiated rejection has no cost or investment, formation has ended correctly. If reassignment repeats a partner in a small class, distinguish an immediate avoidable repeat from a later reencounter that the available pool cannot eliminate.

If the report shows fewer observations than expected, inspect active encounter completion and eligible denominators before assuming data loss. If a guide link works only on the host computer, check whether it is a localhost address rather than the deployed canonical domain. If an observed average differs from a prediction, verify parameters, realized cost counts, choices, and collected transfers before interpreting the difference behaviorally. Preserve the session database through a routine local restart. The package has automated and browser verification with artificial decisions, while duration, student comprehension, and discussion quality still require a classroom pilot. Those practical limits should guide the first teaching use and subsequent refinement.