



Teacher guide for the futures market (hedging) game

Lab implementation, theoretical background
and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



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

How to use this guide

This guide lets you prepare, run and discuss in class the **futures market** game developed for the Behavioral and Experimental Economics Research Lab (BEER Lab) at the Department of Economics, Tecnológico de Monterrey. It reuses **asset_market**'s continuous trading engine (bid and ask offers, immediate acceptance of the best standing offer), but for a genuinely different instrument—a promise to buy or sell, not a physical good—and a genuinely different question: can trading this contract let someone **get rid of a risk they already have** (hedging), rather than only speculate on the price? It is written for instructors of intermediate microeconomics and finance, 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 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 At a glance

Purpose	Show how trading a futures contract —a promise to buy or sell, cash-settled at the end of the period— lets two roles with <i>opposite</i> physical exposure (producer, long; processor, short) cancel that exposure and lock in their earnings the moment they trade, whatever the final price turns out to be: that is hedging, as opposed to leaving the exposure open and depending on chance.
Participants	Any number from 2 up; the whole class forms <i>one single market</i> . Roughly half are producers (physical exposure +4 units) and half are processors (physical exposure −4 units), assigned at random and fixed for the whole session. With 8 or more participants the market has enough activity.
Contract	A promise to buy or to sell. Unlike every other lab market, you can promise to sell without owning anything —short selling—: a person's net position can end up negative, with a cap of ± 20 units.
Period	Each period is a new, independent market: position and trading cash reset to 0, and a new final market price is drawn (uniform between 50 and 150 ECU, average 100 ECU), revealed only at the end.
Trading	A continuous market for 120 seconds (configurable) per period: bid and ask offers with an improvement rule, and immediate acceptance of the best standing offer — the same mechanism as <code>asset_market</code> .
Earnings	cash from your trades + (final position + physical exposure) $\times$ final market price. If the position exactly cancels the physical exposure, the second term is 0 and earnings are fixed from the moment of trading.
Duration	About 20–25 minutes with 8 periods, not counting discussion; with chat, up to 10 minutes more.
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 futuresmarket.beer-lab.org/room/futures_market_en , its QR code (section 2.5), or teaching.beer-lab.org .
Report	Expected final price, average uncovered exposure (0 = perfectly hedged on average), by-period trend of the average traded price, early versus late periods, a histogram of the last completed period and a round-by-round 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 **Futures market** and click **Open panel**. Enter username and password.
3. Rehearse in **Demo**: open the 8-period configuration and play it with several tabs to get familiar with the screens and the report (section 2.3).

In class

4. Count the students present.
5. In the panel, open **Rooms** and the [EN] **Futures Market** room (or the extended one). Choose the configuration, type the *exact* number of students in **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**: this opens the session page, with the **Monitor** (progress) and **Report** tabs. When the last period ends, 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's data stays available under **Sessions**.

1.3 Checklist

- ☐ Panel password received and tested at futuresmarket.beer-lab.org/login.
- ☐ Rehearsal done in **Demo**.
- ☐ Devices, internet, browser and projector ready.
- ☐ Session's number of participants matches the number of students present.
- ☐ 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.
- ☐ Understood the difference between producer (long) and processor (short), and that position *can* be negative (short selling).
- ☐ Monitor and report open; expected final price (100 ECU) at hand 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.

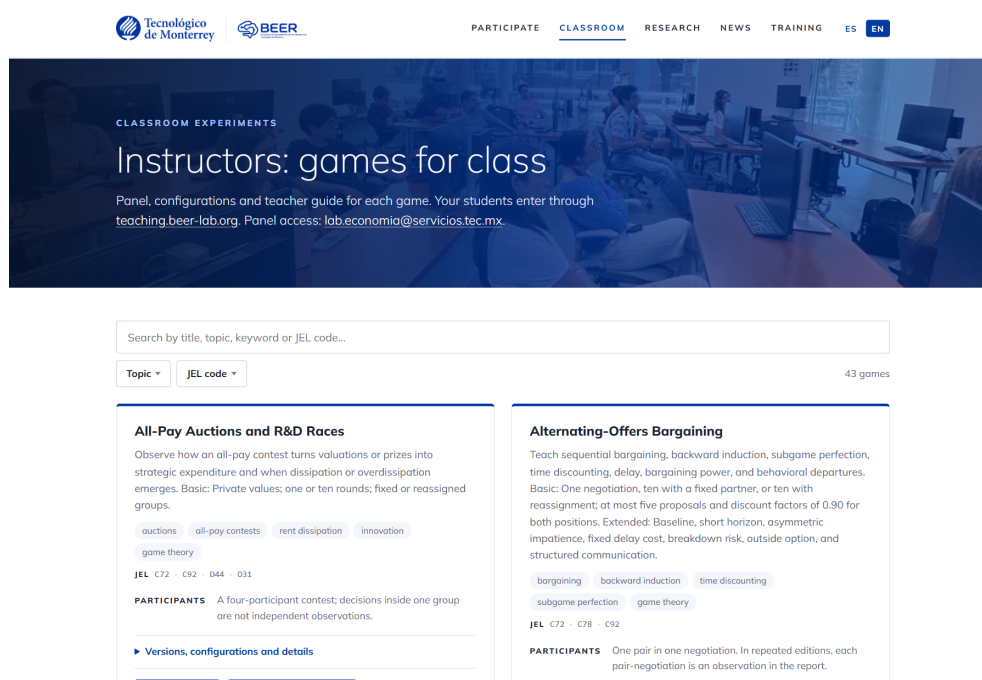


Figure 2.1: Instructor page: teaching-admin.beer-lab.org. Once this game goes live, its card will appear in this same directory (search for **Futures market**).

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 **ES** link downloads the Spanish 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://futuresmarket.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 futuresmarket.beer-lab.org: it is still being prepared. The procedure above is identical to every other lab game's (see the `asset_market` and other market guides); once it goes live, this section will be updated with screenshots specific to **Futures 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 and the chat messages.
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] Mercado de futuros — un periodo
[ES] Mercado de futuros — 8 periodos
[EN] Futures market — one period
[EN] Futures market — 8 periods
[ES] Mercado de futuros extendido — con chat, 8 periodos
[EN] Futures market extended — with chat, 8 periods

Juegos de mercados / Market games — BEER Lab

Mercado de futuros (cobertura de riesgo) / Futures market (hedging)

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 futuros	
[EN] Futures Market	
[ES] Mercado de futuros — extendido	
[EN] Futures Market — extended	

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

2.3 Rehearsing before class

In **Demo**, click a configuration: a practice session is created with eight participants and the links page appears. Open each **P1**, **P2**, ..., **P8** link in a separate tab and play as if you were each student; then open **Report**. Half the tabs will be producers and half processors — check each one's instructions to tell them apart. For rehearsal, the 1-period configuration is convenient. These sessions do not affect your classes.

oTree Demo Sessions Rooms Data Server Check

[EN] Futures market — 8 periods: session 'agv7y7xw' (demo)

[New](#)
[Links](#)
[Monitor](#)
[Data](#)
[Payments](#)
[Report](#)
[Description](#)

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

Choose one of the following options to play the session:

Combined views

☐ Split-screen view
Not available ⓘ

☒ Grid view
[Launch](#)

Session-wide testing link

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

<http://localhost:8030/join/sehagudo>

Single-use links

Open each link in its own browser tab.

P1	http://localhost:8030/InitializeParticipant/83dv00iq
P2	http://localhost:8030/InitializeParticipant/kq389pwm
P3	http://localhost:8030/InitializeParticipant/le2iiff0
P4	http://localhost:8030/InitializeParticipant/de2sjh5
P5	http://localhost:8030/InitializeParticipant/y9n22avz
P6	http://localhost:8030/InitializeParticipant/yjsrv5iy
P7	http://localhost:8030/InitializeParticipant/bibugub5
P8	http://localhost:8030/InitializeParticipant/v8w22xs1

Figure 2.4: Links for a practice session with eight participants. This guide's screenshots were taken on a local copy, which is why the addresses say `localhost`; on the server they say `futuresmarket.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: the basic English room offers `futures_market_en_1_period` and `futures_market_en_8_periods`; the extended one, `futures_market_extended_communication`. Choose the configuration, type the number of students present under **Number of participants** and click **Create**.

The screenshot shows the oTree web interface. At the top is a navigation bar with links: oTree, Demo, Sessions, Rooms, Data, and Server Check. Below this, the page title is "Room: [EN] Futures Market" with the subtitle "Create a new session". A light blue box contains the text: "English room. Only the configurations of this game, language and edition are shown below." Under "Session Config", there is a dropdown menu showing "[EN] Futures market — one period". Below that is a text input field for "Number of participants" with a placeholder "Must be a multiple of 1". A blue "Create" button is positioned below the input field. At the bottom, there is a link "Configure session" with a gear icon, and the text "App sequence" below it.

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

Note

Declare the exact number, with no spare seats. Roles (producer/processor) are split at random among whoever joins, roughly half and half: if more or fewer participants join than declared, the split is not exactly half, but the game still works. If one more student than declared arrives, they will see “The session is full”; in that 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.

Each period's trading time is fixed (120 seconds, unless you changed it when creating the session) and there is no button to end it early, but the period-result screen has no time limit: if a student disconnects or does not click **Next period**, the rest wait. Ask them to reopen the room in the same browser: it resumes where it left off. If they cannot, use **Advance slowest participants** in the Monitor; that person's period ends without further trading (their position stays where it was) and their data still counts in the report's averages.

oTree Demo Sessions Rooms Data Server Check

[EN] Futures market — 8 periods: session 'agv7y7xw' (demo)

New Links Monitor Data Payments Report Description

ID	Code	Label	Progress	App	Round	PageName	Waiting	WaitsFor	Since	
P1	83dv00iq		6/72	futures_market	1	Trade			1m	
P2	kq389pwm		6/72	futures_market	1	Trade			1m	
P3	le2uif0		6/72	futures_market	1	Trade			1m	
P4	de2sjh5		6/72	futures_market	1	Trade			1m	
P5	v9n22avz		6/72	futures_market	1	Trade			1m	
P6	yjsrv5iy		6/72	futures_market	1	Trade			1m	
P7	bibugub5		6/72	futures_market	1	Trade			1m	
P8	v8w22xs1		6/72	futures_market	1	Trade			1m	

8 started, 8 in progress (total: 8)

Figure 2.6: Monitor: each participant's period and page, without showing decisions.

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://futuresmarket.beer-lab.org/room/futures_market_en.
3. **Catalogue.** At teaching.beer-lab.org they search for **Futures market** and click their language's button.



English, basic

futuresmarket.beer-lab.org/room/futures_market_en

English, extended

futuresmarket.beer-lab.org/room/futures_market_e

Español, básica

futuresmarket.beer-lab.org/room/futures_market_es

Español, extendida

futuresmarket.beer-lab.org/room/futures_market_e

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 and a role (producer or processor) they do not choose.

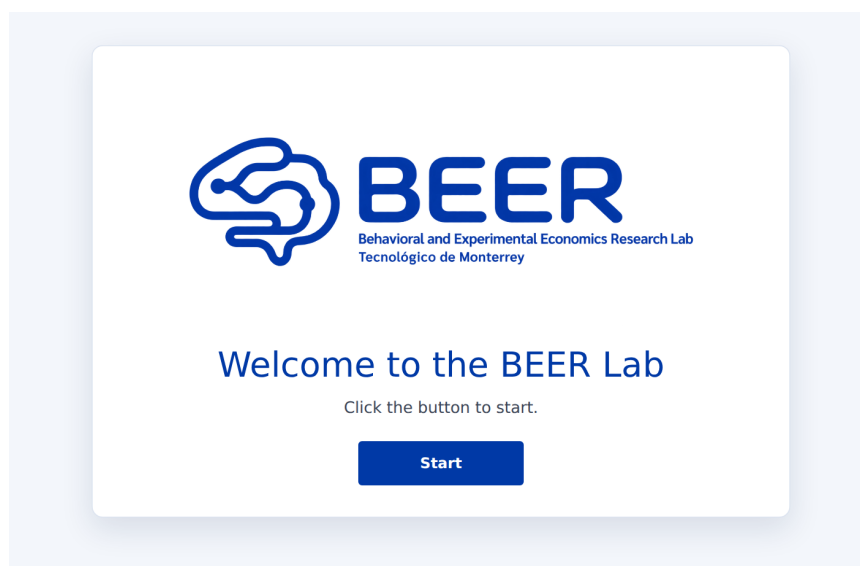


Figure 2.7: Room the student opens.

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: the whole class forms one single market.

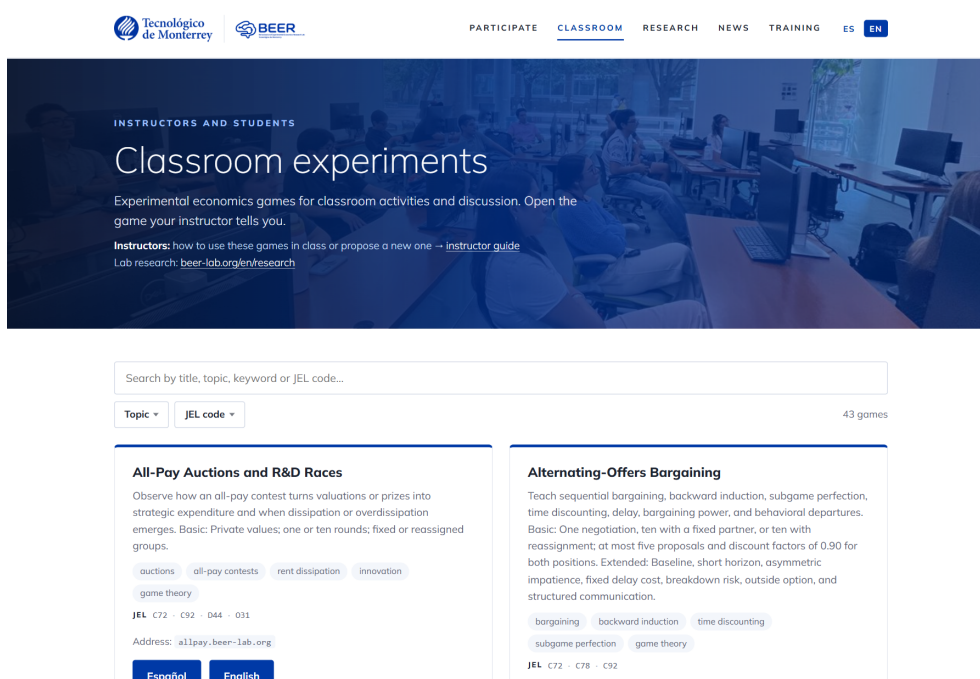


Figure 2.8: Catalogue at teaching.beer-lab.org, the students' page. Once this game goes live, its card will appear here (search for **Futures market**).

The basic game and its screens

3.1 Rules, incentives and the perfect-hedge example

There is one single market for the whole class. When the session is created, each person receives one of two roles, at random and fixed for the whole session: **producer** (physical exposure +4 units: as if they already owned 4 units of output that will be worth the final price) or **processor** (physical exposure −4: as if they already needed to buy 4 units at that price). That exposure is not traded; it is there from the start of the period, whatever the person does.

Each period is a new, independent market: everyone's position in the futures contract starts at 0 and that period's final market price —uniform between 50 and 150 ECU, average 100— is drawn again and revealed only at the end. During the period, anyone can promise to buy (bid) or promise to sell (ask) the contract, as many times as they like, in a continuous order book with an improvement rule —the same mechanism as **asset_market**, but without its “cannot sell what you do not have” limit: here promising to sell without owning anything is going short, and that is exactly what lets a long physical exposure be cancelled. The only limit is an arbitrary net-position cap, ± 20 units, so nobody accumulates an absurd position.

Each person's earnings at the end of the period are

$$\pi = \text{cash from their trades} + (\text{final position} + \text{physical exposure}) \times V,$$

where V is that period's final market price. If the position exactly cancels the physical exposure, the second term is 0 and π is fixed from the moment of trading, whatever V turns out to be.

For the instructor

Central example (perfect hedge), the same one the comprehension check uses.

A producer with exposure +4 promises to sell those same 4 units at 90 ECU: they receive $4 \times 90 = 360$ ECU in cash. Since their position (−4) cancels their exposure (+4), their earnings for the period are **360 ECU, whatever the final price turns out to be**. A processor with exposure −4 who promises to buy those same 4 units at 95 ECU pays $4 \times 95 = 380$ ECU: their earnings are −380 ECU, also fixed. The contrast with *not* trading —earnings = exposure $\times$ final price, which varies by chance between 200 and 600 ECU for 4 units— is the game's central lesson. Before playing, ask: if you were a producer and traded nothing, between which two numbers could your earnings land?

3.2 Cover, instructions and comprehension

The cover presents the BEER Lab and the rules of conduct. The instructions describe only the action —promise to buy, promise to sell— and never say “hedging”, “futures” or “short selling” as technical terms; those appear only in this guide and in the instructor report. The instructions’ text depends on the role: a producer sees that they already have units of output; a processor, that they already need to buy them.





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 where promises to buy and to sell are traded. 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 

Figure 3.1: Cover and lab rules.

Instructions

Period 1 of 8

In this activity you are a producer. At the end of each period, your output is worth a market price that is not yet known.

You already have, without doing anything, **4 units** of output. At the end of the period, each unit is worth that period's market price — a number between 50 and 150 ECU, the same for the whole group, drawn at random and revealed only at the end. If you make no trade at all, your earnings for the period are exactly $4 \times$ that price: it could be high or low, purely by chance.

The market for promises

- During the period, you can trade a promise to buy or sell units, at a price fixed TODAY even though delivery and payment happen at the end of the period. You can offer to buy (a "long" position) or offer to sell (a "short" position), as many times as you like.
- Unlike other markets, here you CAN promise to sell units you do not have — that is exactly what lets you offset what you already have or need.
- Every time your buy promise is accepted, you pay the agreed price and your position goes up by one unit. Every time your sell promise is accepted, you receive the agreed price and your position goes down by one unit (your position can end up negative).

Your earnings for the period = the cash you earned or paid trading, plus (your position + what you already had or needed) $\times$ the final market price. If your position exactly cancels what you already had or needed, your earnings do not depend on the final market price at all: they were fixed the moment you traded.

Example

Example: you have 4 units of output (without doing anything) and you promise to SELL those same 4 units at 90 ECU each. You receive $4 \times 90 = 360$ ECU in cash. Since your position (-4) exactly cancels what you already had ($+4$), your earnings for the period are 360 ECU no matter what the final market price turns out to be.

- There will be 8 periods. Each one draws a new final market price. Your earnings from all periods are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

Continue

Powered by 

Figure 3.2: A producer's instructions: their physical exposure, the market for promises and the perfect-hedge example.

Instructions

Period 1 of 8

In this activity you are a processor. At the end of each period, you need to buy inputs at a market price that is not yet known.

You already need, without doing anything, to buy **4 units** of inputs. At the end of the period, each unit costs that period's market price — a number between 50 and 150 ECU, the same for the whole group, drawn at random and revealed only at the end. If you make no trade at all, your earnings for the period are exactly $-4 \times$ that price: a cost that could be high or low, purely by chance.

The market for promises

- During the period, you can trade a promise to buy or sell units, at a price fixed TODAY even though delivery and payment happen at the end of the period. You can offer to buy (a "long" position) or offer to sell (a "short" position), as many times as you like.
- Unlike other markets, here you CAN promise to sell units you do not have — that is exactly what lets you offset what you already have or need.
- Every time your buy promise is accepted, you pay the agreed price and your position goes up by one unit. Every time your sell promise is accepted, you receive the agreed price and your position goes down by one unit (your position can end up negative).

Your earnings for the period = the cash you earned or paid trading, plus (your position + what you already had or needed) $\times$ the final market price. If your position exactly cancels what you already had or needed, your earnings do not depend on the final market price at all: they were fixed the moment you traded.

Example

Example: you need to buy 4 units of inputs (without doing anything) and you promise to BUY those same 4 units at 95 ECU each. You pay $4 \times 95 = 380$ ECU in cash. Since your position (+4) exactly cancels what you already needed (−4), your earnings for the period are −380 ECU (a fixed cost) no matter what the final market price turns out to be.

- There will be 8 periods. Each one draws a new final market price. Your earnings from all periods are added up.
- Amounts are in ECU (experimental currency units). There is no cash payment.

Continue

Powered by aTree

Figure 3.3: The same instructions for a processor: exposure is negative and the example uses the 95 ECU price.

The comprehension check asks for the fixed earnings of a hedged producer and processor from the example above (360 and −380 ECU), with options that include negative numbers and the typical mistake of using only the range's minimum or maximum price instead of the hedge price. On a wrong answer, the message recalls the rule without giving the answer away, and allows another try.




Before you start

Period 1 of 8

Answer both questions based on the instructions (they apply to any producer or processor).

A producer has 4 units of output and promises to sell those same 4 units at 90 ECU each. What are their earnings for the period, whatever the final market price turns out to be?

☐ -360 ECU
☐ 200 ECU
☐ 360 ECU
☐ 600 ECU

A processor needs to buy 4 units and promises to buy those same 4 units at 95 ECU each. What are their earnings for the period, whatever the final market price turns out to be?

☐ -380 ECU
☐ 200 ECU
☐ 380 ECU
☐ 600 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 producer or processor).

A producer has 4 units of output and promises to sell those same 4 units at 90 ECU each. What are their earnings for the period, whatever the final market price turns out to be?

☐ -360 ECU
☐ 200 ECU
☐ 360 ECU
☐ 600 ECU

Check: if the position exactly cancels what they already had, earnings are the cash received from selling — a fixed number.

A processor needs to buy 4 units and promises to buy those same 4 units at 95 ECU each. What are their earnings for the period, whatever the final market price turns out to be?

☐ -380 ECU
☐ 200 ECU
☐ 380 ECU
☐ 600 ECU

Check: if the position exactly cancels what they already needed, earnings are the cash paid to buy, with a negative sign — a fixed number.

Check

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Figure 3.5: Incorrect answer (200 ECU in both, the mistake of using exposure $\times$ minimum price only): the message recalls the rule without giving the answer away.

3.3 Trading and the result

The trading screen shows at all times the cash from this period's trades, your own position, your physical exposure (what you already had or needed, not traded), the best standing buy and sell promises, and the list of closed trades. The participant can:

- Every trade clears both standing promises; the market starts over with none. Nobody can accept their own promise.

16

Time left to complete this page: 1:51

Trading

Period 1 of 8

Cash from your trades

0

Your position

O

What you already had or needed (not traded)

4

Best buy promise

80

Best sell promise

120

Your sell promise must be lower than the current one.

Your buy promise

Page 10

Offer to buy

Your sell promise

125

Offer to sell

Buy at the best sell promise

Sell at the best buy promise

Trades closed this period

#

Price

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Figure 3.7: A sell promise that does not improve on the standing one is rejected with a notice.




Time left to complete this page: **1:54**

Trading

Period 2 of 8

Cash from your trades
180

Your position
-2

What you already had or needed (not traded)
4

Best buy promise
 —

Best sell promise
 —

Your buy promise

Offer to buy

Your sell promise

Offer to sell

Buy at the best sell promise

Sell at the best buy promise

Trades closed this period

#	Price
1	90
2	90

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Figure 3.8: Halfway through period 2's hedge: the producer has already sold 2 of the 4 units at 90 ECU each (position -2 , cash 180).

When the period ends, the final market price is revealed and the result appears: role, physical exposure, final position, cash from trades, final market price and earnings (and cumulative earnings, if there is more than one period).

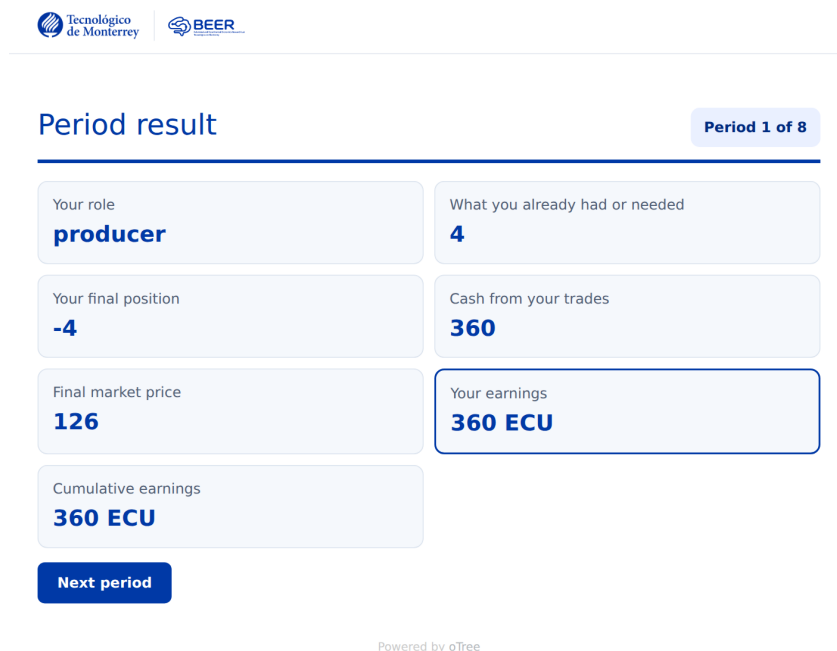


Figure 3.9: Period 1 result for the example's producer: position -4 , cash 360, final price revealed at 126 ECU, earnings 360 ECU (simulated decisions).

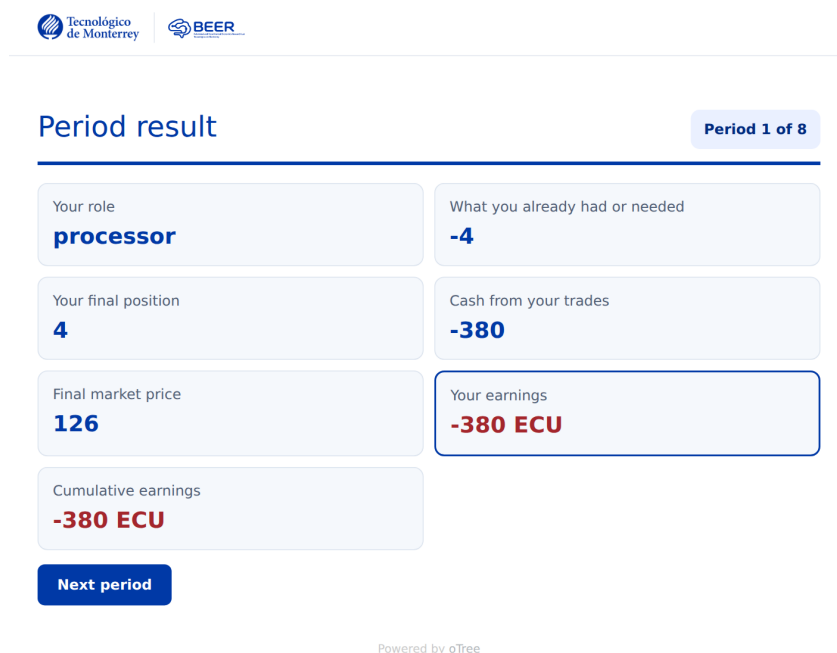


Figure 3.10: The same period's result for the example's processor: position $+4$, cash -380 , the same final price, earnings -380 ECU (simulated decisions).

What the participant sees

The hedged producer's and processor's earnings from the example (360 and -380 ECU) do *not* depend on the revealed price above: it is the same amount that follows from the formula in the box above, whatever the final price had been. Whoever trades nothing, instead, sees their earnings rise or fall with every ECU that price moves.

Period result

Period 2 of 8

Your role

producer

What you already had or needed

4

Your final position

-4

Cash from your trades

360

Final market price

87

Your earnings

360 ECU

Cumulative earnings

720 ECU**Next period**Powered by [oTree](#)

Figure 3.11: Period 2 result for the same producer, repeating the same hedge: the final price revealed this time was 87 ECU —very different from period 1's 126— and yet earnings are again exactly 360 ECU.

For the instructor

Figures 3.9 and 3.11 are the most direct demonstration you can project: the same producer, the same hedge (selling exactly their exposure at 90 ECU), two periods with very different final prices (126 and 87 ECU) and, in both, exactly the same 360 ECU earnings. Ask the class, before revealing the second figure, whether they expect it to change.

3.4 The position cap

Each person's net position has a cap of ± 20 units —well above the physical exposure (4 units), so it never gets in the way of hedging, but finite so nobody accumulates an absurd position. If a promise would take the position past the cap, it is rejected the moment it is posted, before anyone can accept it.




Time left to complete this page: 1:31

Trading

Period 3 of 8

Cash from your trades
3000

What you already had or needed (not traded)
4

Best sell promise
—

Your position
-20

Best buy promise
—

That trade would take your position past the allowed limit.

Your buy promise
 Offer to buy

Your sell promise

Offer to sell

Buy at the best sell promise
Sell at the best buy promise

Trades closed this period

#	Price
1	150
2	150
3	150
4	150
5	150
6	150
7	150
8	150
9	150
10	150
11	150
12	150
13	150
14	150
15	150
16	150
17	150
18	150
19	150
20	150

Powered by gTag

Figure 3.12: A sell promise rejected because the position is already at the cap (-20): the same kind of notice as a promise that does not improve the standing one, but for a different reason.

What the participant sees

The cap rarely matters: hedging the physical exposure exactly takes only 4 units. It only comes up if someone trades far more than needed to hedge — for example, to speculate on the price instead of hedging.

End of the activity

Period 8 of 8

Your total earnings

4128 ECU

Period	Role	Exposure	Position	Final price	Earnings
1	producer	4	-4	126	360
2	producer	4	-4	87	360
3	producer	4	-20	129	936
4	producer	4	0	128	512
5	producer	4	0	140	560
6	producer	4	0	147	588
7	producer	4	0	58	232
8	producer	4	0	145	580

Thank you for participating. Please wait for your instructor.

Powered by  qTree

Figure 3.13: Closing screen: total earnings and the 8-period history for the same producer (simulated decisions).

For the instructor

The history in figure 3.13 is, on its own, a summary of the whole game. In periods 1 and 2, this producer hedged exactly (position -4) and earned 360 ECU both times, with final prices of 126 and 87 ECU. In periods 4 through 8 they traded nothing (position 0): their earnings were $4 \times$ that period's final price —512, 560, 588, 232 and 580 ECU— rising and falling with chance. The same person, the same physical exposure, two very different ways of ending the period.

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 participants, producers, processors, completed periods and whether the current period is unfinished, so you can project it from the start without giving anything away. Click **Show results** once the last period ends; **Refresh** brings in new periods and **Hide results** covers them again.

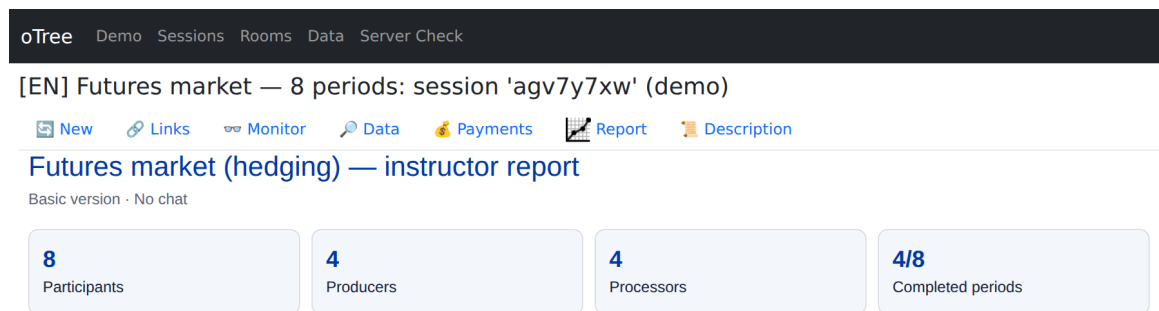


Figure 4.1: Report with results hidden and a progress counter.

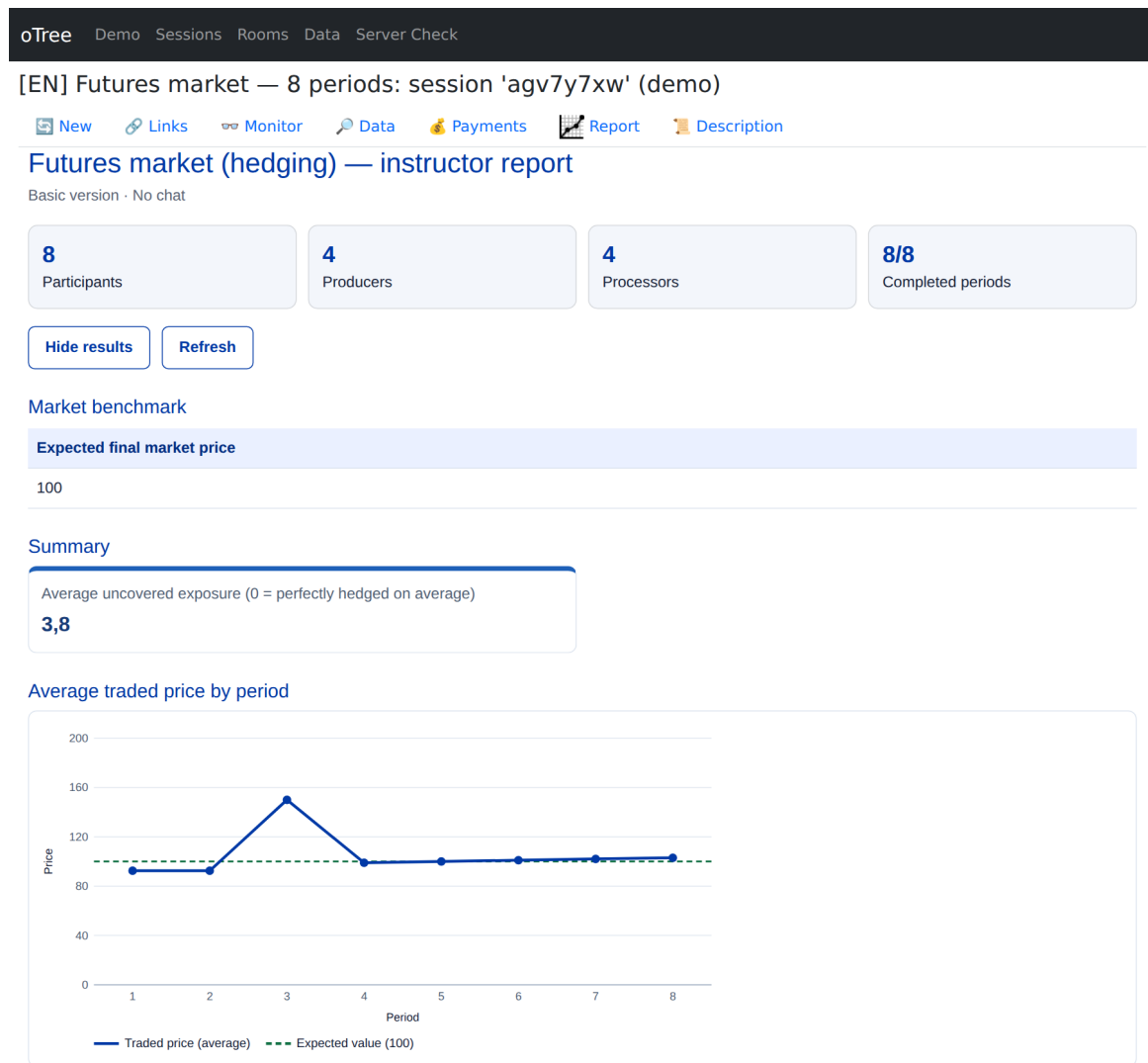


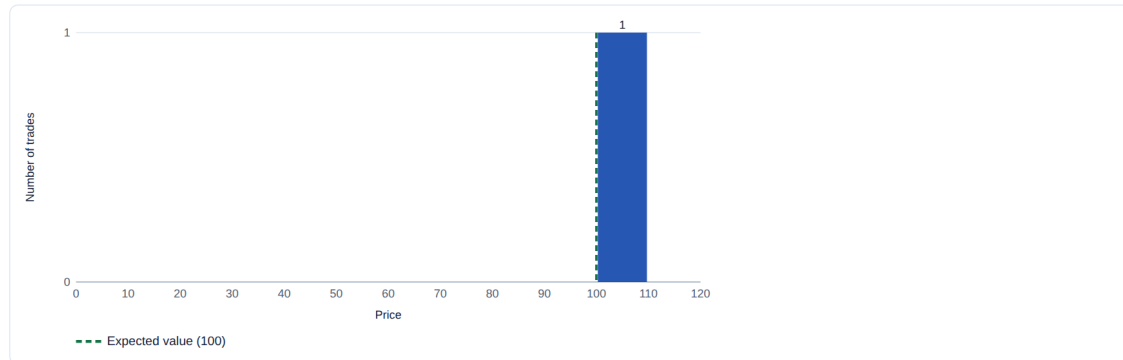
Figure 4.2: Revealed report: market benchmark (expected value 100 ECU) and the average-uncovered-exposure summary (simulated decisions).

Early periods versus late periods (uncovered exposure)

	Uncovered exposure
Periods 1–3	3,8
Periods 6–8	3,8

Distribution of traded prices

Trades in the last completed period.



Results by period

Period	Trades	Average price	Uncovered exposure
1	8	92,5	3
2	8	92,5	3
3	20	150	5,5
4	1	99	3,8
5	1	100	3,8
6	1	101	3,8
7	1	102	3,8
8	1	103	3,8

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

Figure 4.3: Revealed report: early versus late periods, a histogram of the last completed period and the round-by-round table (simulated decisions).

4.2 How to read the report

1. The expected final price (100 ECU) is the only fixed benchmark: it does not depend on what the class trades, unlike the average traded price.
2. The summary shows $|\text{position} + \text{physical exposure}|$ averaged across every person and every completed period: 0 means a perfect hedge on average; the higher it is, the more uncovered exposure the class leaves in aggregate.
3. The chart of average price by period against the expected value only makes sense for periods with trades; a period with none does not appear.
4. The early-versus-late table (from 6 completed periods) compares the first three periods' uncovered exposure with the last three's: does hedging improve with practice?
5. The histogram (last completed period) shows the spread of that period's traded prices, which the average hides.

6. The round-by-round table includes the number of trades; a period with few trades and high uncovered exposure suggests the class speculated instead of hedging, or that there was not enough time to trade.

Debrief script

Before revealing, ask: if everyone in the class had hedged exactly their exposure, what value would they expect to see for “average uncovered exposure”? (0). Then reveal the summary and the round-by-round table. Ask someone with a lot of uncovered exposure to explain their reasoning: did they choose to speculate on the price, or simply not trade? Close by repeating the perfect-hedge example on the board with a real participant’s own numbers (**Data** → **Custom export**).

Theoretical background

5.1 Hedging, speculation and why it works

Theoretical background

Someone with a fixed physical exposure e to an uncertain price V who trades nothing earns $e \times V$, whose variance depends only on V 's. Trading a position q in a contract that is cash-settled against the same V adds $q \times V$ to that result (plus the cash already received or paid while trading). If $q = -e$ —the position exactly cancels the exposure— the term that depends on V vanishes entirely: earnings are fixed at the cash traded, with no variance at all with respect to V . That is a perfect (full) hedge. Any q between 0 and $-e$ is a partial hedge: it reduces the variance without eliminating it. [Working \(1953\)](#) formalizes this distinction —hedging, to get rid of a risk one already has, versus speculating, taking on a new position precisely to assume price risk— as the central economic reason futures markets exist, and documents that a large share of real futures markets' volume is hedging, not pure speculation.

Someone who trades a position larger than $|e|$ against their exposure is not hedging: they are speculating, taking on price risk beyond what their physical exposure already carried. [Hull \(2022\)](#) —the standard textbook on futures and derivatives— presents exactly this distinction between *hedgers* and *speculators* as the starting point for all of futures-hedging theory, along with the optimal hedge ratio (in this game, always 1, because the contract settles against exactly the same price that determines the physical exposure: there is no basis risk). [Friedman \(1953\)](#) is an early historical reference for this same distinction between speculation and hedging in forward markets, originally applied to flexible exchange rates.

5.2 What to look for in the session's own data

- Compare the earnings of those who hedged their exposure (should cluster near ± 360 and ± 380 ECU, depending on role and the price they traded at) with those who traded nothing (should vary much more, tracking that period's final price).
- The report summary's average uncovered exposure is the central metric: 0 is a perfect hedge; large values signal that much of the class did not hedge, speculated, or did not have time to trade.
- The position cap should almost never be reached in a real session: it only happens if someone trades far more than needed to hedge. If it shows up in your class's data, that is evidence of active speculation, not an error.

- Compare the chat variant against the same session without chat (if you ran both): did coordinating help more people hedge, or did it push the group to bet together on a price direction?

Note

A class's results are descriptive. A single session is a single market: periods within the same session are not independent observations of each other (they share the same group of people), and there is no way to separate the effect of the group from the effect of the design. This game is a teaching adaptation: it does not reproduce the parameters or procedure of a published experiment, so no literature finding should be cited as something this session ought to reproduce.

Basic modes

The two basic modes use the rules from chapter 3 and have no chat.

6.1 One period (demonstration)

`futures_market_en_1_period` has a single period. Useful for teaching the mechanics, for rehearsal, or for a short class, but it only covers one hedging period: there is no trend to show and no early-versus-late table in the report.

6.2 Eight periods

`futures_market_en_8_periods` is the reference mode: eight independent markets, enough for the report's early-versus-late table (from 6 completed periods) and for the class to have time to learn to hedge. Reserve 20 to 25 minutes for the game.

For the instructor

Since each period is independent, you can stop the session before all 8 periods if class time runs out — the report works with any number of completed periods — though you will lose the early-versus-late table with fewer than 6.

Extended variants

7.1 Treatment map

Variant	What changes	Pedagogical question
Communication	60s group chat before each period; 8 periods	Does coordinating help more people hedge (by sharing the idea of hedging), or does it push the group to bet together on a price direction instead?

7.2 Communication

`futures_market_extended_communication` is identical to the 8-period mode, but before each period the whole market can write to each other for 60 seconds in an anonymous chat. Every message appears under the same name (“Participant”), so nobody can be identified. Nothing written there is binding.




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

Participant

Participant

Is anyone going to fully hedge this period?
I am selling my 4 units at 90, I do not care about the final price.
If we all hedge, the final price should stop mattering much to us.

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

Unlike the oligopoly games, where chat facilitates collusion, there is no single theoretical prediction here: communication could spread the idea of hedging and help more people hedge, or coordinate the group to bet together on a price direction. It is an empirical question to discuss with the session's own data.

Debrief script

Compare the average uncovered exposure with a session without chat, if you have one. Read a few messages aloud, without identifying anyone (**Data** → **Chat**): did anyone explain how to hedge to someone else? Did anyone propose betting together on a price?

Lesson plan and reading the results

8.1 Suggested 50-minute session

0–5 min	Create the session (room [EN] Futures Market , configuration <code>futures_market_en_8_periods</code>). Students join by QR code or link.
5–10 min	Cover, instructions and comprehension check.
10–30 min	8 periods of trading. While they wait, prepare the Monitor.
30–35 min	Open the hidden report; ask for predictions (what do they expect for “average uncovered exposure”?).
35–45 min	Reveal results. Compare the earnings of those who hedged with those who traded nothing. Discuss the price trend.
45–50 min	Close by working out the perfect-hedge example on the board with a real participant’s numbers.

8.2 Questions to drive discussion

- If you were a producer and traded nothing, what does your earnings depend on? What if you hedge exactly your exposure?
- Why would a processor want to *buy* futures instead of selling them?
- What does it mean for someone to hold a position much larger than their physical exposure (say, 15 when their exposure is 4)?
- If hedging eliminates the variance of earnings, why would anyone choose not to hedge fully?

8.3 Common misreadings

Misreading	Clarification
“Hedging means not trading.”	The opposite: not trading leaves the physical exposure open, uncovered. Hedging requires trading exactly the opposite of that exposure.
“Short selling is a trick in the game.”	It is the central mechanic: without being able to sell without owning anything, a producer could never cancel their long exposure.
“The final price is what determines whether someone won or lost.”	Only for someone who did not hedge. Whoever hedges fixes their earnings the moment they trade, whatever the final price turns out to be.
“A position of -20 is a participant’s mistake.”	The cap is only reached if someone traded far more than needed to hedge (4 units); it is evidence of speculation, not a mistake.

Operations, privacy and troubleshooting

9.1 Privacy and conduct

- Never request names, student IDs or demographic information during this activity.
- Project only the aggregate report. Keep codes, screens and individual earnings private.
- Ask students not to write personal information in the chat; the screen itself reminds them.
- Never use the session to grade anyone on their earnings or on their role (producer or processor, assigned at random).
- 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
A student sees “The session is full”.	More students than present were declared, or some never joined. Close the room, create another session with the correct number.
“Your sell promise must be lower than the current one...”	The promise does not improve on the standing one. It is a rule, not an error.
“That trade would take your position past the allowed limit.”	The position cap (± 20) was reached. Normal only if someone traded far above their exposure (4 units).
Someone disconnects mid-trade.	Ask them to reopen the room in the same browser; it resumes where it left off. If they cannot, use Advance slowest participants in the Monitor.
A different game appears in Demo or Rooms.	The panel does not match this game. Do not start the session; notify the lab.
Need to repeat the activity with the same group.	Create a new session in the same room; roles (producer/processor) are reassigned at random.

9.3 Data for later analysis

Data → **Custom export (futures_market)** downloads one row per person and period: session, anonymous code, period, language, edition, treatment, chat, role, physical exposure, final position, cash from trades, final market price and earnings. **Data** → **Chat** downloads the communication variant's chat messages. Neither export includes personal identifiers: only the anonymous participant code. Treat periods within the same session as dependent: they all involve the same group of people.

Bibliography

Friedman, M. (1953). The case for flexible exchange rates. In *Essays in Positive Economics*. University of Chicago Press.

Hull, J. C. (2022). *Options, Futures, and Other Derivatives* (11th ed.). Pearson.

Working, H. (1953). Futures trading and hedging. *The American Economic Review*, 43(3), 314–343. <https://www.jstor.org/stable/1810322>

QR code for each room

English, basic



`futuresmarket.beer-lab.org/room/futures_market_en`

English, extended



`futuresmarket.beer-lab.org/room/futures_market_extended`

Español, básica



`futuresmarket.beer-lab.org/room/futures_market_es`

Español, extendida



`futuresmarket.beer-lab.org/room/futures_market_extendido`