



Teacher guide for the local monopoly and trade between markets 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 **local monopoly and trade between markets** 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, industrial organization and international trade, with or without prior experience in experimental economics.

The game is a teaching adaptation of Charles Holt’s classroom version in Veconlab ([Holt, 2019](#)): the class is split into isolated markets, each with one posted-price seller and several buyers; halfway through the session, trade between markets opens at a shipping cost. It follows that version’s structure; the values, costs, market sizes and rationing rules were set by the project, and the wording of the screens and of this guide is our own.

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; each variant lists only what changes relative to the basic game.

Author

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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.

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Quick-start guide

1.1 Fact sheet

Purpose	Show that an isolated seller charges the monopoly price and sells few units, and that opening trade with other markets (even at a shipping cost) disciplines that power: prices fall towards the competitive range, more units are sold and efficiency rises. The shipping cost limits that discipline.
Participants	Any number. The class is split into fixed markets of one seller and four buyers; leftover participants join the first markets as extra buyers. With fewer than 10 participants there is a single market (and so no one to trade with).
Values and costs	Each buyer wants up to two units with fixed private values (100/60, 90/50, 80/40, 70/30; extra buyers 65/35 and 55/25). A seller can produce up to 8 units at costs 20, 25, . . . , 55 and pays only for units sold.
Decision	The seller posts a price (0–200) and a maximum number of units (0–8). The buyer picks a single seller among those they can see and orders 0, 1 or 2 units; the system does not allow ordering a unit worth less than its delivered cost.
Trade	Local rounds: each buyer buys only in their own market. Trade rounds: every market is visible and buyers may buy in any of them, paying a shipping cost per unit (10 ECU; 30 in one variant).
Duration	5 minutes for one round; 25–30 minutes for 10 rounds, not counting the discussion.
Instructor (you)	teaching-admin.beer-lab.org/en → the game’s card → Open panel . It asks for a username and password (Section 2.1).
Students	Room link https://monopolytrade.beer-lab.org/room/monopoly_trade_en , its QR code (Section 2.5) or teaching.beer-lab.org .
Report	Theoretical benchmarks (local monopoly, competitive range, maximum surplus), seller profit by price, summary, per-round charts of prices, units and efficiency, before/after comparison of opening trade, purchases in other markets and a per-round table.

Note

There are two different pages. **teaching-admin.beer-lab.org** is yours: from there you open the game's panel and download this guide. **teaching.beer-lab.org** is your students': from there they 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 user **admin**.
2. Open teaching-admin.beer-lab.org/en, search for **Local markets** and click **Open panel**. Enter the username and password.
3. Rehearse in **Demo**: open a configuration and play it in several tabs to learn the seller's and the buyer's screens and the report (Section 2.3).

In class

4. Count the students present.
5. In the panel, open **Rooms** and the room **[EN] Selling in Local Markets** (or the extended one). Choose the configuration (normally the 10-round one, local then trade), type the *exact* number of students under **Number of participants** and click **Create**.
6. Share the room link or project its QR code. Each student clicks **Start**.
7. In the room, click **Monitor the session**: the session page opens, with the **Monitor** (progress) and **Report** tabs. When done, open **Report**, click **Show results** and lead the discussion.

After class

8. In the room, click **Close this room**. It is then ready for the next group; the session data stay under **Sessions**.

1.3 Checklist

- ☐ Panel password received and tested at monopolytrade.beer-lab.org/login.
- ☐ Rehearsal done in **Demo**, seeing at least one seller screen and one buyer screen, in a local round and in a trade round.
- ☐ Devices, internet, browser and projector ready.
- ☐ Configuration chosen: one local round (short demo), 10 rounds local then trade (recommended) or 10 rounds with trade from the start.
- ☐ Number of participants in the session equal to the number of students present (at least 10 so that there are two markets).
- ☐ Room link or QR code at hand (Section 2.5); tested from a phone.
- ☐ Students told that ECU are experimental units and there is no cash payment.
- ☐ Monitor and report open; the profit-by-price table (monopoly at 70) ready for the wrap-up.

Platform access

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

The instructor page is teaching-admin.beer-lab.org/en. 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.

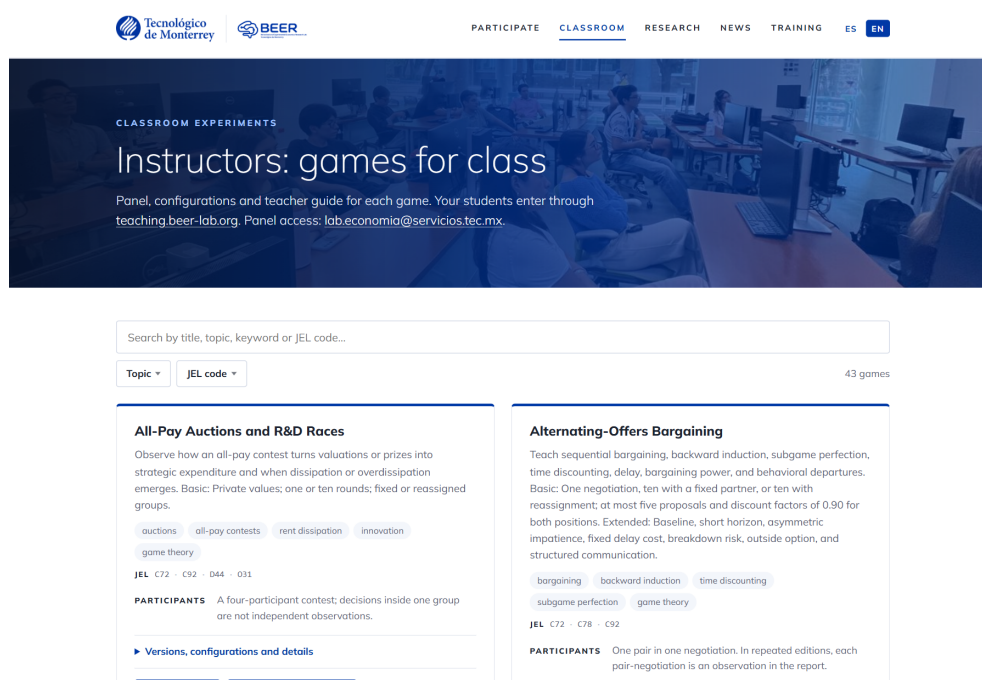


Figure 2.1: Instructor page: teaching-admin.beer-lab.org. Once this game goes live, its card will appear in this same directory (search for **Local markets**).

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. 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://monopolytrade.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 monopolytrade.beer-lab.org: it is still being prepared. The procedure above is identical to every other lab game's (see the Cournot, Bertrand and live market guides); once it goes live, this section will be updated with screenshots specific to this game.

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 dummy participants that you play yourself in several tabs. Use it to rehearse, never with students.
Rooms	Fixed addresses for the class. This game has four: basic and extended, in Spanish and in English. Your students always enter through a room.
Create / Number of participants	Create the session in the room and state how many people will play.
Monitor	Table with each participant's round and current screen. It does not show decisions.
Advance slowest participants	Monitor button that moves forward whoever fell behind (see Section 9.2).
Report	The instructor report for projecting aggregate results.
Data	CSV downloads (and, in the chat variant, the messages).
Sessions	List of all your sessions, to return to an earlier one.
Close this room	Frees the room when you finish, for the next group.

In this panel, **Demo** lists only this game's ten configurations and **Rooms** only its four rooms. Inside each room, the creation form filters further: the basic English room ([EN] **Selling in Local Markets**) offers only the three basic English configurations (one local round; 10 rounds local then trade; 10 rounds with trade from the start); the extended English room, only the two extended ones (expensive shipping and seller chat). If another game appears, do not start the session and notify the lab. Only you see the configuration names ("local monopoly", "trade"); the rooms and your students' screens use neutral names.

oTree Demo Sessions Rooms Data Server Check

Demo

[ES] Monopolio local — una ronda, solo mercados locales
[ES] Monopolio local y comercio — 10 rondas (1–5 locales, 6–10 con comercio, envío 10)
[ES] Comercio entre mercados — 10 rondas desde el inicio, envío 10
[EN] Local monopoly — one round, local markets only
[EN] Local monopoly and trade — 10 rounds (1–5 local, 6–10 trade, shipping 10)
[EN] Trade between markets — 10 rounds from the start, shipping 10
[ES] Monopolio local y comercio extendido — envío caro (30), 10 rondas
[ES] Monopolio local y comercio extendido — chat entre vendedores en las rondas con comercio, 10 rondas
[EN] Local monopoly and trade extended — expensive shipping (30), 10 rounds
[EN] Local monopoly and trade extended — seller chat in trade rounds, 10 rounds

Juegos de mercados / Market games — BEER Lab
 Mercados locales y comercio / Local markets and trade

Figure 2.2: Demo: the game’s configurations (six basic and four extended, in Spanish and English).

oTree Demo Sessions Rooms Data Server Check

Rooms

Current rooms:

[ES] Ventas en mercados locales
[EN] Selling in Local Markets
[ES] Ventas en mercados locales — extendido
[EN] Selling in Local Markets — extended

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

2.3 Rehearsing before class

In **Demo**, click a configuration: a practice session with ten participants (two markets) is created and the links page appears. Open each link **P1**, **P2**, ... in a separate tab and play as if you were each student; then open **Report**. Since all markets move together, every round needs a decision in all ten tabs. These sessions do not affect your classes.

oTree Demo Sessions Rooms Data Server Check

[EN] Local monopoly and trade — 10 rounds (1–5 local, 6–10 trade, shipping 10): session 'vyq4x7tc'

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:8044/join/hisidebo>

Persistent links

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

Single-use links

Below are single-use links.

P1	http://localhost:8044/InitializeParticipant/e9sp1m2h
P2	http://localhost:8044/InitializeParticipant/aa5rbbp9
P3	http://localhost:8044/InitializeParticipant/b48xr0q3
P4	http://localhost:8044/InitializeParticipant/pew1qi50
P5	http://localhost:8044/InitializeParticipant/etqearra
P6	http://localhost:8044/InitializeParticipant/nwfk4apy
P7	http://localhost:8044/InitializeParticipant/gbdxhn6f
P8	http://localhost:8044/InitializeParticipant/9v2gj1o2
P9	http://localhost:8044/InitializeParticipant/7k7t8q8j
P10	http://localhost:8044/InitializeParticipant/9cmlwzed
P11	http://localhost:8044/InitializeParticipant/r71ixdp6
P12	http://localhost:8044/InitializeParticipant/k3xyuqs0
P13	http://localhost:8044/InitializeParticipant/pkaz7xk7
P14	http://localhost:8044/InitializeParticipant/2o6f8xco
P15	http://localhost:8044/InitializeParticipant/gw7j7rzs
P16	http://localhost:8044/InitializeParticipant/kh7ce9dr
P17	http://localhost:8044/InitializeParticipant/ego1uolo
P18	http://localhost:8044/InitializeParticipant/car9wty4
P19	http://localhost:8044/InitializeParticipant/64uwl5i6
P20	http://localhost:8044/InitializeParticipant/8raqjb5o

Figure 2.4: Session links (here, the simulated 20-participant session). Screenshots in this guide were taken on a local copy, so the addresses say `localhost`; on the server they say `monopolytrade.beer-lab.org`.

Note

Do not rehearse with the room link open in several tabs of the same browser: oTree recognizes the browser and all tabs would be the same person. Use **Demo** to rehearse.

oTree Demo Sessions Rooms Data Server Check										
[EN] Local monopoly and trade — 10 rounds (1–5 local, 6–10 trade, shipping 10): session 'vyq4x7tc'										
<a>Edit <a>Links <a>Monitor <a>Data <a>Payments <a>Report <a>Description										
ID	Code	Label	Progress	App	Round	PageName	Waiting	WaitsFor	Since	
P1	e9sp1m2h		54/110	monopoly_trade	5	RoundResult			1m	
P2	aa5rbbp9		54/110	monopoly_trade	5	RoundResult			1m	
P3	b48xr0q3		54/110	monopoly_trade	5	RoundResult			1m	
P4	pew1qj50		54/110	monopoly_trade	5	RoundResult			1m	
P5	etqearra		54/110	monopoly_trade	5	RoundResult			1m	
P6	nwlk4apy		54/110	monopoly_trade	5	RoundResult			1m	
P7	gbdxhn6f		54/110	monopoly_trade	5	RoundResult			1m	
P8	9v2gj6e2		54/110	monopoly_trade	5	RoundResult			1m	
P9	7k7l8q8j		54/110	monopoly_trade	5	RoundResult			1m	
P10	9cm1wzed		54/110	monopoly_trade	5	RoundResult			1m	
P11	r71xcp6		54/110	monopoly_trade	5	RoundResult			1m	
P12	k3xyuqs0		54/110	monopoly_trade	5	RoundResult			1m	
P13	pkaz7xk7		54/110	monopoly_trade	5	RoundResult			1m	

Figure 2.5: Monitor of a running session: each participant's round and screen.

2.4 Creating the session in class

In **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] Selling in Local Markets Create a new session English room. Only the configurations of this game, language and edition are shown below. Session Config [EN] Local monopoly — one round, local markets only Number of participants Must be a multiple of 1 Create Configure session App sequence										

Figure 2.6: Form of the basic English room: only its three configurations appear.

Note

State the exact number, with no spare places. Markets and roles are formed at random when the session is created, and the whole class is a single group: every round waits until *everyone* declared has decided. If one person more than declared arrives, they will see

“La sesión está llena” (session full); in that case, before starting, click **Close this room**, create another session with the right number and ask the class to reopen the link or QR code. If you declare more people than actually join, the first round never ends.

Class size. The session splits the class into markets of 5 (one seller and four buyers). If the number is not a multiple of 5, leftover participants join the first markets, one per market, as extra buyers (values 65/35, then 55/25). Examples: 30 students form 6 markets of 5; 31 form one market of 6 and five of 5; 34 form four of 6 and two of 5; 35 form 7 markets of 5. With 6 to 9 participants there is a single market with more buyers, and with fewer than 5 a single market with fewer buyers (with a single participant, that person sells and has no buyers). Trade only makes sense with at least 10 participants (two markets). If markets are not all the same size, the report adds a table with the benchmarks of each market type.

2.5 How your students join

Your students need no account and no installation; a phone or computer browser is enough. They have three routes, all leading to the same room:

1. **QR code.** Project the one for the room you will use (below, and full-size in Appendix A). They scan it with their phone camera.
2. **Room link.** Share it in the class chat or on Canvas: https://monopolytrade.beer-lab.org/room/monopoly_trade_en.
3. **Catalogue.** On teaching.beer-lab.org they search for **Local markets** and click the button for their language (once the game is live).



English, basic

`monopolytrade.beer-lab.org/room/monopoly_trade_en`



English, extended

`monopolytrade.beer-lab.org/room/monopoly_trade_extended`



Español, básica

`monopolytrade.beer-lab.org/room/monopoly_trade_es`



Español, extendida

`monopolytrade.beer-lab.org/room/monopoly_trade_extendido`

What the participant sees

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

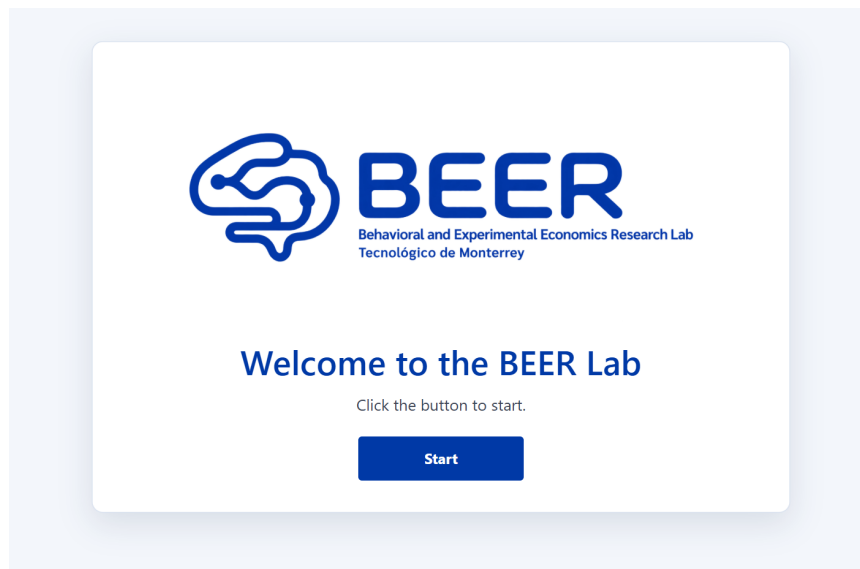


Figure 2.7: Room page each student opens.

Language is per room: a session created in the English room only admits people entering through the English room. If your group is mixed, choose one language for the whole group.

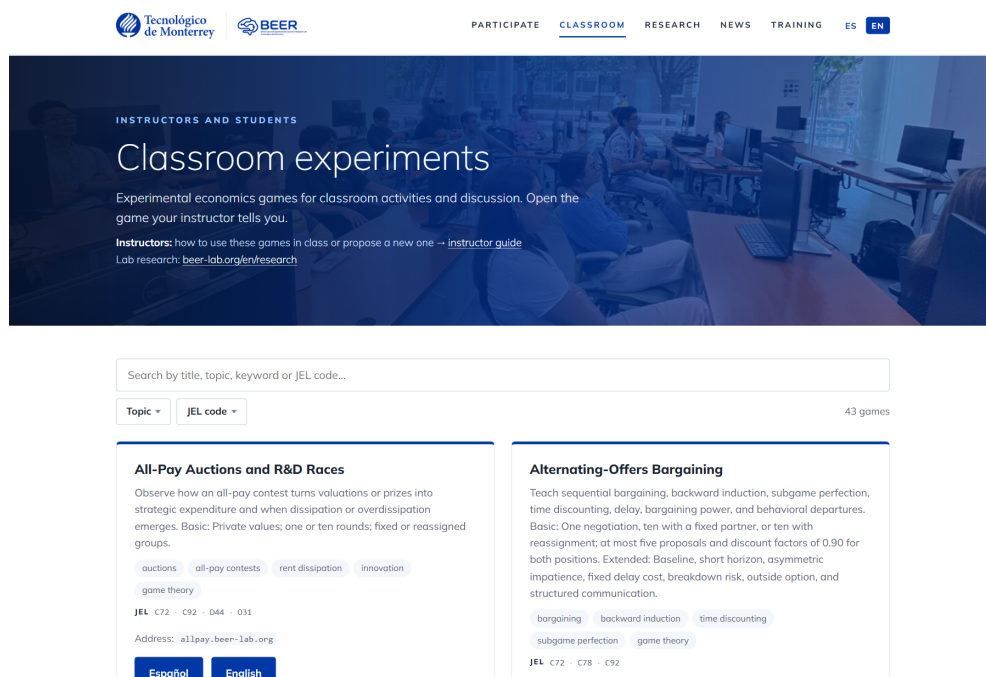


Figure 2.8: Catalogue at teaching.beer-lab.org, your students' page. Once this game goes live, its card will appear here (search for **Local markets**).

The basic game and its screens

3.1 Rules, incentives and benchmarks

Markets and roles. When the session is created, the class is shuffled and split into markets of 5. In each market, one person sells and the others buy. Markets and roles stay the same for the whole session.

A buyer can buy up to two units. Values are private and fixed: buyer 1 of each market has 100 (first unit) and 60 (second); buyer 2, 90 and 50; buyer 3, 80 and 40; buyer 4, 70 and 30. So the demand of a four-buyer market has steps 100, 90, 80, 70, 60, 50, 40, 30. Each buyer sees only their own values.

A seller can produce up to 8 units at increasing costs 20, 25, 30, 35, 40, 45, 50 and 55, and pays only for units sold. Each round the seller posts an integer price between 0 and 200 and the maximum number of units they will sell (0 to 8). Nothing prevents posting below cost; the seller simply loses on those units. Costs are private: buyers only read that each seller has costs only the seller knows.

Orders. With prices in view, each buyer picks *one* seller and orders 0, 1 or 2 units. The system only offers options in which every unit ordered is worth at least its delivered cost (price, plus shipping if applicable), so no one buys at a sure loss. If a seller receives orders for more units than offered, orders are filled in a random order; each buyer gets what they ordered while units remain, and there is no second chance that round.

Local and trade rounds. In a local round, each buyer sees only the price of their own market's seller and can only buy from that seller: each seller is a local monopolist. In a trade round, the buyer sees the prices and units offered in every market and may buy from any seller; buying outside their own market adds a shipping cost per unit (10 ECU by default) that the seller does not receive: it is a real cost. In the recommended configuration, rounds 1–5 are local and rounds 6–10 have trade; the instructions announce this from the start and the round-6 screens show a notice.

$$\pi^{\text{seller}} = \sum_{\text{units sold}} (p - c_k), \quad \pi^{\text{buyer}} = \sum_{\text{units bought}} (v_k - p - s \cdot \mathbb{1}[\text{other market}])$$

Benchmarks (market of 1 seller and 4 buyers). Local monopoly: price 70, four units, seller profit 170. Competitive: six units at a price between 45 and 50. Maximum surplus: 255 per market. Chapter 5 explains where they come from.

For the instructor

Before playing, ask the class: if you were the only seller in your town, what price would you set? And if people from the next town could buy from you, paying freight? Do not give the answer: the game builds it. Your students' screens never say “monopoly”, “free trade”,

“competition” or “efficiency”.

3.2 Cover, instructions and comprehension

The cover introduces the BEER Lab and the conduct rules. The instructions tell each participant their role and market, how many markets there are, how a round unfolds, where buyers can buy and from which round. Each role sees its own payoff rule: the seller sees their cost table and also the buyer’s payoff rule with example values (96 and 44, which belong to no real buyer); the buyer sees their own values and only a line saying that sellers’ costs are private.



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 buying and selling activity. Your earnings depend on your decisions and on other people's decisions.

During the session

- Do not talk or communicate with other people.
- 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.




Round 1 of 10

Instructions

You are the **seller** in market 1.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 4.

How each round works

- Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
- Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
- If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 10 ECU of shipping per unit (the seller does not receive the shipping).

Seller's earnings

Units are produced in order and each one costs more than the previous one (table). Costs are paid only for units actually sold.

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Example: if you post a price of 85 and sell 2 units, you earn $(85 - 20) + (85 - 25) = 125$ ECU.

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

[Continue](#)

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Figure 3.2: Seller's instructions: markets, round steps, trade opening in round 6, cost table and examples.

Instructions

Round 1 of 10

You are a **buyer** in market 3.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 4.

How each round works

1. Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
2. Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
3. If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 10 ECU of shipping per unit (the seller does not receive the shipping).

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Your values: first unit **80 ECU**; second unit **40 ECU**.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

Seller's earnings

Each seller has production costs that only they know. A seller earns what they charge minus those costs.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

Continue

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Figure 3.3: Buyer's instructions: own values, own payoff rule and the note that sellers' costs are private.

The examples avoid the benchmark numbers: a seller who posts 85 and sells 2 units earns $(85 - 20) + (85 - 25) = 125$; a buyer with values 96 and 44 who buys one unit at 85 earns 11. The comprehension check asks *one* question depending on the role. Seller: posts 65 and sells 3 units (answer 120). Buyer: with values 94 and 62, buys 1 unit at 58 in another market with shipping 10 (answer 26; 6 with shipping 30; in the local-only configuration, buys 2 units at 58 in their own market, answer 40). After a mistake, the message restates the rule without giving the answer and allows another try. Buyers never see the cost table: that way they do not judge the price by the seller's margin, as in classic posted-offer designs.

Before you start

Round 1 of 10

Answer based on the instructions.

Your costs

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

A seller posts a price of 65 and sells 3 units. What does the seller earn?

☐ 75 ECU☐ 105 ECU☐ 120 ECU☐ 195 ECUPowered by [oTree](#)

Figure 3.4: Seller's comprehension check, with the cost table.

Por favor corrija los errores.

Before you start

Round 1 of 10

Answer based on the instructions.

Your costs

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

A seller posts a price of 65 and sells 3 units. What does the seller earn?

☐ 75 ECU
 ☐ 105 ECU
 ☐ 120 ECU
 ☐ 195 ECU

Check: add up (price – cost) for each unit sold, using the costs in the table in order.

Check

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Figure 3.5: Wrong answer: the message restates the rule without giving the answer.

Before you start

Round 1 of 10

Answer based on the instructions.

A buyer with values 94 (first unit) and 62 (second) buys 1 unit from the seller of another market, who posted a price of 58. Shipping costs 10 ECU per unit. What does the buyer earn?

☐ 0 ECU
 ☐ 26 ECU
 ☐ 36 ECU
 ☐ 46 ECU

Check

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Figure 3.6: Buyer's comprehension check (configurations with trade).

3.3 Local rounds: price, order and result

The seller sees their cost table and types a price and a maximum number of units. An out-of-range number is flagged and the page does not advance.

Your price and units

Round 1 of 10

You are the **seller** in market 1. In this round only the buyers in your market can buy from you.

Your costs

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Price per unit (whole number between 0 and 200 ECU)

Maximum number of units you sell (0 to 8)

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Figure 3.7: Seller's screen in a local round (simulated decisions).

Por favor corrija los errores.

Your price and units

Round 1 of 10

You are the **seller** in market 2. In this round only the buyers in your market can buy from you.

Your costs

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Price per unit (whole number between 0 and 200 ECU)

Enter a whole-number price between 0 and 200.

Maximum number of units you sell (0 to 8)

Post

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Figure 3.8: Price out of range: the page asks for a correction.

Meanwhile, buyers wait for prices; afterwards, everyone waits for the orders.

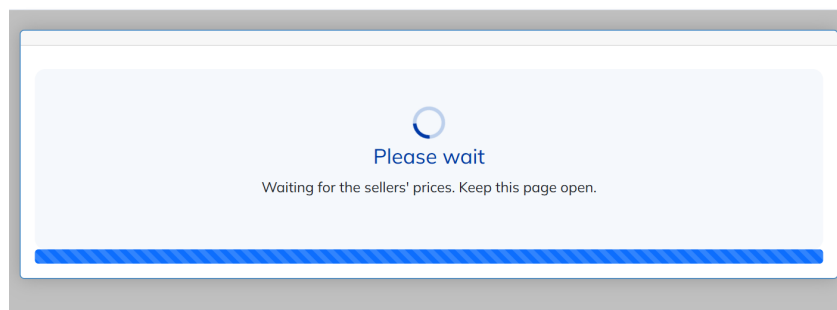


Figure 3.9: Waiting while other people's decisions are pending.

What the participant sees

“Please wait” means other people’s decisions are pending (from the whole class, not just one’s own market). It is not an error. Participants should not close or refresh the page.

In a local round, the buyer sees their values and only their own market’s price and units. The order options include only units worth at least the price.



Your order

Round 1 of 10

You are a **buyer** in market 1.

First unit

80

Second unit

40

Posted prices

Market	Price	Units offered
1 (your market)	80	3

Choose one option (one seller only)

☒ Order 1 unit from market 1 (80 ECU per unit)

☐ Do not buy this round

If you order more units than remain, you receive only those that remain (each seller's orders are filled in a random order).

Send order

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Figure 3.10: Order in a local round: with values 80 and 40 and a price of 80, the buyer can order only one unit (simulated decisions).

The result shows the seller their price, units offered, units ordered and units sold; it shows the buyer their order, units received and what they paid per unit. Both see their profit for the round, the cumulative profit and the prices of the round they could see, with each seller’s units sold.

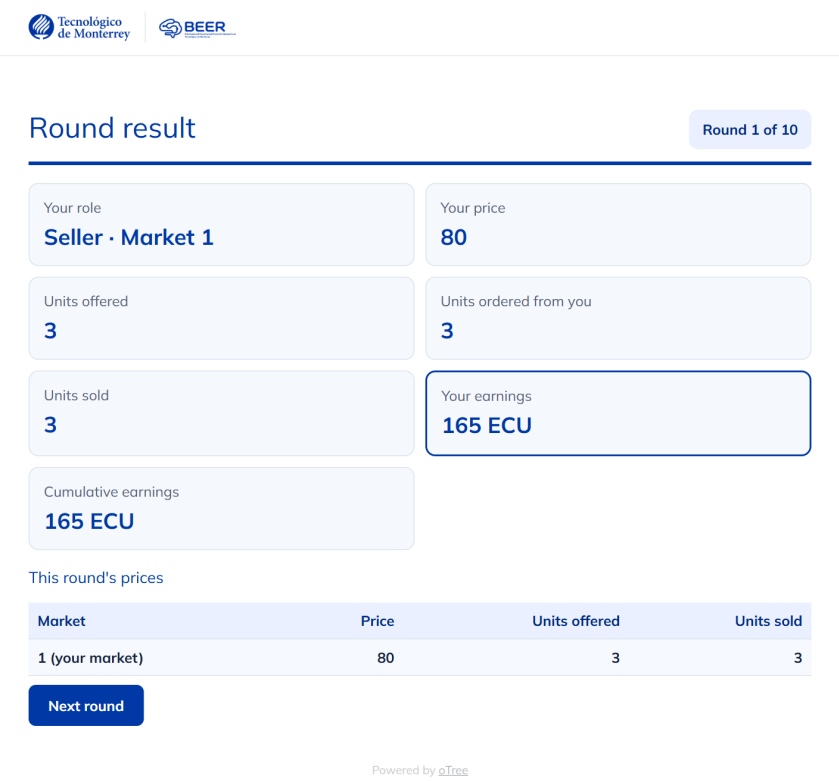


Figure 3.11: Seller’s result in a local round (simulated decisions).

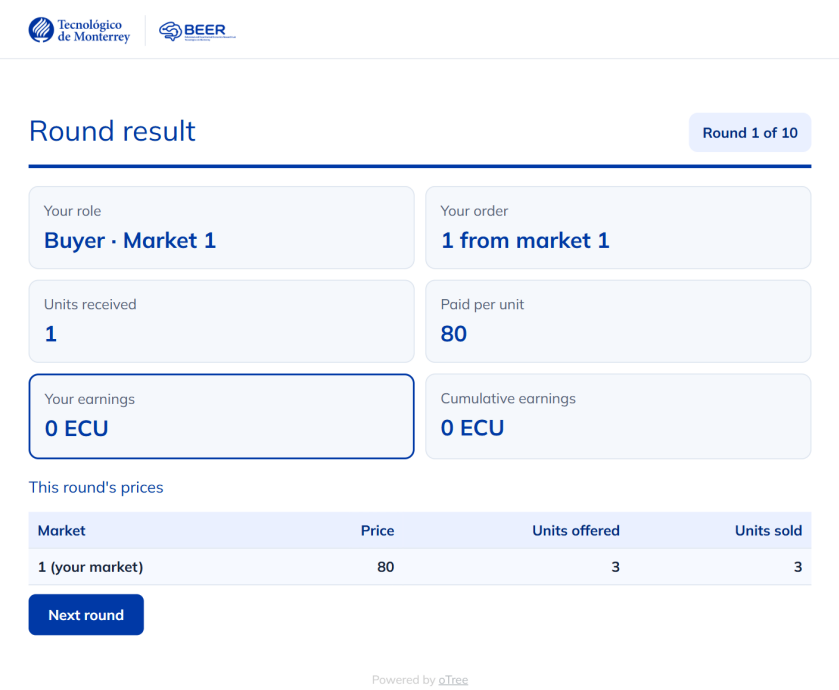


Figure 3.12: Buyer’s result in a local round (simulated decisions).

3.4 Trade rounds

In round 6, the seller's and the buyer's screens show a notice that, from that round on, buyers may buy in any market paying shipping. The seller sees the reminder in every trade round.



Your price and units

Round 6 of 10

From this round on, buyers in other markets can also buy from you (they also pay 10 ECU of shipping per unit).

You are the **seller** in market 3. In this round buyers from any market can buy from you; those from another market also pay 10 ECU of shipping per unit.

Your costs

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Price per unit (whole number between 0 and 200 ECU)

70

Maximum number of units you sell (0 to 8)

4

Post

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Figure 3.13: Round 6: trade-opening notice for the seller (simulated decisions).

The buyer now sees the table of all markets with the shipping cost per unit and the cost per unit for them (price plus shipping). The options include any seller whose delivered cost does not exceed the unit's value.

Your order

Round 6 of 10

From this round on you can buy from the seller of any market (if it is not yours, you also pay 10 ECU of shipping per unit).

You are a **buyer** in market 3.

First unit

80

Second unit

40

Posted prices

Market	Price	Units offered	Shipping per unit	Cost per unit to you
1	65	5	10	75
2	60	6	10	70
3 (your market)	70	4	0	70
4	55	6	10	65

Choose one option (one seller only)

☐ Order 1 unit from market 1 ($65 + 10$ shipping = 75 ECU per unit)

☐ Order 1 unit from market 2 ($60 + 10$ shipping = 70 ECU per unit)

☐ Order 1 unit from market 3 (70 ECU per unit)

☒ Order 1 unit from market 4 ($55 + 10$ shipping = 65 ECU per unit)

☐ Do not buy this round

If you order more units than remain, you receive only those that remain (each seller's orders are filled in a random order).

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Figure 3.14: Round 6, buyer in market 3: the market-4 seller ($55 + 10$ shipping = 65) is cheaper than the buyer's own market (70) (simulated decisions).

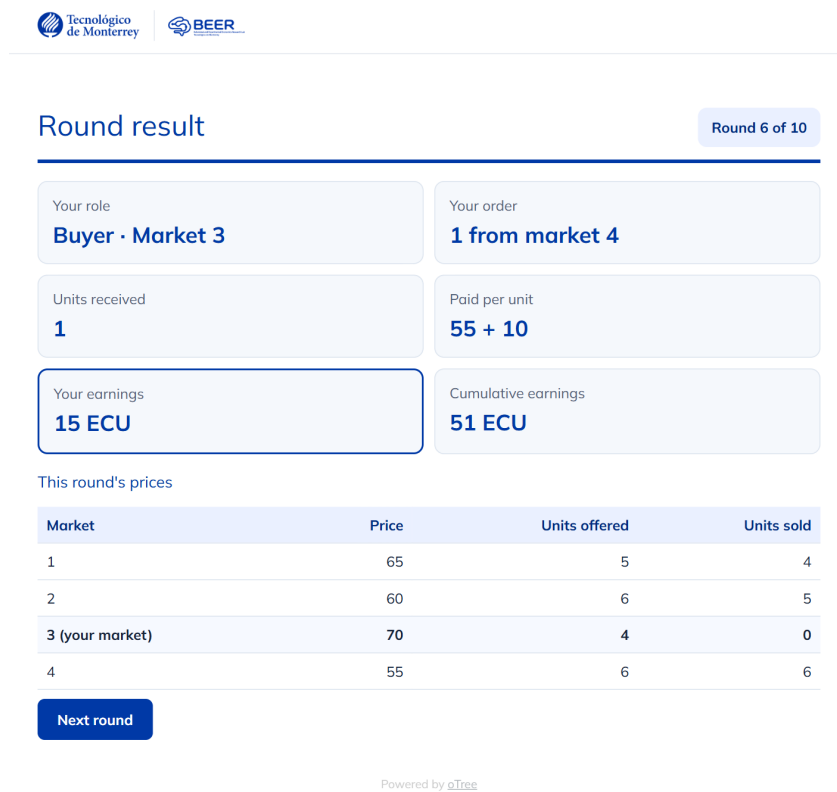


Figure 3.15: Result of a buyer who bought in another market: paid $55 + 10$ per unit (simulated decisions).

Round result

Round 6 of 10

Your role

Seller · Market 4

Your price

55

Units offered

6

Units ordered from you

9

Units sold

6

Sold to buyers of other markets

4

Your earnings

135 ECU

Cumulative earnings

936 ECU

This round's prices

Market	Price	Units offered	Units sold
1	65	5	4
2	60	6	5
3	70	4	0
4 (your market)	55	6	6

Next round

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Figure 3.16: Result of the market-4 seller in round 6: 9 units ordered, the 6 offered were sold, 4 of them to buyers from other markets (simulated decisions).

At the end, each participant sees their total profit and the round history.

End of the activity

Round 10 of 10

Your total earnings

143 ECU

Round	Could buy in	Paid per unit	Bought	Ordered from	Earnings
1	Your market	80	1	Market 1	0
2	Your market	75	1	Market 1	5
3	Your market	72	1	Market 1	8
4	Your market	70	1	Market 1	10
5	Your market	70	1	Market 1	10
6	All markets	65	1	Market 1	15
7	All markets	58	1	Market 1	22
8	All markets	55	1	Market 1	25
9	All markets	60	1	Market 2	20
10	All markets	52	1	Market 1	28

Thank you for taking part. Please wait for the instructor.

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Figure 3.17: Buyer's final screen: history with the market ordered from in each round. In round 9 the buyer bought in market 2 and paid 60 per unit, shipping included (simulated decisions).

End of the activity

Round 10 of 10

Your total earnings

1321 ECU

Round	Could buy in	Your price	Sold / offered	Earnings
1	Your market	80	3/3	165
2	Your market	75	3/4	150
3	Your market	72	3/4	141
4	Your market	70	4/4	170
5	Your market	70	4/4	170
6	All markets	65	4/5	150
7	All markets	58	5/6	140
8	All markets	55	5/6	125
9	All markets	62	0/5	0
10	All markets	52	5/6	110

Thank you for taking part. Please wait for the instructor.

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Figure 3.18: Seller's final screen: price, units sold and offered, and profit in each round (simulated decisions).

Instructor report and debrief

4.1 When to reveal

Report is a tab of the session page: reach it from the room with **Monitor the session**, or from **Sessions** if the session has ended. It opens with results hidden. The top shows participants, markets, shipping per unit and completed rounds, so you can project it from the start without giving anything away. Click **Show results** when the current round ends; **Refresh** adds new rounds and **Hide results** covers them again.

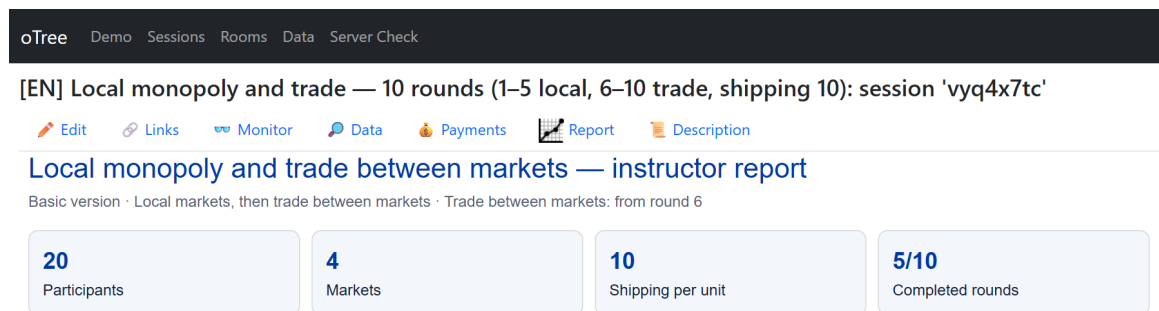


Figure 4.1: Report with results hidden.

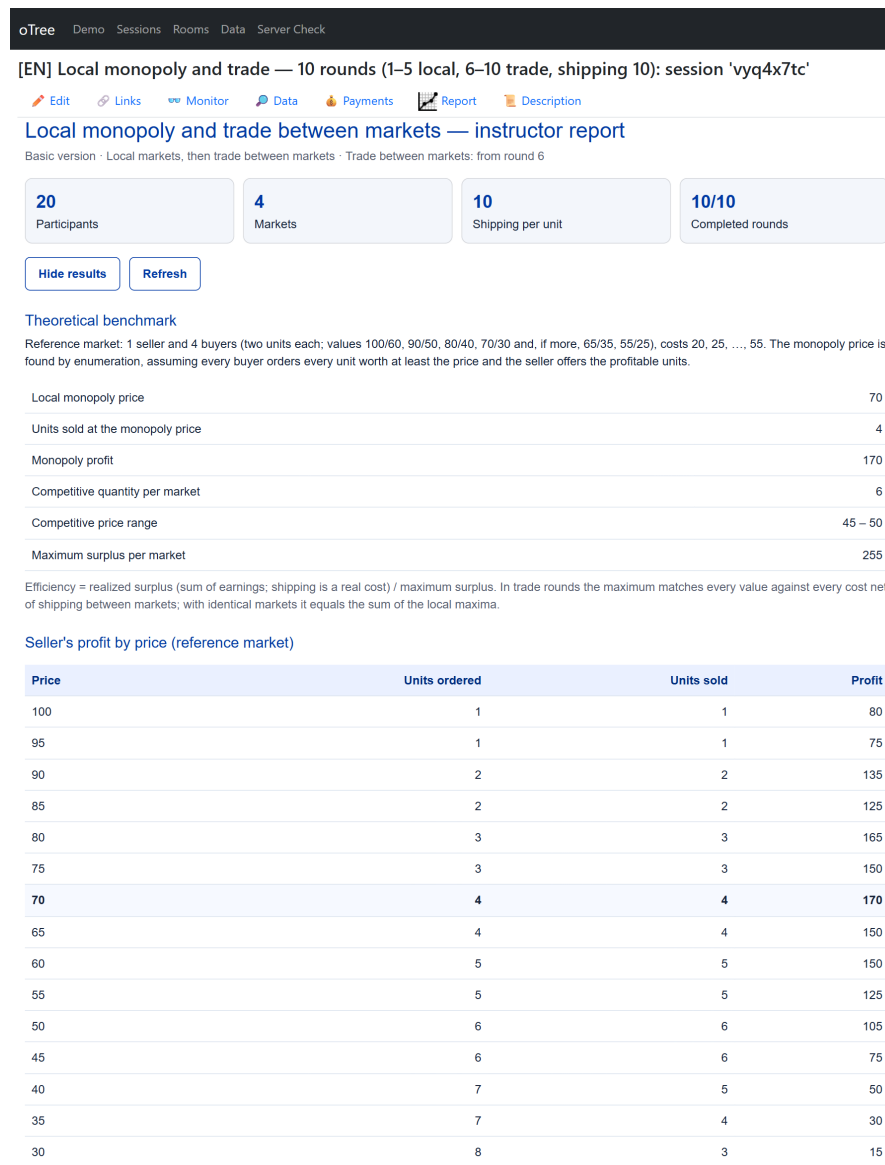


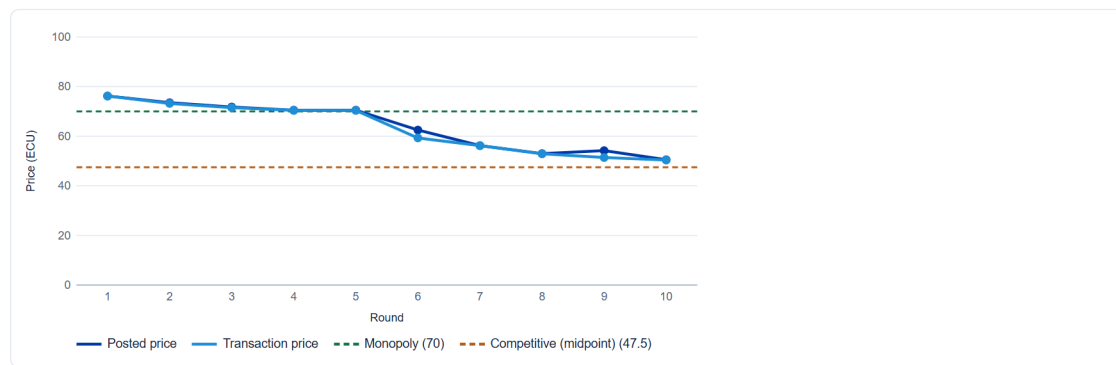
Figure 4.2: Revealed report: benchmarks and seller profit by price (20-participant session with simulated decisions).

Summary (all completed rounds)

Average posted price 63,9	Average transaction price 61,4	Units per market (average per round) 4,12
Average efficiency 85,9%	A seller's average profit per round 133,6	A buyer's average earnings per round 21,4

Prices by round

Average posted price (sellers offering at least one unit) and average price of the units sold (shipping excluded). Dashed lines: local monopoly price and midpoint of the competitive range.



Units sold per market

Total units sold divided by the number of markets.

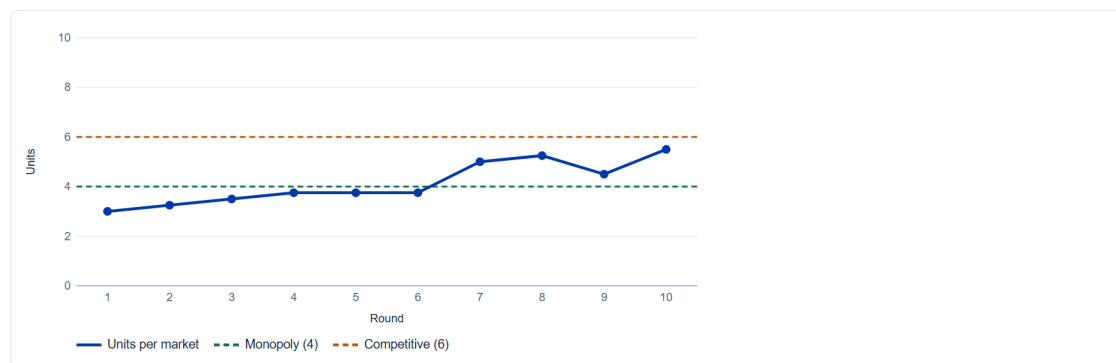
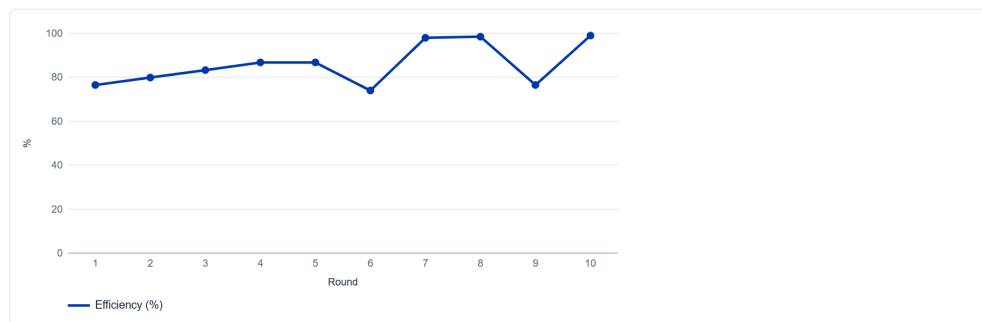


Figure 4.3: Summary, prices by round (with monopoly line at 70 and competitive midpoint at 47.5) and units per market (with benchmarks 4 and 6) (simulated decisions).

Efficiency by round

Realized surplus as a percentage of that round's maximum (local or with trade).



Before and after trade opens

	Posted price	Transaction price	Per market	Efficiency	Seller profit	Buyer earnings	Shipped
Rounds 1–5 (local)	72,5	72,2	3,45	82,7%	158,3	13,1	0
Rounds 6–10 (trade)	55,3	53,7	4,8	89,2%	108,9	29,7	7

Purchases in other markets

Units sold to buyers of another market in trade rounds: 7 (7,3%)

Results by round

Round	Regime	Posted price	Transaction price	Units	Per market	Shipped	Efficiency	Seller profit	Buyer earnings
1	Local	76,2	76,2	12	3,0	0	76,5%	153,8	10,3
2	Local	73,5	73,2	13	3,25	0	79,9%	154,2	12,4
3	Local	71,8	71,5	14	3,5	0	83,3%	157,8	13,7
4	Local	70,5	70,4	15	3,75	0	86,8%	162,8	14,6
5	Local	70,5	70,4	15	3,75	0	86,8%	162,8	14,6
6	Trade	62,5	59,3	15	3,75	4	74,0%	108,8	20
7	Trade	56,2	56,2	20	5,0	0	98,0%	131,2	29,7
8	Trade	53	52,9	21	5,25	0	98,5%	116,2	33,8
9	Trade	54,2	51,4	18	4,5	3	76,5%	83,8	27,8
10	Trade	50,5	50,4	22	5,5	0	99,0%	104,5	37

Individual data: Data → Custom export (monopoly_trade). Messages between sellers (chat configuration): Data → Chat. Design: classroom version by Holt (Veconlab, "Local Monopoly and Trade").

Figure 4.4: Efficiency by round, before and after opening trade, purchases in other markets and per-round table (simulated decisions).

4.2 How to read the report

1. The **benchmarks** give, for a market of 1 seller and 4 buyers, the local monopoly price (70), the units sold at that price (4), the monopoly profit (170), the competitive quantity (6), the competitive price range (45–50) and the maximum surplus per market (255). If there are markets of another size, an extra table gives these figures for each type.
2. The **seller profit by price** table is the wrap-up tool: it shows why 70 is the best price for an isolated seller (170 against 165 at 80 and 150 at 60–65).
3. The **summary** collects the average posted price (only sellers who offered at least one unit), the average transaction price (per unit sold, without shipping), units per market, efficiency and the average profit per round of sellers and buyers.
4. The **per-round charts** show prices, units per market and efficiency. Efficiency is realized surplus (the sum of everyone's profits; shipping is deducted as a real cost) over the maximum

possible in that round.

5. **Before and after opening trade** compares local rounds with trade rounds; **purchases in other markets** counts units shipped and their share; the **per-round table** gives every figure without identifying anyone. (The English report currently prints decimals with a comma, e.g. 63,9 for 63.9.)

For the instructor

In the simulated session in the figures (20 participants, 4 markets, 10 rounds, shipping 10; decisions *scripted* for illustration, not results from a class), the average posted price was 72.5 in local rounds and 55.3 in trade rounds; units per market rose from 3.45 to 4.8, efficiency from 82.7% to 89.2%, the average seller profit fell from 158.3 to 108.9 and the average buyer profit rose from 13.1 to 29.7. Seven units were shipped between markets (7.3% of units sold with trade). The script had sellers post between 70 and 80 in local rounds and move down towards 48–55 with trade; in round 6 one seller kept 70 and lost all their customers, and in round 9 another rose to 62. Those two rounds show that trade can also *lower* efficiency for a moment: orders diverted to a seller who cannot fill them, unsold units and shipping paid. In your class the numbers will differ.

Debrief script

Ask the sellers first: what price did you set in rounds 1–5, and why? Project the profit-by-price table and ask the class to find the best price for an isolated seller. Then ask what changed in round 6: did anyone lose customers? Who bought outside their market and how much shipping did they pay? Reveal the price chart and the before/after table. Lead the class to the key sentence: *the mere possibility that my customers buy elsewhere limits the price I can charge, and that limit depends on how much it costs to bring the goods in.*

Theoretical background and evidence

5.1 Theoretical benchmarks

Theoretical background

Local monopoly. If the seller is isolated and each buyer orders every unit worth at least the price, at a price p the units demanded are the demand steps $\geq p$. The seller's profit is $\sum_{k \leq q} (p - c_k)$ with q the units sold. By enumeration: at 80 the seller sells 3 and earns $60 + 55 + 50 = 165$; at 70 sells 4 and earns $50 + 45 + 40 + 35 = 170$; at 60–65 sells 5 or 4 and earns 150. The monopoly price is 70 (four units). Buyers earn $30 + 20 + 10 + 0 = 60$ and total surplus is 230, 90.2% of the maximum.

Competitive. Supply (costs 20, 25, ..., 55) crosses demand (100, 90, ..., 30) at the sixth unit: the sixth value (50) exceeds the sixth cost (45), and the seventh value (40) does not cover the seventh cost (50). Six units trade at any price between 45 and 50 and surplus is $80 + 65 + 50 + 35 + 20 + 5 = 255$, the maximum.

Trade with shipping s . With identical markets, the efficient allocation needs no shipping: each market supplies itself. Trade matters through the *threat*: if another market sells at p' , the seller in my market cannot charge much more than $p' + s$ without losing customers. With $s = 10$ and outside prices near 50, that cap (≈ 60) is below 70: trade pushes prices towards the competitive range. With $s = 30$, the cap (≈ 80) is above the monopoly price: the threat does not bite, and prices close to 70 can be expected even with trade.

This last argument is an intuition, not a formal equilibrium: a posted-offer market with unit limits, increasing costs and random rationing has no simple solution, and a seller with a low price faces orders it does not pay to fill (the last units cost more). The report does not compute a “trade equilibrium price”; it compares observed prices with the two benchmarks that are clear (70 and 45–50).

Efficiency with trade. In trade rounds the maximum is computed by matching all values with all costs across markets, deducting shipping from cross-market matches (a minimum-cost flow problem). With identical markets it equals the sum of the local maxima; with markets of different sizes it can be larger, because shipping to a market with more buyers creates value.

Why buyers do not see the cost table. In posted-offer markets, buyers tend to “punish” prices they find unfair when they know the margin. The game hides costs so that the only force on the price is the one being shown: where else customers can buy.

5.2 Experimental evidence

The posted-offer institution (the seller sets a take-it-or-leave-it price and buyers decide how much to order) has been studied in the lab since [Plott and Smith \(1978\)](#). [Ketcham et al. \(1984\)](#) compared posted offers with the double auction and found that, with posted prices, markets converge more slowly and tend to stay above the competitive price: one reason why, even with trade, your students may not reach 45–50 within five rounds.

[Coursey et al. \(1984\)](#) studied markets with a natural monopolist and found that the mere presence of potential competitors who can enter pushes prices towards competitive levels: the same idea that the threat, not only actual competition, disciplines the price.

[Isaac et al. \(1984\)](#) studied conspiracies among sellers who can communicate in posted-offer markets: communication tends to raise prices, although agreements are fragile. The seller-chat variant (Section 7.2) lets you see that tension in class.

The classroom version this game follows is that of [Holt \(2019\)](#) and his Veconlab program (<https://veconlab.com>) on local monopoly and trade. The program's exact name in Veconlab is **not verified** against the site, because it requires an instructor login.

5.3 Regularities worth discussing

- In local rounds, prices tend to start above or near 70 and units sold per market stay at 3–4, below the competitive 6.
- When trade opens, prices tend to fall within a few rounds even if little is bought outside one's own market: it is enough for sellers to see that they can lose customers.
- The first trade round is often messy: someone keeps the old price and loses customers, or a cheap seller receives more orders than units offered. Efficiency may dip before rising.
- With expensive shipping (30) the effect is smaller or absent; with seller chat, prices may rise or fall more slowly, depending on whether agreements hold. These are design expectations, not guaranteed results: check them in your own session's before/after table.

Note

Results from one class are descriptive. The difference between rounds 1–5 and 6–10 mixes the effect of trade with that of accumulated experience (sellers also learn by repetition). With few markets, decisions are not independent observations. To separate the two effects, compare with a trade-from-the-start session or with the expensive-shipping variant.

Basic modes

The three basic modes live in the same room (basic, in each language); the panel allows only one active session per room at a time.

6.1 One local round

`monopoly_trade_en_local_1_round`: a single round without trade. Useful as a short demonstration of the monopoly price: then project the profit-by-price table. The buyer's comprehension question is the local version (buys 2 units in their own market).

6.2 10 rounds: local then trade

`monopoly_trade_en_local_then_trade`: the reference configuration, described in Chapter 3. Rounds 1–5 local, 6–10 with trade and shipping 10. Shows the change in prices, units and efficiency when trade opens.

6.3 10 rounds with trade from the start

`monopoly_trade_en_trade`: trade and shipping 10 in every round. Useful as a contrast: if prices fall here from the beginning, the fall in the previous configuration is not due to experience alone. The report does not show the before/after table (there is no “before”).

Extended variants

Variant	What changes	What it is for
Expensive shipping	Shipping between markets costs 30 ECU per unit instead of 10.	Show that transport costs (or a tariff) protect the local monopolist.
Seller chat	Before each trade round, sellers have 60 seconds of chat among themselves; buyers wait and do not see the messages.	Discuss collusion: do sellers who can talk sustain a high price?

Both live in the extended room ([EN] **Selling in Local Markets — extended**), have 10 rounds and open trade in round 6.

7.1 Expensive shipping

`monopoly_trade_extended_high_shipping`: identical to the reference configuration except shipping, which costs 30 per unit. The instructions and the buyer's comprehension question use 30 (answer 6). With outside prices near 50, buying elsewhere costs 80, more than the monopoly price: theory suggests that trade barely disciplines (Section 5.1).

Instructions

Round 1 of 10

You are a **buyer** in market 2.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 2.

How each round works

1. Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
2. Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
3. If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 30 ECU of shipping per unit (the seller does not receive the shipping).

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Your values: first unit **70 ECU**; second unit **30 ECU**.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

Seller's earnings

Each seller has production costs that only they know. A seller earns what they charge minus those costs.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

[Continue](#)

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Figure 7.1: Expensive shipping: buyer's instructions (shipping of 30 per unit from round 6).

Instructions

Round 1 of 10

You are the **seller** in market 2.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 2.

How each round works

1. Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
2. Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
3. If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 30 ECU of shipping per unit (the seller does not receive the shipping).

Seller's earnings

Units are produced in order and each one costs more than the previous one (table). Costs are paid only for units actually sold.

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Example: if you post a price of 85 and sell 2 units, you earn $(85 - 20) + (85 - 25) = 125$ ECU.

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

Continue

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Figure 7.2: Expensive shipping: seller's instructions.

Your order

Round 6 of 10

From this round on you can buy from the seller of any market (if it is not yours, you also pay 30 ECU of shipping per unit).

You are a **buyer** in market 2.

First unit

70

Second unit

30

Posted prices

Market	Price	Units offered	Shipping per unit	Cost per unit to you
1	62	5	30	92
2 (your market)	58	6	0	58

Choose one option (one seller only)

☒ Order 1 unit from market 2 (58 ECU per unit)

☐ Do not buy this round

If you order more units than remain, you receive only those that remain (each seller's orders are filled in a random order).

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Figure 7.3: Expensive shipping, round 6: the other market's seller costs $62 + 30 = 92$, more than this buyer's first value (70), so the only purchase option is the buyer's own market at 58 (simulated decisions; 10-participant practice session, two markets).

Debrief script

If you ran both versions, compare the before/after tables: how much did prices fall with shipping 10 and with shipping 30? What role do tariffs and transport costs play in local market power?

7.2 Seller chat

`monopoly_trade_extended_seller_chat`: identical to the reference configuration, but before each trade round (6–10) sellers have 60 seconds of chat in their own channel, identified only as “Market 1”, “Market 2”, etc. Everyone's instructions say so, including that nothing written is binding. Buyers wait meanwhile. The chat page closes by itself after 60 seconds (or earlier if the seller clicks **Go post my price**). Messages are stored under **Data** → **Chat**.




Instructions Round 1 of 10

You are the **seller** in market 2.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 2.

How each round works

- Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
- Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
- If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 10 ECU of shipping per unit (the seller does not receive the shipping).

From round 6 on, before each round, sellers can exchange messages for 60 seconds. Buyers do not see these messages. Nothing written is binding.

Seller's earnings

Units are produced in order and each one costs more than the previous one (table). Costs are paid only for units actually sold.

Unit	Cost of that unit	Total cost up to that unit
1	20	20
2	25	45
3	30	75
4	35	110
5	40	150
6	45	195
7	50	245
8	55	300

Seller's earnings = sum over units sold of (price – cost of that unit). If the price is below a unit's cost, that unit loses money.

Example: if you post a price of 85 and sell 2 units, you earn $(85 - 20) + (85 - 25) = 125$ ECU.

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

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Figure 7.4: Seller chat: seller's instructions (including the chat paragraph).

Instructions

Round 1 of 10

You are a **buyer** in market 1.

The class is divided into markets. Each market has one seller and several buyers (usually four; if the number of participants is not a multiple of 5, some markets have more; with fewer than 5 participants there is a single market). Markets and roles stay the same in every round.

Number of markets in this session: 2.

How each round works

1. Each seller posts a price per unit (a whole number between 0 and 200 ECU) and the maximum number of units they will sell (0 to 8).
2. Each buyer sees the prices available to them, chooses **one** seller and orders 0, 1 or 2 units from that seller. The system does not allow ordering a unit whose value is below what it would cost.
3. If a seller receives orders for more units than they offered, orders are filled in a random order: each buyer receives what they ordered while units remain. Units that run out are not bought (there is no second chance in that round).

In rounds 1 to 5, each buyer sees only the price of the seller in their own market and can buy only from that seller. **From round 6 on**, buyers see the prices of every market and can buy from the seller of any of them; when buying in a market other than their own, the buyer also pays 10 ECU of shipping per unit (the seller does not receive the shipping).

From round 6 on, before each round, sellers can exchange messages for 60 seconds. Buyers do not see these messages. Nothing written is binding.

Buyer's earnings

Each buyer can buy up to 2 units. Each has a private value for the first unit and a lower one for the second; nobody else knows these values. They stay the same in every round.

Your values: first unit **80 ECU**; second unit **40 ECU**.

Buyer's earnings = sum over units bought of (value of that unit – what was paid for it). The first unit bought uses the first value; the second uses the second.

Example: with values 96 and 44, buying 1 unit at 85 earns $96 - 85 = 11$ ECU. A second unit could not be ordered at that price, because the second value (44) is lower.

Seller's earnings

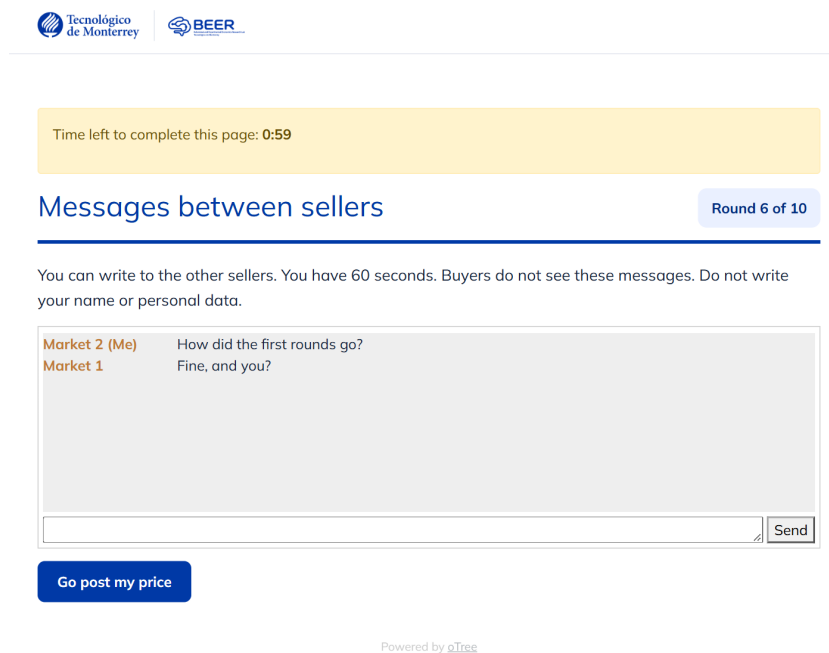
Each seller has production costs that only they know. A seller earns what they charge minus those costs.

- There will be 10 rounds. Your earnings from all rounds are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

Continue

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Figure 7.5: Seller chat: buyer's instructions (buyers know sellers can message each other).



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Time left to complete this page: 0:59

Messages between sellers

Round 6 of 10

You can write to the other sellers. You have 60 seconds. Buyers do not see these messages. Do not write your name or personal data.

Market 2 (Me) How did the first rounds go?

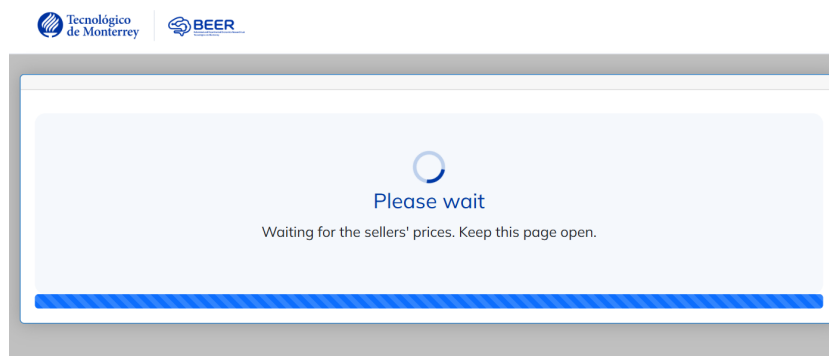
Market 1 Fine, and you?

Send

Go post my price

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Figure 7.6: Sellers' chat before round 6 (simulated messages).



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Please wait

Waiting for the sellers' prices. Keep this page open.

Figure 7.7: A buyer waits for prices while sellers talk.

Note

Review the messages after the session if you plan to project them: although names are “Market 1”, “Market 2”, someone could write something identifying. Project only excerpts without personal data.

Lesson plan and reading results

8.1 Suggested 50-minute session

0–5 min	Create the session (room [EN] Selling in Local Markets , configuration <code>monopoly_trade_en_local_then_trade</code>). Students join via QR code or link.
5–10 min	Cover, instructions and comprehension check. Remind them that where buyers can buy changes in round 6.
10–30 min	10 rounds (about two minutes per round). Follow progress in the Monitor; the whole class waits for the slowest person.
30–35 min	Open the hidden report; ask for predictions: did prices rise or fall when trade opened? How many units were shipped?
35–45 min	Reveal results. Show the profit-by-price table, the price chart and the before/after table. Discuss.
45–50 min	Wrap-up: local monopoly (70, four units), competitive benchmark (45–50, six units), lost surplus, and the “outside price + shipping” cap.

8.2 Discussion questions

- Sellers: how did you choose your price in local rounds? Did you try different prices?
- Why is the best price for an isolated seller not the highest possible price?
- In round 6, what changed for sellers if almost no one bought outside their market?
- Who wins and who loses when trade opens? Compare seller and buyer profits before and after.
- What would happen with shipping of 30? And with free shipping? Relate it to tariffs, transport costs and regional markets.
- If sellers could agree among themselves, would a high price hold? Why would each have an incentive to break the agreement?

8.3 Common misreadings

Misreading	Clarification
“If there were hardly any purchases between markets, trade did not work.”	What disciplines the price is the possibility of buying elsewhere; few purchases with lower prices is exactly the expected outcome.
“The monopolist charges the highest price anyone would pay.”	Charging 100 sells one unit and earns 80; 70 sells four and earns 170. The monopolist trades off price against quantity as far as it pays.
“More trade is always more efficient.”	Shipping is a real cost. With identical markets, the efficient allocation needs no shipping; unnecessary shipping subtracts surplus.
“Prices fell because people learned how to play.”	That may be part of it; that is why it helps to compare with the trade-from-the-start configuration or with expensive shipping.
“A buyer who received no units did something wrong.”	If many buyers order from the same cheap seller, orders are filled at random and some go without units: the cost of everyone chasing the same price.

Operation, privacy and troubleshooting

9.1 Privacy and conduct

Participant codes are anonymous: do not ask for or show names, student IDs or seats alongside individual decisions. Project only aggregate results (averages, charts, per-round tables). Session data remain available to you under **Data**; do not share them beyond teaching or research use authorized by the lab.

9.2 If someone disconnects: Advance slowest participants

The whole class is a single group (trade crosses markets), so one absent person holds up the round for *everyone*. If someone disconnects, ask them to reopen the room in the same browser: they resume where they were. If they cannot, use **Advance slowest participants** in the Monitor. This is what the game records in that case:

- **A seller who has not posted** is recorded with price 0 and **0 units offered**: sells nothing and earns 0. Buyers' tables show "0 (offers no units)" and no one can order from them. In a local round, that market's buyers cannot buy and earn 0; in a trade round, they can buy in other markets paying shipping. The report excludes that seller from the average posted price, but the round's efficiency falls (the maximum still counts that market). You must advance them again in every round in which they remain absent.
- **A buyer who has not ordered** is recorded as "do not buy this round": earns 0, and their seller loses that sale; the round's efficiency also falls.
- **Seller chat**: the chat page closes by itself after 60 seconds; there is no need to advance anyone.
- On the cover, instructions and comprehension check, advancing someone only moves them to the next screen.

9.3 Common problems

Situation	What to do
Someone sees “La sesión está llena” (session full).	You declared fewer participants than arrived. Close the room and create another session with the right number.
The round keeps waiting.	Someone has not posted or ordered. Ask them to reopen the room in the same browser, or use Advance slowest participants (Section 9.2).
Someone only sees the “Do not buy” option.	At the prices they can see, no unit is worth at least its delivered cost. The page says so.
Someone ordered 2 units and got 1 or none.	The seller received more orders than units offered and they were filled at random.
Negative seller profits.	The seller posted below the cost of some unit sold; ECU are not converted into money.
A different game appears in Demo or Rooms.	The panel does not belong to this game. Do not start the session; notify the lab.
You need to repeat the activity with the same group.	Create a new session in the same room; the earlier data stay under Sessions .

9.4 Data for later analysis

Data → **Custom export (monopoly_trade)** gives one row per participant and round: session, anonymous code, round, language, edition, treatment, whether trade was open, shipping, market, role, position in the market, values, price and units offered (sellers), units ordered, sold and shipped to other markets, the order’s market and units, units bought, price and shipping paid per unit, profit and comprehension attempts. Chat messages are under **Data** → **Chat**. No personal identifiers are included.

Annotated bibliography

- [Holt \(2019\)](#): the classroom version and its Veconlab program.
- [Plott and Smith \(1978\)](#): the posted-offer institution in the lab.
- [Ketcham et al. \(1984\)](#): posted-offer markets converge more slowly and tend to stay above the competitive price.
- [Coursey et al. \(1984\)](#): potential competition disciplines the monopolist.
- [Isaac et al. \(1984\)](#): conspiracies among communicating sellers in posted-offer markets.

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- Coursey, D., Isaac, R. M., & Smith, V. L. (1984). Natural monopoly and contested markets: Some experimental results. *The Journal of Law and Economics*, 27(1), 91–113. doi:10.1086/467059.
- Holt, C. A. (2019). *Markets, Games, and Strategic Behavior: An Introduction to Experimental Economics* (2nd ed.). Princeton University Press. No DOI. Local monopoly and trade program in Veconlab: <https://veconlab.com> (exact program name **not verified**).
- Isaac, R. M., Ramey, V., & Williams, A. W. (1984). The effects of market organization on conspiracies in restraint of trade. *Journal of Economic Behavior & Organization*, 5(2), 191–222. doi:10.1016/0167-2681(84)90018-0.
- Ketcham, J., Smith, V. L., & Williams, A. W. (1984). A comparison of posted-offer and double-auction pricing institutions. *The Review of Economic Studies*, 51(4), 595–614. doi:10.2307/2297781.
- Plott, C. R., & Smith, V. L. (1978). An experimental examination of two exchange institutions. *The Review of Economic Studies*, 45(1), 133–153. doi:10.2307/2297090.

Room QR codes

Project or print the page for the room you will use. Students scan it with their phone camera and click **Start**.

Selling in Local Markets

English room



monopolytrade.beer-lab.org/room/monopoly_trade_en

Scan the code and click **Start**.

Selling in Local Markets

English room, extended version



`monopolytrade.beer-lab.org/room/monopoly_trade_extended`

Scan the code and click **Start**.

Selling in Local Markets

Sala en español



`monopolytrade.beer-lab.org/room/monopoly_trade_es`

Escanee el código y pulse **Comenzar**.

Selling in Local Markets

Sala en español, versión extendida



`monopolytrade.beer-lab.org/room/monopoly_trade_extendido`

Escanee el código y pulse **Comenzar**.