

Introduction, Trade in Endowments

ECON 171 - Spring 2026

Week 1: March 27th

Sasha Petrov

Logistics

Course overview

- Lecture materials should be enough to pass the class
- Slides and optional notes will be on Canvas
- Office hours: TBD

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- Textbook: Krugman, Obstfeld, Melitz – *International Economics* (optional)

Course staff

Instructor: Sasha Petrov

- Office: SHFE 313A
- Office hours: TBD
- Additional office hours by appointment: <https://calendly.com/sashapetrov/30min>

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TA: Daniil Iurchenko

- Discussion section: Friday, 3:30–4:20pm (Stuart Hall 102)
- Office hours: TBD
- Grading questions → talk to the TA first

Problem sets

- **6 problem sets** during the quarter
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- Lowest problem set score is **dropped**

Exams

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- In-class on **Thursday, April 30th** (Week 6)
- Closed-book, closed-notes

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Final Exam

- Comprehensive (cumulative)
- During final exam week (date TBD by registrar)
- Closed-book, closed-notes

Grading

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1. 20% Problem Sets, 40% Midterm, 40% Final
2. 20% Problem Sets, 20% Midterm, 60% Final

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Option 3 is only available if you miss the midterm or score below the median.

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2. 20% Problem Sets, 20% Midterm, 60% Final
3. 20% Problem Sets, 80% Final, Bonus: Midterm score/10

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Grade conversion to letter grades will be determined at the end of the course.

Introduction to International Trade

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- What are the effects of trade policy on market outcomes? Do they benefit anyone?
- Why do firms expand internationally? What drives the creation of long international supply chains?

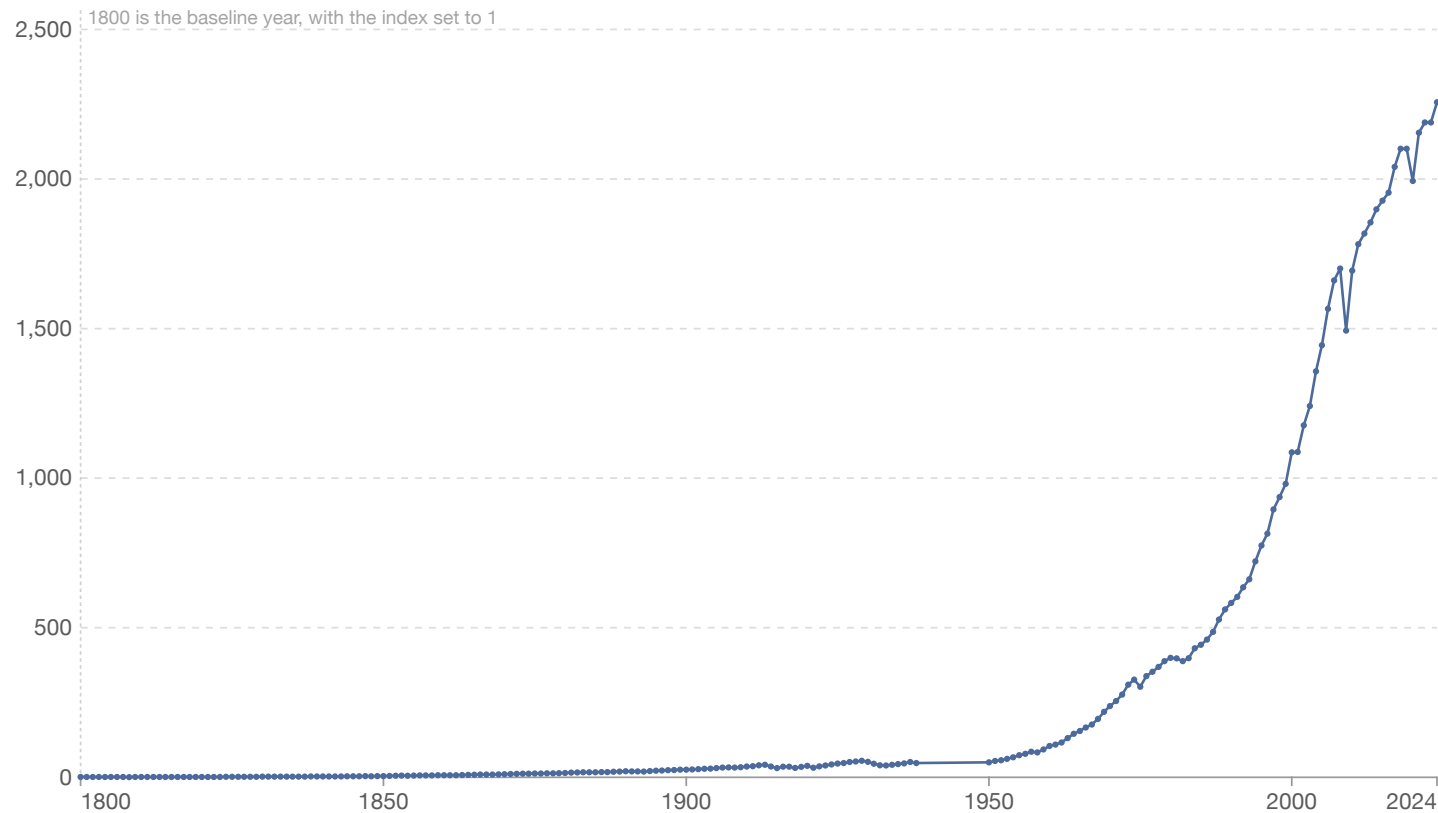
Empirical facts

Trade is essential

Growth of global trade

Our World
in Data

World trade index, based on the average of exports and imports values, adjusted for inflation (1800 = 1).

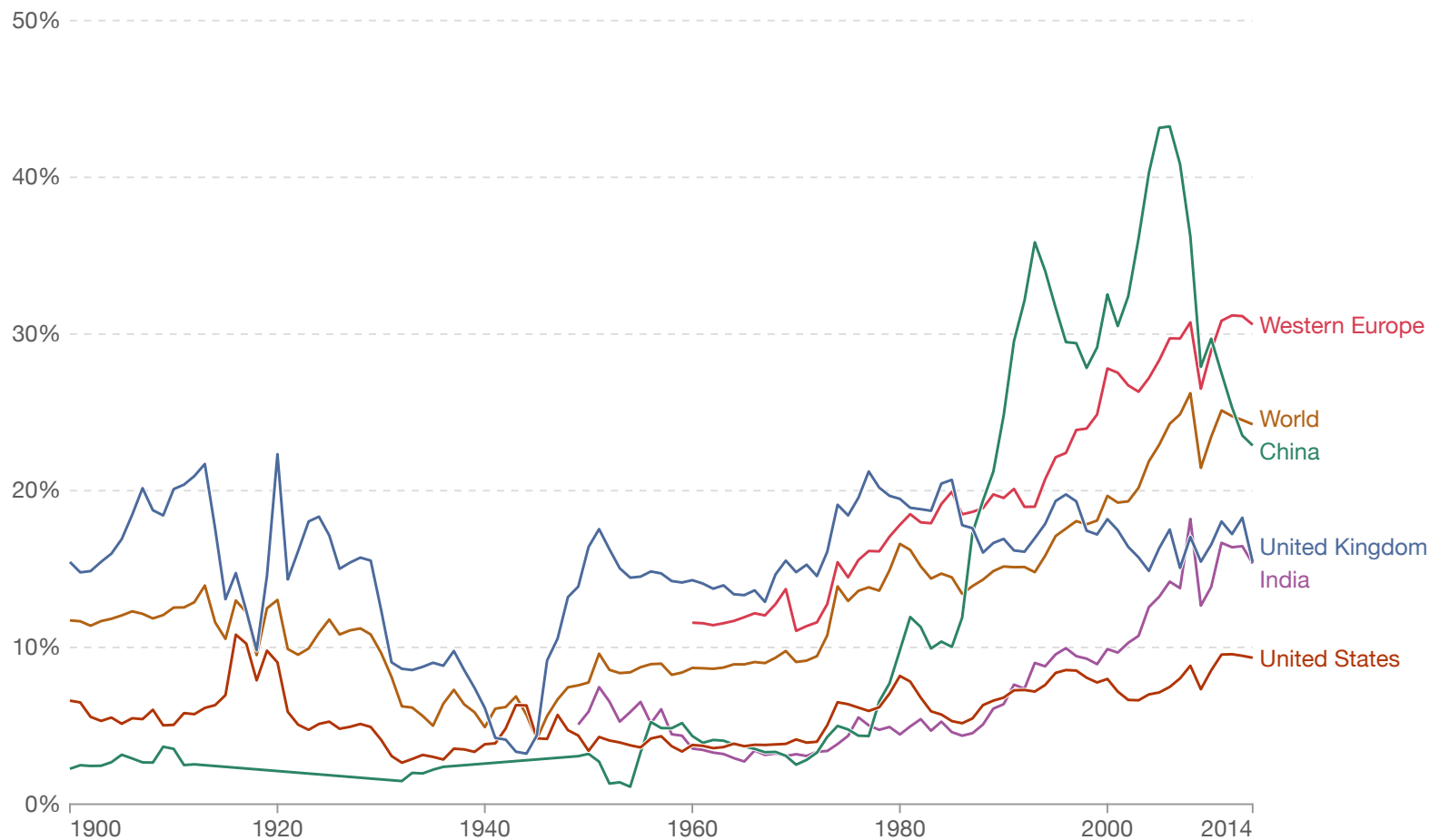


Data source: World Trade Organization (2024); Federico and Tena-Junguito (2016)

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Value of exported goods as a share of GDP

Total value of merchandise exports divided by gross domestic product (GDP), expressed as a percentage.



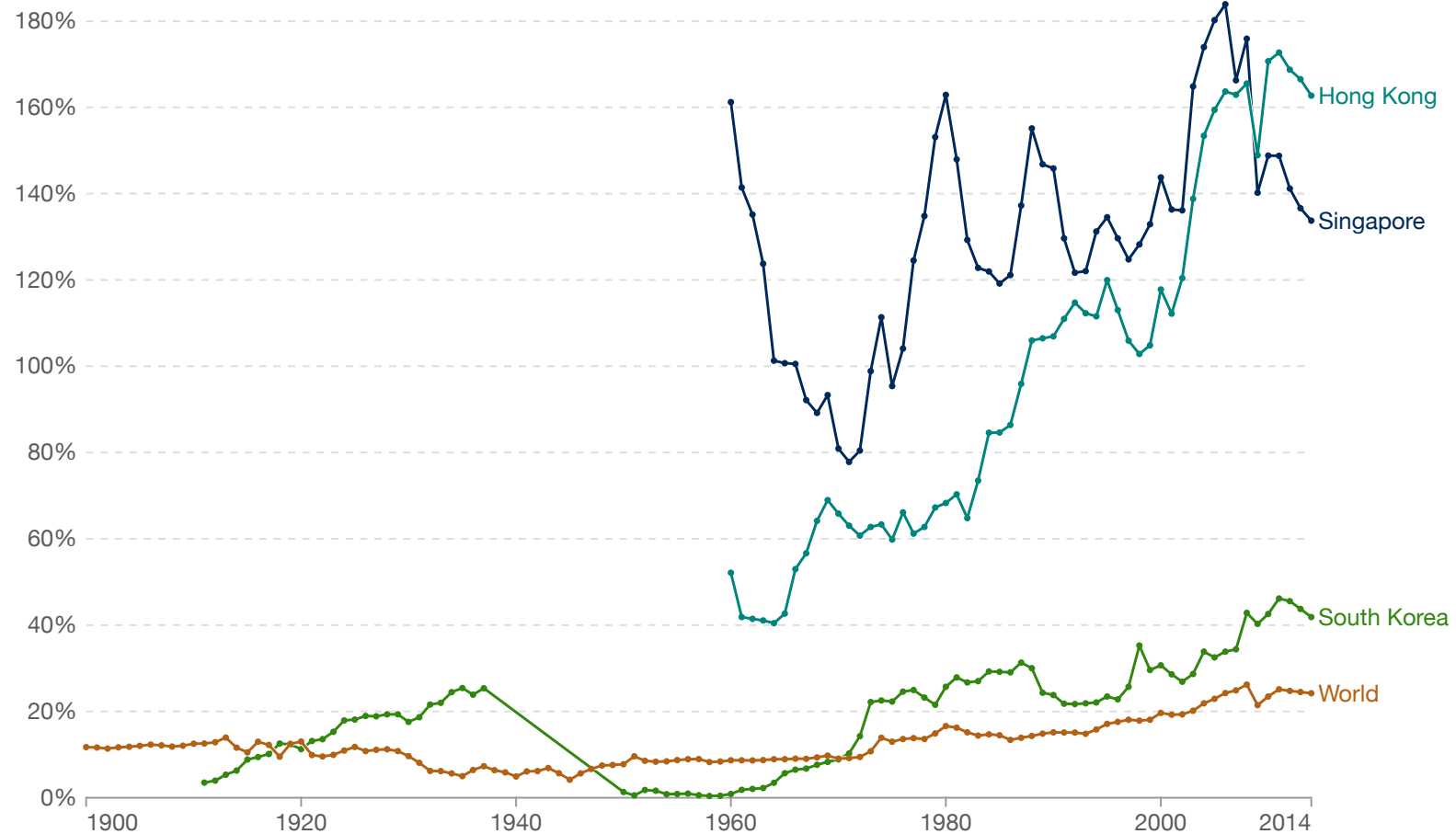
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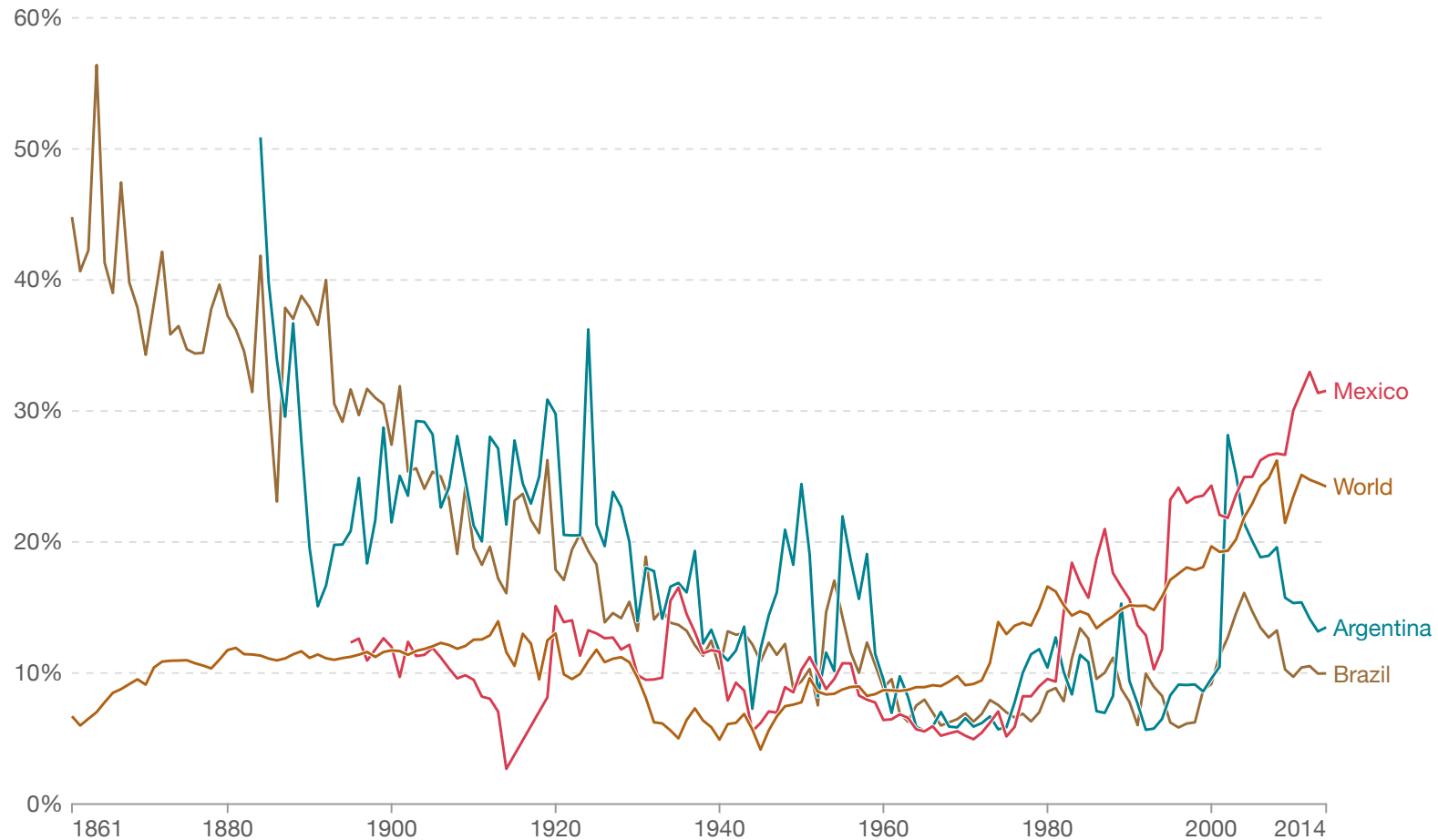


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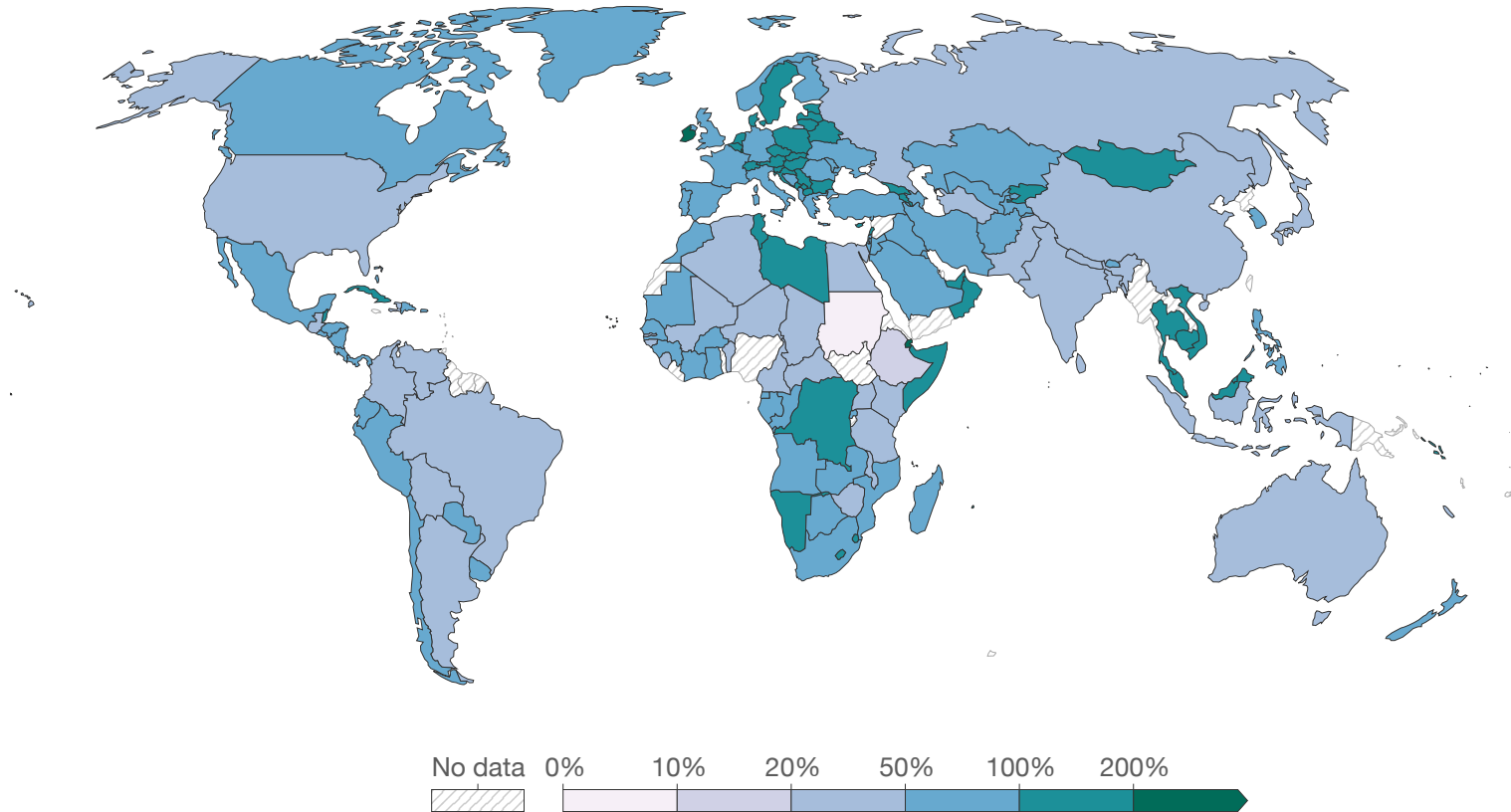


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Trade as a share of GDP, 2024

Sum of exports and imports of goods and services, divided by gross domestic product, expressed as a percentage. This is also known as the "trade openness index".

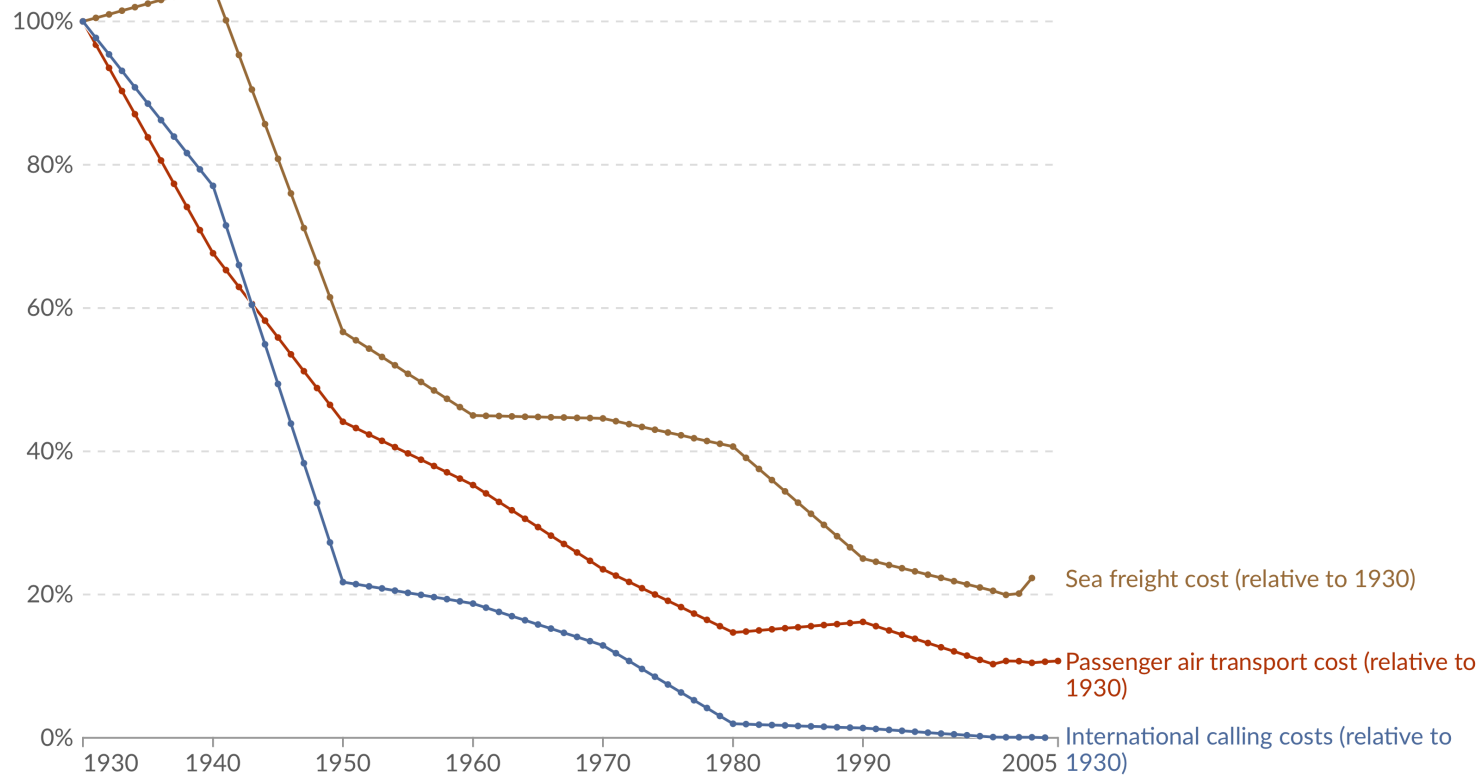


Data source: National statistical organizations and central banks, OECD national accounts, and World Bank staff estimates (2026)

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The decline of transport and communication costs relative to 1930

Sea freight corresponds to average international freight charges per tonne. Passenger air transport corresponds to average airline revenue per passenger-mile until 2000 spliced to US import air passenger fares afterwards. International calls correspond to cost of a three-minute call from New York to London.



Data source: Transaction Costs - OECD Economic Outlook (2007)

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Trade in Endowments

Setup

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- **Two consumers:** A (Home) and B (Foreign)
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 - $U_A(x_1, x_2) = x_1^{1/2} x_2^{1/2}$
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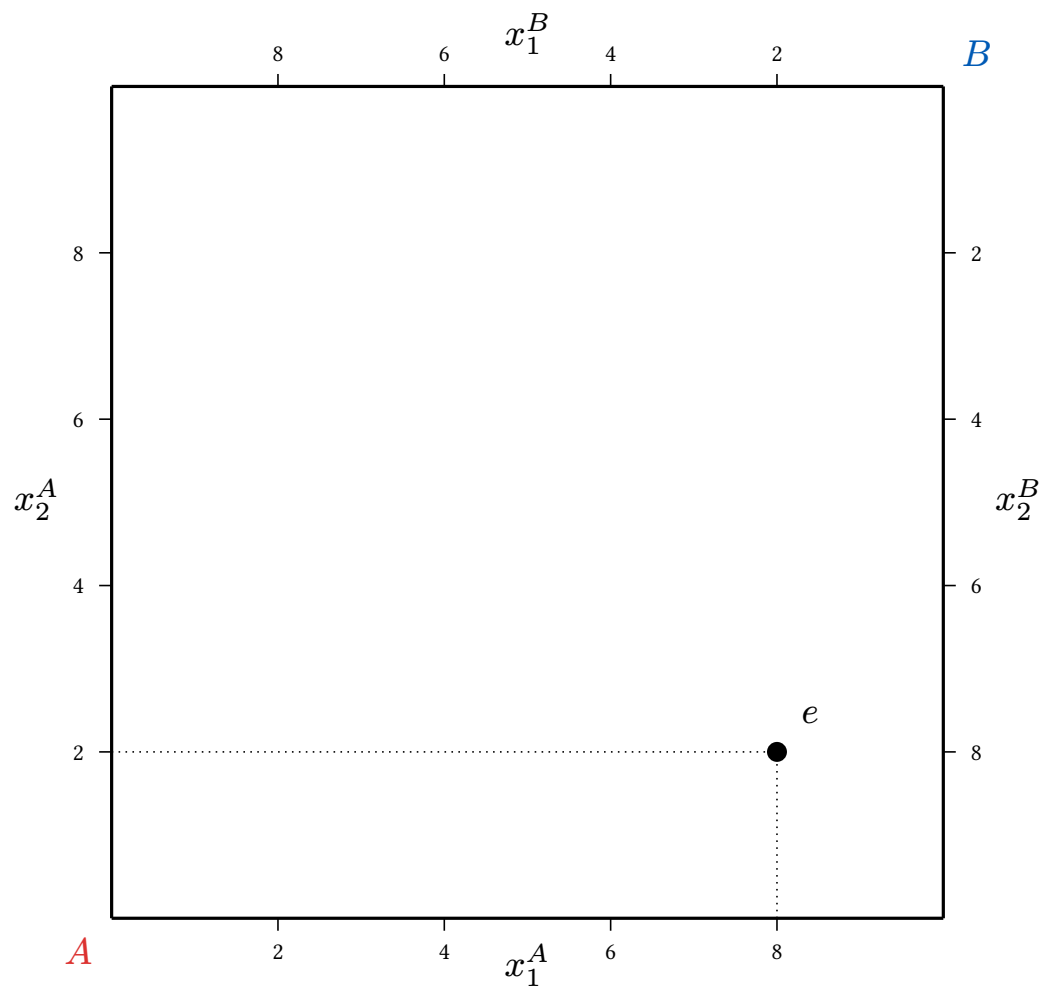
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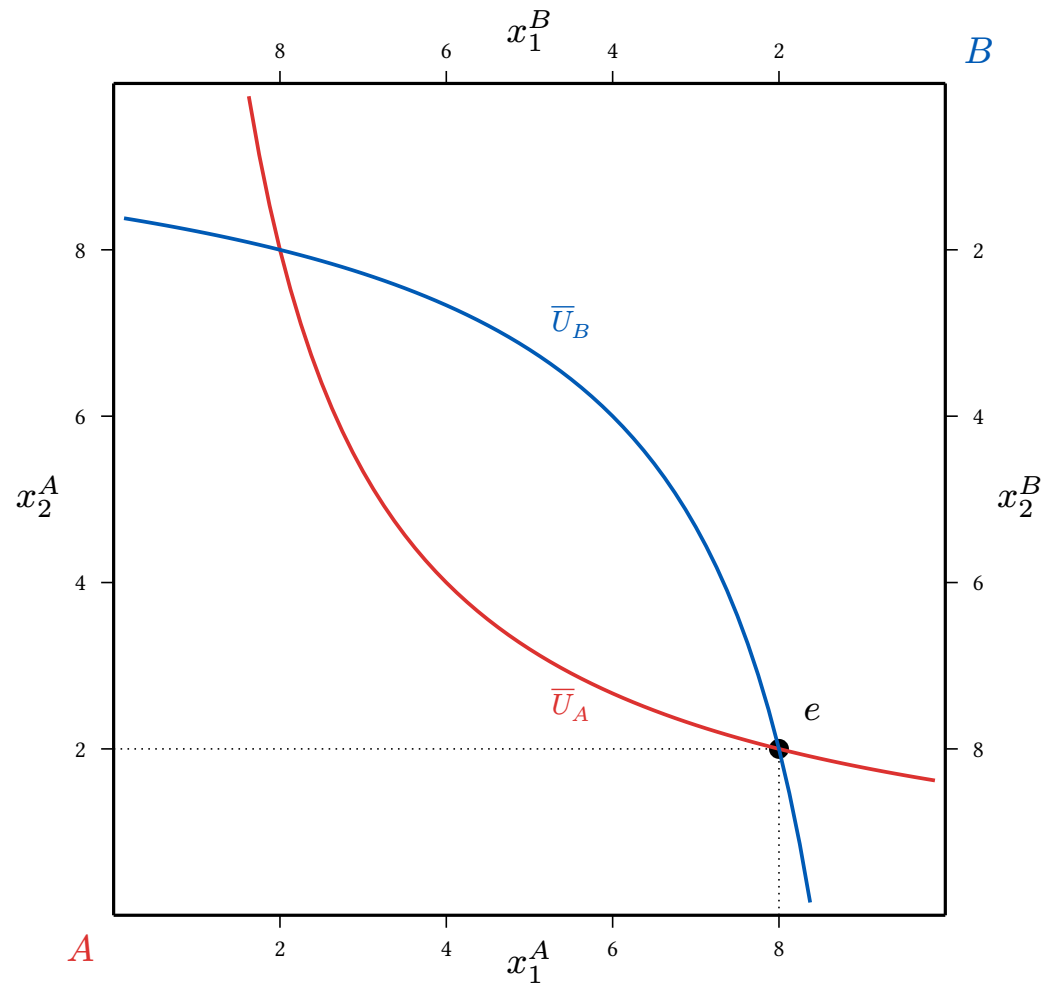
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Both consumers have identical preferences but different endowments.

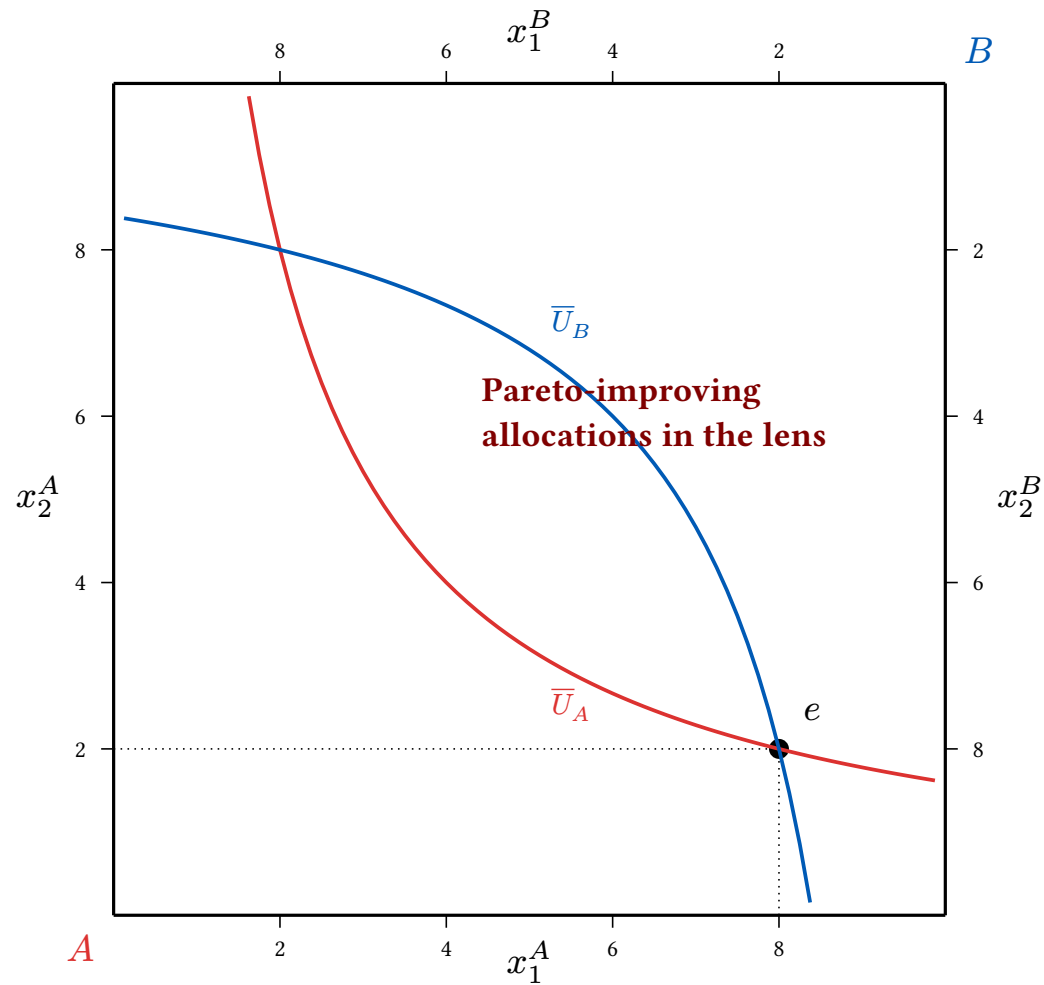
The Edgeworth Box



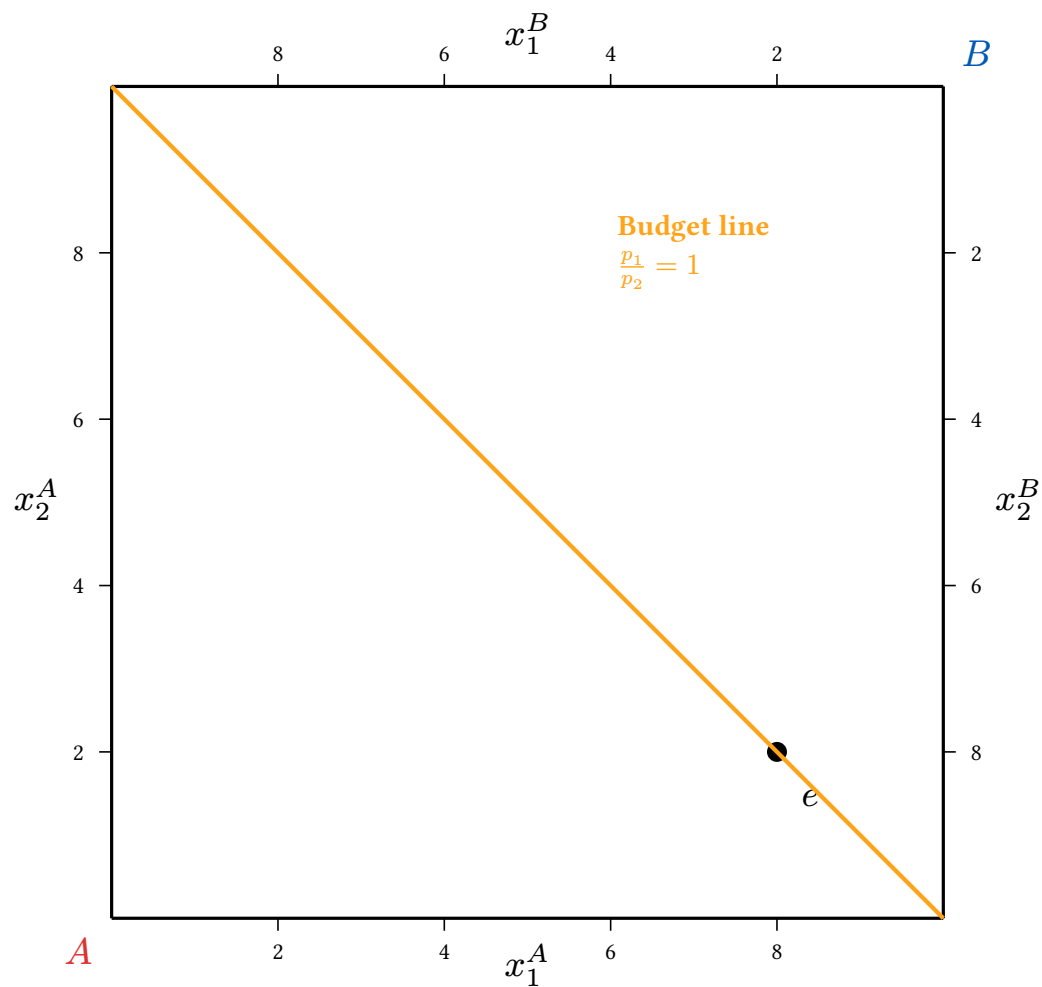
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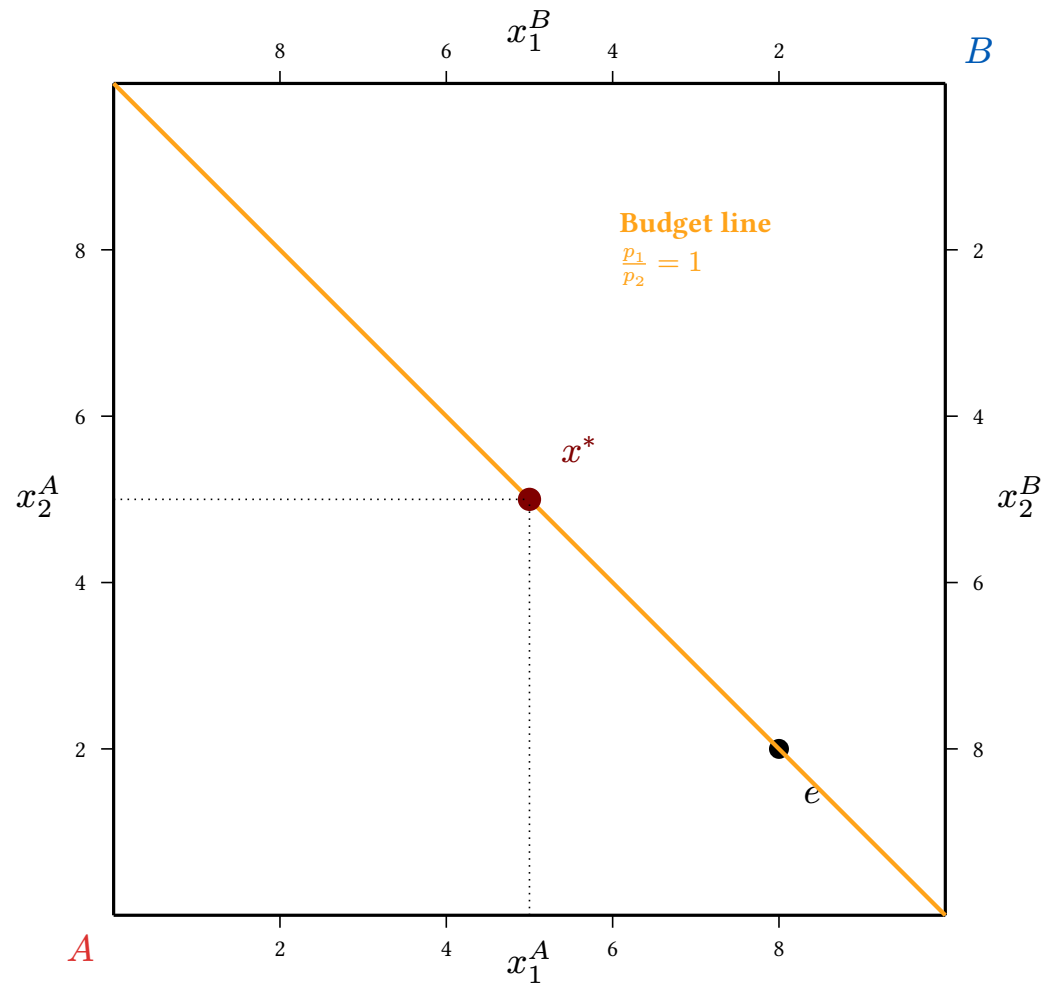
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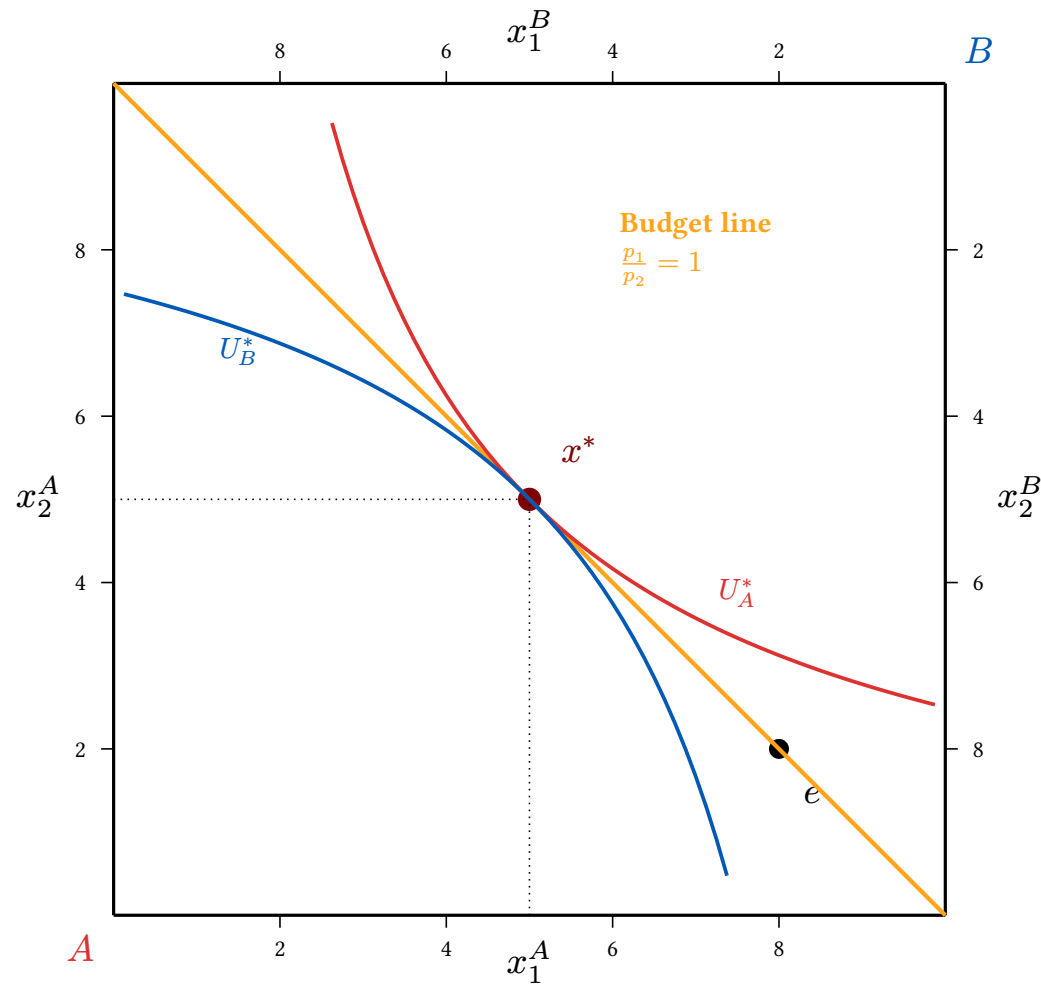
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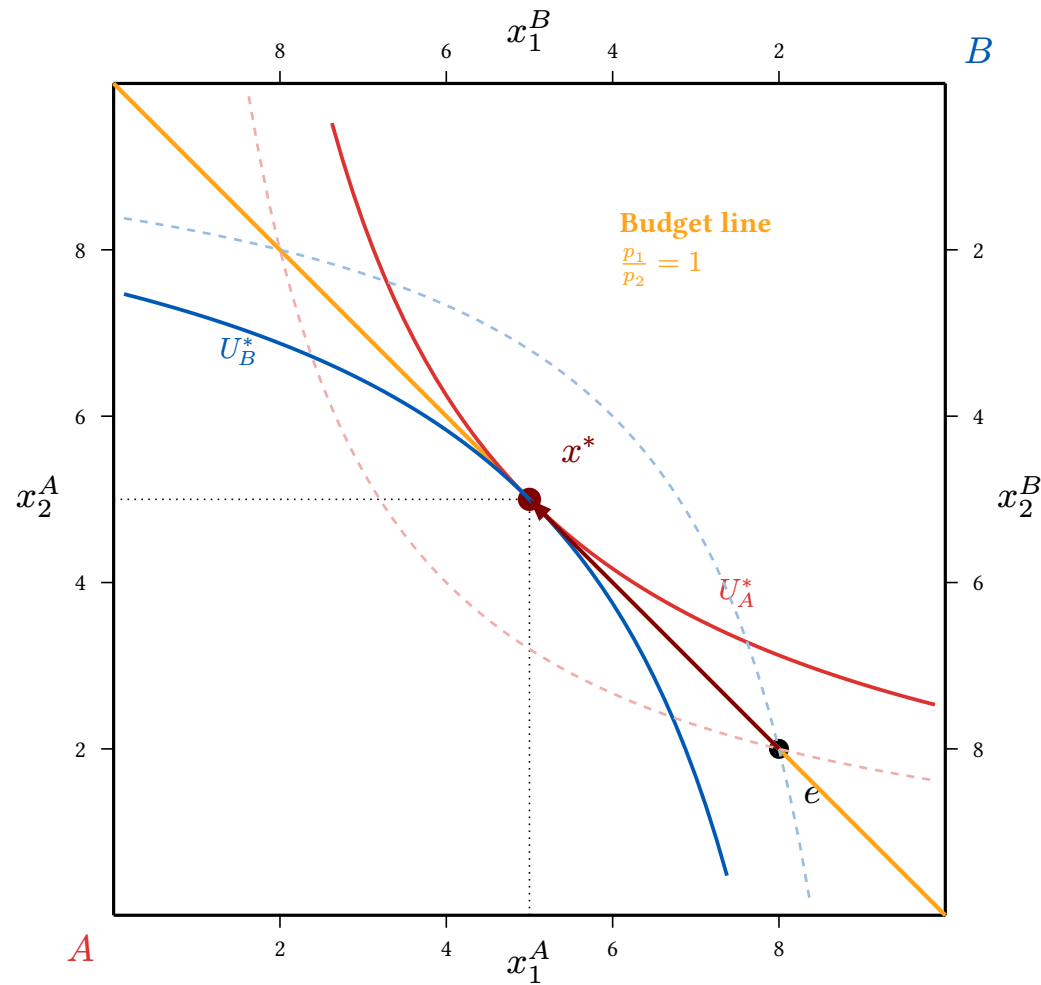
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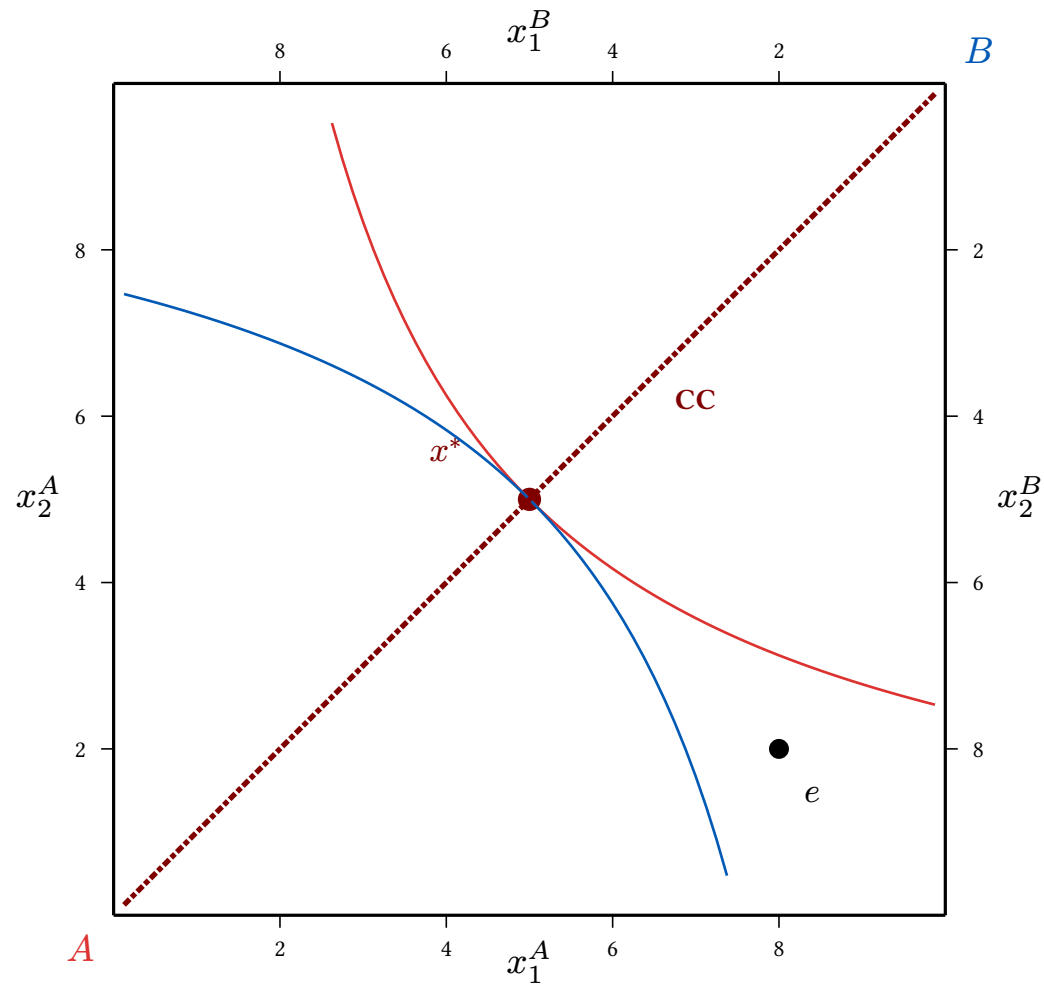
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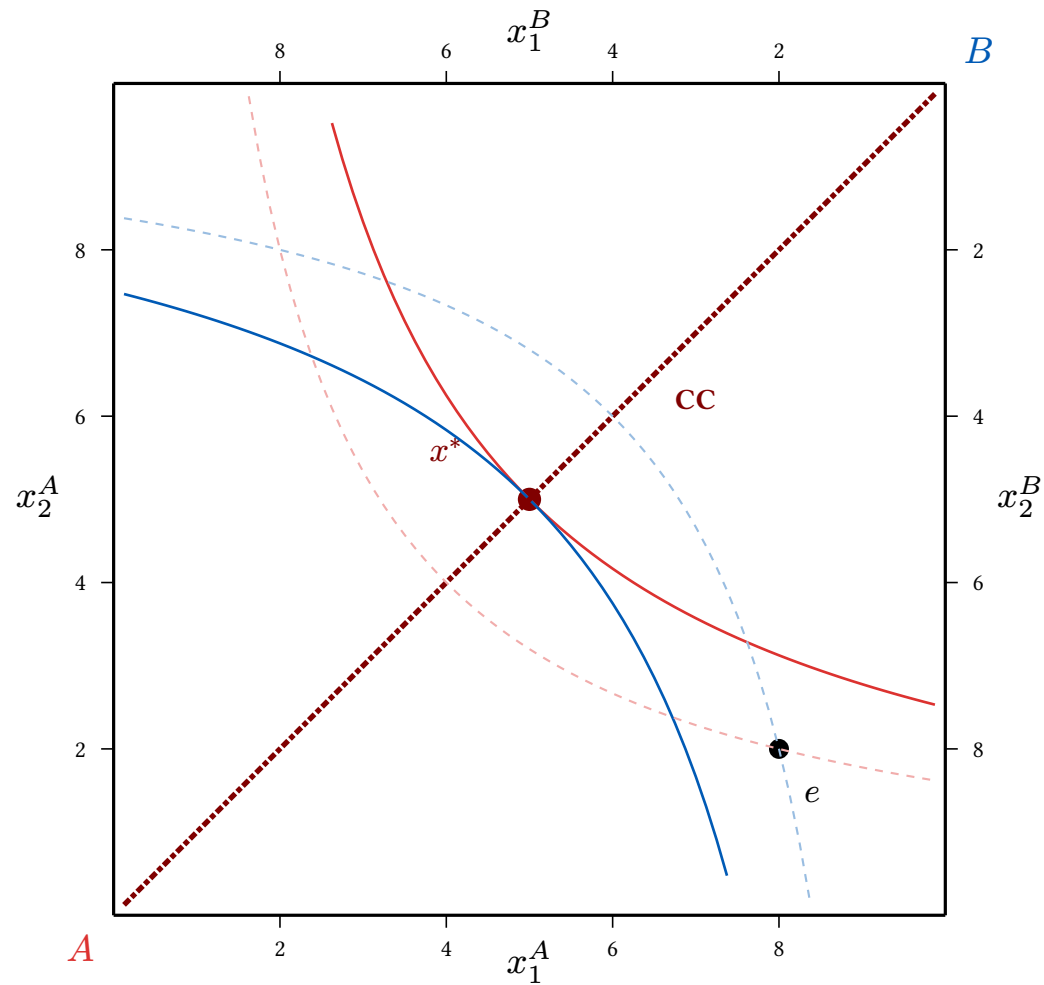
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Contract Curve and Efficiency



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Core: segment of CC between the ICs through e

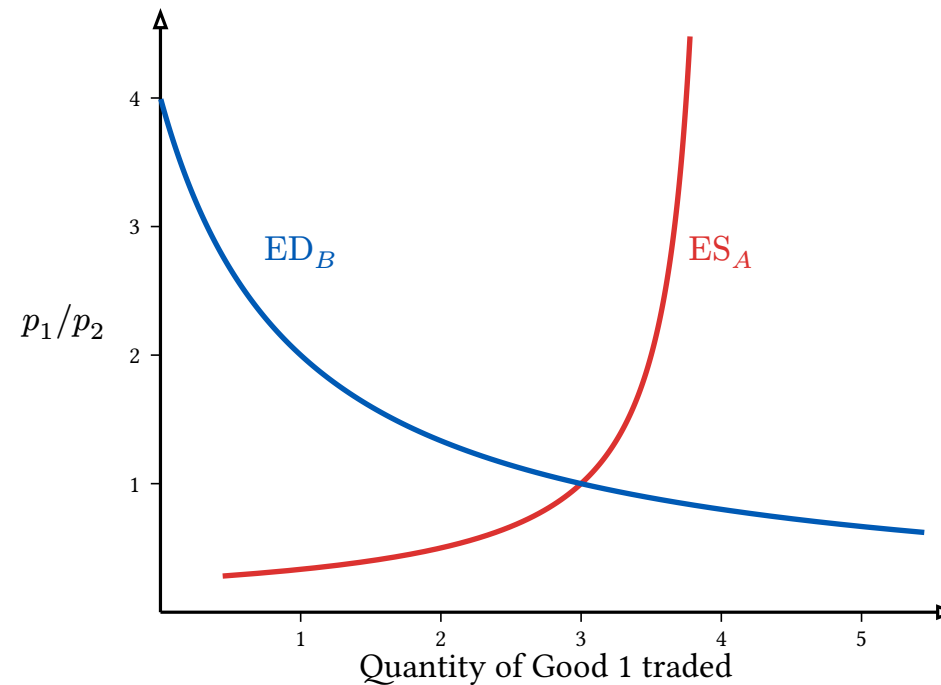
Determining the Terms of Trade

Where does $\frac{p_1}{p_2} = 1$ come from? Derive **excess supply** and **excess demand** for Good 1.



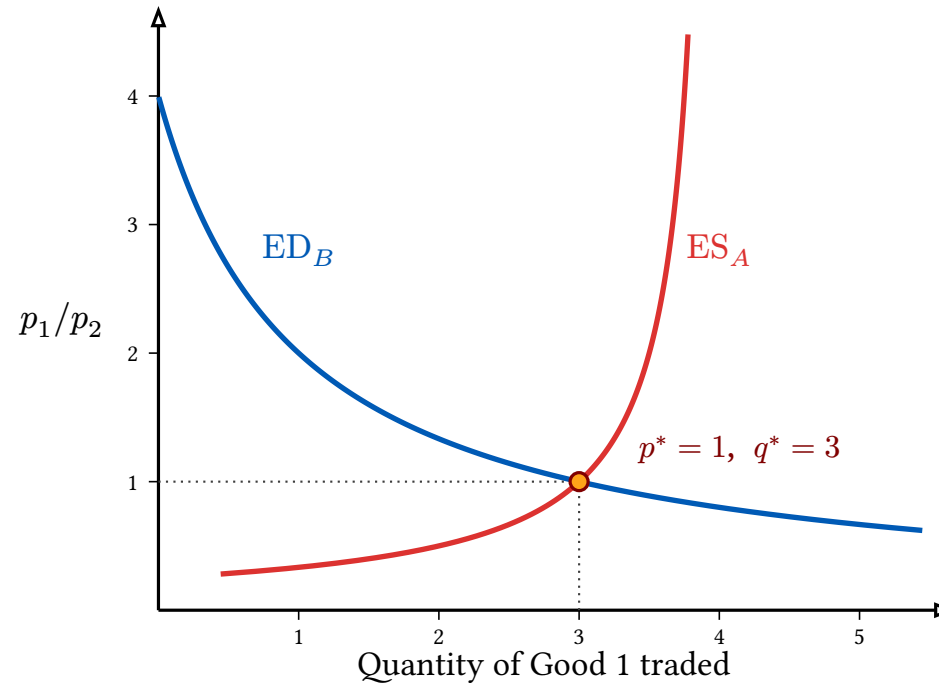
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At $p_1/p_2 = 1$: A exports 3 units of Good 1, B exports 3 units of Good 2. Markets clear.

Gains from Trade

Gains from Trade in Endowment Economies

Starting from the endowment e , competitive trade at prices $\frac{p_1}{p_2} = 1$ leads to:

- A sells 3 units of Good 1, buys 3 units of Good 2
- B sells 3 units of Good 2, buys 3 units of Good 1

Both consumers reach higher indifference curves: $U_A^* > \bar{U}_A$ and $U_B^* > \bar{U}_B$.

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Key insight: Even with identical preferences, differences in endowments alone create gains from trade. Each country exports the good it is abundantly endowed with. The equilibrium allocation is Pareto efficient (on the contract curve).

Gains from Trade and Relative Endowments

For Cobb-Douglas preferences with $\alpha = \frac{1}{2}$, the **ratio of trade utility to autarky utility** is:

$$\frac{U_A^*(e)}{U_A^{\text{aut}}(e)} = \frac{k+1}{2\sqrt{k}}, \quad k \equiv \frac{1 + e_2^B/e_2^A}{1 + e_1^B/e_1^A}$$

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In our example:

$$k = 4 \Rightarrow \frac{U_A^*}{U_A^{\text{aut}}} = \frac{5}{4} = 1.25$$

- k captures **endowment asymmetry**: how different the two countries' relative endowments are
- When $k = 1$ (identical relative endowments): ratio = 1, **no gains from trade**
- As k moves away from 1: gains increase — more asymmetry $\rightarrow$ more gains

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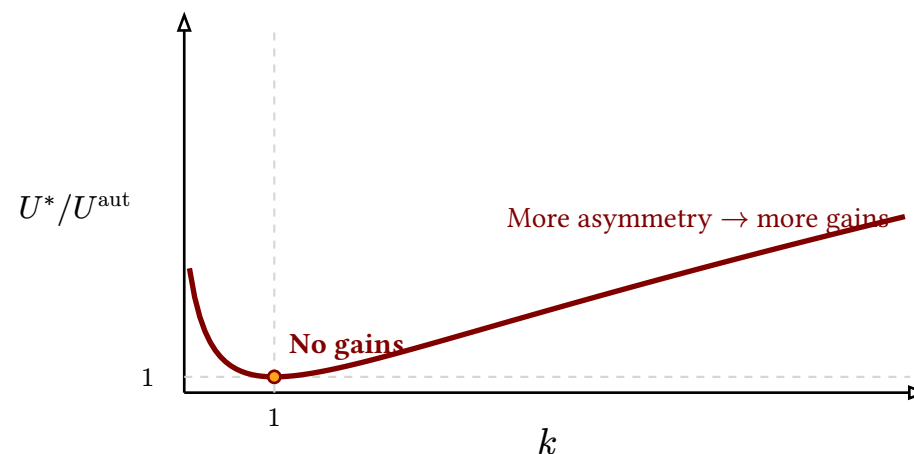
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- **Competitive equilibrium** prices clear both markets, and the equilibrium lies on the **contract curve**
- Both consumers are made (weakly) better off by trade — the equilibrium is in the **core**
- Gains from trade depend positively on the difference in the countries' relative abundances