14.03/003 Microeconomic Theory & Public Policy

Lecture 13. International Trade and the Principle of Comparative Advantage

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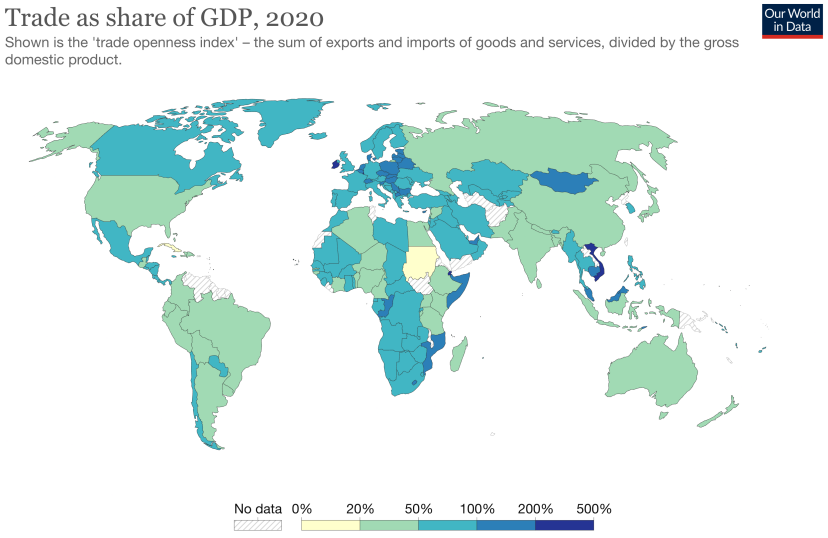
International Trade and the Principle of Comparative Advantage

We now want to add international trade to our study of general equilibrium

- International trade is a big deal! A huge chunk of economic activity is traded across borders, and this shae has been rising for decades
- International trade affects well-being in poor and rich countries—perhaps even more so in **poor** countries
- International trade is extremely controversial—perhaps even more so in **rich** countries

Many countries trade a large fraction of GDP, sometimes exceeding 100%

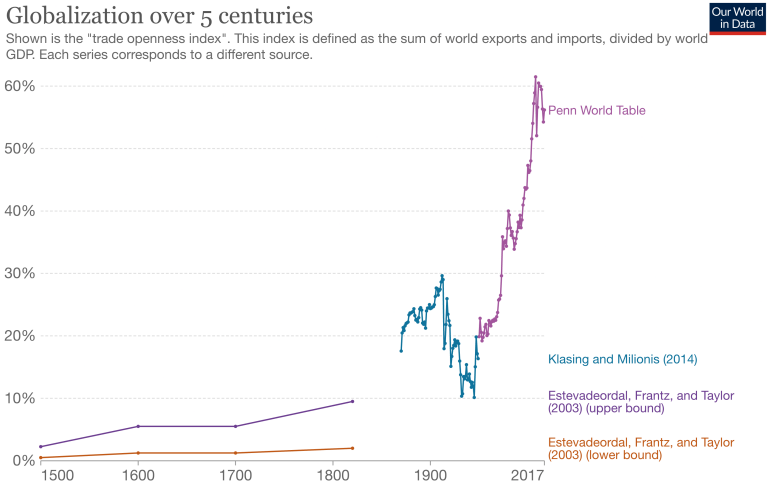


Source: World Bank and OECD

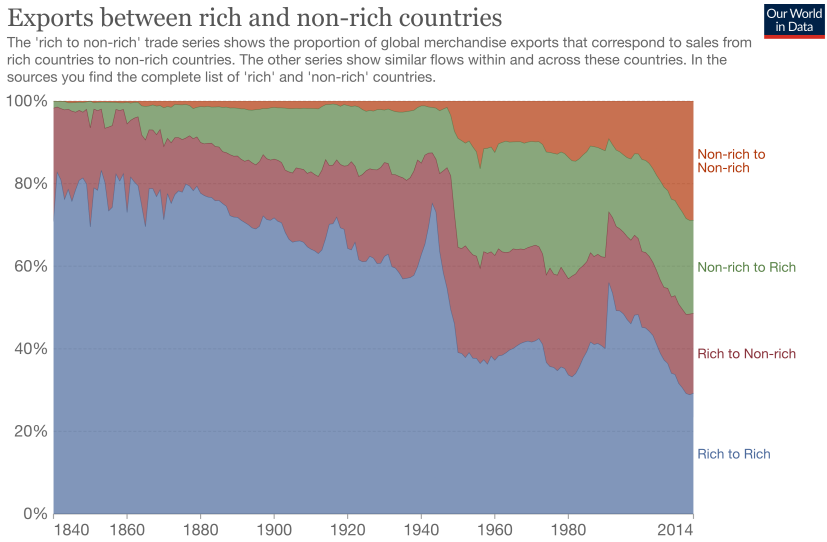
OurWorldInData.org/trade-and-globalization • CC BY

World trade/GDP has been rising for 200 years

But took a huge fall in WWI — ground not regained until mid 1970s!

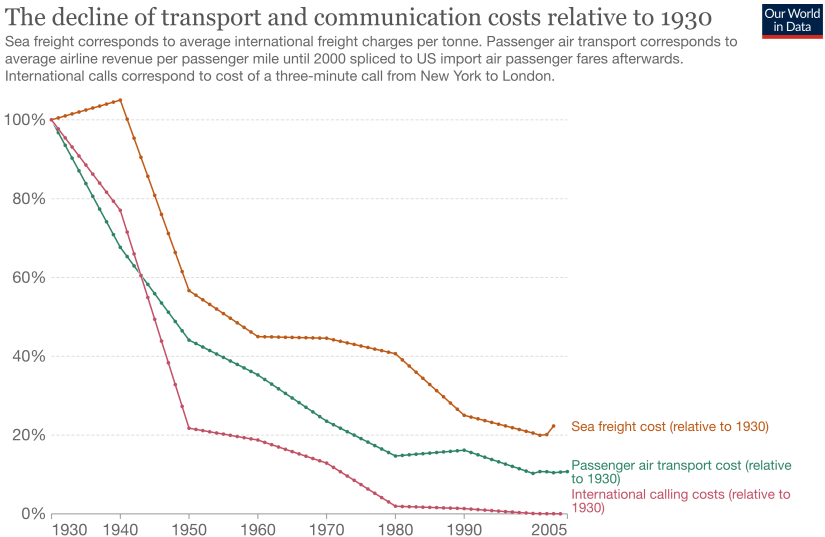


Historically, most trade rich ↔ rich, rich ↔ non-rich, but that's changing



Source: Fouquin and Hugot (CEPII 2016)

Transport costs have plummeted: sea freight, air travel, telecoms



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Adding international trade to our study of general equilibrium

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4. Why is free trade so controversial

Autarky and Free Trade

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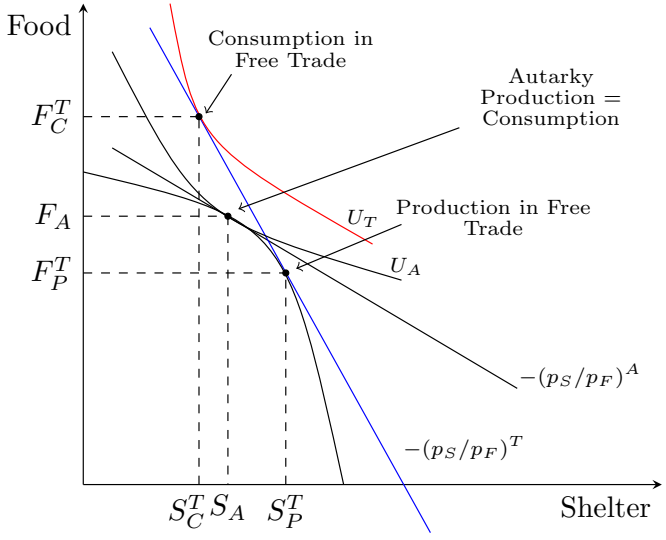

Trade balance

- For each good, the quantity produced differs from the quantity consumed:

$$\begin{aligned} \text{Exports} &= S_P - S_C, \\ \text{Imports} &= F_C - F_P. \end{aligned}$$

- But both points (S_C, F_C) and (S_P, F_P) lie on the same budget line, so they must cost the same:

$$\begin{aligned} S_P P_S^w + F_P P_F^w &= S_C P_S^w + F_C P_F^w, \\ P_S^w(S_C - S_P) + P_F^w(F_C - F_P) &= 0. \end{aligned}$$

- There is no trade imbalance
- Important because many policy discussions confuse trade imbalance with trade itself
- You can have trade without trade imbalance (though not vice versa)

Where do Gains from Trade Come From?

Gains from trade

The gains from trade

- Home still produces on the original PPF
- But Home consumes above its original PPF
- The gap between the autarkic indifference curve and international trade indifference curve reflects the gains from trade

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So, what constraint on general equilibrium problem does international trade relax?

A. Marginal rate of substitution equated among consumers (gains from trade exhausted)

B. No trading party (here a country) made worse off relative to the initial endowment

C. No excess demand or supply of any good

D. Consumption is bounded by the Edgeworth box (that is, the economy's total endowment)

Comparative advantage

- **Not an accident which good Home is importing and which good it is exporting**

$$\left(\frac{P_S}{P_F}\right)_W > \left(\frac{P_S}{P_F}\right)_A,$$

- Home holds a *comparative advantage* in producing shelter: can produce S relative to F at *comparatively* low cost relative to the rest of the world
- The *comparison* is not Home's cost relative to the World's cost. The comparison is Home's *opportunity cost* of how much F it must give up to produce more S

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- **After trade opening**
  1. Home's total consumption of F has risen and its total production of F has fallen
  2. Home's total consumption of S has fallen and its total production of S has risen

Where do gains from trade come from?

- If $\left(\frac{P_F}{P_S}\right)_A = \left(\frac{P_F}{P_S}\right)_W$, there are no gains from trade.
- Gains from trade come entirely from **differences** between countries
- If there were truly "a level playing field" among trading partners—as politicians like to say—then there would be no point in trading
- Gains from trade arise because *relative* prices differ between Home and World
- This raises two further questions
  1. Why do relative prices differ among countries?
  2. Why is it *relative not absolute* prices that matter?

Why do relative prices differ among countries?

Three underlying factors affect relative prices across countries

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Why do relative prices differ among countries?

Three underlying factors affect relative prices across countries

1. Tastes — AKA preferences
2. Technology — Skill, proficiency, expertise at producing something
3. Endowments — Resources or initial conditions that facilitate producing some things over others

Why do only relative prices matter?

- In our diagram, it's only the *relative* price of F versus S in Home versus World that determines what the gains are from trade.
- Why doesn't the *absolute* level of prices matter?
  - Easy to see why U.S. would benefit from trade with China: everyday low prices! China has an "absolute advantage" in many goods that it trades with U.S.
  - Does this imply that China *won't* benefit from trade with the U.S. since U.S. has everyday high prices?
- Is free trade with China good for the U.S. but bad for the Chinese?

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- Is free trade with China good for the U.S. but bad for the Chinese?
- This is a profoundly important question to which the answer is **no**
  - As long as relative prices differ between China and the U.S., both countries experience gains from trade

The Principle of Comparative Advantage
A Dorky Example

The Principle of Comparative Advantage

Dorky example

- The value of a completed paper is $\$10,000$ for a solo authored paper
- A paper requires both theory T and empirics E

The Principle of Comparative Advantage

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- The value of a completed paper is $\$10,000$ for a solo authored paper
- A paper requires both theory T and empirics E
- Prof. Katz, can do E in 75 hours and T in 25 hours
  - Were Katz writing the paper solo, it would take 100 hours at an effective hourly rate of \$100/hr
  - His internal rate of conversion of time into output is the following:

$$\left(\frac{P_E}{P_T}\right)_K = \frac{75}{25} = 3.$$

  - This is a "price ratio": Katz's opportunity cost of one hour is $1/75^{th}$ of the empirical part of a paper or $1/25^{th}$ of the theory part of the paper

The Principle of Comparative Advantage

Dorky example continued

- Autor, a graduate student, could do E in $2,000$ hours and T in $8,000$ hours
- So, it would take Autor $10,000$ hours to write the paper at effective hourly rate 1:

$$\left(\frac{P_E}{P_T}\right)_A = \frac{2,000}{8,000} = 0.25.$$

- Note, however that $P_E^K < P_E^A$ and $P_T^K < P_T^A$.

The Principle of Comparative Advantage

Dorky example concludes

- They could team up and split the $100K
- How should they divide the work?

The RA Problem

	Hours *Empirics*	Hours *Theory*	Hours *Katz*	Hours *Autor*	$/hr *Katz*	$/hr *Autor*
Solo *Katz*						
Solo *Autor*						

The RA Problem

	Hours *Empirics*	Hours *Theory*	Hours *Katz*	Hours *Autor*	$/hr *Katz*	$/hr *Autor*
Solo *Katz*	75	25	100		$100	
Solo *Autor*						

The RA Problem

	Hours *Empirics*	Hours *Theory*	Hours *Katz*	Hours *Autor*	$/hr *Katz*	$/hr *Autor*
Solo *Katz*	75	25	100		$100	
Solo *Autor*	2,000	8,000		10,000		$1

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	Hours *Empirics*	Hours *Theory*	Hours *Katz*	Hours *Autor*	$/hr *Katz*	$/hr *Autor*
Solo *Katz*	75	25	100		$100	
Solo *Autor*	2,000	8,000		10,000		$1
Katz: T *Autor:* E						

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Solo *Katz*	75	25	100		$100	
Solo *Autor*	2,000	8,000		10,000		$1
Katz: T *Autor:* E	2,000	25	25	2,000	$200	$2.50

The RA Problem

	Hours *Empirics*	Hours *Theory*	Hours *Katz*	Hours *Autor*	$/hr *Katz*	$/hr *Autor*
Solo *Katz*	75	25	100		$100	
Solo *Autor*	2,000	8,000		10,000		$1
Katz: T *Autor:* E	2,000	25	25	2,000	$200	$2.50
Katz: E *Autor:* T						

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Solo *Autor*	2,000	8,000		10,000		$1
Katz: T *Autor:* E	2,000	25	25	2,000	$200	$2.50
Katz: E *Autor:* T	75	8,000	75	8,000	$66.67	$0.63