

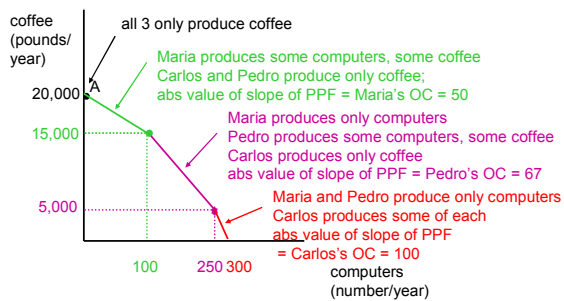
Final exam: 8:00 a.m., Wed, March 19

- Cannot leave exam room until exam is handed in.
- No one will be allowed to start exam after some exams are handed in.
- Please don't hand in exam before 9:00 a.m.
- Please don't arrive for exam after 8:30 a.m.
- Office hours next week: Tuesday, March 18, 1:30-2:30 p.m. in Seq 231

Chapter 20: Trading with the world

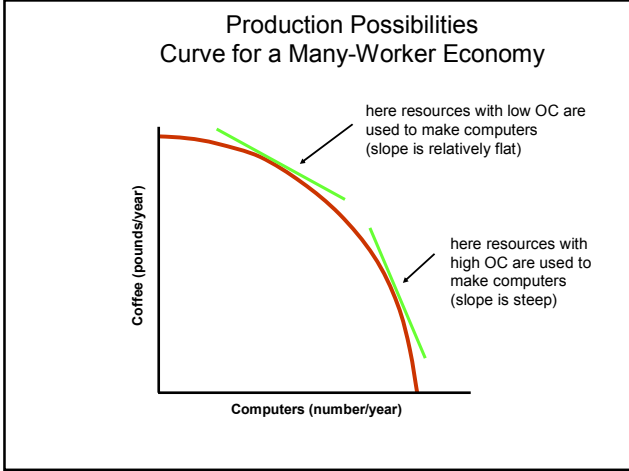
- A. The production possibilities frontier
1. The two-worker production possibilities frontier
 2. The three-worker production possibilities frontier

Brazil's production possibilities frontier

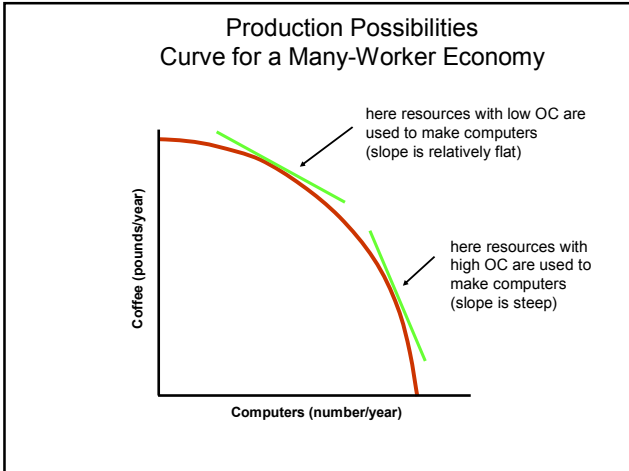


Chapter 20: Trading with the World

- A. The production possibilities frontier
1. The two-worker production possibilities frontier
 2. The three-worker production possibilities frontier
 3. The production possibilities frontier with many workers



- Notice production possibilities frontier gets steeper as we move to the right
- This represents fact that for efficient production plan, resources with lowest opportunity cost of producing computers are used to make the first computers
- As more and more computers are made, there will be an increasing opportunity cost (steeper slope)
- This bow shape (concave) is called the *principle of increasing opportunity cost*



Chapter 20: Trading with the World

A. The production possibilities frontier

B. Autarky

Definitions:

If a country does not import or export goods or services from any other country, it is said to be in a position of *autarky*

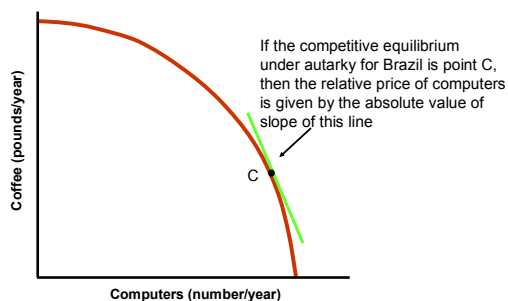
An economy is said to be in a *competitive equilibrium* if all markets are perfectly competitive with no distortions such as taxes, subsidies, externalities, public goods, or government regulations

Proposition:

If the Brazilian economy is characterized by a competitive equilibrium under autarky then

- (1) Brazil will operate at a point on the production possibilities frontier
- (2) the relative price of computers in terms of coffee will be given by the (absolute value of the) slope of the PPF at that point

Relative price under autarky



Demonstration of part (2) of the proposition:

- Suppose Brazil is at point C and the slope of the PPF at this point is -100.
- Then Brazil's opportunity cost of producing one more computer is 100 pounds of coffee
- Suppose that under autarky, a pound of coffee costs 1 Brazilian real and a computer costs 200 real

- Then by shifting resources out of coffee and into computer production, someone in Brazil could make more profit
- e.g., Carlos works one less week in coffee loses (100 pounds coffee x 1 real per pound) = 100 real, gains (1 computers x 200 real per computer) = 200 real
- Conclusion: whenever slope of PPF (Brazil's OC of making one more computer) is less than relative price of a computer, it pays to shift resources out of coffee into computers

- Whenever slope of PPF is greater than relative price, it pays to shift resources out of computers into coffee
- Competitive equilibrium would therefore result in slope of PPF = relative price

Chapter 20: Trading with the World

- The production possibilities frontier
- Autarky
- Effects of opening a country to trade

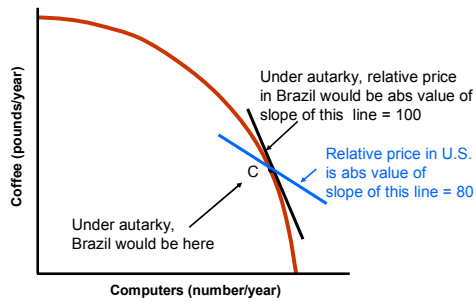
Opening up Brazil to trade with other countries allows people in Brazil to consume quantities of coffee and computers that aren't on the PPF

- For example, suppose that coffee sells for \$5/pound in the U.S. and a computer sells for \$400 in the U.S.
- Then the relative price in the U.S. is

$$\frac{\$400}{\text{computer in U.S.}} \div \frac{\$5}{\text{pound coffee in U.S.}} = \frac{80 \text{ pounds coffee in U.S.}}{\text{computer in U.S.}}$$

Suppose that under autarky, Brazil would be at C and relative price in Brazil would be 100 pounds coffee per computer

Suppose that in the U.S., relative price is 80 pounds of coffee per computer



Since the relative price of computers is cheaper in the U.S., anyone could make a profit by buying coffee in Brazil, selling it in U.S., and buying computers in U.S., sell them in Brazil

Brazil

- 1 pound coffee costs 1 real
- 1 computer costs 100 real
- relative price = 100 pounds coffee per computer

U.S.

- 1 pound coffee costs \$5
- 1 computer costs \$400
- relative price = 80 pounds coffee per computer

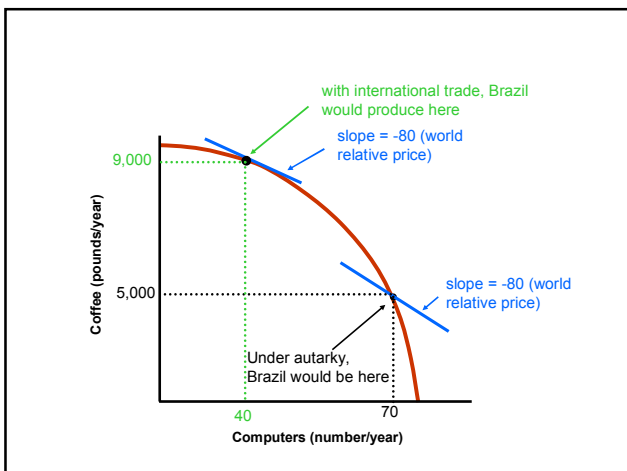
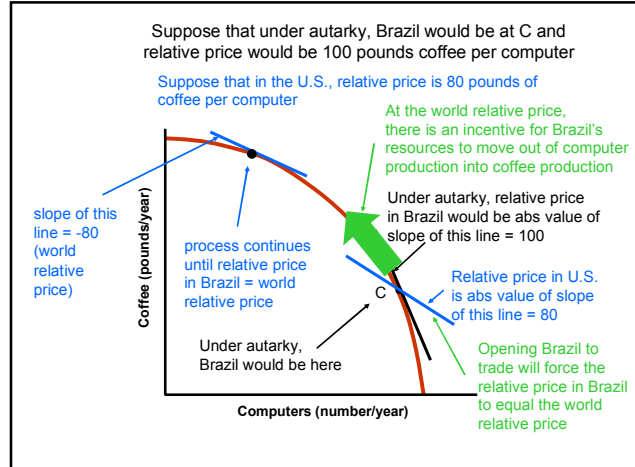
Plan to make profit

- Buy 80 pounds coffee in Brazil for 80 real
- Sell 80 pounds coffee in U.S. for \$400
- Buy 1 computer in U.S. for \$400
- Sell 1 computer in Brazil for 100 real
- Make 20 real profit

Conclusion:

- Differences in relative prices of goods across countries create an incentive for trading goods between countries
- If relative price of computers is lower in the U.S., then Brazil will export coffee to the U.S. and import computers from the U.S.

- If you can earn 20 real for every computer you import into Brazil, how many will you want to import?
- Answer: ∞
- Implications: Firms trying to sell imported computers in Brazil will drive price of computers in terms of real down
- Firms trying to buy Brazilian coffee for export will drive price of coffee in terms of real up



Under autarky:

- Brazil produced 70 computers
- Brazil produced 5,000 pounds coffee
- Brazil consumed 70 computers, 5,000 pounds coffee

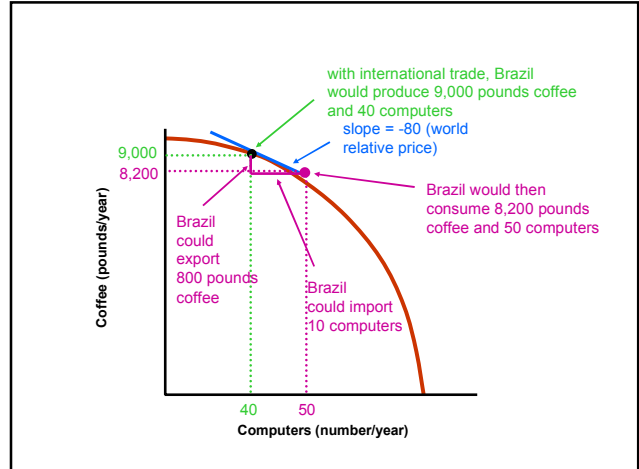
With international trade:

- Brazil produced 40 computers
- Brazil produced 9,000 pounds coffee
- Brazil consumed < 9,000 pounds coffee (some exported)
- Brazil consumed > 40 computers (some imported)

What consumption levels are now possible for Brazil?

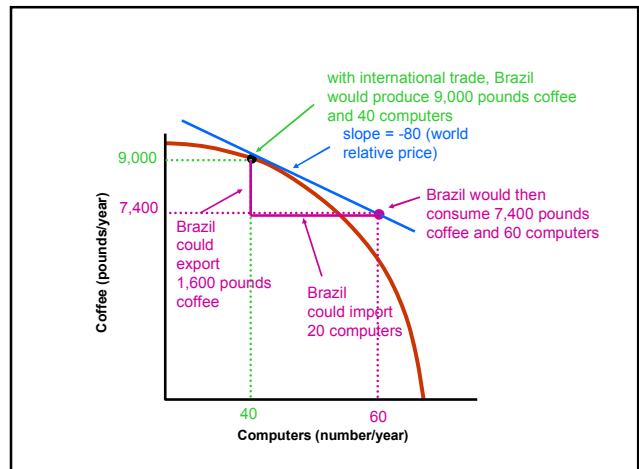
One possibility:

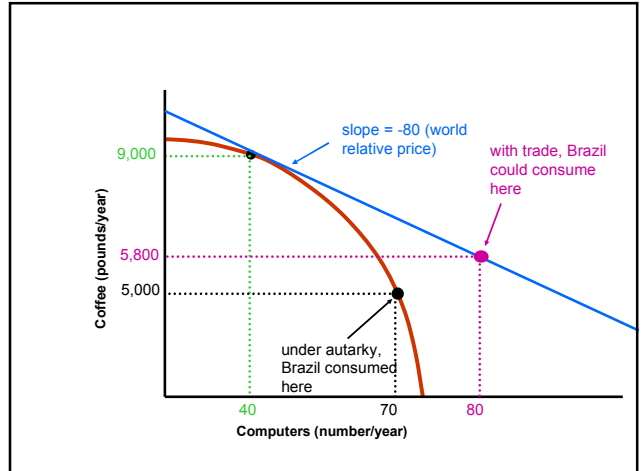
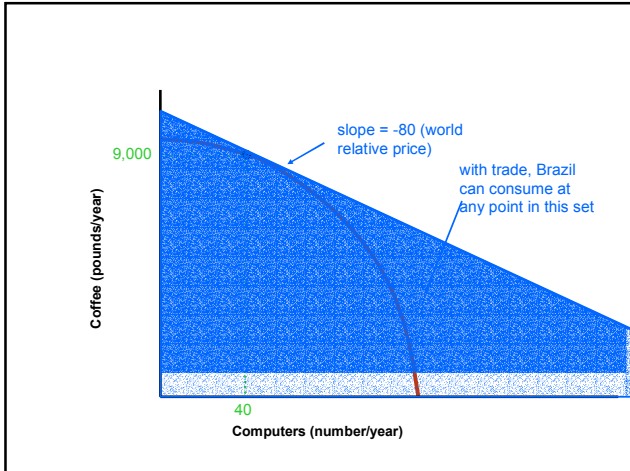
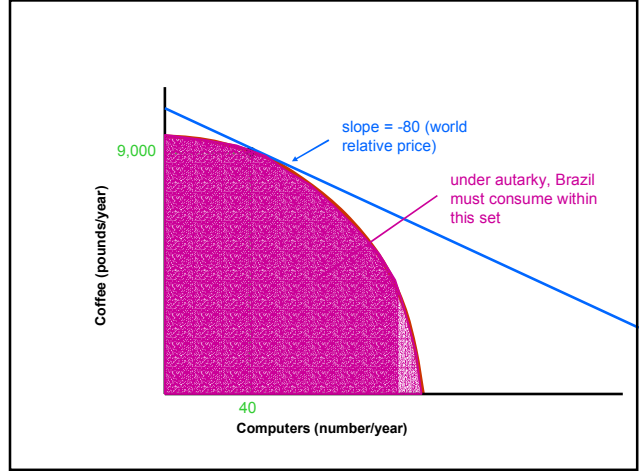
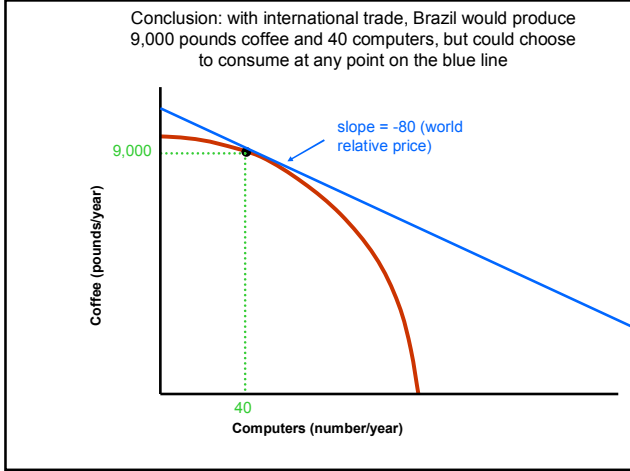
- Brazil produces 9,000 pounds coffee, 40 computers
- Brazil then exports 800 pounds coffee, imports 10 computers
- Brazil's consumption is then 8,200 pounds coffee, 50 computers



Another possibility:

- Brazil produces 9,000 pounds coffee, 40 computers
- Brazil then exports 1,600 pounds coffee, imports 20 computers
- Brazil's consumption is then 7,400 pounds coffee, 60 computers





Considering the nation as a whole, Brazil can be unambiguously better off if its residents are allowed to trade with other countries

- Being able to trade, it must be possible to accomplish more than if you are unable to trade
- Under a competitive equilibrium, private markets would find the efficient way to exploit this opportunity

Does this mean everyone in Brazil would be better off with international trade compared to autarky?

Answer: no

Consider Maria, who specialized in making computers in Brazil:

- Under autarky, the relative price of computers was 100 pounds coffee per computer
- If Maria works one week, she makes 2 computers
- Under autarky, she could afford 200 pounds of coffee each week

- With international trade, relative price of computers is now 80 pounds of coffee
- Maria can now only afford to buy 160 pounds of coffee each week

Consider Carlos, who specialized in producing coffee in Brazil:

- Under autarky, the relative price of computers was 100 pounds coffee per computer
- If Carlos works one week, he produces 100 pounds coffee
- Under autarky, he could afford to buy 1 computer each week

- With trade, he could afford to buy 1 computer plus have 20 pounds of coffee left to drink

Losers from international trade:

- producers of the good that is now imported
- consumers of the good that is now exported

Winners from international trade:

- consumers of the good that is now imported
- producers of the good that is now exported

Conclusions:

- (1) The incentives for trade depend not on which country has an absolute advantage at producing a given good but rather which country has a comparative advantage at producing a given good
- (2) Brazil can gain from trade regardless of whether it has an absolute advantage over its trading partners in producing all goods, just some goods, or no goods

Chapter 20: Trading with the World

- A. The production possibilities frontier
- B. Autarky
- C. Effects of opening a country to trade
- D. Trade deficit

U.S. imports in 2007 = \$2,350 B

- \$331 B oil
- \$254 B autos

U.S. exports in 2007 = \$1,153 B

- \$488 B services (transportation, professional, financial)
- \$88 B aircraft
- \$121 B autos

But imports minus exports = \$1,297 B

(= deficit on trade in goods and services)

What are we giving foreigners in exchange?

Answer: debt and equity

Chapter 20 studies: balanced trade in goods and services

In Econ 3 will look at: net borrowing or lending between countries