



Teacher guide for the call market (batch clearing auction) game

Lab implementation, theoretical background,
experimental evidence and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



Version 1.0 | October 2026

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

How to use this guide

This guide lets you prepare, run and discuss the **call market (batch clearing auction)** game developed for the Behavioral and Experimental Economics Research Lab (BEER Lab) at the Department of Economics, Tecnológico de Monterrey. It is written for instructors of intermediate microeconomics, with or without prior experience in experimental economics.

The **quick-start chapter** gets a session running. The operational chapters explain every screen. The conceptual chapters give the theoretical background and evidence needed to interpret results. Shared rules are explained once; the extended variant lists only what changes relative to the basic game.

This game is part of a family of four markets with induced values and costs: the double auction (**double_auction**), the direct-negotiation pit market (**pit_market**), the posted-offer market (**posted_offer**), and this call market. All four share the same economic logic and differ only in the institution that sets prices (Chapter 5), so they can be compared across successive classes.

Author

This guide was prepared by Edgar O. Castro Méndez, research professor at the Department of Economics, Tecnológico de Monterrey, Monterrey campus. For questions or suggestions about its content, contact the author at ecastrom@tec.mx.

For the instructor

This guide matches the English interface. A separate Spanish version exists. Screenshots in this guide were taken on a local instance of the game with simulated decisions; the numbers shown illustrate the interface and are *not* results from a real class. Project only aggregate results: never link participant codes to names, student IDs, seats or individual decisions.

This game is still being prepared for the lab server. The access steps in Chapter 2 and the screen sequence in Chapter 3 are already final (tested on an identical copy of the game); only the screenshots of YOUR game's card, login and rooms on teaching-admin.beer-lab.org and teaching.beer-lab.org are still missing — this guide will add them once the game goes live on those sites.

Contents

How to use this guide	i
1 Quick-start guide	1
1.1 At a glance	1
1.2 Minimal sequence	2
1.3 Checklist	2
2 Platform access	3
2.1 Your access: teaching-admin and the game's panel	3
2.2 The panel: minimal vocabulary	4
2.3 Rehearsing before class	5
2.4 Creating the session in class	6
2.5 How your students join	7
3 The basic game and its screens	10
3.1 Rules, incentives and benchmarks	10
3.2 Cover, instructions and comprehension	10
3.3 Order, waiting and the result	14
4 Instructor report and debrief	19
4.1 When to reveal	19
4.2 How to read the report	21
5 Theoretical background and evidence	23
5.1 Why this is a distinct institution	23
5.2 Theoretical benchmark	23
5.3 Experimental evidence	24
5.4 Patterns worth discussing	24
6 Basic modes	26
6.1 One period	26

6.2	Eight periods	26
7	Extended variants	27
7.1	Treatment map	27
7.2	Communication	27
8	Lesson plan and reading the results	29
8.1	Suggested 50-minute session	29
8.2	Questions to drive discussion	29
8.3	Common misreadings	30
9	Operations, privacy and troubleshooting	31
9.1	Privacy and conduct	31
9.2	Common issues	32
9.3	Data for later analysis	32
A	QR code for each room	34

List of Figures

2.1	Instructor page: teaching-admin.beer-lab.org . Once this game goes live, its card will appear in this same directory (search for Call Market).	3
2.2	Demo: the game's 6 configurations (4 basic, 2 extended, in Spanish and English).	4
2.3	Rooms: the game's four rooms.	5
2.4	Links for a 14-participant test session. This guide's screenshots were taken on a local copy, which is why the addresses say <code>localhost</code> ; on the server they say <code>callmarket.beer-lab.org</code> .	6
2.5	Form for the basic English room: only its two configurations appear.	7
2.6	Room the student opens.	8
2.7	Catalogue at teaching.beer-lab.org , the students' page. Once this game goes live, its card will appear here (search for Call Market).	9
3.1	Cover and lab rules.	11
3.2	Instructions for a seller.	12
3.3	Instructions for a buyer.	13
3.4	Comprehension check.	14
3.5	Incorrect answers: the message recalls the rule without giving the answer away.	14
3.6	Buy order: own value, box and slider.	15
3.7	Filled-in buy order.	15
3.8	Sell order: own cost, box and slider.	15
3.9	Filled-in sell order.	16
3.10	A buyer waiting after submitting their order.	16
3.11	Result for a buyer who traded.	17
3.12	Result for a buyer whose order did not clear.	17
3.13	Order screen in period 2, with the previous period's history.	18
3.14	Closing screen: total earnings, history and a note to wait for the instructor.	18
4.1	Report with results hidden and a period counter.	19
4.2	Revealed report: theoretical benchmark, efficiency and the closing-price trend (simulated decisions).	20

4.3	Revealed report: early versus late periods, a histogram of every order, and a period-by-period table (simulated decisions).	21
7.1	Pre-period chat (demo messages).	28

Quick-start guide

1.1 At a glance

Purpose	Show how a batch clearing institution — sealed, simultaneous orders, a single closing price per period — compares with the competitive equilibrium, and contrast it with the other three institutions in this battery (double auction, direct negotiation, posted offer).
Participants	Any number from 2 up. The whole class forms <i>one single market</i> . Roughly half are buyers and the rest sellers, assigned at random; role and value or cost stay the same for the whole session. Recommended: 12 or more.
Market	Buyer of rank i : value $\max(0, 260 - 20(i - 1))$. Seller of rank j : cost $20(j - 1)$. Each person buys or sells at most one unit per period. Its own ladder, distinct from the other three institutions (section 5.1).
Decision	Each period, each person submits a single sealed order , at the same time as everyone else: a buyer offers the highest price they will pay; a seller, the lowest price they will accept. No one sees any order until the market clears.
Earnings	Buyer: value — closing price. Seller: closing price — cost. Whoever does not clear earns 0 that period.
Duration	10–15 minutes for one period; 25–35 for eight periods or the chat variant, not counting discussion.
Instructor (you)	teaching-admin.beer-lab.org → the game's card → Open panel . Asks for a username and password (section 2.1).
Students	The room link callmarket.beer-lab.org/room/call_market_en , its QR code (section 2.5), or teaching.beer-lab.org .
Report	Theoretical benchmark (equilibrium quantity and price band), average efficiency, closing-price trend by period, early versus late periods, histogram of every order sent in the last period, and a period-by-period table.

Note

There are two different sites. **teaching-admin.beer-lab.org** is yours: from there you open the game's panel and download this guide. **teaching.beer-lab.org** is for your students: from there one can only *play*, not create sessions.

1.2 Minimal sequence

Before class

1. Request panel access at lab.economia@servicios.tec.mx, stating the game, course, number of students and date. You will receive the password for the **admin** user.
2. Open teaching-admin.beer-lab.org, find **Call market (batch clearing auction)** and click **Open panel**. Enter username and password.
3. Rehearse in **Demo**: open a configuration and play it across the participant tabs to get familiar with the buyer and seller screens and the report (section 2.3).
4. Choose the mode (one period or eight periods) or the extended chat variant.

In class

5. Count the students present.
6. In the panel, open **Rooms** and the [EN] **Call Market** room (or the extended one). Choose the configuration, type the *exact* number of students in **Number of participants** and click **Create**.
7. Share the room link or project its QR code. Each student clicks **Start**.
8. In the room, click **Monitor the session**: this opens the session page, with the **Monitor** (progress) and **Report** tabs. Once the completed-periods counter reaches the total, open **Report**, click **Show results** and lead the discussion.

After class

9. In the room, click **Close this room**. It is then ready for the next group; the session's data stays available under **Sessions**.

1.3 Checklist

- ☐ Panel password received and tested at callmarket.beer-lab.org/login.
- ☐ Rehearsal done in **Demo**.
- ☐ Devices, internet, browser and projector ready.
- ☐ Mode or variant chosen to match the class question.
- ☐ Session's number of participants matches the number of students present (the whole group is one market: one absent person stalls everyone).
- ☐ Room link or QR code at hand (section 2.5); tested from a phone.
- ☐ Made clear that ECU are experimental units and there is no cash payment.
- ☐ Monitor and report open; theoretical benchmark (quantity and price band) computed before revealing results.

Platform access

2.1 Your access: teaching-admin and the game's panel

The instructor page is teaching-admin.beer-lab.org. It does not appear in the beer-lab.org menu: type the address directly or bookmark it. It lists every classroom game in the lab; you can search by title, topic or JEL code.

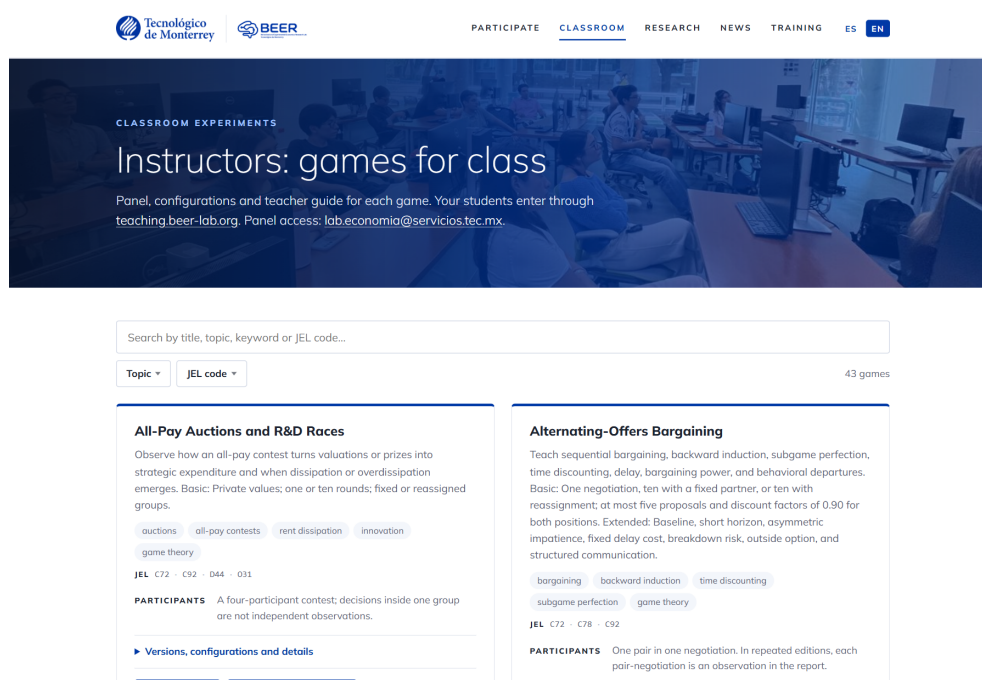


Figure 2.1: Instructor page: teaching-admin.beer-lab.org. Once this game goes live, its card will appear in this same directory (search for **Call Market**).

Each game has a card with its description, number of participants and duration, and two buttons: **Open panel**, which goes to the game's panel, and **Teacher guide (PDF)**, which downloads this guide (the **EN** link downloads the English version). Expanding **Versions, configurations and details** lists the rooms, each with its own **open panel** straight to that room's session-creation form. The game's panel (<https://callmarket.beer-lab.org>) is protected: **Open panel** shows the **Admin Login** screen, where you type **admin** under **Username** and the password the lab gave you under **Password**. If you do not have it, request it at lab.economia@servicios.tec.mx.

Note

This game does not yet have its own card in the directory or an active panel at callmarket.beer-lab.org: it is still being prepared. The procedure above is identical to every other lab game's (see the auction, Cournot, Bertrand and other market guides); once it goes live, this section will be updated with screenshots specific to **Call Market**.

2.2 The panel: minimal vocabulary

The panel is oTree's own and is in English. These are the only terms you need:

Demo	Practice sessions. Creates a session with fictitious participants that you play yourself across several tabs. Use it to rehearse, never with students.
Rooms	Fixed addresses for class. This game has four: basic and extended, in Spanish and English. Students always enter through a room.
Create / Number of participants	Create the session in the room and declare how many people will play.
Monitor	A table with each participant's period and screen. It does not show decisions.
Advance slowest participants	The Monitor button that moves along whoever has fallen behind (section 2.4).
Report	The instructor report for projecting aggregate results.
Data	Downloads the data as CSV.
Sessions	A list of all your sessions, to return to an earlier one.
Close this room	Frees the room when done, for the next group.

In this panel, **Demo** shows only this game's 6 configurations and **Rooms** only its four rooms. If a different game appears, do not start the session and notify the lab.

oTree
Demo
Sessions
Rooms
Data
Server Check

Demo

[ES] Cierre por lotes — un periodo
[ES] Cierre por lotes — 8 periodos
[EN] Call market — one period
[EN] Call market — 8 periods
[ES] Cierre por lotes extendido — con chat, 8 periodos
[EN] Call market extended — with chat, 8 periods

Juegos de mercados / Market games — BEER Lab

Mercado de cierre por lotes (call market) / Call market (batch clearing auction)

To add to this list, create a new session config.

Figure 2.2: Demo: the game's 6 configurations (4 basic, 2 extended, in Spanish and English).

oTree	Demo	Sessions	Rooms	Data	Server Check
-------	------	----------	-------	------	--------------

Rooms	
Current rooms:	
[ES]	Mercado de cierre por lotes
[EN]	Call Market
[ES]	Mercado de cierre por lotes — extendido
[EN]	Call Market — extended

Figure 2.3: Rooms: the game's four rooms.

2.3 Rehearsing before class

In **Demo**, click a configuration: a practice session with 8 participants (4 buyers, 4 sellers) is created and the links page appears. Open each **P1**, **P2**, ... link in a separate tab and play as if you were each student; then open **Report**. Since the whole session is one market, each period only clears once all 8 tabs have submitted their order. With 4 and 4, the report's theoretical benchmark differs from that of a large group (section 5.2); this chapter's screenshots instead use a 14-participant test session (7 and 7), to show the full class-size benchmark. These sessions do not affect your classes.

oTree Demo Sessions Rooms Data Server Check

[EN] Call market — 8 periods: session 'dozsja5'

Edit
Links
Monitor
Data
Payments
Report
Description

You can either use the session-wide link, persistent links, or single-use links.

Session-wide link

If it's not practical for you to use a Room, you can distribute the following link to participants.

<http://localhost:8029/join/vuruzusa>

Persistent links

For a real session, you should use a [room](#).

Single-use links

Below are single-use links.

P1	http://localhost:8029/initializeParticipant/meobsyiv
P2	http://localhost:8029/initializeParticipant/g93owrhj
P3	http://localhost:8029/initializeParticipant/nlx6teqq
P4	http://localhost:8029/initializeParticipant/fren28y5
P5	http://localhost:8029/initializeParticipant/m95qrkp8
P6	http://localhost:8029/initializeParticipant/3b32rmw1
P7	http://localhost:8029/initializeParticipant/7utejofx
P8	http://localhost:8029/initializeParticipant/an9a3cbd
P9	http://localhost:8029/initializeParticipant/f5ynveyu
P10	http://localhost:8029/initializeParticipant/n3qnlhgs
P11	http://localhost:8029/initializeParticipant/2d82949x
P12	http://localhost:8029/initializeParticipant/so8luefv
P13	http://localhost:8029/initializeParticipant/e49a4k93
P14	http://localhost:8029/initializeParticipant/890u8ne7

Figure 2.4: Links for a 14-participant test session. This guide's screenshots were taken on a local copy, which is why the addresses say `localhost`; on the server they say `callmarket.beer-lab.org`.

Note

Do not rehearse with the room link open in several tabs of the same browser: oTree recognizes the browser, and every tab would count as the same person. Use **Demo** to rehearse instead.

2.4 Creating the session in class

Under **Rooms**, open the room for the language you will use. The form offers only that room's configurations. Choose the configuration, type the number of students present under **Number of participants** and click **Create**.

oTree Demo Sessions Rooms Data Server Check

Room: [EN] Call Market

Create a new session

English room. Only the configurations of this game, language and edition are shown below.

Session Config

[EN] Call market — one period ▾

Number of participants

Must be a multiple of 1

Create

[Configure session](#) ⚙️

App sequence

Figure 2.5: Form for the basic English room: only its two configurations appear.

Note

Declare the exact number, with no spare seats. Roles and values or costs are assigned when the session is created, and the whole class is one market: each period’s waiting page waits for *everyone* before computing the clearing. If you declare more participants than show up, the market never clears. If one more student than declared arrives, they will see “The session is full”. In either case, before starting, click **Close this room**, create another session with the correct number, and ask everyone to reopen the link or the QR code. If a student disconnects mid-activity, there is no time limit to submit an order and the whole group stalls on the waiting page. Ask them to reopen the room in the same browser: it resumes where it left off. If they cannot, **Advance slowest participants** in the Monitor moves along whoever has fallen behind; that person is left without a submitted order that period (they do not clear, earnings 0), and the rest of the market is computed as usual from the orders that did arrive.

2.5 How your students join

Students need no account and nothing to install; a phone or computer browser is enough. They have three paths, all leading to the same room:

1. **QR code.** Project the one for the room you are using (below, and full-size in appendix A). They scan it with a phone camera.
2. **Room link.** Share it over the class chat or on Canvas: https://callmarket.beer-lab.org/room/call_market_en.
3. **Catalogue.** At teaching.beer-lab.org they search for **Call market (batch clearing auction)** and click their language’s button.



English, basic

callmarket.beer-lab.org/room/call_market_en



English, extended

callmarket.beer-lab.org/room/call_market_extended



Español, básica

callmarket.beer-lab.org/room/call_market_es



Español, extendida

callmarket.beer-lab.org/room/call_market_extendido

What the participant sees

The student opens the room and clicks **Start**. If you have not created the session yet, they see “Please wait” and join as soon as you do; so you can share the link or QR code from the start of class. No email or password is needed: they receive an anonymous code.

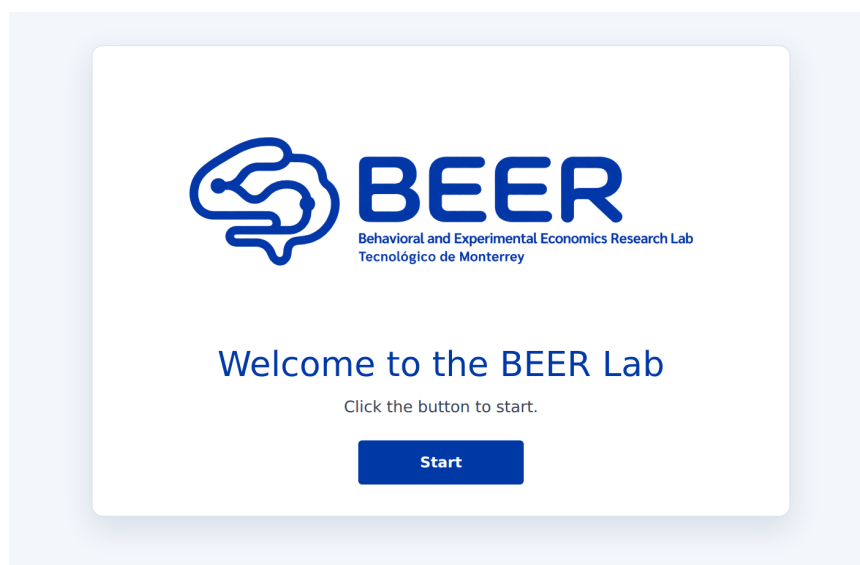


Figure 2.6: Room the student opens.

Language is set per room: a session created in the English room only admits students entering through the English room. If your group is mixed, pick one language for everyone.

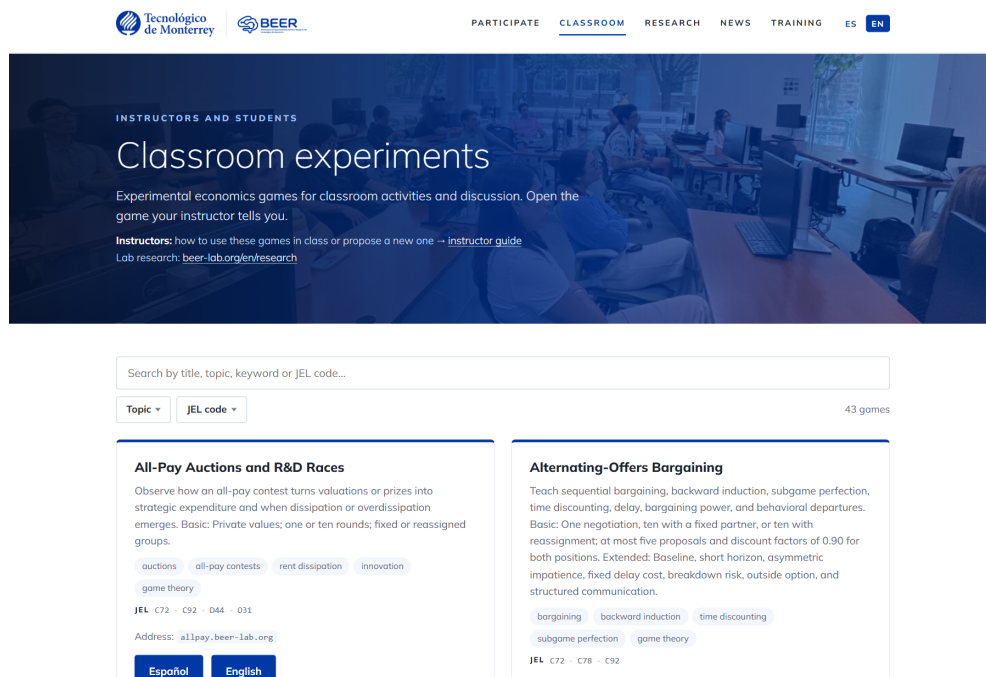


Figure 2.7: Catalogue at teaching.beer-lab.org, the students' page. Once this game goes live, its card will appear here (search for **Call Market**).

The basic game and its screens

3.1 Rules, incentives and benchmarks

When the session is created, participants are ordered at random. Roughly half are buyers and the rest sellers. Each buyer gets a rank i and a **value** $v_i = \max(0, 260 - 20(i - 1))$: 260, 240, 220, ... Each seller gets a rank j and a **cost** $c_j = 20(j - 1)$: 0, 20, 40, ... Role, rank and value or cost stay the same in every period. This ladder is deliberately different from `double_auction`'s, `pit_market`'s and `posted_offer`'s (section 5.1), so no number accidentally matches across games.

Each period has a single decision step: every person submits **one sealed order**, at the same time as everyone else, without seeing anyone else's. A buyer offers the highest price they would pay (the system will not let them offer more than their value); a seller offers the lowest price they would accept (the system will not let them offer less than their cost). Once everyone has submitted their order, the system **clears the market**: it sorts buy orders from highest to lowest and sell orders from lowest to highest, and finds the largest quantity k such that the k -th highest buy order is at or above the k -th lowest sell order. That is the quantity that trades. The **closing price** is the midpoint between those two marginal orders, rounded. The k people with the highest buy orders buy, and the k people with the lowest sell orders sell, all at the same closing price — not at the price each one offered. Whoever is not among those k does not trade that period.

$$\pi_i = \begin{cases} v_i - \text{closing price} & \text{buyer, if cleared} \\ \text{closing price} - c_j & \text{seller, if cleared} \\ 0 & \text{if not cleared} \end{cases}$$

Since every buy order that clears is, by construction, at or above the closing price, and every sell order that clears is at or below it, and the system already prevented orders that violate one's own value or cost, **no one who trades can lose money**.

For the instructor

Before playing, ask the class to draw supply and demand with the first seven values and costs, and predict at what price the market will clear and how many units will trade. Then ask: if no one sees any order before the market clears, is it better to offer one's exact value, below it, or above it?

3.2 Cover, instructions and comprehension

The cover presents the BEER Lab and the rules of conduct. The participant confirms they have read them. The instructions depend on the assigned role and describe only the action (submitting a buy or sell order): they never mention “call market” or “clearinghouse”.



Welcome to the BEER Lab

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

Today you will take part in a market as a buyer or a seller. Your earnings depend on your decisions.

During the session

- Do not talk or communicate with other people, except through the means shown on screen.
- Make your decisions individually.
- Follow the on-screen instructions. Do not refresh or close this page.
- If you need help, raise your hand.

I have read and understood the lab rules.

☐ Yes ☐ No

Start

Powered by [oTree](#)

Figure 3.1: Cover and lab rules.

Instructions

Period 1 of 8

In this activity you are a seller. Each period you want to sell one unit of a product.

Each period you have your own **cost** for your unit: the lowest price it is worth accepting. If you sell at a higher price you earn the difference. No one else knows your cost.

Your earnings = the price you sell at – your cost. If you do not sell, your earnings are 0.

Example: if your cost is 60 and you sell at a price of 110, your earnings are $110 - 60 = 50$ ECU.

How the market works

- Each period, every buyer and seller sends, at the same time, a single sealed order: you do not see anyone else's order, and they do not see yours.
- Your order is the lowest price you are willing to accept. The system will not let you offer less than your cost.
- Once everyone has sent their order, the system computes a single closing price for the whole market that period, and how many units trade at that price: the highest offers to pay buy (as far as there are sellers willing to sell at that price), and the lowest offers to sell, sell.
- If your order ends up on the right side of the closing price, your trade happens at that price, not at the price you offered. You can buy or sell at most one unit per period; if your order does not make it into the clearing, your earnings for that period are 0.

- There will be 8 periods. Each period you are given a new value or cost. Your earnings from all periods are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

[Continue](#)

Powered by [oTree](#)

Figure 3.2: Instructions for a seller.

Instructions

Period 1 of 8

In this activity you are a buyer. Each period you want to buy one unit of a product.

Each period you have your own **value** for your unit: the highest price it is worth paying. If you buy at a lower price you earn the difference. No one else knows your value.

Your earnings = your value – the price you buy at. If you do not buy, your earnings are 0.

Example: if your value is 180 and you buy at a price of 110, your earnings are $180 - 110 = 70$ ECU.

How the market works

- Each period, every buyer and seller sends, at the same time, a single sealed order: you do not see anyone else's order, and they do not see yours.
 - Your order is the highest price you are willing to pay. The system will not let you offer more than your value.
 - Once everyone has sent their order, the system computes a single closing price for the whole market that period, and how many units trade at that price: the highest offers to pay buy (as far as there are sellers willing to sell at that price), and the lowest offers to sell, sell.
 - If your order ends up on the right side of the closing price, your trade happens at that price, not at the price you offered. You can buy or sell at most one unit per period; if your order does not make it into the clearing, your earnings for that period are 0.
- There will be 8 periods. Each period you are given a new value or cost. Your earnings from all periods are added up.
 - Amounts are in ECU (experimental currency units). There is no cash payment.

[Continue](#)

Powered by [oTree](#)

Figure 3.3: Instructions for a buyer.

The example uses a value of 180, a cost of 60 and a closing price of 110 (earnings of 70 ECU for the buyer, 50 ECU for the seller). None of these three numbers matches the real equilibrium band (120–140) or the examples in the other three market games, so the example cannot serve as an anchor. The comprehension check asks both questions of every participant, regardless of role: the buyer's earnings and the seller's earnings in that case. A wrong answer recalls the rule and allows another try.




Before you start

Period 1 of 8

Answer both questions based on the instructions (they apply to any buyer or seller).

A buyer has a value of 180 and their trade clears at a price of 110. What are their earnings?

☐ -70 ECU

☐ 70 ECU

☐ 110 ECU

☐ 180 ECU

A seller has a cost of 60 and their trade clears at a price of 110. What are their earnings?

☐ -50 ECU

☐ 50 ECU

☐ 60 ECU

☐ 110 ECU

Check

Powered by [oTree](#)

Figure 3.4: Comprehension check.




Por favor corrija los errores.

Before you start

Period 1 of 8

Answer both questions based on the instructions (they apply to any buyer or seller).

A buyer has a value of 180 and their trade clears at a price of 110. What are their earnings?

☐ -70 ECU

☐ 70 ECU

☐ 110 ECU

☐ 180 ECU

Check: a buyer's earnings = their value – the closing price.

A seller has a cost of 60 and their trade clears at a price of 110. What are their earnings?

☐ -50 ECU

☐ 50 ECU

☐ 60 ECU

☐ 110 ECU

Check: a seller's earnings = the closing price – their cost.

Check

Powered by [oTree](#)

Figure 3.5: Incorrect answers: the message recalls the rule without giving the answer away.

3.3 Order, waiting and the result

The order is sealed: nobody sees anyone else's before deciding their own. The buyer types the highest price they offer to pay; the seller, the lowest price they offer to accept. Both screens have a box and a slider, with their own value or cost always visible.

Your buy order

Period 1 of 8

Highest price you offer to pay (0 to 400)

Send order

Powered by [oTree](#)

Figure 3.6: Buy order: own value, box and slider.

Your buy order

Period 1 of 8

Highest price you offer to pay (0 to 400)

120

Send order

Powered by [oTree](#)

Figure 3.7: Filled-in buy order.

Your sell order

Period 1 of 8

Lowest price you offer to accept (your cost to 400)

Send order

Powered by [oTree](#)

Figure 3.8: Sell order: own cost, box and slider.

Tecnológico de Monterrey | BEER

Your sell order

Period 1 of 8

Lowest price you offer to accept (your cost to 400)

45

Send order

Powered by oTree

Figure 3.9: Filled-in sell order.

After submitting, the screen waits for everyone else in the market to submit theirs.

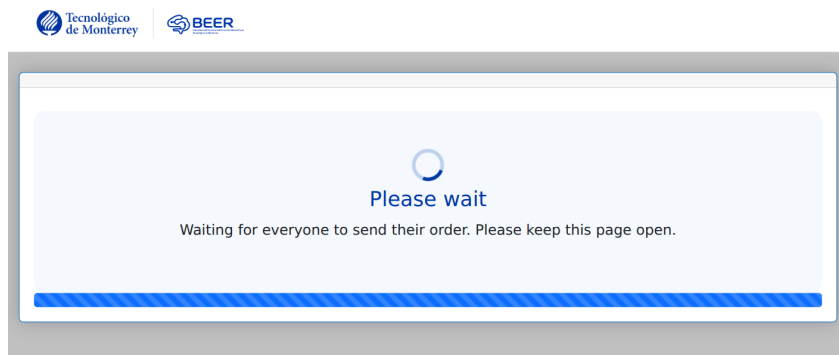


Figure 3.10: A buyer waiting after submitting their order.

What the participant sees

“Please wait” means other people in the market have not submitted yet; since the market is the whole class, a single pending person is enough. It is not an error. The participant should not close or refresh the page.

The result shows the role, the person’s own value or cost, the order submitted, the market’s closing price, how many units traded, whether their own order cleared and, if it did, the price of the trade and the earnings. Whoever does not clear sees “No” and earnings of 0, with the same closing price as the rest of the market (the market did clear; that person’s order simply was not on the right side of it).

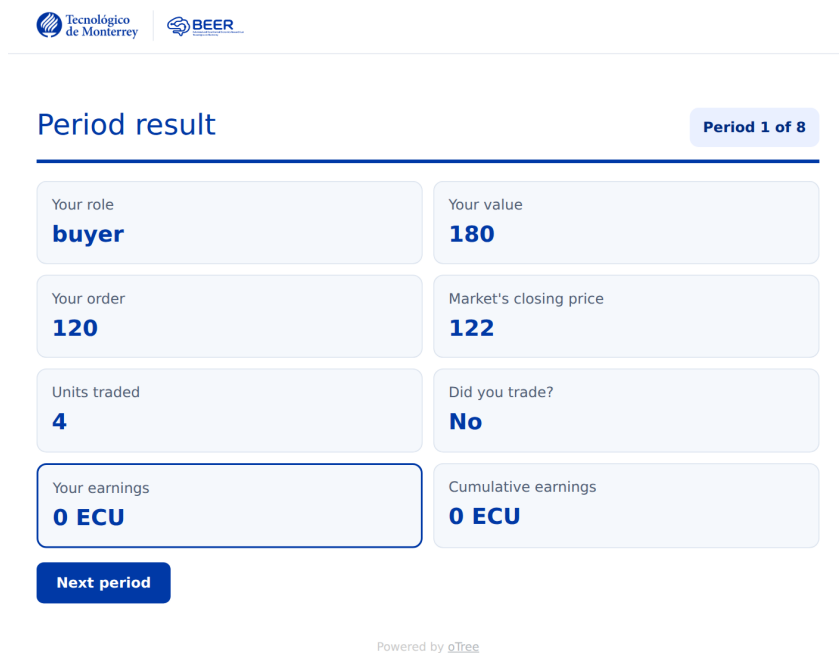


Figure 3.11: Result for a buyer who traded.

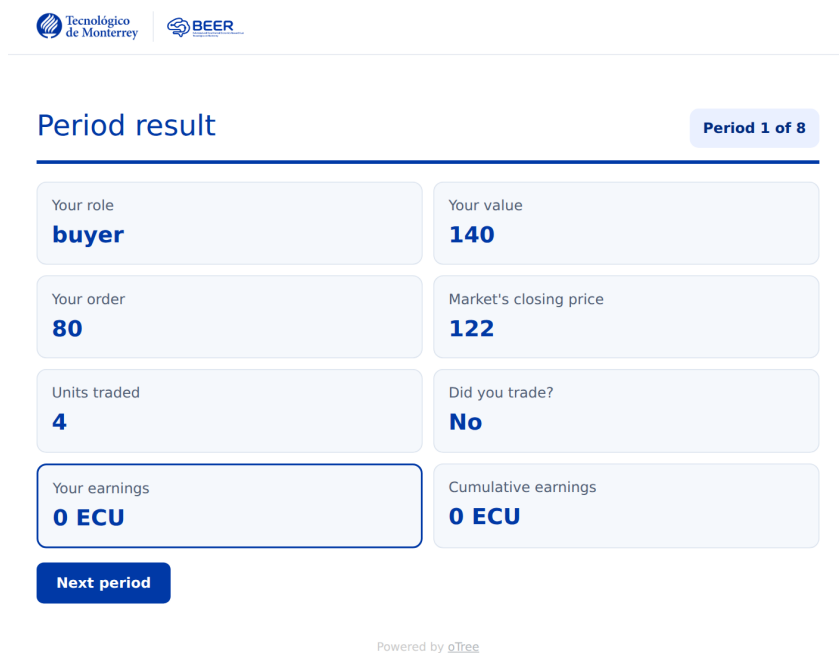


Figure 3.12: Result for a buyer whose order did not clear.

In later rounds, the order screen includes the history of earlier periods.




Your buy order

Period 2 of 8

Highest price you offer to pay (0 to 400)

Send order

Previous periods

Period	Role	Value / cost	Traded	Price	Earnings
1	buyer	180	No	—	0

Powered by [oTree](#)

Figure 3.13: Order screen in period 2, with the previous period's history.




End of the activity

Period 8 of 8

Your total earnings

1035 ECU

Period	Role	Value / cost	Traded	Price	Earnings
1	seller	0	Yes	122	122
2	seller	0	Yes	132	132
3	seller	0	Yes	125	125
4	seller	0	Yes	135	135
5	seller	0	Yes	125	125
6	seller	0	Yes	135	135
7	seller	0	Yes	131	131
8	seller	0	Yes	130	130

Thank you for participating. Please wait for your instructor.

Powered by [oTree](#)

Figure 3.14: Closing screen: total earnings, history and a note to wait for the instructor.

Instructor report and debrief

4.1 When to reveal

Report is a tab on the session page: reach it from the room via **Monitor the session**, or from **Sessions** once the session has ended. It opens with results hidden. The top shows the number of participants, buyers, sellers and completed periods, so you can project it from the start without giving anything away. Click **Show results** once completed periods reach the total; **Refresh** brings in new periods and **Hide results** covers them again.

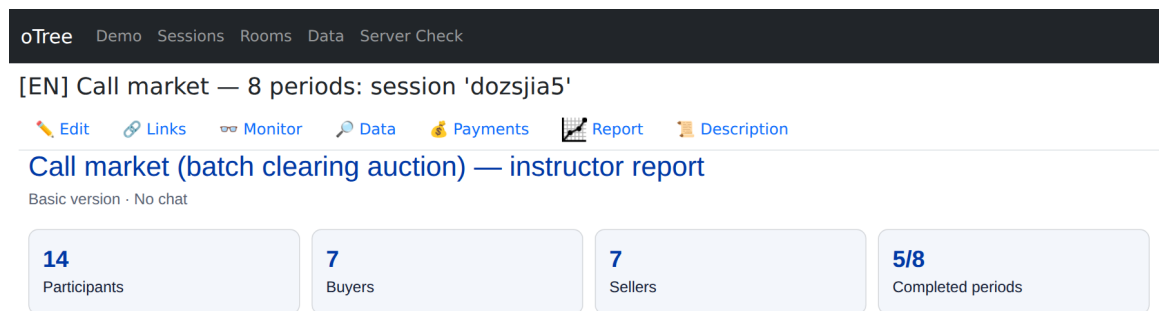


Figure 4.1: Report with results hidden and a period counter.

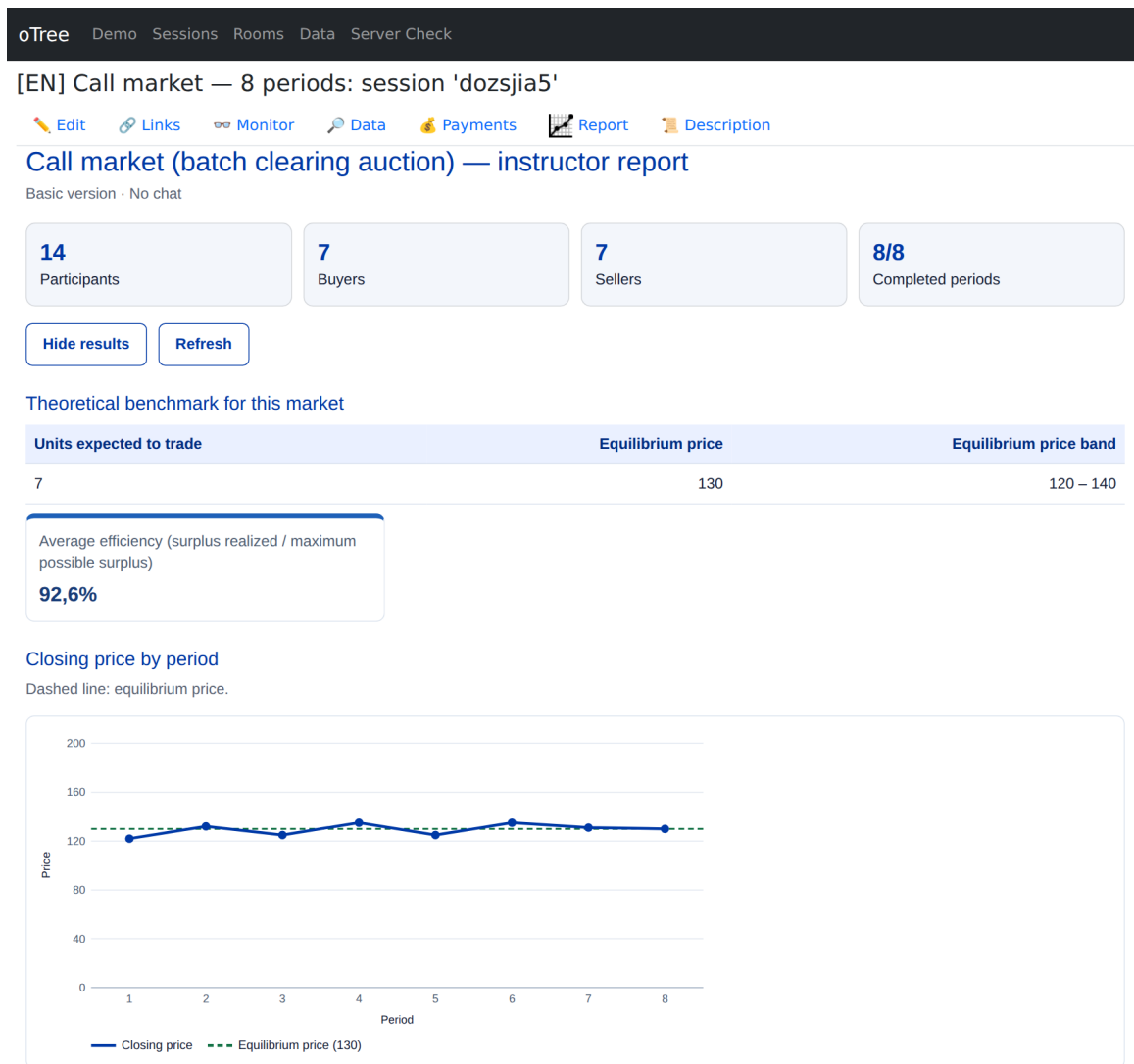


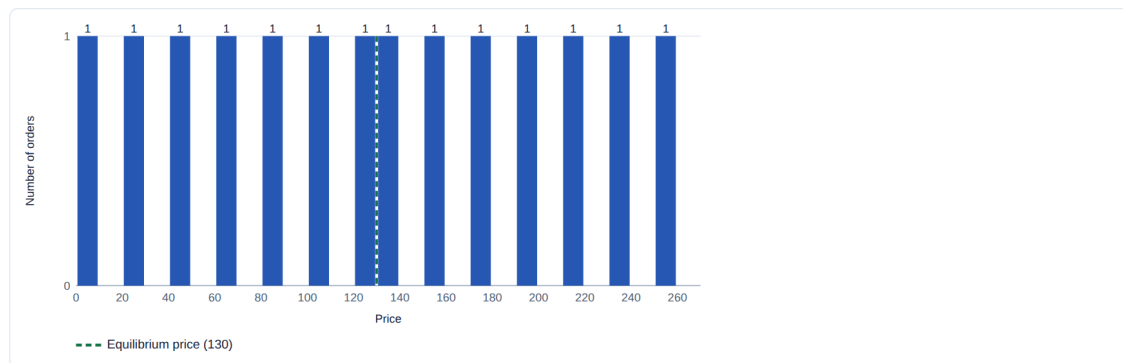
Figure 4.2: Revealed report: theoretical benchmark, efficiency and the closing-price trend (simulated decisions).

Early periods versus late periods (efficiency)

	Efficiency
Periods 1–3	85,0%
Periods 6–8	98,7%

Distribution of orders (buy and sell)

Orders sent in the last completed period.



Results by period

Period	Units traded	Closing price	Efficiency
1	4	122	81,6%
2	4	132	81,6%
3	5	125	91,8%
4	5	135	91,8%
5	6	125	98,0%
6	6	135	98,0%
7	6	131	98,0%
8	7	130	100,0%

Individual data: Data → Custom export (call_market). Chat messages: Data → Chat.

Figure 4.3: Revealed report: early versus late periods, a histogram of every order, and a period-by-period table (simulated decisions).

4.2 How to read the report

1. Start with the theoretical benchmark: quantity expected to trade, equilibrium price and band (section 5.2).
2. The trend chart has a single series: each period's closing price (there is only one price per period, unlike `double_auction` or `pit_market`, where every trade has its own price). The dashed green line is the equilibrium price.
3. Efficiency is the surplus realized (sum of value minus cost over the traded units) divided by the maximum possible surplus. Under this institution, every trade that clears is, by construction, profitable for both sides; efficiency falls when the closing price leaves out units with positive margin.
4. With six or more completed periods, the early-versus-late table compares average efficiency in the first three periods against the last three: it is the most direct way to see whether the class learned to bring its orders closer to its own value or cost.

5. The histogram shows *every* order submitted (buy and sell) in the last completed period, not only the ones that traded; compare it against the equilibrium band marked in green.
6. The final table summarizes units traded, closing price and efficiency for each period.

Debrief script

First ask what price the class expected. Reveal the closing-price trend and ask a few people who did not trade to explain their order: did they think it was better to offer below their value (or above their cost), or did they get the direction wrong? Close on the board with supply and demand, mark the equilibrium band, and compare it with the order histogram.

Theoretical background and evidence

5.1 Why this is a distinct institution

The difference across the four markets in this battery is not the induced value or cost — all four use exactly the same logic — but **when information is revealed and how many times a price is set**:

	Information revealed	Prices per period
<code>double_auction</code>	Public and continuous: everyone sees the current best bid and ask at all times	Many (every trade at its own price)
<code>pit_market</code>	Private and continuous: each pair negotiates without anyone else seeing anything	Many (every trade at its own price, different per pair)
<code>posted_offer</code>	Sequential: sellers post first, buyers choose afterward seeing every price	Several (one price per chosen seller)
<code>call_market</code>	Sealed and simultaneous: no one sees any order until the market has already cleared	One per period only (the closing price, the same for every trade)

The `call_market` is the “clearinghouse” or batch-market institution (Friedman, 1993): the closest of the four to how a textbook usually describes the opening of a real stock exchange, or to the “Walrasian auctioneer” of general-equilibrium theory.

5.2 Theoretical benchmark

Theoretical background

With a ladder of buyers of value $v_i = \max(0, 260 - 20(i - 1))$ and sellers of cost $c_j = 20(j - 1)$, unit k trades in the competitive equilibrium if $v_k \geq c_k$, i.e. if $260 - 20(k - 1) \geq 20(k - 1)$, or $k \leq 7$. With 7 or more people on each side, the equilibrium is 7 units; the seventh buyer values 140 and the seventh seller costs 120, so the equilibrium price sits in the band $[120, 140]$, with a midpoint of 130 (the same midpoint convention the clearing mechanism itself uses to set each period’s price).

Unit k	Value v_k	Cost c_k	$v_k - c_k$	Trades in equilibrium?
1	260	0	260	Yes
2	240	20	220	Yes
3	220	40	180	Yes
4	200	60	140	Yes
5	180	80	100	Yes
6	160	100	60	Yes
7	140	120	20	Yes (positive margin)
8	120	140	-20	No

With 7 buyers and 7 sellers (this ladder’s reference size), maximum surplus is $260 + 220 + 180 + 140 + 100 + 60 + 20 = 980$ ECU. With fewer than 7 people per side, every possible unit trades in equilibrium and the price band is different: for example, with 4 and 4 (the size of the **Demo** session), the equilibrium is trivial — all four units always trade, because even the fourth buyer (value 200) comfortably exceeds the fourth seller (cost 60) — and does not illustrate the price band well. To rehearse with a full class-size benchmark, use a session of 7 and 7 or more, like the one in this chapter’s screenshots.

5.3 Experimental evidence

[Friedman \(1993\)](#) compares the performance of call (batch-clearing) markets against continuous double auctions in the lab: both institutions converge reasonably well to the competitive equilibrium with induced values and costs, but they differ in how fast they converge and how much information is needed to get there — a continuous double auction reveals more information within each period, while a call market only reveals the final price. [Cason and Friedman \(1996\)](#) develops the formal contrast between batch-clearing and continuous-negotiation mechanisms in price formation, and documents that both can reach high efficiency, though by different routes: the double auction adjusts price by price within the period, while the call market only lets a person correct their own order from one period to the next. [Smith \(1962\)](#) is the founding induced-value market experiment from which all four institutions in this battery descend.

5.4 Patterns worth discussing

- Because each person only observes the closing price (never anyone else’s orders), learning from one period to the next is slower than in `double_auction`, where the full book is visible at all times.
- Efficiency can be high from the very first period if orders happen to land close to true values and costs; unlike `posted_offer`, no side here structurally holds the power to set the price, so there is no single directional prediction about whether the closing price lands above or below equilibrium.
- Early orders tend to sit farther from one’s own value or cost (more conservative); with repetition, they tend to move closer, which reduces the units left out of the clearing by a thin margin.
- Because each period has a single closing price for the whole market, it is easier to compare across periods and across sessions than the average price in `double_auction` or `pit_market`, which mixes trades at different prices within the same period.

Note

A class's results are descriptive. With a single market per session, periods are not independent observations, and a difference between two sessions (for example, with and without chat, or against the double auction) does not estimate a causal effect without random assignment and enough independent markets.

Basic modes

The basic modes have no chat. Both use the same market and the same screens.

6.1 One period

`call_market_en_1_period` has a single period. It is useful for introducing supply and demand with induced values, and for showing that a first attempt at ordering usually leaves out some people whose margin was positive. The report does not show the trend chart or the early-versus-late comparison.

6.2 Eight periods

`call_market_en_8_periods` repeats the market eight times with the same roles, values and costs. It lets you see whether orders converge toward one's own value or cost, and whether the closing price moves toward the equilibrium band with repetition.

Extended variants

7.1 Treatment map

The extended version has one variant, of eight periods, with the same market.

Variant	What changes	Pedagogical question
Communication	60s chat with the whole group before each period	Does talking before ordering help converge faster to the equilibrium price under a batch-clearing institution, compared with the other three institutions in this battery?

7.2 Communication

`call_market_extended_communication`: before each period, everyone in the market can write to each other for 60 seconds in an anonymous chat. Everyone appears as “Participant”, so it is not known whether a message came from a buyer or a seller. Nothing written there is binding. The chat closes only when time runs out; whoever clicks **Go to the market** earlier waits for the rest.



Time left to complete this page: **0:56**

Messages

Period 1 of 8

You can write to the whole group. You have 60 seconds. Do not write your name or any personal information.

Participant (Me)

Should we all offer something similar?

Participant

I will offer close to my value.

Participant

At that price I would rather not trade.

Send

Go to the market

Powered by [oTree](#)

Figure 7.1: Pre-period chat (demo messages).

Debrief script

Compare the closing-price trend with a session without chat, if you have one. Read a few messages out loud, without identifying anyone (**Data** → **Chat**), and check whether submitted orders followed what was agreed. Ask whether talking before ordering helped more people clear, or only changed the price without changing the quantity traded.

Lesson plan and reading the results

8.1 Suggested 50-minute session

0–5 min	Room access, lab rules and role assignment.
5–12 min	Instructions, example and comprehension check.
12–30 min	Eight periods (about 2 minutes each). Do not reveal the report between periods.
30–33 min	Class predictions: quantity and equilibrium price; whether the closing price will land above or below the band.
33–43 min	Closing-price trend, efficiency, order histogram and period-by-period table.
43–48 min	Supply and demand on the board; comparison with the other institutions in this battery if one ran in parallel.
48–50 min	Applications: stock exchange opens and closes, treasury auctions, wholesale electricity markets.

8.2 Questions to drive discussion

1. What quantity and price does supply and demand predict? What do we observe?
2. If no one sees any order before the market clears, is it better to order one's exact value, below it, or above it?
3. Why is there a single closing price for the whole market, rather than a different one for each trade as in the double auction?
4. Which institution — call market, double auction, direct negotiation or posted offer — seems easiest to learn in few periods? Why?
5. What real markets work by batch clearing or something similar? Why do those markets choose that institution?

8.3 Common misreadings

Misreading	Clarification
“My order did not clear because the market did not close.”	The market did close (there is a closing price for the whole period); that person’s order simply was not on the right side of it.
“The closing price is the average of the orders.”	It is the midpoint between the two marginal orders (the last one that clears on each side), not an average of every order submitted.
“If my order equals my value, I cannot lose.”	Correct, but it also cannot earn if that is exactly the marginal order: clearing with zero margin means zero earnings even though a trade happened.
A difference between two classes is causal.	That requires comparable assignment and enough independent markets.

Operations, privacy and troubleshooting

9.1 Privacy and conduct

- Do not request names, student IDs or demographic information during this activity.
- Project only the aggregate report. Keep individual codes, roles and screens private.
- Ask students not to write personal information in the chat; the screen itself reminds them.
- Do not use the session to grade anyone on their decision.
- Treat the session as a teaching activity, unless a research protocol with specific consent is in place.

9.2 Common issues

Situation	What to do
I went to <code>teaching.beer-lab.org</code> and cannot find how to create a session	That is the students' page. Use <code>teaching-admin.beer-lab.org</code> → Open panel .
The panel asks for a username and password	Username admin and the lab's password. If you do not have it, email <code>lab.economia@servicios.tec.mx</code> .
"Please wait" before starting	You have not created the session in that room yet, or the student opened a different room (another language or edition). Once you create it, they join automatically.
"Please wait" for a long time during play	Check Monitor : at least one person has not submitted an order, and the whole market is waiting on them. Ask them to reopen the room in the same browser; if they cannot, use Advance slowest participants (that person is left without an order and without a trade that period).
"The session is full"	More students joined than were declared. Before starting: Close this room , a new session with the correct number, and everyone reopens the link.
The market never clears	More participants were declared than showed up. Close the room and create a new session with the correct number.
My order did not clear	The closing price landed on the opposite side of the order (a buyer who offered too little, or a seller who asked too much). Normal, especially for extreme ranks.
"Enter a whole number between 0 and your value" / "between your cost and 400"	The order entered is outside the allowed range for that role; adjust it within the limits the label shows.
Several tabs in the same browser are the same participant	Normal with the room link. Use Demo to rehearse instead.
Not Found on a <code>/p/...</code> link	That individual link belongs to an earlier session. Share the room again (link or QR code), not the individual link.
I want to see a session from another day	Panel → Sessions → that session → Report or Data .
Report with no data	No period is complete yet. Wait and click Refresh .

9.3 Data for later analysis

Data → **Custom export (call_market)** gives one row per participant and period: session, anonymous code, period, language, edition, treatment, chat, role (**buyer/seller**), rank, value or cost, buy order, sell order, whether they traded, trade price, earnings, and comprehension-check attempts. Chat messages are under **Data** → **Chat**. Treat periods from the same session as dependent.

Bibliography

- Cason, T. N., & Friedman, D. (1996). Price formation in double auction markets. *Journal of Economic Dynamics and Control*, 20(8), 1307–1337. [https://doi.org/10.1016/0165-1889\(95\)00901-5](https://doi.org/10.1016/0165-1889(95)00901-5)
- Friedman, D. (1993). How trading institutions affect financial market performance: Some laboratory evidence. *Economic Inquiry*, 31(3), 410–435. <https://doi.org/10.1111/j.1465-7295.1993.tb01305.x>
- Smith, V. L. (1962). An experimental study of competitive market behavior. *Journal of Political Economy*, 70(2), 111–137. <https://doi.org/10.1086/258609>

QR code for each room

Project or print the page for the room you are using. Students scan it with a phone camera and click **Start**.

Call market

English room



`callmarket.beer-lab.org/room/call_market_en`

Scan the code and press **Start**.

Call market

English room, extended version



`callmarket.beer-lab.org/room/call_market_extended`

Scan the code and press **Start**.

Call market

Sala en español



`callmarket.beer-lab.org/room/call_market_es`

Escanee el código y pulse **Comenzar**.

Call market

Sala en español, versión extendida



`callmarket.beer-lab.org/room/call_market_extendido`

Escanee el código y pulse **Comenzar**.