



Instructor Guide to Platforms and Market Design

Laboratory implementation, theoretical foundations,
experimental evidence, and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



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

How to use this guide

This guide supports preparation, implementation, and discussion of the BEER Lab platform-market family. It is intended for instructors in microeconomics, industrial organization, and market design with different levels of familiarity with laboratory experiments.

There are three reading routes. Operational chapters explain session creation and monitoring. The economic model and worked examples support interpretation. Basic modes and extensions let instructors select a specific comparison without repeating common instructions.

The market is interactive and includes human participants on both sides. One guide covers the basic and extended editions; the Spanish version preserves the same decisions, parameters, and measures. Use the questions and answer guidance to conduct feedback without assuming specialist knowledge.

Author

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For the instructor

Check configuration and market size before starting. Reserve benchmarks for discussion and do not project individual identifiers. ECU are experimental units; this activity does not promise real-money payments.

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Preparing access and selecting a market

1.1 What this family teaches

A platform can create value without manufacturing the product being exchanged: it helps people find counterparts, organize alternatives, and coordinate choices. That function becomes clearer when students experience a concrete obstacle. In this family, someone may want an agreement, identify an attractive counterpart, and nevertheless finish unmatched because other people contacted the same recipient, because the directory was limited, or because the market closed before search was completed. The problem extends beyond knowing a price. There are two sides, heterogeneous preferences, and capacity for one agreement per person.

The activity supports courses in microeconomics, industrial organization, game theory, digital economics, and market design. An introductory class can compare a search market with a recommendation service. An intermediate class can distinguish thickness, congestion, segmentation, and information. An advanced class can introduce preference lists, immediate acceptance, and deferred acceptance, explaining why an efficient assignment need not be stable and why a stable outcome need not maximize the sum of gains.

The strategic unit is a market rather than a previously formed pair. The reference market includes four people on side A and four on side B. Participants receive program-induced characteristics and disclose no personal information. A sends requests; B responds. Both sides make human decisions even though income calculation and intermediation are automated. Algorithm treatments also collect lists from both sides; they do not replace one side with fictitious institutional priorities. This feature supports discussion of reciprocal preferences and consent in a setting distinct from assigning students to institutions with fixed capacities.

For the instructor

The basic edition offers one round, ten rounds with the same market, and ten rounds with reassigned markets. The extended edition provides eighteen independently selectable treatments, each with one round by default. To repeat an extension, edit the horizon before creating the session, selecting one to ten rounds and fixed or reassigned markets. Do not change parameters during an ongoing session.

Element	Description
Purpose	Compare counterpart search and intermediation, distinguishing coverage, gains, stability, and costs.
Experimental unit	A two-sided market with interdependent decisions; each person may form one agreement per round.
Participants	Reference: multiples of eight, four per side. Thin market: multiples of four; thick market: multiples of twelve; unequal sides: multiples of ten.
Basic edition	One round; ten with a fixed market; ten with random reassignment retaining side and characteristic.
Extended edition	Full directory, sizes, deadlines, segmentation, information, recommendations, three algorithms, short lists, fees, outside option, unequal sides, and complementarity.
Decision	Send one request or none; accept one request or reject all; alternatively, rank acceptable counterparts.
Outcome	A 100-ECU endowment per round plus agreement income or unmatched income, less request costs and the fee.
Suggested duration	15–25 minutes for a short activity comparison and 20–30 for discussion; ten-round sessions require additional time.
Topics	Two-sided markets, search costs, market thickness and congestion, market segmentation, matching algorithms, stability and efficiency.
JEL	A22, C78, C92, D47, D83, L14.

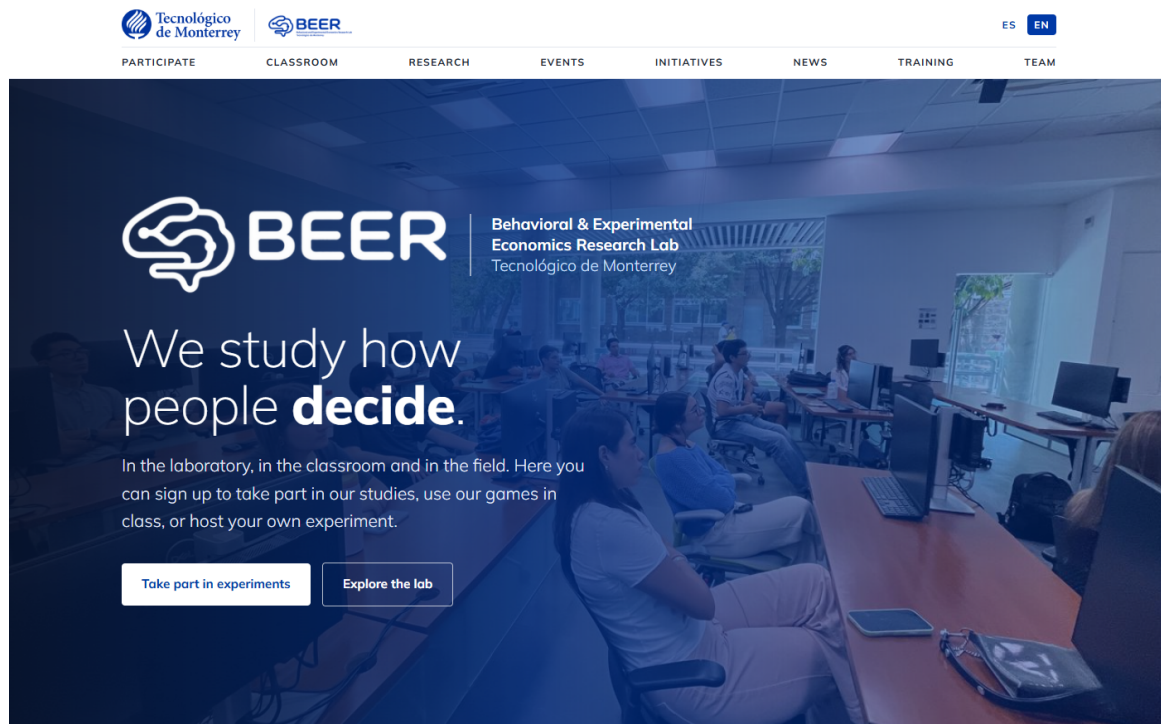
1.2 From the laboratory website to two access routes

Begin preparation at <https://beer-lab.org/en/>. The teaching section leads to the game directory at <https://teaching.beer-lab.org/en/>. Find the *Platforms and Market Design* card; its topics help identify it, and its controls select edition and language. Screenshots show website navigation checked on October 11, 2026. The laboratory directory can add further families, while each family domain keeps its administered sessions separate.

The English student entrance is https://platforms.beer-lab.org/room/platforms_en; its Spanish counterpart is https://platforms.beer-lab.org/room/plataformas_es. Extended rooms use https://platforms.beer-lab.org/room/platforms_extended and https://platforms.beer-lab.org/room/plataformas_extendido. Each room groups treatments of one edition and language. Students should not select algorithms or create sessions: they receive the room link for a session already prepared by the instructor.

Instructors enter <https://platforms.beer-lab.org/demo> to explore configurations, and <https://platforms.beer-lab.org/rooms> to manage the four rooms. The panel may request credentials supplied by the laboratory coordinator. A participant link does not provide administrative access. The report contains benchmarks reserved for discussion; sharing a demonstration session also does not authorize distributing administrative credentials.

Demo should list forty-two configurations belonging to this family: three basic and eighteen extended in each language. *Rooms* should list four rooms. Seeing another game indicates an incorrectly selected instance or an outdated service; it is not a platform-market treatment. Stop preparation and consult the coordinator before distributing links. Isolation also matters for data: this family service has its own session database, although the teaching code remains in a common repository.



WHAT WE DO

Figure 1.1: Open the institutional website and locate its teaching section.

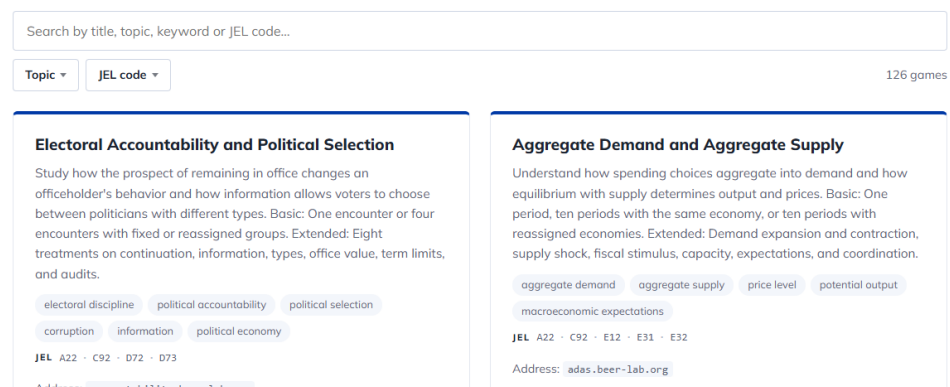
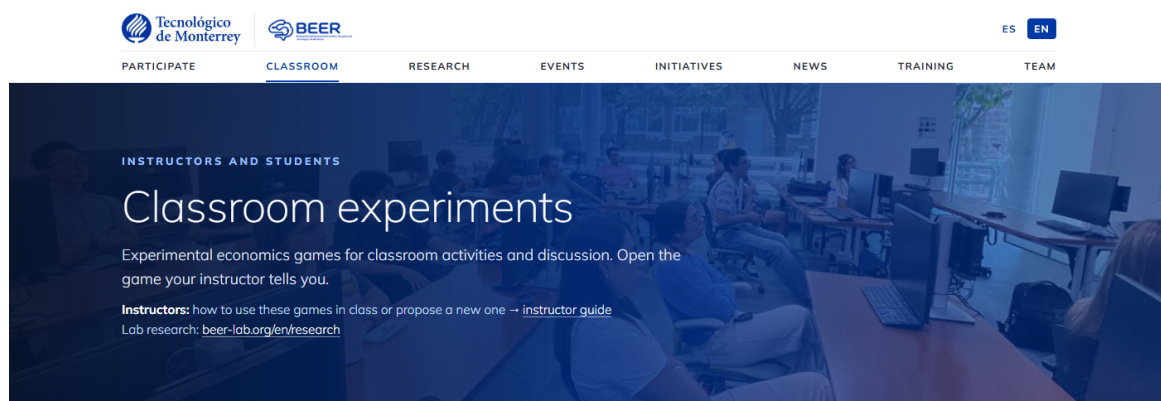


Figure 1.2: Select family, edition, and language in the teaching directory.

Platforms and Market Design · Basic · EN · one round
Platforms and Market Design · Basic · EN · ten rounds, fixed market
Platforms and Market Design · Basic · EN · ten rounds, reassigned markets
Platforms and Market Design · Extended · EN · Full directory
Platforms and Market Design · Extended · EN · Thin market: two per side
Platforms and Market Design · Extended · EN · Thick market: six per side
Platforms and Market Design · Extended · EN · One available turn
Platforms and Market Design · Extended · EN · Six available turns
Platforms and Market Design · Extended · EN · Segmentation by characteristic blocks
Platforms and Market Design · Extended · EN · Segmentation by parity
Platforms and Market Design · Extended · EN · Undisclosed characteristics
Platforms and Market Design · Extended · EN · Recommendations with consent
Platforms and Market Design · Extended · EN · Deferred acceptance: A proposes
Platforms and Market Design · Extended · EN · Deferred acceptance: B proposes
Platforms and Market Design · Extended · EN · Immediate acceptance
Platforms and Market Design · Extended · EN · Deferred acceptance with lists of at most two
Platforms and Market Design · Extended · EN · Five-ECU fee
Platforms and Market Design · Extended · EN · Twenty-five-ECU fee
Platforms and Market Design · Extended · EN · Forty-ECU unmatched option
Platforms and Market Design · Extended · EN · Six people on A and four on B
Platforms and Market Design · Extended · EN · Complementary characteristics

Figure 1.3: Check that Demo lists this family only.

Rooms

Current rooms:

Plataformas y diseño de mercados · Básica · ES
Plataformas y diseño de mercados · Extendida · ES
Platforms and Market Design · Basic · EN
Platforms and Market Design · Extended · EN

Figure 1.4: Choose the room for your class edition and language.

1.3 Creating a session without confusing people and agreements

Open the room, select a configuration, and enter the participant count. The minimum and required multiple depend on treatment. In the reference, eight people form one market, sixteen form two, and twenty-four form three. Selecting twelve people is incorrect for the reference, although twelve is valid for the thick-market treatment. An even count alone is insufficient: six people do not form a reference market. The form should state the effective requirement and reject incompatible counts.

An eight-person group does not mean that the software assigns four pairs in advance. It establishes who can interact within the market. Pairs are outcomes of decisions. An eight-person session may generate four agreements, fewer agreements, or none. This distinction is essential when interpreting the report and prevents instructors from announcing a number of exchanges that does not yet exist.

Checkpoint

Before creating the session, confirm title, language, edition, treatment, active rounds, reassignment rule, and participant count. Test two different links, one from each side. Check that A requests agreements and B waits or responds to requests. Do not attempt to test an interactive market with only one participant window.

A demonstration produces individual links for every planned participant. Explore the sequence using enough independent windows, each retaining its own identification. The public room simplifies access from laboratory computers, but the instructor still prepares and activates its session. If no session is available, students may wait; this does not mean that the room should automatically create an experiment.

1.4 Teaching and logistical preparation

There is no need to explain the optimal algorithm before play. Each person needs to understand their side, characteristic, income rule, and the distinction between a request and an agreement. Announcing that a particular institution should perform better can induce strategies or responses consistent with the instructor's expectation. Predictions and benchmarks belong in the later discussion, after students first reconstruct what their own choices produced.

Prepare a comparison that changes one mechanism at a time. Limited search versus the full directory keeps size, tastes, costs, and turns constant. Search with three versus six turns retains the institution while changing contact opportunities. Comparing search with deferred acceptance changes both the decision procedure and request costs, which are zero under the algorithm. This is a valid institutional-package comparison, but it does not by itself identify the pure effect of removing one friction.

Allow time to review comprehension errors. Each incorrect answer shows the submitted answer, the correct answer, and the applicable rule. This reduces verbal intervention and lets students proceed at different speeds without receiving strategy advice. An assistant can help with access or screen reading, but should not recommend a counterpart. If someone leaves, their market may become blocked: the system does not invent a choice or silently replace them.

The family can be repeated across the semester. Preserve treatment, market count, grouping rule, and teaching materials to support comparison. A large class is not automatically a thick market: twenty small markets provide many observations, but each person still faces few counterparts. Confusing these dimensions would prevent a correct interpretation of market thickness.

Room: Platforms and Market Design · Basic · EN

Create a new session

Session Config

Platforms and Market Design · Basic · EN · one round

Number of participants

Complete groups of 8 participants. Use a multiple of 8; minimum 8.

Create

[Configure session](#) 

App sequence

platform_market_game (10 rounds)

0 participants present

Start links

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

Room-wide URL

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

http://127.0.0.1:8181/room/platforms_en

Figure 1.5: Select treatment and market size before creating the session.

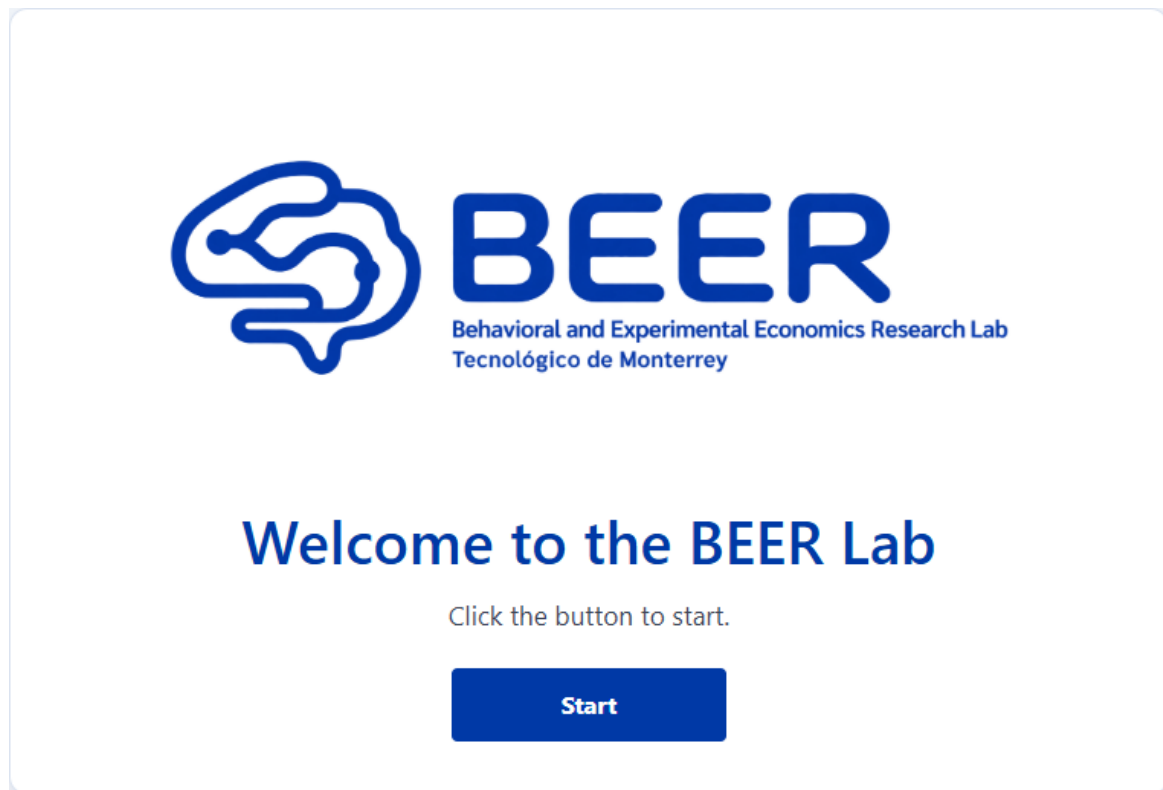


Figure 1.6: Start the instructor-prepared session from the room welcome.

After creation, identify the start-links and report screen. Distribute participant links or the room according to laboratory practice. Keep administration open on a separate computer from screens used for projection. Revealing aggregates remains locked until every active market has completed its decisions; instructors can monitor progress and download records before that point.

oTree
Demo
Sessions
Rooms
Data
Server Check
Logout

Platforms and Market Design · Basic · EN · one round: session 'ztntdndn' (demo)

New
 Links
 Monitor
 Data
 Payments
 Report
 Description

Below are temporary links for testing and demonstration. To launch a real study, either create persistent links by setting up a [room](#), or create a session through the [sessions page](#).

Choose one of the following options to play the session:

Split-screen view
Not available ⓘ

Grid view
[Launch](#)

Session-wide testing link

Open the below link in up to **8** browser tabs.

<http://127.0.0.1:8181/join/humalijs>

Single-use links

Open each link in its own browser tab.

P1	http://127.0.0.1:8181/InitializeParticipant/96sbk1vh
P2	http://127.0.0.1:8181/InitializeParticipant/kfglvkug
P3	http://127.0.0.1:8181/InitializeParticipant/3y0gdz1x
P4	http://127.0.0.1:8181/InitializeParticipant/b87bv8lp
P5	http://127.0.0.1:8181/InitializeParticipant/3ghe8v7z
P6	http://127.0.0.1:8181/InitializeParticipant/8lk62otd
P7	http://127.0.0.1:8181/InitializeParticipant/e12yjny2
P8	http://127.0.0.1:8181/InitializeParticipant/wkew9c6b

Figure 1.7: Distribute participant links and keep the report with the instructor.

Guiding the participant sequence

2.1 Welcome, rules, and resources

The first room screen displays the laboratory logo and a Start button. The next explains the laboratory's general purpose, requests silence, and reminds participants to decide individually. Participants confirm that they have read the rules. This confirmation organizes a teaching session; it should not be presented as informed consent for a research project that has not been explained separately.

Instructions identify the market position, assigned characteristic, and applicable income. Positions such as A1 and B1 have different meanings across markets: A1 in one group is not A1 for the entire class. Characteristic numbers do enter the economic rule and can be shared by different people, especially after reassignment. They do not represent ability, real income, gender, or an evaluation of the student.

Every person receives a new 100-ECU endowment at the beginning of each round. There is no 100-ECU fund shared by eight people. An unmatched person receives an additional twenty ECU in the reference. A matched person instead receives the income induced by that counterpart. Request costs and fees are deducted separately. The endowment makes the accounting visible, but does not change a person's ranking of counterparts because it is added equally to their alternatives.

In the reference, side A pays two ECU for each request sent, even when rejected. Sending none costs zero, and responding also costs zero. Side B incurs no hidden waiting charge. Understand this asymmetry before comparing sides: lower income for A may reflect contact costs, assignment differences, or both. The instructor should not attribute every difference to bargaining power, because participants do not negotiate how agreement income is divided.

What participants will see

A useful introduction is: "You have a new 100 ECU each round. Without an agreement, additional income is the amount on your screen. With an agreement, you receive that counterpart's income. A can request; B can accept one request. No one can agree with two people. Check costs before confirming."

2.2 Comprehension with specific feedback

Questions check the individual endowment, one-agreement capacity, and the rule appropriate to the mechanism. Search asks whether a rejected request incurs its sending cost. Algorithm treatments ask whether an omitted person can be assigned. The interface displays a correction beside the incorrect field and preserves other answers. It deducts no ECU for errors and does not



Welcome to the BEER Lab

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

You will take part in a market with other people and choose whom to contact or accept for an agreement.

Laboratory rules

- Remain silent and do not talk to other participants.
- Make decisions individually and do not look at other people's screens.
- If you need help, raise your hand and wait for the instructor.

☐ I have read the instructions and will follow the laboratory rules.

Start

Figure 2.1: Confirm the rules before continuing.

BEER LAB · ROUND 1 / 1

How this market works

Resources and unit of account

Each person on both sides receives a new 100 ECU endowment every round. Without an agreement, they receive 20 ECU in additional income. With an agreement, they receive that counterpart's income instead of the unmatched option. Request costs and any applicable fee are deducted. ECU stands for Experimental Currency Units; no conversion to real money is specified.

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

This session does not convert ECU into real money.

Market side

A1

Initial endowment per round

100 ECU

Your characteristic

1

Your preferred characteristic

1

Each person on both sides receives a new 100 ECU endowment every round. Without an agreement, they receive 20 ECU in additional income. With an agreement, they receive that counterpart's income instead of the unmatched option. Request costs and any applicable fee are deducted. ECU stands for Experimental Currency Units; no conversion to real money is specified.

Your market has 4 people on side A and 4 on side B. Each person may have only one agreement per round; no one can have two counterparts. Requests and lists are not agreements by themselves.

Agreement income is 60 minus 10 for every unit of distance between your preferred characteristic and your counterpart's characteristic, with a minimum of zero. Your income can differ from the other person's income.

In each turn, a person on side A can send one request to an available directory counterpart or send none. Sending a request costs 2 ECU even if rejected. Each person on side B can accept one incoming request or reject all; responding has no cost. An accepted agreement is final for this round.

The directory shows at most 2 available counterparts per turn. It can change on the next turn. Labels such as A1 and B1 identify anonymous positions within this market only.

Each matched person pays 0 ECU to the platform. An unmatched person pays no fee. The fee is separate from request costs.

This configuration has one round.

[Continue](#)

Figure 2.2: Review resources, sequence, and costs before choosing.

turn comprehension into an examination on market theory.

If someone reports receiving zero ECU initially, feedback explains that the endowment is individual and renewed. If they report capacity for two agreements, the correction reminds them that each person has one place. If they believe only accepted requests are charged, it distinguishes sending cost from agreement income. For lists, omitting a person means not authorizing an assignment to them, even when both could gain according to their original values.

BEER LAB

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.

How many ECU do you initially receive each round?

Your answer: 0. The correct answer is 100. The individual endowment is 100 ECU and is renewed; it is not a shared fund between sides.

How many agreements can you have within one round?

Your answer: 2. The correct answer is 1. Each agreement joins one person from each side; each person occupies a single place.

If you send a request that is rejected, is its sending cost deducted?

☐ Yes

☒ No

Your answer: No. The correct answer is Yes. The cost is paid when a request is sent, regardless of acceptance. Responding or sending no request is free.

Continue

Figure 2.3: Correct each field using its rule explanation.

2.3 Requests from side A

Each turn displays a directory of available counterparts. In the reference it contains at most two people, sampled within the market by a reproducible rule. Fewer may appear when recipients are scarce or segmentation removes contacts. It changes across turns and is not a list of everyone who exists in the market. Side A selects one option or chooses to send no request.

Cards show the counterpart's characteristic, own income if matched, and own income after the fee. They do not reveal the other person's utility or plans. Knowing that a counterpart yields sixty ECU does not guarantee acceptance. Several requesters can see and contact the same person simultaneously. Nor can someone choose a position absent from the available directory: the server validates options in addition to form restrictions.

After sending, A waits while other requests are recorded and B responds. Income has not yet

BEER LAB · ROUND 1 / 1 · TURN 1 OF 3

Request an agreement

Market side

A1

Initial endowment per round

100 ECU

Your characteristic / Your preferred characteristic

1 / 1

Your renewed endowment is 100 ECU. Each request costs 2 ECU whether accepted or rejected. Without an agreement, you will receive 20 ECU less costs already incurred.

You do not yet have an agreement. Review this turn's options.

Available counterparts

B3

Characteristic: 3

Your income with this agreement: **40**

Your income after the fee: 40

B4

Characteristic: 4

Your income with this agreement: **30**

Your income after the fee: 30

Choose whom to request an agreement with

Send no request ▾

Confirm decision

Figure 2.4: Compare counterparts and confirm one request or none.

been determined. Waiting is necessary to process simultaneous requests; it does not represent the service time of a real commercial platform. Once an agreement is accepted, both people leave the available set for that round and A sends no further requests. A rejected requester can try again in a later turn if any turns remain.

2.4 Responses from side B

B receives requests directed to its position during the turn. It can accept one or reject all. The screen displays B's own income from each agreement, which may differ from the income shown to A. Acceptance is final: B cannot hold a tentative reservation while seeking a better alternative. This irreversibility distinguishes decentralized search from deferred acceptance, where the platform revises tentative assignments before the final result.

If nobody contacts B, no artificial decision needs answering: the system advances to the corresponding wait. This also does not mean that B rejected someone. Having no requests is an opportunity constraint. To interpret an unmatched outcome, consider whether opportunities arose, whether they were rejected, and how many turns remained. Exported requests and responses are recorded by turn and allow these cases to be reconstructed.

BEER LAB · ROUND 1 / 1 · TURN 1 OF 3

Respond to requests

Market side B1	Initial endowment per round 100 ECU	Your characteristic / Your preferred characteristic 1 / 1
--------------------------	---	---

Acceptance is final for this round. You will receive the indicated income minus the 0 ECU fee; ending unmatched yields 20 ECU. Responding has no cost.

Requests you received

A4

Characteristic: 4

Your income with this agreement: **30**

Your income after the fee: 30

Choose one request to accept

Reject all ▾

Confirm decision

Figure 2.5: Accept one incoming request or reject all.

Under hidden information, A sees neither characteristics nor incomes before requesting. B sees its own income when responding, although not the requester's characteristic. At the end, each

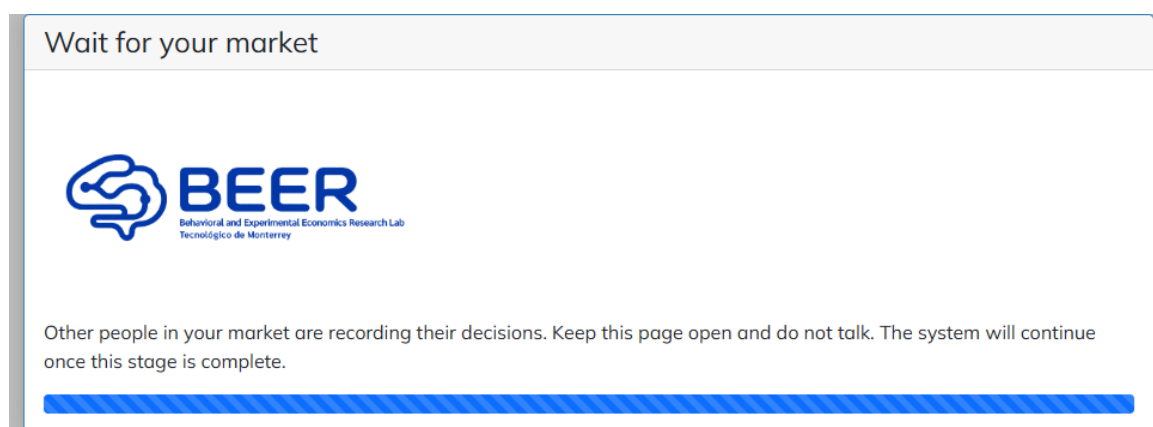


Figure 2.6: Wait for your market without closing the screen.

person learns their realized income. The design introduces uncertainty for requesters while letting recipients understand what accepting pays. State this asymmetry clearly so that a card saying “Not revealed” is understood as part of the rule rather than a loading error.

2.5 Lists and centralized allocation

In algorithm treatments, both sides rank acceptable counterparts. First position is most preferred. A list may end with “No additional counterpart,” leaving every subsequent position without names. Duplicates and names after an ending are prohibited. Listing someone means accepting a possible assignment to them, rather than guaranteeing that an agreement will occur.

The platform processes both sides’ lists. If A lists B while B omits A, that pair cannot form through the algorithm. Full lists permit as many positions as there are counterparts; the short-list extension permits at most two. The form allows omitting everyone. This represents accepting no assignment and should not prevent the round from finishing.

Deferred acceptance may generate several internal proposals, but students submit a single list per round. The duration of automatic calculation should not be interpreted as a comparable saving in seconds of human interaction. Instead, the contrast shows whether a procedure avoids conflicting requests, obtains reciprocally acceptable agreements, and eliminates pairs that would rather meet outside the resulting assignment.

2.6 Result and closure

The result identifies match status, counterpart, and accounting components. If A sent two requests, earned fifty, and faces no fee, the outcome is $100 + 50 - 4 = 146$ ECU. If A remained unmatched after three requests, it is $100 + 20 - 6 = 114$. Do not add both fifty and twenty when matched: agreement income and unmatched income are mutually exclusive alternatives.

Repeated-round agreements expire at the end of each round. A first-round pair does not occupy places in the next round, and endowments restart. Personal characteristic and side remain fixed. A fixed market retains its members; reassignment mixes participants within each side. New compositions can include an earlier counterpart because the rule imposes no ban on repeat encounters.

The final screen says the activity is complete, displays own history, and requests that participants wait for the instructor. It has no button leading to an empty page. Cumulative outcomes

BEER LAB · ROUND 1 / 1

Rank counterparts

Market side

A1

Initial endowment per round

100 ECU

Income without an agreement

20 ECU

Both sides submit an ordered list of counterparts, placing the most preferred first. Listing someone means you would accept an agreement with them. You may end the list with "No additional counterpart." Submitting a list has no cost; duplicates and names after ending the list are not allowed.

Your income depends on the assigned counterpart and your original values, not the position you write in the list.

Available counterparts

Counterpart	Characteristic	Your income with this agreement	Your income after the fee
B1	1	60 ECU	60 ECU
B2	2	50 ECU	50 ECU
B3	3	40 ECU	40 ECU
B4	4	30 ECU	30 ECU

Position 1

No additional counterpart ▾

Position 2

No additional counterpart ▾

Position 3

No additional counterpart ▾

Position 4

No additional counterpart ▾

[Confirm decision](#)

Figure 2.7: Rank acceptable counterparts and end the list when appropriate.

BEER LAB · ROUND 1 / 1

This round's result

Status
Matched

Counterpart
B3

Round outcome
138 ECU

Initial endowment per round	100 ECU
Your income with this agreement	40 ECU
Total request cost	2 ECU
Individual fee if matched	0 ECU
Round outcome	138 ECU

Endowment + agreement income (or unmatched income) – total request cost – fee. Agreement income and the unmatched option are not added together.

Continue

Figure 2.8: Reconstruct endowment, income, costs, and fee.

sum renewed accounts across active rounds; compare institutions with different horizons using outcomes per person and round rather than cumulative totals alone. Optimal benchmarks and other participants' outcomes belong in the instructor report, not the individual closing screen.



Activity completed

You have completed this session's rounds. Keep this screen open and wait for the instructor's instructions.

Cumulative outcome

138 ECU

Round history

Round	Status	Round outcome
1	Matched	138 ECU

Figure 2.9: Await discussion from closure and own history.

Economic foundations and worked examples

3.1 Induced values and agreement gains

Let x_i denote a person's characteristic and z_i their preferred counterpart characteristic. Reference side A characteristics range from one to four, with targets one, one, three, and three. Side B targets equal their own characteristics. Individual income follows $v_i(j) = \max\{0, 60 - 10|z_i - x_j|\}$. Each number is an induced valuation for this activity. It does not estimate a student's real preference or assume that every digital market follows this function.

Unmatched additional income is $o = 20$ in the reference. A pair (i, j) generates gross gains relative to not matching of $v_i(j) + v_j(i) - 2o$. Endowments are excluded because everyone receives the same endowment regardless of matching. Two people receiving fifty and sixty generate $50 + 60 - 40 = 70$ in gains, not two hundred seventy. Endowments belong to individual accounts; gains from exchange are differences between alternatives.

Theoretical foundation

Values are individual; pair gains add both improvements over the unmatched option. Having your highest valuation for a counterpart does not make you that person's preferred option. Reciprocal preferences and one-agreement capacity mean that an individual's best option may be unavailable.

Without search costs, reference characteristic pairs (1, 1), (2, 2), (3, 3), and (4, 4) produce combined incomes of 120, 110, 120, and 110 ECU. Their total is 460. Without agreements, eight people earn 160 in additional income, so the maximum gross gain is 300. Other assignments can exchange some counterparts and retain the same maximum. The reference is a maximum total value, not a claim that one uniquely specified set of pairs must occur.

3.2 Search, thickness, and congestion

Thickness means relevant alternatives are available within the market. Increasing from two to six people per side can expand options, but need not improve realization when each requester sees only two and has three opportunities. Congestion is conflict between desired transactions and attention capacity or time. When two people contact B1 and nobody contacts B2, a place can remain vacant despite potential gains. Locally conflicting requests do not establish that the market lacks buyers or sellers in total.

The cost of an already sent request is sunk when the next turn arrives. A should evaluate another

contact by comparing its expected improvement with the additional cost, without requiring recovery of all previous requests. In an illustrative calculation, a counterpart accepts with probability one half and yields sixty; against unmatched income of twenty, the expected improvement is $(60 - 20)/2 = 20$. A two-ECU request therefore produces an expected incremental gain of eighteen. This example does not supply an acceptance probability promised by the software; it demonstrates how to combine a belief with the payment rule.

When acceptance seems very unlikely, repeatedly contacting the highest-value person can be inferior to contacting a less attractive but more available alternative. The activity reveals that tension but does not elicit participants' subjective probabilities. An apparently unprofitable request therefore does not diagnose a bias on its own. It may reflect uncertainty, an incorrect belief, or a willingness to experiment.

3.3 Stability and maximization

A blocking pair consists of two people not assigned to one another who both prefer matching together over retaining their assignments, considering the unmatched option and fee. Stability requires no blocking pairs and individually rational agreements. For equal values, the report gives priority to the lower local identifier; equality with the unmatched option favors remaining unmatched. This convention makes the diagnostic reproducible and must be distinguished from an observed real preference.

Maximizing gross gains is a separate criterion. Consider an analytical two-person-per-side table with sixty for each member of a diagonal pair. In the crossed pairs, A1 receives one hundred with B2, while B2 receives twenty; A2 receives twenty with B1, while B1 receives one hundred. With a zero outside option, either assignment totals 240. If A1 and B1 instead received seventy from their diagonal pair, that assignment would total 260. Incentives to change depend on the individual values, not their sum alone. This illustrates how an aggregate hides preference distribution; it is an analytical table rather than the parameters of an available configuration.

To show that stability and maximum total can differ, use values $(A1, B1) = (100, 100)$, $(A1, B2) = (99, 90)$, $(A2, B1) = (90, 99)$, and $(A2, B2) = (1, 1)$ with a zero outside option. The diagonal is stable: A1 and B1 prefer staying together; A2 and B2 cannot find a partner willing to improve jointly. The sum is 202. The crossed assignment totals 378, but A1 and B1 form a blocking pair. Calculate each number on the board and ask which objective an institution should pursue when it permits no additional monetary transfers.

3.4 How deferred acceptance works

Each proposer contacts its first acceptable counterpart. A recipient tentatively keeps its highest-ranked proposal and rejects the others. Rejected proposers try their next option. A new proposal can replace an earlier reservation. The procedure ends when no further proposals are possible; only then do assignments become final. Lists on both sides determine acceptable counterparts and how competing offers are ordered.

In an illustrative ordinal table, A1 ranks B1 above B2 and A2 ranks B2 above B1; B1 prefers A2 and B2 prefers A1. When A proposes, the diagonal appears immediately. When B proposes, the crossed assignment appears. Both are stable under these preferences but favor different sides. The example should not be read as a guarantee that changing proposers benefits every person in every environment. The property concerns the set of stable assignments under fixed, strict preferences, appropriately complete acceptable lists, and accurate reporting.

Implementation reference lists order original values after the fee, excluding options that do not improve on remaining unmatched. Truthfulness is a benchmark for interpreting induced information, not an assumption about submitted lists. Under deferred acceptance, truthful reporting is an especially useful strategic reference for the proposing side. Do not promise the same guarantee to both sides or under immediate acceptance. Short lists constrain communication even when the internal algorithm remains deferred acceptance.

3.5 Academic origins and adaptation limits

Nungsari and Flanders (2020) organize classroom games around thickness, segmentation, preferences, and algorithms. Their article is this family's pedagogical antecedent. Our digital implementation adds small market sizes, induced values, limited directories, simultaneous requests, learning rounds, and ECU accounts. It does not literally reproduce every published protocol or claim to measure the article's teaching effectiveness. The reference guides selection of mechanisms students can discuss through a short experience.

Roth (2008) provides a market-design framework distinguishing thickness, congestion, and safe participation. Roth and Xing (1997) study how response times can prevent decentralized market clearing. Kagel and Roth (2000) experimentally examine institutional transitions when congestion encourages early matching. Their findings motivate comparisons between procedures; they do not predict a universal match rate for this class. Gale and Shapley (1962) support deferred acceptance. The numerical rules and worked examples in this guide are original teaching developments for these mechanisms.

Complementarity connects with Becker's (1973) discussion of positive assignment across characteristics, without turning this activity into a marriage simulation or estimating actual inequality. Fees connect with intermediation incentives in Rochet and Tirole (2003), but students do not manage a platform that endogenously chooses prices or entry. Discussion of two-sided markets should preserve the distinction between studying a given fee rule and solving full platform competition.

Reading the report and comparing institutions

4.1 Progress and revelation

The private report displays session participants, completed markets, and pending markets. Across ten rounds, one eight-person market provides ten potential market observations rather than eighty markets. Each round enters aggregates once its required decisions finish. A person confirming a request does not by itself complete the market; responses and later-turn requests may remain outstanding.

Aggregates are hidden when the report loads. Revelation becomes available once every market in the active rounds is complete. A one-round configuration does not wait for the nine technical rounds the application retains to support other configurations. Opening the report from the final administrative position still counts the single active round correctly. This prevents incomplete counts and benchmarks calculated for an irrelevant period.

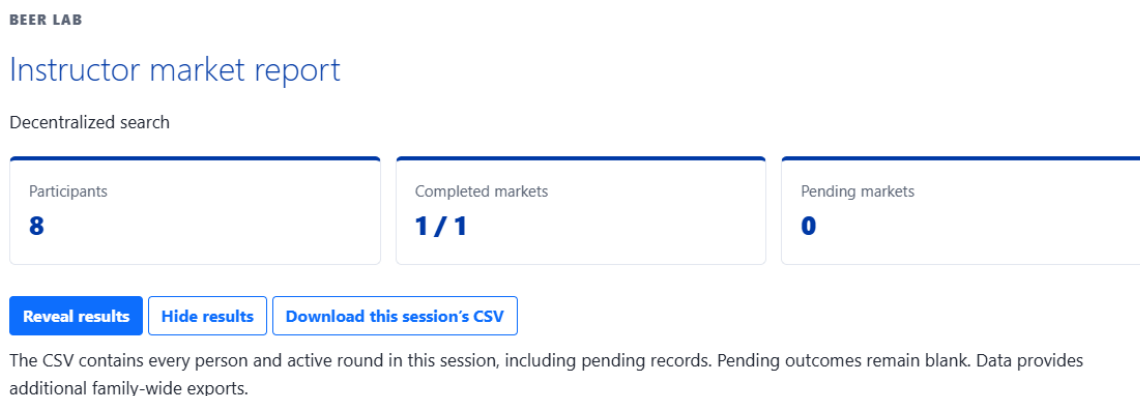


Figure 4.1: Monitor progress and reveal only after completion.

For a class with several conditions, reveal each report after the relevant decisions close. When different groups play different institutions, announce the comparison beforehand but do not project benchmarks while someone is still deciding. Session CSV download remains available during activity to preserve records rather than provide clues. Refresh the report to see subsequent progress; an already open page is not a substitute for checking current status.

4.2 Distinguishing people, pairs, and markets

The match rate divides matched people by people in completed markets. A pair counts as two people and one relationship. If an eight-person market produces three agreements, its rate is six out of eight, or 75%; two people remain unmatched. Do not divide three by eight to measure matching, or treat the eight people as eight independent institutional observations: their choices affect one another.

The side table reports person-round observations, matched people, mean outcome, mean requests, and mean seconds on decision pages. Side B reasonably has zero requests sent because it responds to A. Zero is not a recording failure. Compare sides' economic outcomes together with their opportunities and costs, without interpreting the mean as an assessment of individual performance.

Market side					
Market side	n	Matched	Round outcome · Mean (ECU)	Requests sent · Mean	Seconds on decision pages · Mean
A	4	4	142.5	1.25	10.01
B	4	4	145	0	1.06

Figure 4.2: Compare sides using their denominators and costs.

Outcome distributions separate A in primary blue from B in medium blue. Intervals have width twenty-five ECU and include their lower boundary but exclude their upper boundary. An outcome of 150 enters the interval starting at 150. Frequencies are counts rather than percentages. The second figure counts requests from A, including rejected requests. Someone with no requests may have sent none deliberately, found no suitable option, or not yet reached the turn; therefore only completed markets enter this distribution.

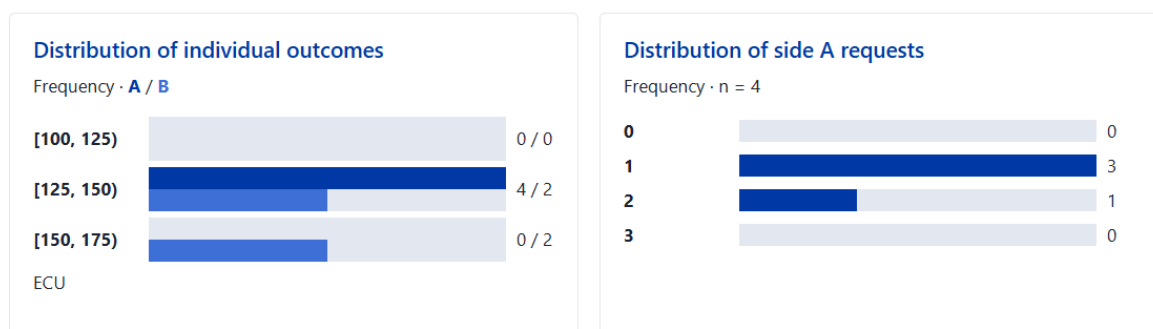


Figure 4.3: Interpret dispersion and search using both distributions.

4.3 Gains, fees, and references

The report computes gross gains over unmatched income, social gains after search costs, and participant gains after search and fees. Fees become platform revenue. When participants and platform are considered together, a fee is a transfer rather than automatically destroyed value. The application assumes no platform operating cost and assigns no participant the role of collecting its revenue; there is no platform administrator player.

Suppose three agreements generate 210 in combined gross gains. Five requests costing two each use ten, leaving two hundred in social gains. If each member of the three pairs pays five, the platform receives thirty and participants retain one hundred seventy in net gains. Accounting

satisfies $170 + 30 = 200$. This does not establish that every fee is harmless: it may discourage agreements or change search, reducing the gross gains actually realized.

The reference maximum evaluates possible pairs with induced values and allows people to remain unmatched when that raises total value. Each person has capacity one, and request costs are excluded. A second maximum applies segmentation constraints. Their difference describes opportunities removed by the access rule; the gap between realization and the permitted maximum describes gains not exploited within the institution.

Gross reference maximum	
Gross reference maximum · Mean	300 ECU
Gross maximum under segmentation · Mean	300 ECU
Gross gains / maximum without segmentation	66.67%
Blocking pairs · Mean	5
Individual rationality	100%

Fees are transfers to the platform; they reduce private gains but not social gains. Search costs do reduce social gains. References optimize induced values and unmatched options without search costs. Stability is evaluated using true preferences, the fee, and segmentation; it is distinct from efficiency.

Figure 4.4: Separate gains, costs, transfers, and references.

The efficiency ratio divides summed observed gross gains by summed unsegmented maxima for completed markets. It weights markets by their opportunities rather than averaging percentages with different denominators. A zero maximum displays a dash instead of an invented percentage. Social gains may be negative when no agreements form but requests cost resources. A gross benchmark is not the monetary outcome of a strategy students could implement without additional coordination.

4.4 Composition and stability

The pair matrix counts A characteristics in rows and B characteristics in columns. It contains no personal names. An intense diagonal means similar characteristics ended together; this may reflect induced values, segmented access, or the algorithm. Zeros for characteristics five and six are expected in markets containing only one through four. Do not interpret them as rejection of people who do not exist in that environment.

Blocking pairs are calculated from original values, the fee, unmatched income, and segmentation constraints. The diagnostic therefore does not mistake a strategic reported list for true preferences. An algorithm can be stable under submitted lists while showing blocks under original values. Individual rationality is also checked: an assignment without blocking pairs can still include an agreement paying less than remaining unmatched. The stable-market proportion requires both conditions.

Round evolution displays gross and social gains plus a table containing coverage, blocks, and decision time. Improvement in repeated sessions may reflect learning, coordination, or expectations. Reassignment changes market value composition, so each market's references are recalculated. The figure does not identify a causal reputation effect on its own or establish independence across rounds played by the same people.

Characteristics of realized pairs

A ↓ · B → · Frequency

A / B	1	2	3	4	5	6
1	0	0	1	0	0	0
2	0	1	0	0	0	0
3	0	0	0	1	0	0
4	1	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0

Figure 4.5: Read A characteristics in rows and B characteristics in columns.



Figure 4.6: Compare trajectories and composition by round.

Selecting extensions without repeating common rules

5.1 Directories, thickness, and contact opportunities

5.1.1 Full directory

The platform displays all available counterparts, up to six, retaining three turns and reference costs and values. The contrast focuses on visibility. More information may avoid unhelpful contacts but can also concentrate requests on the same person. Compare coverage, requests, and outcome dispersion. Better coverage with fewer contacts is consistent with saved search effort; concentrated requests require attention to congestion. Nungsari and Flanders' teaching antecedent and Roth's framework motivate separating access from coordination.

5.1.2 Thin and thick markets

The thin treatment has two people per side; the thick treatment has six, requiring four and twelve people per market. Side A targets remain grouped in characteristic pairs: one, one, three, three, five, and five when present. The directory and three turns remain constrained. Both participant count and characteristic variety change, so the treatment illustrates thickness rather than purely manipulating count while holding an identical value distribution. Compare proportions and gains per person along with each market's specific maximum.

5.1.3 One versus six turns

The short extension offers one request-and-response opportunity; the long extension offers six. Requests still cost two. More turns may produce additional agreements but also accumulate uncompensated costs. The prediction is not that everyone should use every turn. Ask about the incremental value of another search after rejection, distinguishing a filled market from one with unused opportunities. Roth and Xing motivate attention to bottlenecks; the specific number of turns is a classroom adaptation.

5.2 Segmentation and information

5.2.1 Characteristic blocks

Agreements are restricted to blocks one–two, three–four, and five–six. Directories still display at most two options, now within the block. This may direct contacts toward useful alternatives and reduce competition for recipients in other segments. Segmentation also removes options. Assess the gap between unrestricted and segmented maxima before celebrating faster search. A search filter does not imply that all excluded relationships were valueless.

5.2.2 Parity

Only pairs with both even or both odd characteristics are allowed. This can exclude A's preferred counterpart: characteristic two prefers one in the reference but cannot contact it under parity. Compare with blocks using references, realized pairs, and coverage. The treatment demonstrates that curation criteria matter even when two rules reduce available alternatives. It is not presented as a real policy based on personal attributes; characteristics are induced numbers for this exercise.

5.2.3 Undisclosed characteristics

A cannot see characteristics or incomes when requesting; B sees its own income when responding, but not the requester's characteristic. Cards explicitly indicate unavailable information. Directory, costs, and turns remain unchanged. Compare gains and requests without attributing to A optimization with information it lacked. Lower gains may reflect less directed search, but do not demonstrate that students ignored visible data. Exports identify this condition and retain original values for later analysis.

5.3 Recommendations and algorithms

5.3.1 Recommendations with consent

The platform computes an assignment maximizing permitted gross gains subject to each person's income after the fee being at least their unmatched option. It recommends at most one counterpart per person. A can request or decline, B can accept or reject; there is one turn, and requesting still costs two. Rejection may prevent a valuable reference from being realized. Observe which recommendations became agreements and explain that advice does not replace consent. The platform uses induced values known to the program rather than estimating private tastes from behavior.

5.3.2 Deferred acceptance with A or B proposing

Both sides submit lists without paying request costs. These two extensions change the internally proposing side while retaining values and capacities. Compare assignments and side outcomes alongside stability under original preferences. With truthful lists and no additional restrictions, the theoretical reference is stability; different proposers can select different members of the stable set. Submitted lists matter because an omission can remove an agreement acceptable under original values. Gale and Shapley support the mechanism, while institutional contrasts connect to Kagel and Roth.

BEER LAB · ROUND 1 / 1 · TURN 1 OF 3

Request an agreement

Market side

A1

Initial endowment per round

100 ECU

Your characteristic / Your preferred characteristic

1 / 1

Your renewed endowment is 100 ECU. Each request costs 2 ECU whether accepted or rejected. Without an agreement, you will receive 20 ECU less costs already incurred.

You do not yet have an agreement. Review this turn's options.

Available counterparts

B1

Characteristic: Not revealed

Your income with this agreement: **Not revealed**

Your income after the fee: Not revealed

B4

Characteristic: Not revealed

Your income with this agreement: **Not revealed**

Your income after the fee: Not revealed

Choose whom to request an agreement with

Send no request ▾

Confirm decision

Figure 5.1: Identify information withheld when requesting.

BEER LAB · ROUND 1 / 1 · TURN 1 OF 1

Request an agreement

Market side

A1

Initial endowment per round

100 ECU

Your characteristic / Your preferred characteristic

1 / 1

Your renewed endowment is 100 ECU. Each request costs 2 ECU whether accepted or rejected. Without an agreement, you will receive 20 ECU less costs already incurred.

You do not yet have an agreement. Review this turn's options.

Available counterparts

B1

Characteristic: 1

Your income with this agreement: **60**

Your income after the fee: 60

Choose whom to request an agreement with

Send no request ▾

Confirm decision

Figure 5.2: Request or decline advice: agreement requires acceptance.

5.3.3 Immediate acceptance

The platform processes positions on A's lists and makes B's acceptances final at each step. An earlier acceptance cannot be replaced by a later preferred proposal. B admits only candidates included in its own list. The rule preserves reciprocal acceptability while changing whether reservations can be revised. Compare blocks, assignments, and lists. Do not announce truthful ordering as universally dominant: competition at first positions can make placing a reachable option ahead of a favorite strategically relevant.

5.3.4 Lists of at most two

A-proposing deferred acceptance allows only two names per person. Shorter lists reduce available information and may leave places vacant. An outcome can remain stable relative to truncated lists while showing blocks under true values. Ask whether omitted people were unacceptable or excluded by the limit. The form prevents duplicate names and requires no names after ending the list. This is a teaching communication restriction grounded in the distinction between original and reported preferences, without attributing a universal empirical effect to this particular length.

BEER LAB · ROUND 1 / 1

Rank counterparts

Market side
A1

Initial endowment per round
100 ECU

Income without an agreement
20 ECU

Both sides submit an ordered list of counterparts, placing the most preferred first. Listing someone means you would accept an agreement with them. You may end the list with "No additional counterpart." Submitting a list has no cost; duplicates and names after ending the list are not allowed.

Your income depends on the assigned counterpart and your original values, not the position you write in the list.

Available counterparts

Counterpart	Characteristic	Your income with this agreement	Your income after the fee
B1	1	60 ECU	60 ECU
B2	2	50 ECU	50 ECU
B3	3	40 ECU	40 ECU
B4	4	30 ECU	30 ECU

Position 1

No additional counterpart ▼

Position 2

No additional counterpart ▼

Confirm decision

Figure 5.3: Check the two-name limit and omissions.

5.4 Fees, outside options, and composition

5.4.1 Five- and twenty-five-ECU fees

These treatments use the full directory and three turns. Each matched person pays the fee; unmatched people pay none. A value of forty versus an outside option of twenty provides fifteen in private gain under a five-ECU fee, but negative five under a twenty-five-ECU fee before search. Fees can change worthwhile agreements and exclusion. Distinguish platform revenue from destroyed gains. Rochet and Tirole motivate charges across sides; here fees are given and symmetric, with no platform competition or endogenous entry decision.

5.4.2 Forty-ECU unmatched option

Unmatched income rises to forty while the fee remains zero. With a value of forty, agreement provides no improvement before costs, so rejection can fit incentives. Gross pair gains now subtract eighty rather than forty. Do not attribute lower coverage to failure without checking whether forgone agreements were beneficial under that outside option. The treatment illustrates selection and individual rationality using the same directory and income rule.

5.4.3 Six people on A and four on B

Each market requires ten participants. A capacity of four pairs leaves at least two people on A unmatched even when every B person is assigned. The combined match rate cannot exceed 80%. A's targets include five while B characteristics stop at four, also changing compatibility. Compare side-specific rates and the maximum calculated for actual composition. An unmatched person on A does not reveal poor strategy by itself when the other side has scarce places.

5.4.4 Complementary characteristics

Agreement income becomes $10x_i x_j$, unmatched income is zero, the directory is complete, and six turns are available. Both sides value high characteristics more. Complementarity favors positively ordered pairs under total-gain maximization; with four per side, the gross maximum is 600. Observe competition for high options and discuss how an allocation generates unequal outcomes. Do not infer actual income inequality or reproduce a marriage market: Becker supplies a conceptual reference, while numbers belong to the teaching activity.

No extension silently changes one-agreement capacity. Maintain a comparison record containing parameters, participant counts, order, and duration. Exact maxima are recalculated for each market's values and constraints. Do not carry the 300 benchmark into a different outside option, income function, or composition. A rigorous discussion first checks what changed before attributing differences to a mechanism.

BEER LAB · ROUND 1 / 1 · TURN 1 OF 6

Request an agreement

Market side A1	Initial endowment per round 100 ECU	Your characteristic 1
--------------------------	---	---------------------------------

Your renewed endowment is 100 ECU. Each request costs 2 ECU whether accepted or rejected. Without an agreement, you will receive 0 ECU less costs already incurred.

You do not yet have an agreement. Review this turn's options.

Available counterparts

B1 Characteristic: 1 Your income with this agreement: 10 Your income after the fee: 10	B2 Characteristic: 2 Your income with this agreement: 20 Your income after the fee: 20	B3 Characteristic: 3 Your income with this agreement: 30 Your income after the fee: 30	B4 Characteristic: 4 Your income with this agreement: 40 Your income after the fee: 40
---	---	---	---

Choose whom to request an agreement with

Send no request ▾

Confirm decision

Figure 5.4: Apply this treatment's multiplicative rule and unmatched option.

Running the class and consolidating learning

6.1 A fifty-minute introductory class

Use the first five minutes to introduce the organizing problem: many interested people do not guarantee realization of possible agreements. Use professional services or project platforms as examples, avoiding analogies that ask students to disclose personal relationships. Explain that characteristics are assigned for the exercise. Present the 100-ECU account and unmatched option, and work through an outcome involving a rejected request on the board.

Reserve ten minutes for one search round, including access and comprehension. Announce silent individual choices as participants reach instructions. Walk through the laboratory to detect access problems without watching or commenting on choices. Use administration to distinguish people still reading from markets waiting for a response. Brief waits are normal; locate the outstanding stage before interpreting a prolonged wait as a technical failure.

After closing that round, allow another ten minutes for recommendations or the full directory. Retaining members across sessions may introduce learning from the first activity; reassignment changes composition. Either approach is usable, but record the choice and mention it when discussing results. For a cleaner institutional contrast, distribute conditions across markets and retain common instructions, timing, and parameters, ensuring that the second condition is not always favored by order.

Use twenty minutes of discussion to reveal coverage and distributions, reconstruct gains, and ask where opportunities remained. Introduce the benchmark after hearing explanations. Finish with five minutes of individual writing: ask for a difference between thickness and congestion, a difference between private and social gains, and a limitation of the comparison. This brief exercise evaluates conceptual understanding even when the class produces few observations.

Feedback script

First ask: “How many people found a counterpart and how many stayed unmatched?”
Continue: “Were beneficial options absent, were they not found, or did someone prefer waiting?” Then introduce: “What did requests cost, and who received fees?” Close with: “Does an outcome with more agreements necessarily generate greater gains or greater stability?”

6.2 An advanced class with algorithms

For a seventy-five-minute lesson, extend the comparison to immediate and deferred acceptance. Introduce acceptable lists and tentative reservations using two people per side. There is no need to prove every strategic property before play. Let students submit lists, observe outcomes, and suggest which pairs might want to change. Then construct a small ordinal example demonstrating the proposing side's effect.

A possible allocation is fifteen minutes for access and search reference, fifteen for immediate acceptance, fifteen for deferred acceptance, twenty for interpretation, and ten for final exercises. If infrastructure and course size permit, different markets can play conditions simultaneously. With different market sizes, plan complete groups first: a ten-person treatment cannot arbitrarily receive eight links while retaining its structure.

Discuss submitted lists in relation to original values. Asking an unmatched participant to explain an omission can be useful, but do not project their identifier or force public disclosure of a strategy. Invite voluntary explanations and reconstruct anonymous examples. Aggregates describe patterns; the CSV supports more detailed mechanism review after class.

6.3 Exercises with answer guidance

6.3.1 Endowment, income, and cost

A has 100 ECU and an unmatched option of twenty, sends three requests, and forms an agreement yielding fifty. Each request costs two and there is no fee. Calculate this outcome and that of an unmatched person sending the same requests. Answers are 144 with an agreement and 114 without. The thirty-ECU improvement replaces twenty with fifty; incurred costs are equal in both accounts. A common mistake is to add the twenty again to agreement income.

6.3.2 Coverage and scarcity

A market has six people on A and four on B, with four agreements. Calculate side-specific and combined rates. A has four out of six, approximately 66.67%; B has four out of four, 100%; together there are eight out of ten, 80%. B coverage is complete and aggregate coverage reaches capacity. Gains may still be unused if pairs are poorly compatible. Agreement count reflects capacity; agreement quality reflects values and selection.

6.3.3 A fee as transfer and incentive

Two agreements create one hundred in gross gains. Four requests cost two each, and every matched person pays five. Social gains, participant gains, and platform revenue are 92, 72, and twenty. Ask what happens if a higher fee makes one agreement disappear. Gross gains now change too; retaining 92 would presume an assignment that no longer happened. Transfer accounting does not remove incentive effects.

6.3.4 Sunk cost and additional search

A person spent six on rejected requests. A new option yields sixty if accepted and twenty otherwise; subjective acceptance probability is one tenth. The request costs two. Its expected improvement is four, less two, giving two. Previous spending does not enter the marginal cost. Explain why

sending is still not guaranteed optimal when another option has a greater expected return or when only one turn remains.

6.3.5 Proposing sides

Use lists A1: B1, B2; A2: B2, B1; B1: A2, A1; B2: A1, A2. With A proposing, the result is diagonal; with B proposing, it is crossed. Verify stability by enumerating unrealized pairs. In each assignment, at least one member of a possible pair prefers their current agreement. Ask what additional criterion could select between the outcomes. Stability alone does not identify a unique assignment or a distribution everyone regards as fair.

6.3.6 Different efficiency and stability

Return to the numerical example with stable total 202 and crossed total 378. Identify the crossed assignment's blocking pair and calculate the aggregate cost of retaining the diagonal. The loss against the maximum is 176. Do not conclude that an algorithm is incorrectly programmed: stability prevents mutually desired deviations, while total value evaluates aggregate gains. Permitting monetary transfers changes the problem and is outside this activity.

6.3.7 Complementarity

With two people per side, characteristics one and two, income $10x_ix_j$, and outside option zero, the ordered assignment produces combined incomes twenty and eighty, totaling one hundred. The crossed assignment produces forty for each pair, totaling eighty. Explain the twenty difference and extend to four per side. The ordered total is $20(1^2 + 2^2 + 3^2 + 4^2) = 600$. This calculation requires the complete characteristic set; a reassigned market containing duplicates needs its own maximum.

6.3.8 Interpreting an omission

A list restricted to two names omits someone yielding more than the outside option. Does omission reveal rejection? It can instead reveal limited communication: the two listed alternatives may also be attractive. Compare the list with original values and the permitted length. Do not label every option absent from the algorithm as a negative preference.

6.4 Brief assessment and applications

A strong response correctly identifies the market unit, reconstructs an account, distinguishes sides, and supports interpretation with its denominator. A rubric can assess rule accuracy, economic calculation, figure reading, and recognition of limits. Do not give better grades for more ECU: a position receiving few requests may generate low income despite sound understanding. Evaluate explanation rather than luck or opportunity power.

To connect with real markets, describe a specific platform function: filtering candidates, ordering content, recommending projects, or coordinating acceptances. Then identify what the exercise omits: negotiated prices, unobserved quality, voluntary entry, multiple agreements, reputation, or operating costs. The comparison preserves the model's value without assuming that eight people with induced payoffs represent an entire industry.

6.4.1 A rubric separating understanding from outcomes

Score each criterion from zero to two. Two denotes a correct, supported explanation; one denotes partial understanding requiring correction; zero denotes an unsupported statement or one incompatible with the rules. Share the criteria before requesting individual reports. This scale evaluates reasoning and lets instructors compare understanding between the reference activity and an extension.

For rule accuracy, ask students to identify initial resources, the unmatched alternative, and capacity. A complete response recognizes that each person has one hundred ECU, that unmatched income replaces agreement income, and that acceptance closes both partners' search. For economic calculation, require the terms of an account: endowment, relevant income, request costs, and fee. A correct number without a calculation does not establish that these components were distinguished.

For figure reading, request a comparison between A and B using both side sizes. The response must distinguish people, agreements, and markets; when using a mean, it must identify the observations being averaged. For interpretation limits, request one mechanism consistent with the pattern and an alternative explanation that cannot yet be excluded. Merely saying that an institution is better is insufficient: students must specify whether coverage, gains, stability, or costs improve.

After returning the assessment, allow correction of one account or interpretation using the guide. Retain the original response to compare learning, but use anonymous examples in discussion. If outcomes conflict with a prediction, reconstruct rules, lists, and constraints before discussing conduct. This sequence prevents a denominator or accounting error from becoming an apparent refutation of theory.

Data, difficulties, and teaching continuity

7.1 Exporting the correct session

From the report, *Download this session's CSV* produces a file for every person and active round in the selected session. Pending markets are included and missing economic outcomes are not replaced by zeros. Eight people across ten rounds produce eighty person-round rows plus the header, even if only round one has finished. Do not expect eight rows alone or interpret row count as the number of independent markets.

Data provides additional native and custom exports for the family. These can combine several sessions stored in the instance. For one particular class, use its report button or carefully filter the session column in a family export. Being isolated from other games does not mean every administrative export automatically contains one class only.

The table retains session, participant, round, market, side, characteristic, target, treatment, language, edition, and grouping. It also includes endowment, outside option, costs, fee, turns, directory, segmentation, information, mechanism, and valuation rule. Recorded choices reconstruct requests, responses, and lists. Market outcomes repeat on member rows to support joins; do not add market gains eight times because eight people participate.

For market-level analysis, deduplicate by session, round, and market, using completed markets when calculating report metrics. For individual analysis, retain one observation per participant and active round. Side comparisons use the relevant side's observation count; unequal composition requires different denominators. Repeated periods from the same people are dependent, a fact to acknowledge when summarizing uncertainty. This guide does not transform a small classroom activity into a causal evaluation of actual institutions.

Attention

Do not open an incomplete CSV and fill blank outcomes with zero. A blank means the mechanism has not determined an outcome; zero would be an economic realization. Preserve the original, document exclusions, and use a copy when cleaning or adding information.

7.2 Responding to common difficulties

If a link reports a nonexistent participant, it likely belongs to a reset database or an earlier session. Create a new session when appropriate and distribute current links. Do not reuse obsolete codes or have students share one identity to bypass the problem. If a room displays another family or no

configuration, check domain and service before starting. The directory title is not a substitute for checking Demo and Rooms contents.

When a market waits, inspect its monitor and pending stage. Rules confirmation, comprehension, a request, or a response may be incomplete. B without incoming requests needs no fabricated response; its page is skipped. A matched person still participates in synchronization even without choosing again. If someone closed their window, reopening the correct link usually resumes the existing stage; deleting the database destroys that continuity.

If an expected counterpart is absent, check availability, directory sampling, and segmentation. Missing a card does not prove an error: the person may already be matched, absent from the turn's sample, or outside the segment. A rejected ranking requires checking duplicate names and names following the ending option. If a participant calculates a different payoff, reconstruct endowment, the income alternative, requests actually sent, and fee. Do not compare one person's gross income with another's final account.

Code updates require the local or laboratory instance to load the new version. Keeping a tab open does not update the service. Coordinate deployment outside sessions and preserve earlier data. Guides are editable sources: rule changes require updated instructions, examples, references, and affected captures alongside the program. An editorial-only correction does not require recreating markets or repeating choices.

7.3 Preserving a reusable package

Keep code version, effective parameters, teaching sequence, date, and original data. Maintain one guide per language covering basic and extended editions; avoid nearly identical documents for every fee or deadline. The repository holds LaTeX sources, PDFs, and a shared figure folder. Dropbox copies are organized by family and language, including the images needed to compile each source.

After class, record difficulties and questions rather than means alone. Note whether congestion arose in contacting or understanding lists, whether waiting was technical or strategic, and whether discussion distinguished stability from efficiency. Such observations improve later sessions without turning one class into conclusive evidence. The aim is for colleagues to select a condition, prepare its market correctly, and provide feedback with clear foundations and limits.

Checkpoint

At closure, confirm the final screen, session download, all-round records, and parameter backup. Ensure conclusions use people, pairs, or markets as appropriate. Reserve strong causal comparisons for designs that support them, and retain classroom uncertainties as learning opportunities.

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