



Instructor's Guide to Equity Issuance and Price Formation

Laboratory implementation, theoretical foundations,
experimental evidence, and variants

Behavioral and Experimental Economics Research Lab
Department of Economics



Revised edition | October 2026

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

How to use this guide

This guide prepares instructors to teach equity issuance, ownership and price formation through decisions by one founder and four investors. It assumes no previous experience running classroom experiments and follows the English interface.

Begin with the account example and operating summary. Then select one institutional comparison. The treatment chapter, report definitions and worked exercises support discussion after decisions are recorded. The Spanish guide covers the same mechanisms.

The primary and secondary markets share one ownership ledger. Screenshots show genuine local interfaces. Proposed public routes describe the prepared product; the delivery receipt distinguishes local validation from publication on the public server.

Author

This guide was prepared by Stanislao Maldonado, research professor in the Department of Economics at Tecnológico de Monterrey, Monterrey Campus. For questions or suggestions about its content, please contact the author at stanislao.maldonado@tec.mx.

For the instructor

Reconstruct the company account before revealing price comparisons. Keep indications separate from binding demand and unavailable prices separate from zeros. Use one condition pair rather than all extensions in a single lesson.

Contents

How to use this guide	i
1 The activity and its economic logic	1
1.1 What students can learn	1
1.2 Session preparation summary	1
1.3 Resources, ownership and company cash	2
1.4 The sequence of a complete market	3
1.5 A complete issuance and settlement example	3
1.6 A general account for explaining dilution	4
2 Access and classroom operation	5
2.1 Participant and instructor routes	5
2.2 Preparation before class	5
2.3 During placement and trading	10
2.4 Completion and the first debrief	10
3 Institutions, information and extended conditions	16
3.1 Choosing an informative comparison	16
3.2 Posted offer and subscription	16
3.3 Uniform-price auction	17
3.4 Pay your bid	17
3.5 Indicative book and pricing	17
3.6 Discretionary allocation	18
3.7 Uncertain value without a signal	18

3.8	Imperfect private signals	19
3.9	Issuer information	19
3.10	An informed investor and informational priority	23
3.11	Full public disclosure	23
3.12	Founder lock-up	23
3.13	Public placement history	23
3.14	Minimum proceeds and larger offering	24
3.15	Theory and evidence for a careful discussion	24
4	Instructor report, interpretation and teaching plan	25
4.1	Read progress before outcomes	25
4.2	Price distributions and market evolution	25
4.3	A 75-minute classroom sequence	26
5	Worked exercises, data and operational checks	30
5.1	Questions that reveal understanding	30
5.2	Exercise: partial issuance	30
5.3	Exercise: the subscription threshold	31
5.4	Exercise: multiple prices and identical claims	31
5.5	Exercise: orders and reservations	31
5.6	Exercise: uncertainty and selection	31
5.7	Exercise: final session payment	32
5.8	Data exports and a reproducible analysis	32
5.9	Frequent operational problems	32
5.10	Final instructor checklist	33

List of Figures

2.1	Institutional website: CLASSROOM opens the teaching catalogue.	6
2.2	Current catalogue: search by title, topic or JEL code.	7
2.3	Opening Demo view:36 family configurations.	8
2.4	The four family rooms.	9
2.5	Basic room with the correct initial language and edition.	9
2.6	Welcome and rules before decisions.	11
2.7	Comprehension: explained error with retained answers.	12
2.8	The founder announces pricing and sees indications when applicable.	13
2.9	Binding request after the price announcement.	14
2.10	Allocation separates personal cash from company proceeds.	14
2.11	Active turn: resources, reservations, book and own order.	15
3.1	The auction requests two binding prices rather than posted-price quantities.	18
3.2	Indicative prices do not purchase shares.	19
3.3	The placement agent selects quantities within actual requests.	20
3.4	Private information in the signal condition.	20
3.5	The founder retains locked ownership and separately available inventory.	21
3.6	Same-group history from the second market.	22
4.1	Settlement distinguishes transaction price from final payment.	27
4.2	Explicit completion with the mean credited once.	28
4.3	The instructor report starts hidden.	28
4.4	Aggregates and evolution with observed denominators.	29

The activity and its economic logic

1.1 What students can learn

An equity offering connects decisions often taught separately. A company places securities, investors decide how much to purchase, and owners subsequently trade their shares. The announced price, actual placement price and price of a later transaction may differ. None automatically becomes the company's value. This activity reconstructs those distinctions using student decisions and an explicit ledger of ownership, personal cash and corporate proceeds.

The design is interactive. Each market has one founder who also acts as issuer and placement agent, and four investors. Combining the founder's functions is a teaching simplification: there is no separate underwriting bank receiving a commission or committing to purchase unplaced securities. The founder owns old shares; the company may issue new shares; investors submit requests; and everyone participates in a short secondary market. The economic observational unit is therefore the market, although individual decisions and transactions are also recorded.

In a first class, students should be able to follow a share from issuance to settlement. They must identify who pays, which account receives the money, how many shares exist and what claim each share conveys. Only then should the class ask whether a price was high or low. Starting with a return chart before reconstructing accounts encourages students to call transfers gains, count proceeds twice or treat an unallocated request as a completed purchase.

The activity also shows how allocation rules change the relationship between a request and its outcome. At a posted price, requesting two shares does not guarantee receiving two under excess demand. In an auction, a higher bid may change both allocation probability and payment. In an indicative book, expressing interest does not commit an investor to purchase. With discretion, the placement agent chooses among submitted binding requests. These institutional differences are the comparisons, rather than different names for the same form.

For the instructor

For a first implementation, use one basic market and reserve about 75 minutes including discussion. Have students write the company account before secondary trading opens. For a later class, compare two conditions changing one institution. Do not present fifteen conditions as fifteen games or attempt to run all of them in one lesson.

1.2 Session preparation summary

Purpose	Understand primary issuance, cash ownership and subsequent price formation.
Experimental unit	Interactive five-person market: founder/issuer and four investors.
Basic edition	One market; ten with a fixed group or random reassignment preserving roles.
Extended edition	Fifteen placement, information, lock-up, financing and public-history conditions.
Decision	Indications, offer/reserve, binding demand, optional discretionary allocation and secondary orders.
Payoff	Mean final personal wealth across active markets, credited once. Founder 200 ECU and four old shares; investors 400 ECU each.
Topics	equity issuance; primary placement; price formation; asymmetric information; share allocation; secondary market
JEL	C92; D44; D82; G14; G32
Participants	Multiples of five; minimum five, or ten for random reassignment.
Suggested duration	About 75 minutes for one market including discussion; 90–120 for repeated comparisons.

The basic edition offers one market, ten with a fixed group and ten with reassignment. Extended conditions share resources, ownership accounting, trading and settlement. Discretion and public history use three fixed-group markets, allowing comparison of continuity with and without past information. Other extended conditions begin with one market. Menu labels describe these differences; language and edition are selected before session creation.

Founder and investor roles persist between markets. Under reassignment, investors are redistributed across founders; a participant does not randomly become a founder. At least ten people are required for reassignment to be meaningful. Other modes form complete groups of five. Ten markets mean ten offerings and independent settlements. They are neither ten dates of the same share nor a panel of firms accumulating capital across rounds.

The introductory example uses V equal to 100. V is the value per old share before issue proceeds enter the company. It is not a market quotation and is not the final payment on every share after issuance. Legacy company assets equal four times V . New proceeds increase assets available at settlement, and issued shares increase the number of claims. This prepares a dilution explanation without adding corporate balance-sheet mechanisms absent from the program.

1.3 Resources, ownership and company cash

Each market gives the founder 200 personal ECU and four old shares. Every investor receives 400 personal ECU and no shares. A separate company account receives money paid for new shares. That account is distinct from the founder's personal cash. ECU means Experimental Currency Units; conversion into real money depends on session settings and instructor announcements. Do not infer an exchange rate from the numerical examples.

The company normally has capacity to place four new shares; the larger-offering condition allows six. Nobody owns these potential shares before allocation. A share is created only when awarded and paid for. Unplaced securities do not enter an invisible founder portfolio and receive no final dividend. This prevents duplicate claims. If three shares are placed, seven exist rather than eight: four old and three new. Available describes issuance capacity rather than existing ownership.

The founder combines two interests. The founder chooses placement terms while retaining four

claims on final company assets. Raising capital on terms favorable to old shares may increase founder wealth, while a low price relative to legacy assets may reduce it. Nevertheless, proceeds are not personal cash. Confusing those channels suggests the founder always wants to sell any quantity at the highest possible price regardless of demand and dilution. The activity keeps both channels in the accounts.

Investors can acquire at most two shares in the primary offering. Subsequently they can change positions through secondary orders subject to available cash and owned shares. There is no borrowing, short selling or creation of shares through trading. A secondary purchase transfers cash to a seller and changes ownership of an existing share. A primary purchase transfers cash to the company and creates a new claim. This contrast teaches corporate financing and market liquidity using the same asset while keeping their recipients clear.

What participants will see

The resource screen identifies role-specific accounts, states that resources reset and defines ECU. Information about V appears separately under the selected condition. A participant should be able to identify owned shares and committable cash without looking at anyone else's screen. Open-order reservations reduce available resources even before a transaction occurs.

1.4 The sequence of a complete market

A session begins with institutional welcome, rules and comprehension questions. Comprehension uses the same example: four new shares placed at 80 with V equal to 100. It checks investor cash, the recipient of proceeds and division of company assets. Incorrect answers retain other entries and show a question-specific explanation. Retrying does not reduce payment. Do not use this stage to recommend prices or a trading strategy.

Where applicable, investors first enter two indicative prices. The founder sees that book before pricing. Otherwise the founder begins by posting an offer price or reserve. Investors observe that amount before submitting binding requests. Allocation is then automatic under the rule or chosen by the founder within submitted requests. Waiting pages separate phases: pricing cannot use an incomplete book and discretionary allocation cannot use a request that has not been submitted.

Primary allocation, proceeds and the participant's own position appear next. Secondary trading has ten turns, two per person. Only the active person decides; others wait. Turn order rotates between markets so that one position does not permanently retain the first opportunity. After ten turns, remaining orders expire, previously hidden V is revealed and final payment per share is computed. Each person sees an account and confirms to reach completion. The last completion page displays the average credited once, without a technical no-more-pages ending.

1.5 A complete issuance and settlement example

Let V equal 100 and place four new shares at 80. Legacy company assets are worth 400. Investors pay 320 into the company, creating four shares. Before secondary trading, final assets are 720 and eight equal claims exist. Each share will pay 90. The founder keeps 200 personal cash and four shares; without trading, final wealth is $200 + 4(90) = 560$. Initial wealth evaluated at V was 600. Issuance has reduced founder wealth by 40.

If each investor receives one share, each retains 320 cash and a claim paying 90. Without trading, final wealth is 410, ten above the initial 400. Investors jointly gain 40, exactly the founder's loss.

Proceeds are not surplus created through accounting duplication: they leave investor cash, remain inside the company and return once through share claims. Adding a further 320 to founder wealth would artificially inflate total resources.

Now let the founder sell one old share at 95 in secondary trading. Personal cash rises from 200 to 295 while ownership falls from four shares to three. Final wealth is $295 + 3(90) = 565$, five more than without the sale. The buyer pays 95 for a final claim of 90 and loses five relative to retaining the earlier position. Company assets remain 720 and eight shares remain outstanding. Secondary trading redistributes wealth without changing primary proceeds or the number of claims.

The secondary volume-weighted price is 95 if that is the only transaction. Its change relative to placement is $95/80 - 1 = 18.75\%$. The final-payment comparison is $90/80 - 1 = 12.5\%$. These are different measures: one uses observed trading and the other the model's final asset value. Without a trade, the first is unavailable while the second remains defined if placement occurred. The program does not invent a secondary price from an unaccepted standing quote.

Checkpoint

Reconstruct four equalities: primary cash paid equals proceeds; four old shares plus issued shares equals outstanding shares; secondary cash paid equals cash received; and total share payments equal company final assets before rounding. A cent-level rounding residual is reported separately and does not justify changing ownership.

1.6 A general account for explaining dilution

Let q be new shares actually issued and R actual primary proceeds. Final payment per share is

$$D = \frac{4V + R}{4 + q}.$$

When all new shares pay one price P_0 , proceeds are $R = qP_0$. D is then a weighted average of V and P_0 : four old claims and q new claims jointly divide legacy assets and new cash. A price below V lowers D ; a price above V raises it. This does not make every high offer feasible: investors must request and pay.

Founder ownership falls from one hundred percent to $4/(4 + q)$ without secondary trading. A lower fraction alone does not demonstrate lower wealth because company assets also change. With V equal to 100 and four shares placed at 120, proceeds are 480, assets 880 and D 110. The founder retains four shares paying 440, plus 200 personal cash, and finishes with 640. Ownership fell to one half while wealth rose by 40. The difference comes from the terms on which new capital entered.

In a pay-your-bid auction, R sums actual payments. The program reports R/q as mean primary price per placed share. It does not call that a unique common issue price when awardees paid different amounts. D uses the same formula because all shares carry the same final claim even when acquisition prices differ. Separating purchase terms from ownership rights prevents treating an asset as if its final payoff remembered its acquisition cost.

Access and classroom operation

2.1 Participant and instructor routes

Begin at <https://beer-lab.org/en/> and choose CLASSROOM to open <https://teaching.beer-lab.org/en/>. Search for equity issuance and price formation by title, topic or JEL code. The card should offer basic and extended editions in both languages. The family address is <https://equityissuance.beer-lab.org/>. Routes in this guide describe the prepared product; the delivery receipt distinguishes validated local operation from pending public deployment.

The English basic room is https://equityissuance.beer-lab.org/room/equity_issuance_en; the Spanish room is https://equityissuance.beer-lab.org/room/emision_acciones_es. Extended rooms use `equity_issuance_extended` and `emision_acciones_extendido`. Instructors access Demo or Rooms with their credentials. Demo must show only 36 configurations from this family and Rooms four rooms. Basic menus have three choices per language and extended menus fifteen. Stop session creation and consult the laboratory if another family appears.

A room is a group entry point; an individual link identifies a place in a session; the report belongs privately to the instructor. Do not distribute administration links. A participant identifier is pseudonymous but remains an access key and should not appear in slides. Resetting a database can invalidate old session links. Refreshing a preview requires restarting its server while preserving data, rather than resetting the database during an activity.

2.2 Preparation before class

Choose the lesson question before choosing a condition. The reference suffices for financing and dilution. Use the indicative-book condition to distinguish interest from commitment. For asymmetric information, compare conditions with the same V distribution and different information. For continuity, compare discretion and public history, both with three fixed-group markets. Keeping other elements constant makes institutional contrasts interpretable.

Count available participants and form complete groups of five. Reassignment requires at least ten. Prepare one place per student and an instructor display. Explain any real-money conversion, which average is paid and how incidents will be handled. Do not announce final balances as pure gains: founders start with old shares while investors start with cash, so role-specific wealth levels have different endowments. A combined mean may hide those distinctions.

Require silence and use of personal links only. Informal disclosure of V would undermine a private-information comparison. If someone asks what an order means, explain its procedure without recommending a price. If someone asks whether to invest, refer to resources, claims and rules. Before play the instructor should be able to solve the 320-proceeds and 90-per-share example

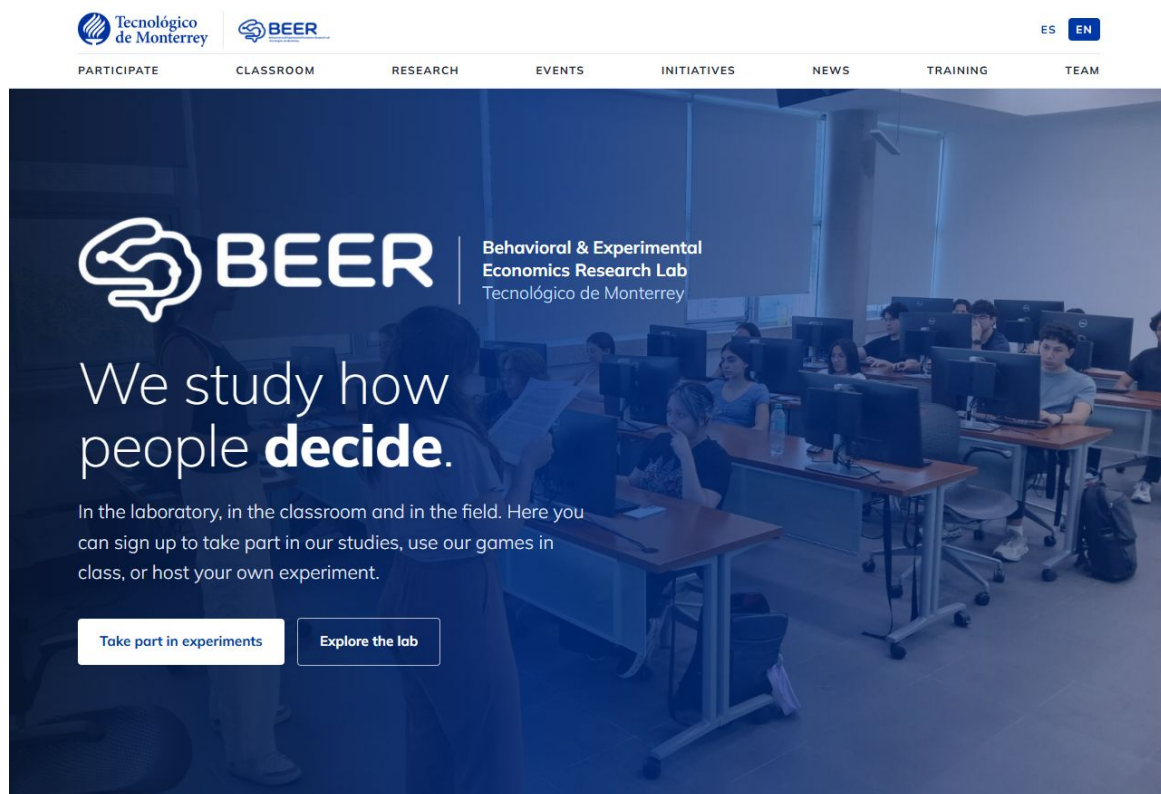
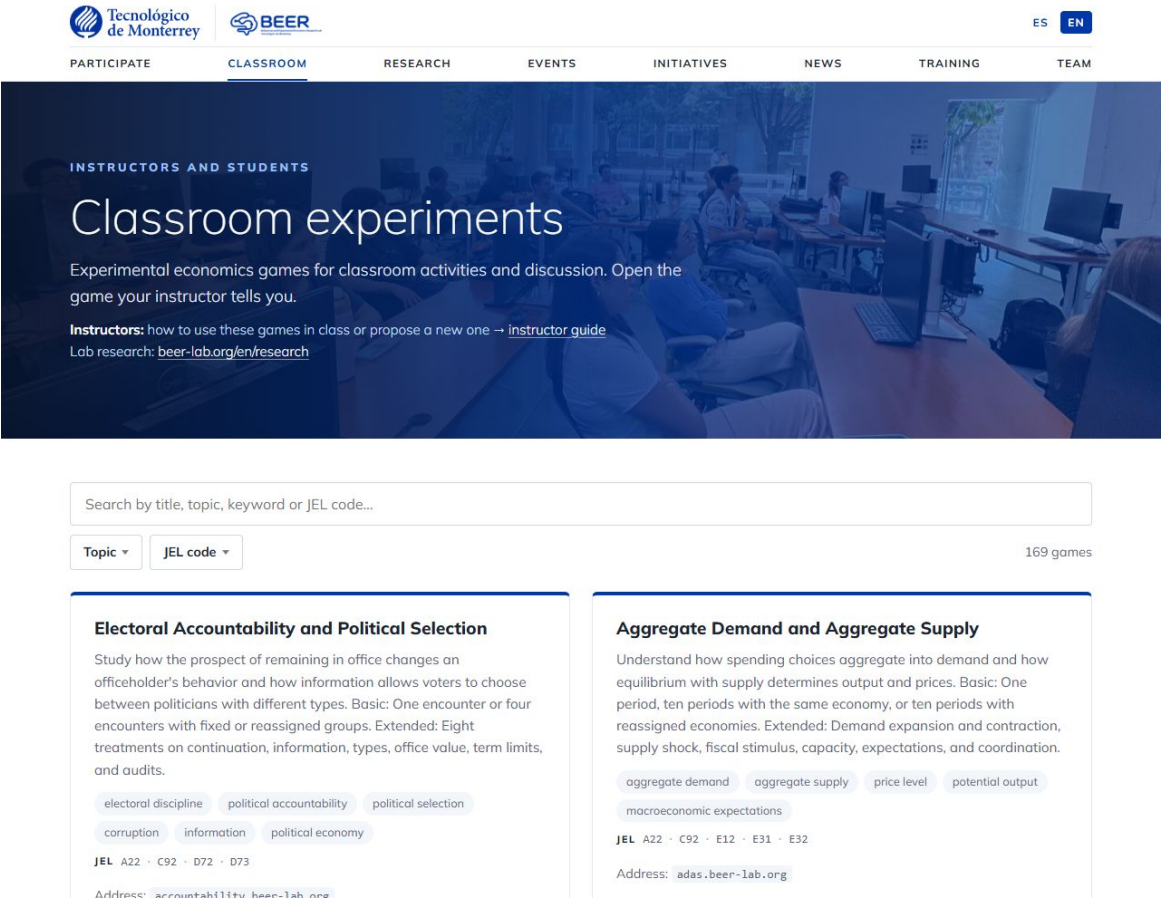


Figure 2.1: Institutional website: CLASSROOM opens the teaching catalogue.



The screenshot displays the BEER Lab website. At the top, there is a navigation bar with the logos of Tecnológico de Monterrey and BEER, and a language selector (ES/EN). Below the navigation bar, a horizontal menu lists various sections: PARTICIPATE, CLASSROOM (highlighted), RESEARCH, EVENTS, INITIATIVES, NEWS, TRAINING, and TEAM.

The main content area features a large banner for "Classroom experiments" with the text: "Experimental economics games for classroom activities and discussion. Open the game your instructor tells you." It includes links for "Instructors" and "Lab research".

Below the banner is a search interface with a text input field labeled "Search by title, topic, keyword or JEL code...". There are dropdown menus for "Topic" and "JEL code", and a button indicating "169 games".

Two search results are shown:

- Electoral Accountability and Political Selection**: A study on how the prospect of remaining in office changes behavior. It includes tags for electoral discipline, political accountability, political selection, corruption, information, and political economy. JEL codes: A22, C92, D72, D73. Address: accountability.beer-lab.org.
- Aggregate Demand and Aggregate Supply**: A study on how spending choices aggregate into demand and how equilibrium with supply determines output and prices. It includes tags for aggregate demand, aggregate supply, price level, potential output, and macroeconomic expectations. JEL codes: A22, C92, E12, E31, E32. Address: adas.beer-lab.org.

Figure 2.2: Current catalogue: search by title, topic or JEL code.

Demo

Emisión de acciones: Un mercado
Emisión de acciones: Diez mercados: grupo fijo
Emisión de acciones: Diez mercados: reasignación
Emisión de acciones — Extendido: Precio anunciado y suscripción
Emisión de acciones — Extendido: Subasta de precio uniforme
Emisión de acciones — Extendido: Pago de la propia oferta
Emisión de acciones — Extendido: Sondeo indicativo y precio
Emisión de acciones — Extendido: Asignación discrecional
Emisión de acciones — Extendido: Valor incierto sin señal
Emisión de acciones — Extendido: Señales privadas imperfectas
Emisión de acciones — Extendido: Información del emisor
Emisión de acciones — Extendido: Un inversionista informado
Emisión de acciones — Extendido: Prioridad informativa
Emisión de acciones — Extendido: Información pública completa
Emisión de acciones — Extendido: Restricción de venta del fundador
Emisión de acciones — Extendido: Historial público del colocador
Emisión de acciones — Extendido: Recaudación mínima
Emisión de acciones — Extendido: Emisión de mayor tamaño
Equity issuance: One market
Equity issuance: Ten markets: fixed group
Equity issuance: Ten markets: reassignment
Equity issuance — Extended: Posted offer and subscription
Equity issuance — Extended: Uniform-price auction
Equity issuance — Extended: Pay your bid
Equity issuance — Extended: Indicative book and pricing
Equity issuance — Extended: Discretionary allocation
Equity issuance — Extended: Uncertain value without a signal
Equity issuance — Extended: Imperfect private signals
Equity issuance — Extended: Issuer information
Equity issuance — Extended: One informed investor
Equity issuance — Extended: Information priority
Equity issuance — Extended: Full public disclosure
Equity issuance — Extended: Founder lock-up
Equity issuance — Extended: Public allocation history
Equity issuance — Extended: Minimum proceeds
Equity issuance — Extended: Larger offering

Emisión de acciones y formación de precios / Equity Issuance and Price Formation — BEER Lab

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

Figure 2.3: Opening Demo view:36 family configurations.

Rooms

Current rooms:

Emisión de acciones — Español
Equity issuance — English
Emisión de acciones — Extendido
Equity issuance — Extended

Figure 2.4: The four family rooms.

oTree
Demo
Sessions
Rooms
Data
Server Check
Logout

Room: Equity issuance — English

Create a new session

Session Config

Equity issuance: One market

Number of participants

Complete groups of 5 participants. Use a multiple of 5; minimum 5.

Create

[Configure session](#) ⚙️

App sequence

equity_issuance_game (10 rounds) Primary equity issuance, binding allocation and human secondary price formation.

0 participants present

Start links

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

Room-wide URL

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

http://127.0.0.1:8108/room/equity_issuance_en

Figure 2.5: Basic room with the correct initial language and edition.

without relying on a random uncertain-state realization.

2.3 During placement and trading

Use the progress monitor to identify ordinary waiting. The book requires four investors; pricing requires the founder; requests require four investors; discretionary allocation returns to the founder. Waiting is not automatically a technical fault. Someone may still be reading, and a phase cannot advance without the necessary role. Ask participants to check the correct tab before intervening.

Only one person is active on each secondary turn. A limit order specifies price and quantity rather than guaranteeing immediate execution. It may execute fully, partly or remain open. Passing is allowed even when resources permit trading. Participants may cancel only their own still-open orders. Cancellation releases reservations but does not reverse completed transactions. Explain these distinctions before the first turn so that a missing purchase is not mistaken for a platform failure.

Secondary orders execute at the resting order's price, with best-price and then arrival priority. An ask resting at 95 meets a subsequent buy limit of 100 at 95. The buyer's limit is a maximum acceptable amount rather than necessarily the price paid. If a two-share buy finds only one share at an acceptable price, one can trade and the remainder stays open, subject to resources sufficient to commit the entire submitted order. Reservations prevent spending that same cash or those shares twice.

2.4 Completion and the first debrief

After ten turns, remaining open quantities expire. An unexecuted order generates no gain, company revenue or ownership change. Settlement distributes final assets according to ownership after trading. Earlier purchases and sales are already reflected in personal cash. Final wealth does not add transactions or proceeds a second time. Participants confirm their results to reach completion, where the mean is credited once.

Before revealing aggregates, request a brief account of each person's path: what was requested, what was allocated and what changed through trading. Avoid beginning with who earned the largest balance because founder and investor starting wealth differs. Reconstruct one placed market on the board. Only then compare prices and ask what information is missing without secondary transactions. This connects classroom experience to an economic concept students can verify.



Welcome to the BEER Lab

The Behavioral and Experimental Economics Research Lab in the Department of Economics at Tecnológico de Monterrey is a space for learning through decisions under announced rules.

General laboratory rules

Use only your own link. Decide independently. Do not share private information or try to identify other participants. Keep the page open while waiting. Ask the instructor about procedural questions.

I confirm that I read and will follow the rules.

☐ Yes

☐ No

Continue

Figure 2.6: Welcome and rules before decisions.

Market 1 / 3 · Founder and issuer

Comprehension check

Public allocation history

Resources and unit of account

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

This session does not convert ECU into real money.

How many personal ECU does each investor receive at the start of a market?

Your answer: 200. The correct answer is 400. Each investor receives 400 personal ECU, renewed in every market.

If four new shares are issued at 80 ECU, how many ECU go to the company account?

With $V=100$ and that issue, how much does each of the eight shares pay at settlement?

Continue

Figure 2.7: Comprehension: explained error with retained answers.

Market 1 / 3 · Founder and issuer

Issue pricing

Public allocation history

Available information

Known V: 100.00 ECU

History of this group

No previous markets have been completed yet.

Received indicative prices

Investor	Maximum price for the first share (ECU)	Maximum price for the second share (ECU)
A	110.00	90.00
B	110.00	90.00
C	110.00	90.00
D	110.00	90.00

The company owns legacy assets worth four times V. Issue proceeds remain in the company. Final payment per share = $(4 \times V + \text{proceeds}) / (4 + \text{new shares issued})$. The founder does not receive proceeds as personal cash. Old and new shares have equal claims on the final payment.

Offer price or reserve per share (40–140 ECU)

[Continue](#)

Figure 2.8: The founder announces pricing and sees indications when applicable.

Market 1 / 3 · Investor A

Binding request

Public allocation history

Available information

Known V: 100.00 ECU

History of this group

No previous markets have been completed yet.

Offer price or reserve: 80.00 ECU

This decision does determine purchases when awarded. It cannot be changed after submission.

Shares requested (0–2)

[Continue](#)

Figure 2.9: Binding request after the price announcement.

Market 1 / 3 · Investor A

Primary allocation

Public allocation history

New shares issued

4

New shares not issued

0

Company issue proceeds

320.00 ECU

Mean primary price per
placed share

80.00 ECU

Allocated

1

Primary payment

80.00 ECU

Personal cash

320.00 ECU

Owned shares

1

The company owns legacy assets worth four times V. Issue proceeds remain in the company. Final payment per share = $(4 \times V + \text{proceeds}) / (4 + \text{new shares issued})$. The founder does not receive proceeds as personal cash. Old and new shares have equal claims on the final payment.

[Continue](#)

Figure 2.10: Allocation separates personal cash from company proceeds.

Market 1 / 3 · Founder and issuer

Trading turn

Public allocation history

Trading turn 1 / 10 · Only the active role decides. Everyone else waits. Private information does not change when an order is submitted.

Available information

Known V: 100.00 ECU

Personal cash

200.00 ECU

Owned shares

4

Locked old shares

0Cash available after
reservations**200.00 ECU**Shares available after
reservations and lock-up**4**

Bids

Limit price (1–200 ECU)

Quantity (1–2 shares)

Asks

Limit price (1–200 ECU)

Quantity (1–2 shares)

Your open orders

Action

- ☐ Pass
- ☐ Buy with a limit order
- ☐ Sell with a limit order
- ☐ Cancel an order of your own

Limit price (1–200 ECU)

Quantity (1–2 shares)

Own order to cancel

 **Continue**

Figure 2.11: Active turn: resources, reservations, book and own order.

Institutions, information and extended conditions

3.1 Choosing an informative comparison

The extended edition contains fifteen conditions including the reference. Their purpose is to separate institutions, not maximize the number of sessions. Some change primary pricing, others change information, selling rights or access to past outcomes. All use the same secondary order engine and ownership accounting. Before comparing results, identify what changes and what remains constant.

Do not use known V as the only control for uncertain V when attributing a difference to private information. Uncertainty and information are separate changes. Compare imperfect private signals against uncertain value without a signal; informational priority against one informed investor without priority; and public history against the three-market discretionary condition. These comparisons delimit what classroom evidence can establish.

3.2 Posted offer and subscription

The founder selects a price from 40 to 140. Each investor requests zero, one or two shares. Requests are fully awarded when they fit within supply. Under oversubscription, an integer proportional rule applies. Requests of two, two, one and one sum to six for four shares. Ideal quotas are $4/3$, $4/3$, $2/3$ and $2/3$. Integer parts allocate one, one, zero and zero; largest remainders assign the other two, giving each investor one share.

Tied remainders use a random order independent of requests. Equal applicants need not receive identical realized allocations, but no position receives permanent priority. Distinguish ideal quota from integer award. Requesting two and receiving one does not mean the system ignored the request. A zero request cannot receive a rounding share. Total allocation never exceeds capacity or individual demand.

The posted price commits the issuer before binding demand arrives. It illustrates low placement at an excessive price and possible transfers to new shareholders at a low price. There is no advertising, issue expense or placement guarantee. Partial offerings can continue using paid shares unless the minimum-proceeds condition applies. Explain that rule before treating every incomplete offering as failure.

3.3 Uniform-price auction

The founder chooses a reserve and each investor submits two nonincreasing maximum prices. Unit bids meeting the reserve compete for shares. Highest bids win up to supply. Every winning unit pays the higher of the reserve and the highest rejected eligible unit bid. Without a losing eligible unit, winners pay the reserve. This is a specified teaching auction, not a claim about every real stock-market procedure.

For four shares, reserve 80 and unit bids of 160, 150, 140, 130, 120, 110, 100 and 90, the first four win and all pay 120. Proceeds are 480. With V equal to 100, final payment is $(400 + 480)/8 = 110$. Some winners offered as much as 160 but pay 120. Distinguish bid, clearing payment and final value. If only three eligible units exist, three shares are created and the remainder never enters ownership.

An auction does not eliminate strategy. One person's two units can influence the cutoff and are not independent bidders. Do not teach truthful bidding as a universal dominant strategy in every multiunit auction. Ask which element of the rule affects allocation and which affects payment. A realized cutoff also does not automatically reveal V when information differs across people.

3.4 Pay your bid

Reserve, eligibility and ranking remain, but each winning unit pays its own bid. A person receiving two shares may pay different prices for them. The company sums those receipts and the report displays their mean per placed share. This supports revenue comparison without implying a common price. Secondary shares retain identical claims regardless of acquisition cost.

A clean uniform-price comparison retains the V distribution, supply, budgets and turns. Ask students to predict changes in bidding incentives before observing results. A small class need not produce a universal revenue ordering. Strategies, experience and realizations may all differ. Explain how one fixed list of bids generates different payments across rules and why people may change the list when they know the institution.

3.5 Indicative book and pricing

Investors report two indicative prices before the announcement. The issuer sees the book and chooses its price. Investors then submit a new binding quantity request. An indication of 150 buys nothing, reserves no cash and does not oblige a subsequent request. Indications and commitments are recorded separately. This permits discussion of information production and use without assigning an obligation that instructions never promised.

Compare the chosen price with the book's distribution, but do not treat correlation as proof of truthful revelation. The issuer may react to indications that anticipated its response. Information-extraction arguments require additional assumptions about rewards and allocation; this activity intentionally uses a simpler teaching mechanism. Ask what makes an indication credible and what could reward revelation without claiming that a nonbinding form measures an incentivized willingness to pay.

3.6 Discretionary allocation

The book and price follow the indicative sequence. After binding requests, however, the founder chooses quantities for A, B, C and D. Each award must lie between zero and that investor's request, with total awards no greater than supply. Price cannot be renegotiated. The issuer may leave shares unplaced despite demand. This is a genuine additional decision about opportunities, rather than proportional allocation under a new label.

This condition uses three markets with unchanged roles and no public summary of earlier outcomes. Participants remember their own experience; absence of a history table does not remove memory or repeated interaction. Distinguish discretion from public visibility of the past. Examine whether higher indications receive larger awards or whether an allocation pattern persists. The data cannot diagnose personal favoritism because positions are anonymous and personal identities are not collected.

Market 1 / 1 · Investor A

Binding request

Uniform-price auction

Available information

Known V: 100.00 ECU

Offer price or reserve: 80.00 ECU

This decision does determine purchases when awarded. It cannot be changed after submission.

Maximum price for the first share (ECU)

Maximum price for the second share (ECU)

Continue

Figure 3.1: The auction requests two binding prices rather than posted-price quantities.

3.7 Uncertain value without a signal

V is 60 or 140 with equal probability. Nobody receives an extra signal. Prior mean V is 100, but realized V is unavailable during issuance and trading. Final payment per share also depends on actual proceeds and new shares. Thus uncertainty does not justify imposing 100 as the equilibrium market price. Participants may dislike risk and anticipate the interaction determining observed prices.

This condition controls the information variants. Uncertain versus known V concerns risk; equal uncertainty with different signals concerns information. The guide uses a certain accounting

Market 1 / 3 · Investor A

Indicative book

Public allocation history

Available information

Known V: 100.00 ECU

Report indicative prices. This form neither buys shares nor reserves cash.

Maximum price for the first share (ECU)

Maximum price for the second share (ECU)

Continue

Figure 3.2: Indicative prices do not purchase shares.

example, but instructors must check what participants actually know in the chosen session. Revealing V during an explanation before completion would remove the intended contrast.

3.8 Imperfect private signals

Each investor receives a high or low signal indicating the correct state with 80% probability. Signals are independent across investors conditional on V , not unconditionally independent because they share the same state. The founder retains the prior. Under equal prior probabilities, a high signal gives posterior probability 80% to V equal to 140 and expected V of 124. A low signal gives expected V of 76.

These expectations describe private information before interpreting others' actions. They are neither imposed prices nor promised gains. Another person's order might convey information, but interpreting it requires a hypothesis about strategy. The report does not recover beliefs that were never elicited. Ask what learning might come from the order book and what uncertainty remains. Keep signals private until settlement.

3.9 Issuer information

Only the founder knows V exactly; investors retain the prior. The announced price can contain information about legacy assets but is also an interested choice. A high price may reflect a valuable company, extraction strategy or both. There is no quality-certification system or punishment for a false quality statement. The founder chooses a permitted price rather than reporting a verifiable quality that must be disclosed truthfully.

Comparison with uncertain value without a signal preserves the draw and changes issuer knowledge. Analyze price, demand and placement jointly. Posting 140 with little demand is not equivalent to everyone valuing the company at 140. High demand also does not prove correct information

Market 1 / 3 · Founder and issuer

Choose allocation

Public allocation history

Do not exceed individual requests or total supply. All allocated units pay the announced price.

Requested

Investor A: 2

Investor B: 2

Investor C: 2

Investor D: 2

New shares issued ≤ 4

A

1

B

1

C

1

D

1

[Continue](#)

Figure 3.3: The placement agent selects quantities within actual requests.

Available information

V is 60 or 140, equally likely. Each signal indicates the correct state with 80% probability; signals are independent across people conditional on V. It does not guarantee a payment. Your private signal: High

Figure 3.4: Private information in the signal condition.

Market 1 / 1 · Founder and issuer

Trading turn

Founder lock-up

Trading turn 1 / 10 · Only the active role decides. Everyone else waits. Private information does not change when an order is submitted.

Available information

Known V: 100.00 ECU

Personal cash

200.00 ECU

Owned shares

4

Locked old shares

4Cash available after
reservations**200.00 ECU**Shares available after
reservations and lock-up**0**

Bids

Limit price (1–200 ECU)

Quantity (1–2 shares)

Asks

Limit price (1–200 ECU)

Quantity (1–2 shares)

Your open orders

Action

☐ Pass☐ Buy with a limit order☐ Sell with a limit order☐ Cancel an order of your own

Limit price (1–200 ECU)

Quantity (1–2 shares)

Own order to cancel

----- ▾

Continue

Figure 3.5: The founder retains locked ownership and separately available inventory.

Market 2 / 3 · Founder and issuer

Issue pricing

Public allocation history

Available information

Known V: 100.00 ECU

History of this group

Market	Mean primary price per placed share	New shares issued	Mean secondary price per traded share	Secondary price change relative to primary
1	80.00	4	95.00	18.75%

Received indicative prices

Investor	Maximum price for the first share (ECU)	Maximum price for the second share (ECU)
A	110.00	90.00
B	110.00	90.00
C	110.00	90.00
D	110.00	90.00

The company owns legacy assets worth four times V. Issue proceeds remain in the company. Final payment per share = $(4 \times V + \text{proceeds}) / (4 + \text{new shares issued})$. The founder does not receive proceeds as personal cash. Old and new shares have equal claims on the final payment.

Offer price or reserve per share (40–140 ECU)

[Continue](#)

Figure 3.6: Same-group history from the second market.

transmission. Realized V and final accounts allow assessment after decisions are recorded without prematurely revealing private information.

3.10 An informed investor and informational priority

In both conditions investor A knows V exactly and others retain the prior. Without priority, all face proportional rationing. With priority, A receives its requested quantity first, followed by proportional allocation among B , C and D . Priority is public from the outset and does not depend on verifying a truthful indication. Neither condition has an indicative book, so that interpretation would be incorrect.

The comparison concerns request selection and the composition of awards. If A buys more in favorable states and less in unfavorable ones, other investors' opportunities can depend on the state. This links to selection in new issues associated with [Rock \(1986\)](#); the activity adapts rather than replicates that model. Compare payoffs conditional on allocation, not just mean requests across all investors.

3.11 Full public disclosure

The draw of V in 60 or 140 remains, but everyone learns the state before deciding. This separates objective variation across markets from ignorance within a market. It is not identical to constant V equal to 100. Prices can respond to V while negotiation frictions, strategic disagreement and allocation effects remain. Common information does not force every transaction to equal final share payment.

Compare markets in the same state or display V beside prices. A mean price of 100 might combine high and low states and hide different responses. Do not count the shared disclosure as four independent signals. One common fact is revealed to everyone. Final payment after issuance still incorporates proceeds and share count, so knowing V does not replace calculating D .

3.12 Founder lock-up

Four old shares are locked throughout secondary trading. The founder may buy shares and subsequently resell units held above those original four. Lock-up neither removes ownership nor cancels final payment. Investors' new shares remain tradable. Availability subtracts both locked shares and open-order commitments. An old-share sale is rejected even if total founder ownership still displays four.

Compared with the reference, lock-up changes potential secondary supply and opportunities to turn old claims into cash. Volume and prices may change without a universal prediction that placement improves or deteriorates. There is no gradual expiry or later trading window. It is a complete old-share sale restriction during this short market. Retain that limitation when connecting classroom evidence to real offerings.

3.13 Public placement history

Three fixed-group markets, indicative book and discretionary allocation remain. Relative to discretion, only a public table of completed earlier offerings is added: placement, prices and observed price change. The first market has no past. From the second, founder and investors can

observe a shared record. Other sessions are not consulted, and no reputation score is inferred from a personal identity.

History does not guarantee continuation beyond three markets or transform a generous allocation into measured reputation. Study whether indications, requests or awards change after visible experience while considering learning and the final period. Repeated-group cooperation and trust induced by a public screen are related but different concepts. The control therefore preserves duration and discretion without that screen.

3.14 Minimum proceeds and larger offering

Minimum proceeds requires at least 240 ECU. Allocation is calculated from submitted requests; if receipts fall short, every primary purchase is cancelled and no new share is created. Cash stays in or returns to personal accounts. The four old shares may still trade. A secondary price can therefore exist without a realized issue price, leaving the primary–secondary return undefined. This differs from a partial offering proceeding normally.

The larger offering permits six rather than four new shares, keeping each investor's two-share limit. It illustrates excess demand, dilution and ownership under changed capacity without altering accounting. Unallocated securities still never exist. Display q and R alongside final payment: larger capacity does not mean six shares were placed or wealth multiplied. These conditions change placement constraints and capacity without adding a productive project or debt market.

3.15 Theory and evidence for a careful discussion

Placement price and allocation can organize participation and use investor information. The book-building literature links these elements; [Cornelli and Goldreich \(2001\)](#) examine book information and allocation. This activity combines a simple book with observable later choices rather than reproducing all real underwriting commitments, client relations or powers. Classroom associations between indications and awards belong within that simplification.

[Füllbrunn et al. \(2020\)](#) compare issuance mechanisms with aftermarket trading in laboratory markets, distinguishing market prices from fundamental references. Their different design does not establish a magnitude this class must replicate. [Bonini and Voloshyna \(2013\)](#) provide another experimental comparison of offering mechanisms. Use these studies to frame questions about institutions and measurement, rather than promise that one rule always raises more capital or reduces price deviations.

Theoretical foundation

Three questions require three objects: cash received by the company, prices at which outstanding claims traded, and final payment on each claim. Proceeds, secondary price and fundamental payment are connected through decisions and accounts but are distinct. A positive secondary–primary price change alone establishes neither efficiency nor correct information.

Instructor report, interpretation and teaching plan

4.1 Read progress before outcomes

The private report begins with participant count, settled accounts, pending active accounts and completed markets. These counts answer different questions. A founder who has chosen an offer price has supplied an observed pricing decision, but the market is not complete. Five settled accounts form one completed market. An inactive technical round is not a pending classroom decision. Before discussing economic results, identify the phase that has actually been completed and whether its observations represent requests, allocations, trades or settlement.

Aggregates remain hidden until the instructor reveals them, and the same control hides them again. Reveal is available with partial data so that an instructor can diagnose progress, but premature classroom display could change subsequent decisions. Keep the administration tab private during play. Refreshing the report does not submit an investor's request or finish a trading turn. A missing account may indicate a participant still on a result or decision page rather than a failed calculation.

Mean announced price uses submitted founder prices. Mean primary price uses completed markets with at least one placed share. Mean secondary price uses completed markets with executed transactions. The secondary–primary change uses only markets satisfying both requirements. Each table row reports its observation count. These counts need not match even in one session. A market without a trade contributes no secondary-price observation; substituting zero would turn missing price formation into an artificial collapse.

Mean final wealth uses settled personal accounts and is additionally separated by founder and investor. Their wealth levels are not directly comparable as gains because initial endowments differ. Issuance capacity and placed shares identify placement fractions; primary prices are weighted within a market by placed units. The report then averages market-level prices across eligible markets rather than silently giving a high-volume market extra weight. If an instructor wants an aggregate volume-weighted price across markets, that is a separate statistic to construct explicitly from exports.

4.2 Price distributions and market evolution

The distribution groups valid primary–secondary changes into negative, zero-to-ten, ten-to-twenty-five and at-least-twenty-five-percent intervals. Bar counts refer to eligible markets, not investors or executed orders. A one-market session therefore has one observation in one bar, or none when the

comparison is undefined. This is an honest display of small data, not a defect requiring invented observations. Use several independent groups or sessions for a meaningful distribution.

Evolution rows preserve market number, completed-market count, primary and secondary prices, eligible comparisons and mean change. Fixed-group paths mix learning with a continuing relationship. Reassigned paths change partners while preserving founder and investor roles. A decline in price across ten markets does not prove one explanation without considering V, placement and trading volume. The public-history comparison keeps three markets and allocation rules fixed; its interpretation is stronger than comparing a single reference market with a repeated history condition.

A useful debrief displays one market's ledger beside the aggregate table. Ask which individual actions produced each market-level number. If a low primary price accompanies no secondary trades, the report cannot demonstrate aftermarket appreciation. If a high secondary price comes from one small transaction, acknowledge that limited volume. A market price is an executed agreement under a specified institution, not a census of every participant's valuation. Quotes, requests and final claims remain separate evidence.

4.3 A 75-minute classroom sequence

Use the first ten minutes to introduce personal cash, corporate proceeds and share claims. Students should solve the common comprehension example independently. Allocate another ten minutes to placement and ten to secondary turns. The structured turn system is slower than continuous exchange but makes priority, reservations and ownership changes visible to a novice class. Do not compress discussion by skipping the company account; it is the basis for interpreting every later price.

Spend fifteen minutes reconstructing one completed market, including a share transfer if trading occurred. Use another fifteen to compare announced price, primary payments, secondary VWAP and final payment. Reserve the final fifteen for an institutional comparison or a written exercise. If timing is tight, use one reference market and discuss a counterfactual allocation rule on the board. Do not begin a three-market history activity without time for its later decisions and completion.

For a longer class, assign independent groups to two matched conditions. Record a prediction before opening either session. Keep V distributions and resource rules comparable. Discuss observations after all relevant decisions are recorded. A prediction is useful even when class size is too small for inference: it makes the proposed mechanism explicit and exposes cases in which a claimed result depends on an unnoticed institutional difference. Grade the quality of reasoning rather than whether a student's market happened to follow the prediction.

Feedback script

"Where did primary payments go? Count the claims before valuing them. Which changes in cash came from issuance and which from trading? Was the reported secondary price actually executed? Now change the allocation rule while holding the requests fixed. Finally ask whether those same requests would be submitted under the alternative rule. We have an accounting comparison and a strategic comparison; they require different arguments."

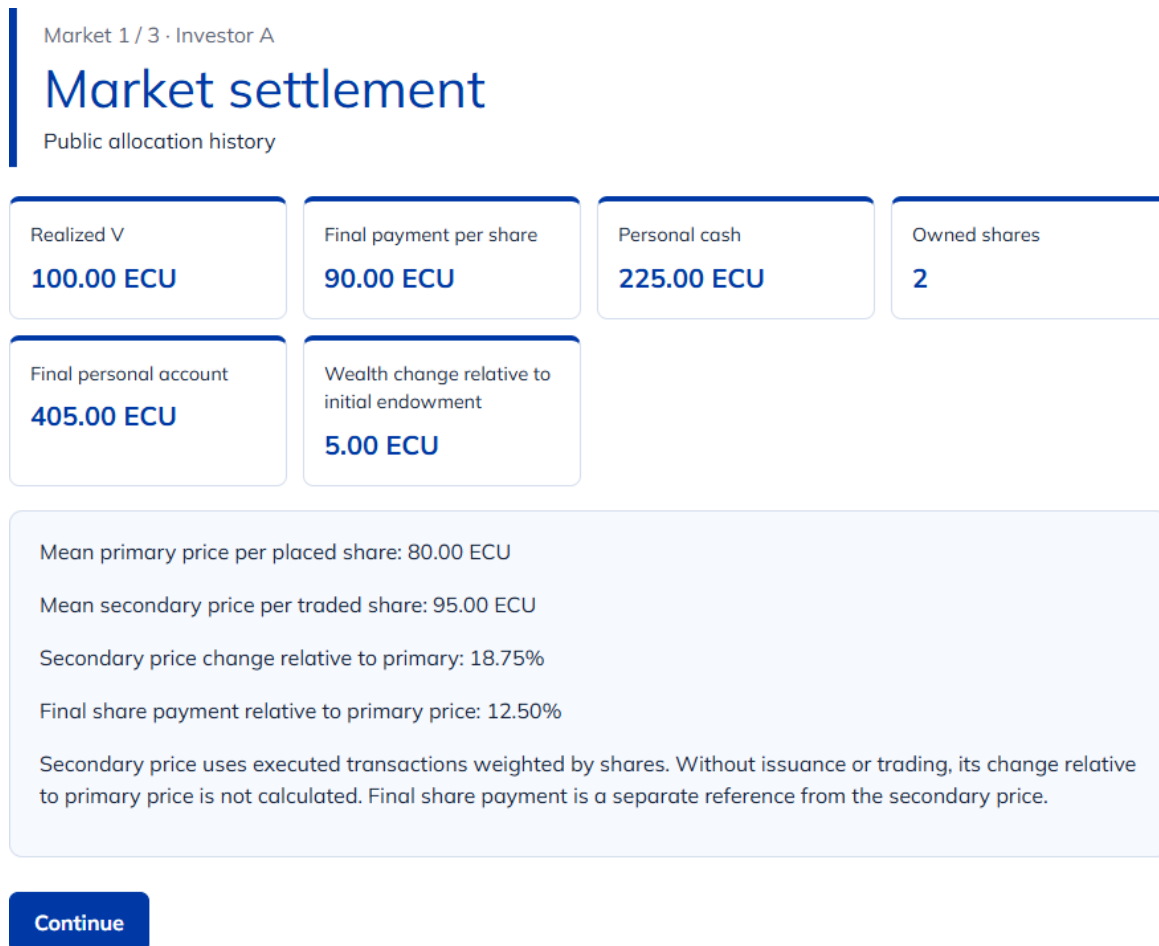


Figure 4.1: Settlement distinguishes transaction price from final payment.



Activity completed

You completed every active market. The following mean was credited once; cash, dividends and issue proceeds are not added again.

Final mean credited: 410.00 ECU

Figure 4.2: Explicit completion with the mean credited once.

Instructor report: equity issuance

Public allocation history

Participants: 5 · Settled accounts: 0 · Pending active accounts: 15 · Completed markets: 0

Pending does not mean zero. Primary prices exclude unplaced offerings and secondary prices exclude markets without trades. Price change requires both. An indicative book is not binding demand. Retain market, role and condition for analysis.

[Reveal aggregates](#)

[Download this session by round and event](#) · [Download native participant data](#)

Figure 4.3: The instructor report starts hidden.

Instructor report: equity issuance

Public allocation history

Participants: 5 · Settled accounts: 15 · Pending active accounts: 0 · Completed markets: 3

Pending does not mean zero. Primary prices exclude unplaced offerings and secondary prices exclude markets without trades. Price change requires both. An indicative book is not binding demand. Retain market, role and condition for analysis.

[Hide aggregates](#)

[Download this session by round and event](#) · [Download native participant data](#)

Aggregates and observed denominators

Aggregates and observed denominators	Statistic value	Observations
Mean announced price	80.00	3
Mean primary price / placed markets	80.00	3
Mean secondary price / markets with trades	95.00	3
Mean price change / markets with issuance and trading	18.75%	3
Placed shares / available shares	100.00%	3
Mean final account / settled accounts	440.00	15
Mean founder account	561.67	3
Mean investor account	409.58	12
Aggregate rounding residual (ECU)	0.00	3

Distribution of primary–secondary price change

< 0%: 0

0–10%: 0

10–25%: 3

25%+: 0

Evolution by market

Market	Completed markets	Mean primary price per placed share	Mean secondary price per traded share	Secondary price change relative to primary	Observations
1	1	80.00	95.00	18.75%	1
2	1	80.00	95.00	18.75%	1
3	1	80.00	95.00	18.75%	1

Figure 4.4: Aggregates and evolution with observed denominators.

Worked exercises, data and operational checks

5.1 Questions that reveal understanding

Ask a founder why a large ownership fraction need not maximize final wealth. An adequate response identifies both the numerator of company assets and the denominator of shares. Ask an investor why receiving an award can be bad news under asymmetric participation. The answer should describe selection into allocation rather than assume that every award is profitable. Neither response requires claiming a unique equilibrium for the finite classroom game.

Ask how a cancellation changes resources. It releases committed cash or shares but does not undo a trade. Ask whether a high indicative price counts as demand. It records a nonbinding statement, while later requests determine purchases. Ask why a no-trade market has no secondary price even if everyone observed a best ask. An ask that nobody accepted is a potential trade condition, not an executed transaction. These distinctions transfer to other market lessons without treating the current activity as a model of every exchange.

For a written exit ticket, have students supply one valid explanation and one alternative explanation for a price difference. Require the observation that would distinguish them. For example, a larger observed return could reflect a lower primary price, a higher secondary price, or both; it need not imply better fundamental information. This exercise connects measurement to causal reasoning while avoiding claims unsupported by a small classroom sample.

5.2 Exercise: partial issuance

Let V be 100, offer price 80 and only three shares be requested and awarded. Proceeds are 240, outstanding shares seven and final company assets 640. Final share payment is $640/7 \approx 91.428571$. A one-share investor who does not trade finishes with approximately 411.43 after personal-account rounding. The founder finishes with $200 + 4(640/7) \approx 565.71$. One potential new share was never created and has no owner or payment.

Ask students to compare this outcome with the four-share example. Less new capital entered, but fewer new claims also share the legacy asset. A conclusion based only on proceeds would miss the denominator. Final accounts are rounded once to cents; the system reports any aggregate rounding residual. Students should not independently round the dividend first and multiply that rounded number, because that can change personal payments by a cent.

5.3 Exercise: the subscription threshold

In the minimum-proceeds condition, price 40 and four requests of one share would raise only 160. The threshold is 240, so the issue is cancelled: no new shares exist, proceeds are zero, investor cash remains 400 each and founder ownership remains four old shares. Final payment before subsequent trading is V , which is 100 in this condition. A secondary trade at 105 could still occur between existing-share owners and buyers, but there would be no realized primary price with which to calculate underpricing.

Compare this with ordinary reference placement under the same requests, which would issue four shares at 40. The cases differ in whether the primary transaction takes place. Do not call both zero demand or both partial issuance. The threshold rule creates a discontinuity: a small increase in requested units or offer price can move the outcome from cancellation to a completed issue. That is a financing institution, not a random loss imposed after purchase.

5.4 Exercise: multiple prices and identical claims

Suppose an auction places four units for payments of 120, 110, 100 and 90. Total proceeds are 420 and mean primary price is 105. With V equal to 100, company assets are 820 and eight shares each pay 102.50. Investors purchasing at different prices have different primary gains even though they own identical claims. The mean primary–fundamental comparison is $102.5/105 - 1$, approximately negative 2.38%, but that is not every investor’s return.

If two secondary trades exchange one share at 100 and two shares at 110, secondary VWAP is $(100 + 2(110))/3 = 106.666667$. The market-level primary–secondary comparison uses this VWAP and 105. It is not the simple mean of 100 and 110, and it is not a realized return for someone who never sold. Require students to state the unit and weighting before naming a percentage a return.

5.5 Exercise: orders and reservations

An investor holds 320 cash and one share. A buy limit for two shares at 100 reserves 200, leaving 120 available. Another buy order costing 150 is not feasible while the first remains open. If one unit fills at 95, cash falls to 225 and the remaining open unit still reserves 100; available cash becomes 125. Cancelling that remainder releases 100 without reversing the completed purchase. Ownership increases only by the executed unit.

For selling, a founder with four locked old shares and no new purchases has zero available shares. Buying one raises ownership to five while four remain locked, making one sale possible. An open sell order reserves that one unlocked share. Submitting another sale cannot use the same share again. This exercise explains why total ownership and immediately available inventory can differ without either figure being wrong.

5.6 Exercise: uncertainty and selection

With V equal to 60 or 140, equal priors and an 80%-correct high signal, expected V is $0.8(140) + 0.2(60) = 124$. At a proposed uniform placement price of 100 and four placed shares, the corresponding expected final payment using that information and holding placement fixed is $(4(124) + 400)/8 = 112$. The calculation conditions on placement of four units. If placement itself depends on private information, that conditioning must be revisited rather than assumed away.

The informed-investor comparison makes this issue visible. Other investors might receive a larger share of their requests when the informed person withdraws. Conditional allocation outcomes can differ from unconditional expected values. Have students identify what a receipt of shares tells them under an assumed informed strategy. The exercise is about a possible selection mechanism, not a requirement that every informed participant follow that strategy or a claim that beliefs were measured.

5.7 Exercise: final session payment

If an investor finishes three active markets with accounts 410, 395 and 425, the credited session account is $(410 + 395 + 425)/3 = 410$. It is assigned once after the last active market. Earlier active rounds have zero credited oTree payoff while their account results remain recorded. Inactive technical rounds neither enter the average nor represent missing decisions. Finalization is protected against duplicate credit if a completion path is revisited.

This payment rule prevents ten repeated markets from automatically having ten times the nominal stakes of one market. It does not make participants indifferent to every risk of repetition, and an average of account outcomes is not the same as a separate payment for each primary or secondary decision. Explain the rule before play. Converting ECU into money, if applicable, is a session-level instruction and should not be inferred from a participant's initial resources.

5.8 Data exports and a reproducible analysis

The private report offers a long export and a native wide export, each restricted to the chosen session. The long file contains participant-round records and separate event records. It retains all ten technical rounds, flags active and completed status, and preserves empty values where no response exists. Event records preserve orders, executions, cancellations and passing. Personal form fields for secondary decisions can be overwritten by a later turn; reconstruct the full path from events rather than treating the last form value as the complete trading history.

The native export has one participant per row with round-specific columns, including the market ledger. It is useful for archival checks, while the event file is better for reconstructing sequences. Do not assume ten markets necessarily mean ten rows in the native file. Keep an untouched original alongside configuration, session code, language, active-market count and any incident notes. Share only anonymous aggregates in class. Participant codes are access-related pseudonyms, not permission to distribute individual links.

Begin analysis by selecting participant records, active rounds and the relevant completion status. Construct one market record for placement and price comparisons to avoid repeating the same market outcome five times. Preserve founder and investor roles for wealth summaries. Use event rows to compute volume-weighted transaction prices, checking price times quantity and excluding cancelled quantities. Verify that market-level underpricing excludes no-placement or no-trade cases. Report excluded counts rather than recoding missing values to zero.

5.9 Frequent operational problems

A group waiting at the book usually needs a missing investor submission; a pricing wait needs the founder; a trading wait needs the current turn holder. Check the monitor and browser tab before recreating anything. If a numeric form remains on screen, read its displayed error: descending primary bids, resource restrictions, own-order cancellation and lock-up are distinct constraints.

A rejected action should be corrected in place, not bypassed by changing a person's identity or moving an investor into another session.

If the report is empty, confirm session, active rounds and observed phase. Partial progress can show offer-price observations without settled accounts. If a secondary price is unavailable, inspect executed trades rather than the presence of orders. If data contain blank values, preserve them until distinguishing inactivity, pending response and a field that does not apply to a role. These are different states, not universal zeros.

Do not reset a live database to refresh an app. Preserve data, confirm the intended family and restart only its server. A schema change requires the laboratory's normal data-preserving deployment procedure. The local instance is <http://localhost:8108/demo>; it runs one family on a dedicated database and port. The public address remains proposed until deployment is verified. A local test, Git commit and public deployment are separate stages.

Attention

Without placed shares there is no realized primary price; without executed trades there is no secondary transaction price. Do not substitute the reserve, last quote or final dividend to fill either gap. Such substitutions manufacture an apparent underpricing result and change the concept being taught.

5.10 Final instructor checklist

Before opening the room, verify language, edition, group requirements and chosen comparison. Confirm accounts, known information, the location of issue proceeds and whether the founder can sell old shares. During play, keep private links and signals private, monitor the actual phase and avoid strategic advice. At completion, confirm that all necessary roles reach their result and final page, then reveal the report deliberately.

After class, download both formats for the correct session, preserve original files and document incidents. Reconstruct at least one market's ownership and cash before reporting comparative means. Relate the finding to the announced institution and acknowledge sample size, endogenous trade selection and any missing price comparison. A successful lesson ends with students able to explain the ledger and identify what evidence would distinguish competing mechanisms, even if the class produces little secondary trading.

Bibliography

- Bonini, S., and Voloshyna, O. (2013). A, B or C? Experimental tests of IPO mechanisms. *European Financial Management*, 19(2), 304–344. <https://doi.org/10.1111/j.1468-036X.2010.00590.x>.
- Cornelli, F., and Goldreich, D. (2001). Bookbuilding and strategic allocation. *Journal of Finance*, 56(6), 2337–2370. <https://www.kellogg.northwestern.edu/academics-research/research/detail/2001/book-building-and-strategic-allocation/>.
- Füllbrunn, S., Neugebauer, T., and Nicklisch, A. (2020). Underpricing of initial public offerings in experimental asset markets. *Experimental Economics*, 23, 1002–1029. <https://doi.org/10.1007/s10683-019-09638-7>.
- oTree. Groups; pages; administering an experiment; data export. Official documentation. <https://otree.readthedocs.io/en/master/multiplayer/groups.html>. Accessed October 17, 2026.
- Rock, K. (1986). Why new issues are underpriced. *Journal of Financial Economics*, 15(1–2), 187–212. [https://doi.org/10.1016/0304-405X\(86\)90054-1](https://doi.org/10.1016/0304-405X(86)90054-1).
- U.S. Securities and Exchange Commission (2022). Updated investor bulletin: Investing in an IPO. *Investor.gov*. <https://www.investor.gov/introduction-investing/general-resources/news-alerts/alerts-bulletins/investor-bulletins-17>.