BRYN MAWR
COLLEGE

Interdependence and Gains from Trade

ECON B105

September 2nd, 2026

Economic Thinking Question

https://6abc.com/post/tredyffrin-township-police-investigating-tire-thefts-how-can-protect/16281495/

What would bother an economist about this situation?

- Besides the obvious fact that stealing other people's property is wrong

6 abc ACTION NEWS

THEFT

Wheels stolen off multiple cars in Tredyffrin Township, Pa.

By Leland Pinder
Wednesday, April 30, 2025

Trade

Let’s talk trade..

Donald J. Trump
@realDonaldTrump

China is worried about its shortage of soybeans. Our great farmers produce the most robust soybeans. I hope China will quickly quadruple its soybean orders. This is also a way of substantially reducing China’s Trade Deficit with the USA. Rapid service will be provided. Thank you President XI.

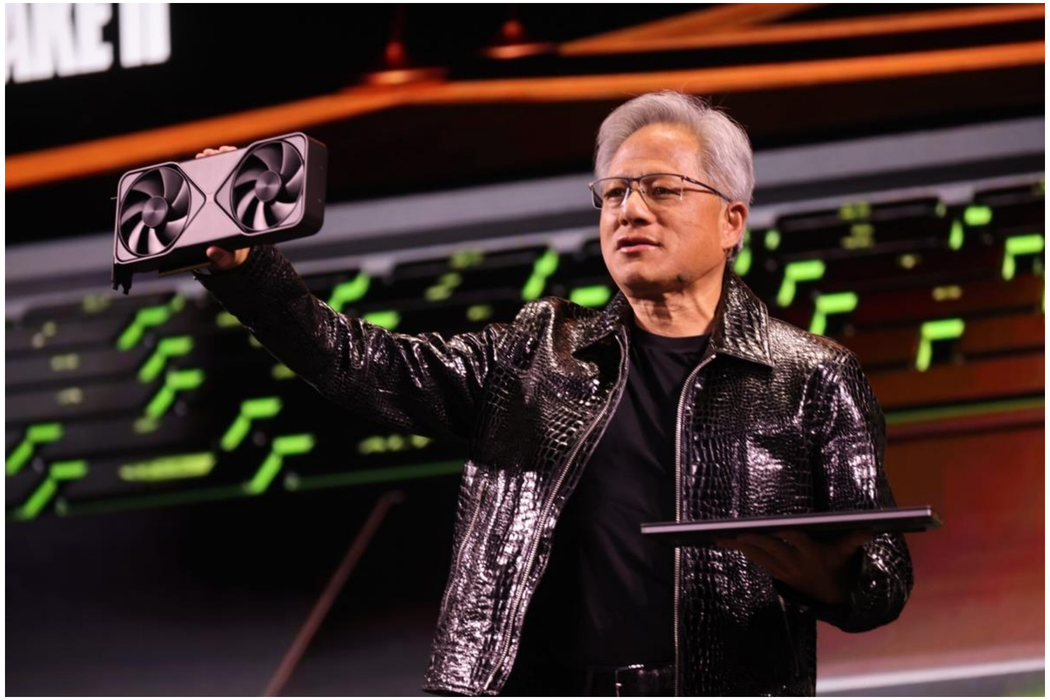
5.26k ReTruths **24.9k** Likes Aug 10, 2025, 11:21 PM

[TRADE MAP]

Trade Puzzle

Why does the U.S.

- Export advanced AI chips
- Import t-shirts



Trade Puzzle

Why does the U.S. buy more from abroad than it sells abroad?

EMBARGOED UNTIL RELEASE AT 8:30 a.m. EDT, Tuesday, August 5, 2025

BEA 25-33
CB 25-118

U.S. International Trade in Goods and Services, June 2025

The U.S. Census Bureau and the U.S. Bureau of Economic Analysis announced today that the **goods and services deficit** was $60.2 billion in June, down $11.5 billion from $71.7 billion in May, revised.

U.S. International Trade in Goods and Services Deficit

Deficit:	$60.2 Billion	−16.0%°
Exports:	$277.3 Billion	−0.5%°
Imports:	$337.5 Billion	−3.7%°

Next release: Thursday, September 4, 2025

(°) Statistical significance is not applicable or not measurable.
Data adjusted for seasonality but not price changes

Source: U.S. Census Bureau, U.S. Bureau of Economic Analysis; U.S. International Trade in Goods and Services, August 5, 2025

Personal Trade Deficit

- Do you run a trade deficit?
- Should you stop trading with other people?
  - Become entirely self-reliant?
  - Even though you are losing money?

Why Do We Trade?

Why do we engage in trade?

- It benefits both sides!

- Questions for today:
  - What exactly do people gain when they trade with one another?
  - Why do people become interdependent?
  - Should even the most productive people/countries trade?

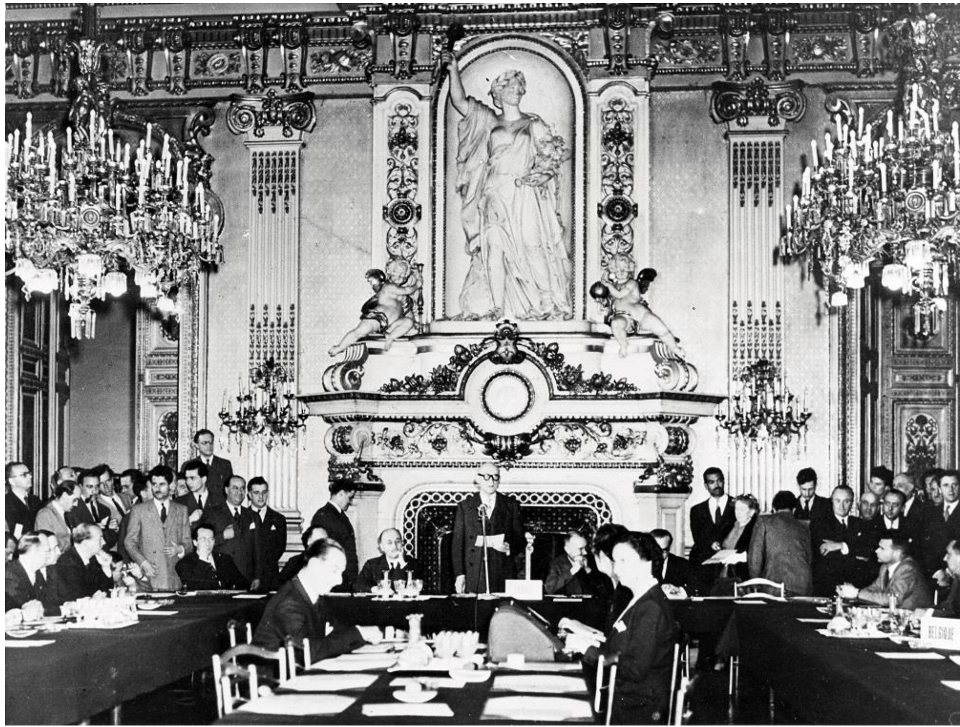
Interdependence

European Union

Schuman Declaration of 1950

“The solidarity in production thus established will make it plain that any war between France and Germany becomes not merely unthinkable, but materially impossible.” …

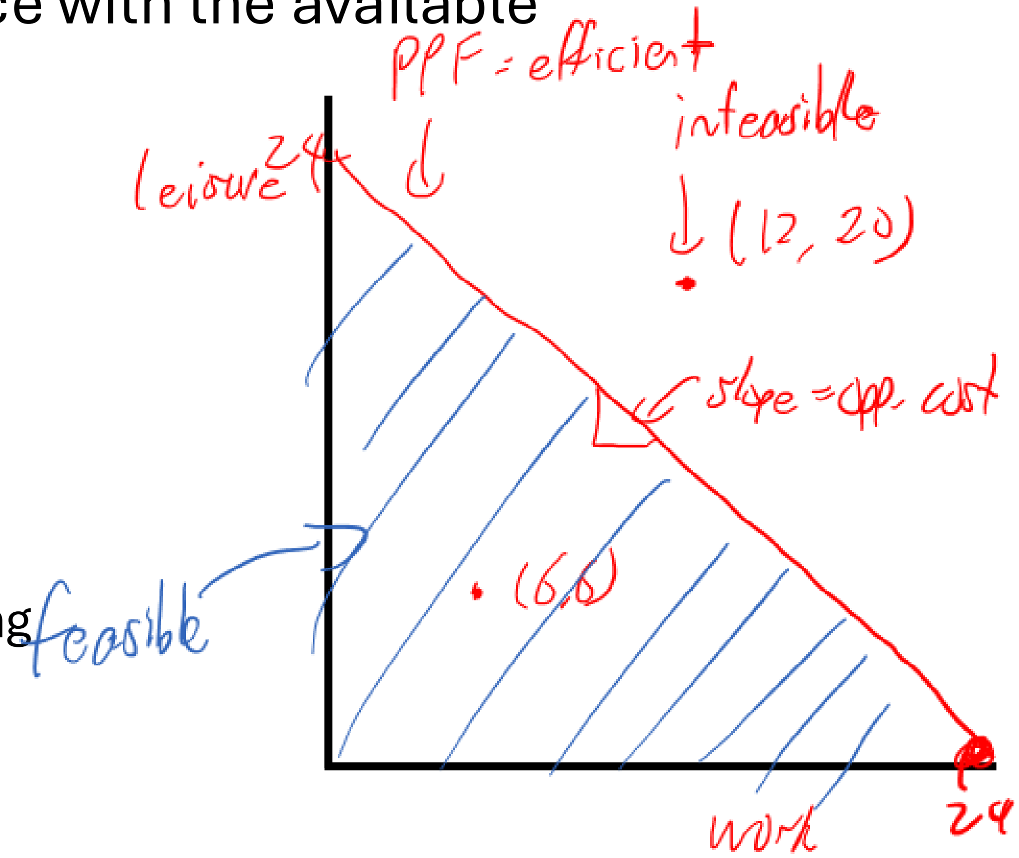
“The movement of coal and steel between member countries will immediately be freed from all customs duty, and will not be affected by differential transport rates."



Production Possibility Frontier (Ch. 2.1e)

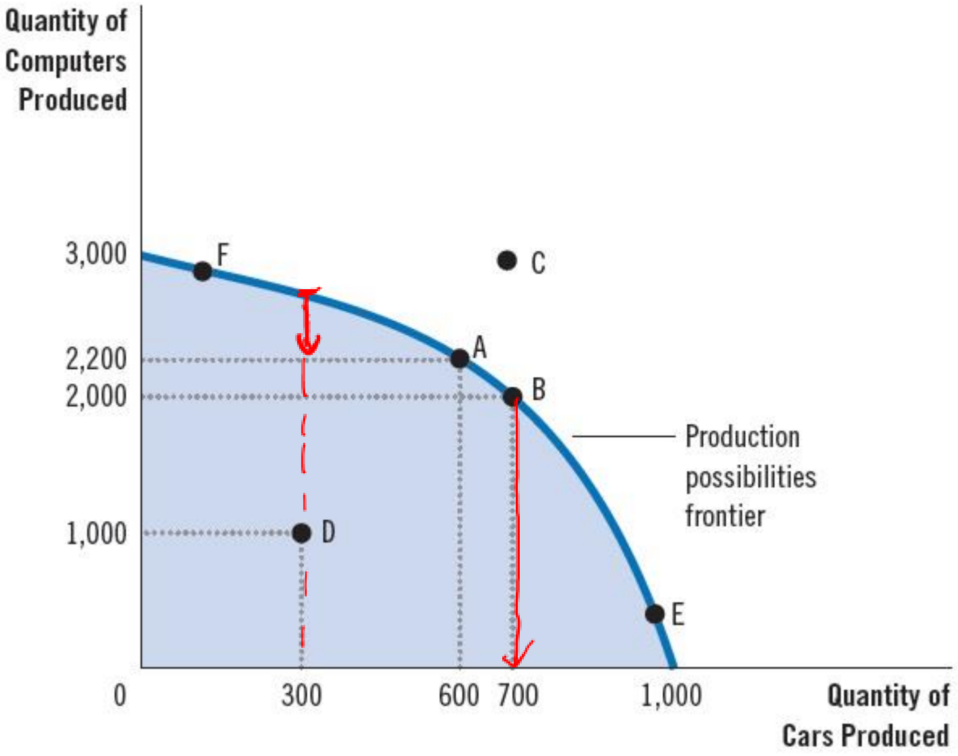
Production possibilities frontier (PPF)

- A graph that shows the various combinations (bundles) of outputs that the economy or individual can possibly produce with the available
  - Factors of production
  - Production technology
- Example: “produce” work or leisure
  - 24 hours in a day.
- Concepts
  - Feasible/infeasible/efficient outcomes
  - **Opportunity cost:** what you give up by choosing one alternative instead of another



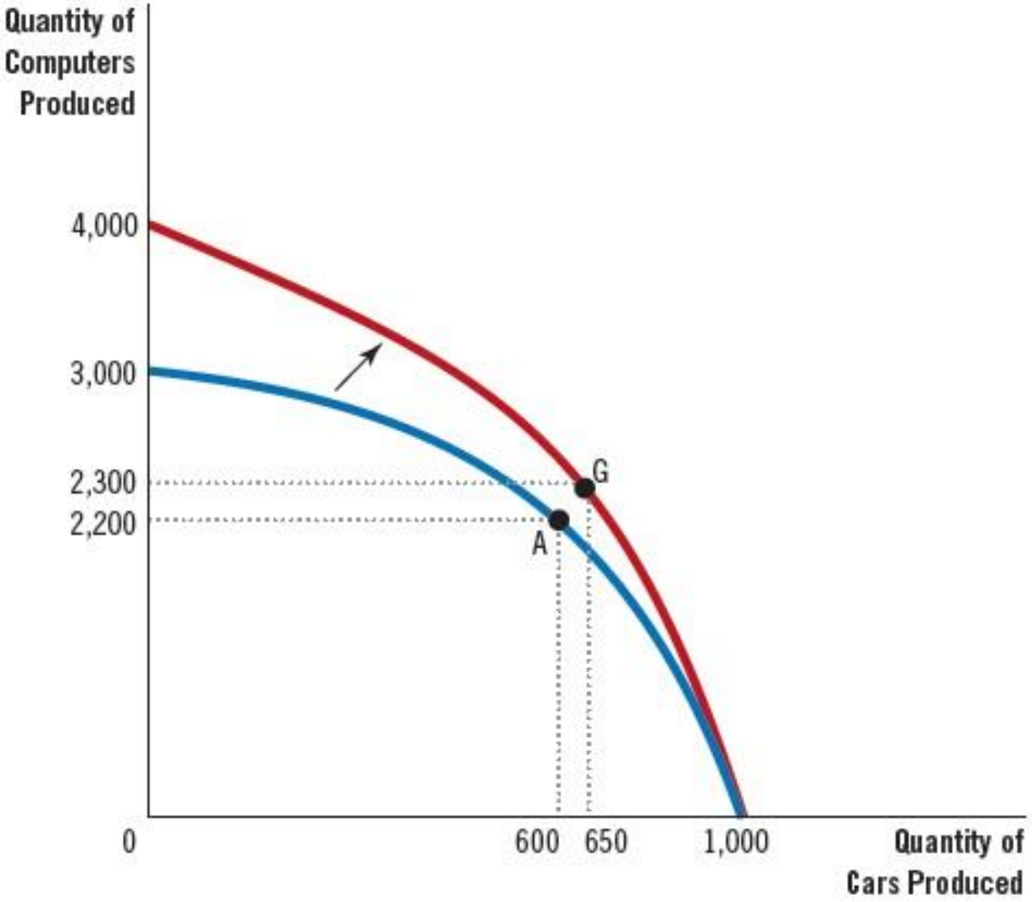
Production Possibility Frontier

- Slope of the PPF = opportunity cost
- But opportunity cost need not be constant
  - Diminishing returns!



Production Possibility Frontier

- Increase in technology can also increase your PPF



PPF and Trade

Simplified economy

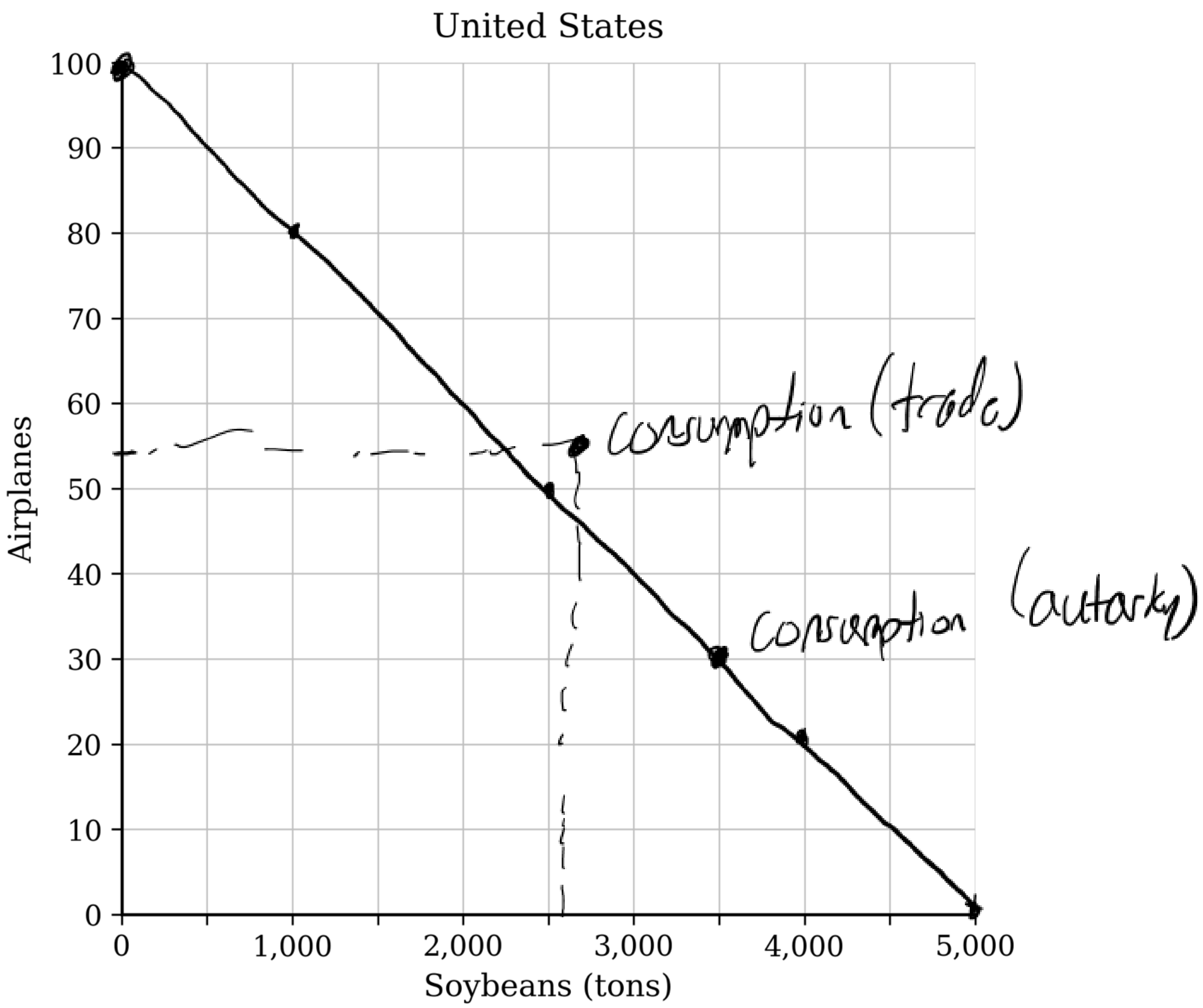
- Two countries: U.S. and Japan
- Two products: airplanes and soybeans
- One input: only labor is needed
- Autarky: state of **no** trade
  - You consume what you produce

U.S. Production Schedule

- U.S.
  - 50,000 labor hours
  - 1 airplane takes 500 labor hours
  - 1 ton of soybeans takes 10 labor hours

Point	Labor Hours for Airplanes	Labor Hours for Soybeans	Airplanes Produced	Soybeans Produced
A	50,000	0	100	0
B	40,000	10,000	80	1000
C	25,000	25,000	50	2500
D	10,000	40,000	20	4000
E	0	50,000	0	5000

U.S. Production Possibility Frontier

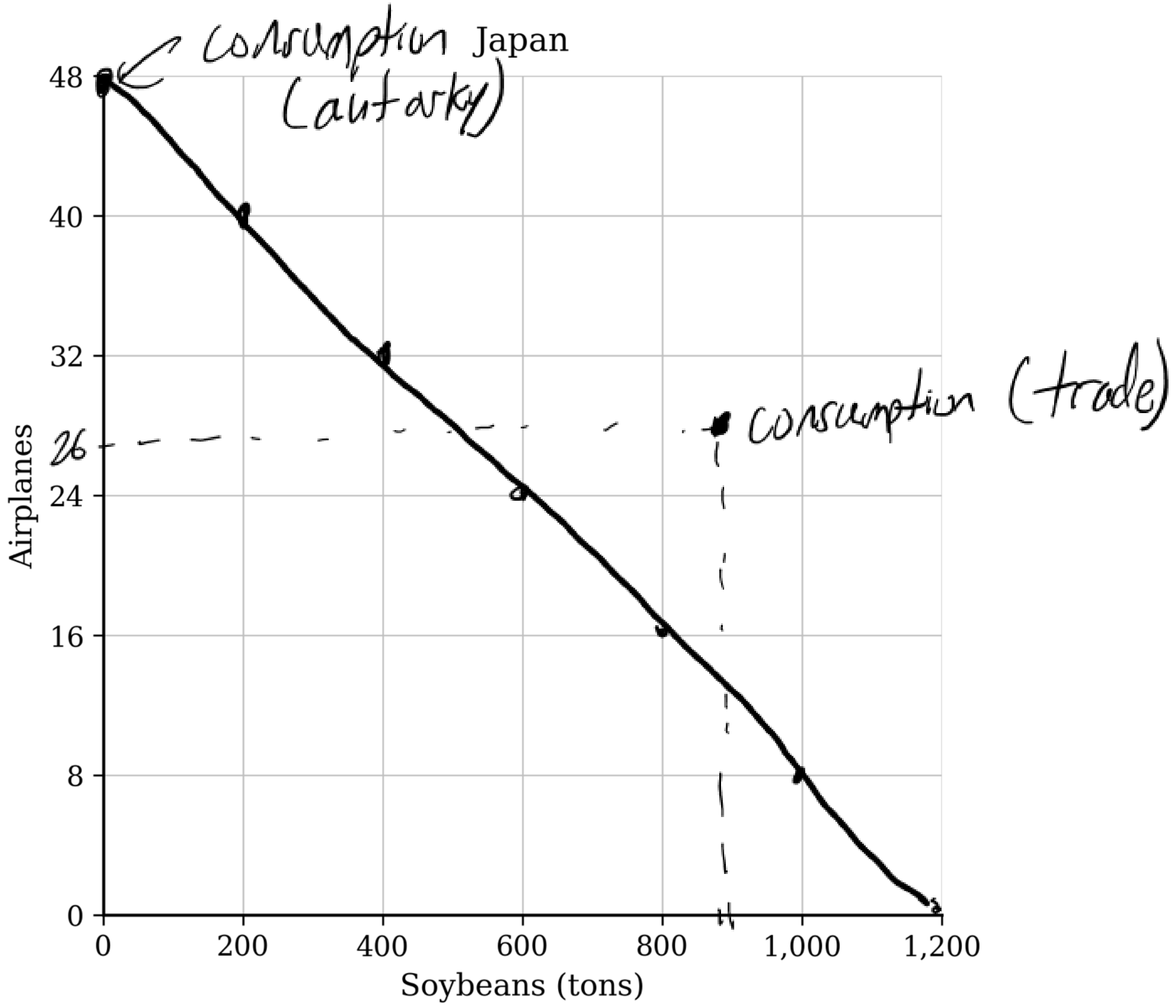


Japanese Production Schedule

- Japan
  - 30,000 labor hours
  - 1 airplane takes 625 labor hours
  - 1 ton of soybeans takes 25 labor hours

Point	Labor Hours for Airplanes	Labor Hours for Soybeans	Airplanes Produced	Soybeans Produced
A	30,000	0	48	0
B	25,000	5000	40	200
C	15,000	15000	24	600
D	5,000	25000	8	1000
E	0	30,000	0	1200

Japanese Production Possibility Frontier



Under Autarky (No Trade)

- U.S.
  - Say, produces and consumes 3,500 tons of soybeans
  - How many airplanes? 30

$$3500\ SB \times \frac{10\ LH}{1\ SB} = 35000\ LH \Rightarrow 15000\ LH\ \text{leftover} \times \frac{1\ AP}{500\ LH} = 30\ AP$$

- Japan
  - Say, produces and consumes 48 airplanes
  - How many soybeans? 6

Under Free Trade

Japanese want to eat too

- Assume they are willing to exchange 22 airplanes for 880 tons of soybeans
- What are the new consumption bundles?

Magic of trade

- We made more output using the same inputs!
- Win-win for both parties involved
  - Both can produce/consume at a point above their PPF

Absolute Advantage

- **Absolute advantage**
  - The ability to produce a good using fewer inputs than another producer

		U.S.	Japan
Cost to Produce:	Soybeans	10 LH	25 LH
	Airplanes	500 LH	625 LH

- The U.S. has the lower cost to build airplanes and grow soybeans
- Why did the U.S. still benefit from trading?
  - The real cost of some item is not the money/time/resource spent to acquire something… but what that money/time/resource could have gone to instead
  - Opportunity cost!

Comparative Advantage

- **Comparative advantage**
  - The ability to produce a good at a lower opportunity cost than another producer
  - One country (or person)
    - Can have an absolute advantage in both goods
    - Cannot have a comparative advantage in both goods

Why Trade Works

- For the U.S. to produce one airplane:

$$\frac{1\ AP}{500\ LH} \times \frac{10\ LH}{1\ SB} = 1\ AP / 50\ SB$$

- For Japan to produce one airplane:

$$\frac{1\ AP}{625\ LH} \times \frac{25\ LH}{1\ SB} = 1\ AP / 25\ SB$$

		U.S.	Japan
(Opportunity) Cost to Produce	Soybeans	1/50 AP	1/25 AP
	Airplanes	50 SB	25 SB

Gains From Trade

For trade to occur,

- The exchange rate must be between both countries' opportunity costs!

US's cost of 1 more airplane: 50 tons of soybeans

Japan's cost of 1 less airplane: 25 tons of soybeans

- Exchange rate: 1 airplane for 40 tons of soybeans
  - What if exchange rate is 1 airplane for 20 tons of soybeans?
  - Or 1 airplane for 60 tons of soybeans?

Announcements

- TA Sessions TBD

- Review Chapter 3 (Interdependence and the Gains From Trade)
  - Review Chapter 2 Appendix if rusty on graphs