Practice Problem Set 2

180.102 Elements of Microeconomics - TA Section 03

Pinda Wang, 6 September 2024

Part I. Comparative advantage

1. During the 1992 U.S. presidential campaign, President George H. W. Bush visited a grocer's convention and reportedly marvelled at the commonplace supermarket barcode scanner. The *New York Times* ran a front-page story titled "Bush Encounters The Supermarket, Amazed", portraying him as elitist and out of touch. Numerous politicians have since been ridiculed for bungling their publicity visits to grocery stores. Based on what you've learned, should presidents buy their own groceries? Why?

2. Suppose there are 3 countries in the world: Oceania, Eurasia, and Eastasia, each of which can produce 3 goods: oil, beef, and computers. The production possibilities of each country per year (when the country devotes its entire production capacity to only one good) is given in the table below:

Production	Oil (billion barrels)	Beef (tons)	Computers (million)
Oceania	2	10	30
Eurasia	5	15	25
Eastasia	3	16	20

What are the comparative advantages of the three countries? Explain.

Part II. The gains from trade

Countries A and B produce guns and butter. The production possibilities of each country per year (when the country devotes its entire production capacity to only one good) is given in the table below:

Production	Guns (thousand)	Butter (ton)
Country A	X	12
Country B	5	15

1. For what values of X does Country A have absolute advantage in guns? Explain.
2. For what values of X does Country A have absolute advantage in butter? Explain.
3. For what values of X are gains from trade possible? Explain.
4. For what values of X will Country A export guns? Explain.

Solutions to Practice Problem Set 2

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Part I. Comparative advantage

1. No. Whereas it helps to have a president who understands people's everyday concerns, it is the president's comparative advantage to run the country instead of buying groceries. The country is better off when the president is doing the thing in which he has comparative advantage (i.e. run the country) and leave grocery shopping to his staff who have comparative advantage at grocery shopping.

2. The opportunity cost of producing 1bn barrels of oil:

   Oceania: 5 tons of beef or 15 million computers
   Eurasia: 3 tons of beef or 5 million computers
   Eastasia: 16/3 tons of beef or 20/3 million computers

   Eurasia has the smallest opportunity cost of producing oil in terms of both beef and computers, so Eurasia has comparative advantage in producing oil.

   The opportunity cost of producing 1 ton of beef:

   Oceania: 0.2bn barrels of oil or 3 million computers
   Eurasia: 1/3bn barrels of oil or 5/3 million computers
   Eastasia: 3/16bn barrels of oil or 1.25 million computers

   Eastasia has the smallest opportunity cost of producing beef in terms of both oil and computers, so Eastasia has comparative advantage in producing beef.

   The opportunity cost of producing 1 million computers:

   Oceania: 1/15bn barrels of oil or 1/3 ton of beef
   Eurasia: 0.2bn barrels of oil or 0.6 ton of beef
   Eastasia: 0.15bn barrels of oil or 0.8 ton of beef

   Oceania has the smallest opportunity cost of producing computers in terms of both oil and beef, so Oceania has comparative advantage in producing computers.

Part II. The gains from trade

1. $X > 5$. It takes Country B 1/5 years to produce a thousand guns. For Country A to have absolute advantage in producing guns, it must take Country A less time to

produce a thousand guns. That is achieved when $X > 5$.

2. Never. It takes country A 1/12 years and Country B 1/15 years to produce a ton of butter. Coutnry B has absolute advantage in producing butter, and no value of X would change that.

3. Anything except $X = 4$. Recall that gains from trade arise from comparative advantage. As long as each country has comparative advantage in a different good, gains from trade will be possible. This allows any positive values of X except 4. With $X = 4$, the two countries have exactly identical opportunity costs, and they're indifferent between trading and not trading. (Try draw their PPFs and CPFs with trade if you are still not convinced.)

4. $X > 4$. Because with $X > 4$, Country A's opportunity cost of producing guns is smaller than 3 tons of butter per thousand guns, whereas Country B's is exactly 3 tons of butter per thousand guns. Country A has comparative advantage in producing guns, and will therefore specialize and export guns in trade.