

This homework is due by the beginning of class on Monday, Sept. 10. Please answer the questions on your own paper. Collusion is acceptable, but each student must turn in their own homework.

1. Consider a Ricardian model with two countries, the United States and Ecuador. Each country produces only two goods: bananas and machines. There is only one input to production, labor, which is perfectly mobile between the two goods. Suppose the unit-labor requirements are: Bananas^{US} = 8, Bananas^E = 4, Machines^{US} = 2, Machines^E = 4. Assume the US has 3200 workers and Ecuador 400 workers.

a. Which country has the comparative advantage in bananas? Why?

Comparative advantage is determined by who has the lower opportunity cost.

The maximum each country can produce of each product is determined by dividing each country's labor force by the labor requirement for each product. The following is the maximum amount of each product each country can produce:

	U.S.	Ecuador
Bananas	400	100
Machines	1600	100

The opportunity cost of bananas is the number of machines each country must sacrifice to gain one banana. In the U.S. each banana requires the sacrifice of four machines ($1600M/400B = 4m/1B$). In Ecuador each banana requires the sacrifice of one machine ($100M/100B = 1M/1B$).

Ecuador has the lower opportunity cost ($1M/1B < 4M/1B$) and therefore has the comparative advantage in bananas.

Note: It is possible to determine comparative advantage by using the labor requirements instead of total output:

Labor requirements

	U.S.	Ecuador
Bananas	8	4
Machines	2	4

In the United States, labor is four times more productive in machines than bananas, whereas in Ecuador labor is equally productive in bananas and machines. In this case, the United States has a comparative in machines and Ecuador has a comparative advantage in bananas.

b. What is the US terms-of-trade in autarky?

The terms-of-trade in autarky is the opportunity cost of producing each product. Therefore, in autarky the U.S. would trade 4 machines for each banana or $\frac{1}{4}$ of a banana for each machine.

c. What would be the pattern of trade if the United States and Ecuador engaged in free trade?

In free trade, Ecuador would export bananas and the United States would export machines.

d. How much of each good would Ecuador produce in free trade if complete specialization occurred?

If Ecuador completely specialized in their comparative advantage, Ecuador would produce 100 bananas.

e. Suggest a plausible free trade terms-of-trade.

Any price between $1M/1B$ and $4M/1B$, perhaps $2M/1B$ or $1/2B$ for $1M$.

2. Visit the website http://www.ita.doc.gov/td/industry/otea/industry_sector/tables_naics.htm and record the levels of imports and exports for the following NAICS (North American Industry Classification System) manufacturing sectors:

Sector	Imports in 2001	Exports in 2001	U.S. Comparative Advantage?
Ship building & repairing (NAICS 336611)			
Electric housewares (NAICS 335211)			
Audio & video equipment mfg (NAICS 3343)			
Bottled water mfg (NAICS 312112)			
Other missile/space veh parts (NAICS 336419)			
Game, toy & children's vehicle mfg (NAICS 339932)			

- a. Complete the table above using data from the International Trade Administration. If the pattern of trade follows comparative advantage, in which of the sectors does it appear the United States holds a comparative advantage? Indicate your answers in the table above.
- b. Do your results suggest that the United States is not competitive in the world economy? Explain.

No. Concerns about “competitiveness” often involve two confusions. Competitiveness often refers to profitability, which requires comparing price and quantity produced with the cost of production. Patterns of trade do not indicate profitability, *per se*. Second, trade is not motivated by absolute costs but relative costs. If a country is a net importer of a product it only indicates that the country may not hold a comparative advantage in that particular product. However, no country can have a comparative advantage in all products/activities and thus there is very little connection between being a net importer or exporter and “competitiveness.”

- c. Use comparative advantage to explain the pattern of trade in bottled water even though the United States has one of the cleanest public water systems in the world.

Assuming that U.S. consumers want bottled water, one reason the U.S. would import water is because U.S. resources are *relatively* better used in other endeavors. For example, rather than using U.S. resources to fill plastic bottles with water, which is a relatively low-value activity, U.S. resources have a comparative advantage being employed making computer chips, for example. Meanwhile, in other countries, applying resources to filling plastic bottles with water might prove to be their comparative advantage.