Discussion 2

Important Topics

- Opportunity Cost, Comparative Advantage, Absolute Advantage
- Production Possibility Frontiers (PPF) and Global PPF
- Determinants of PPF

Concept Review

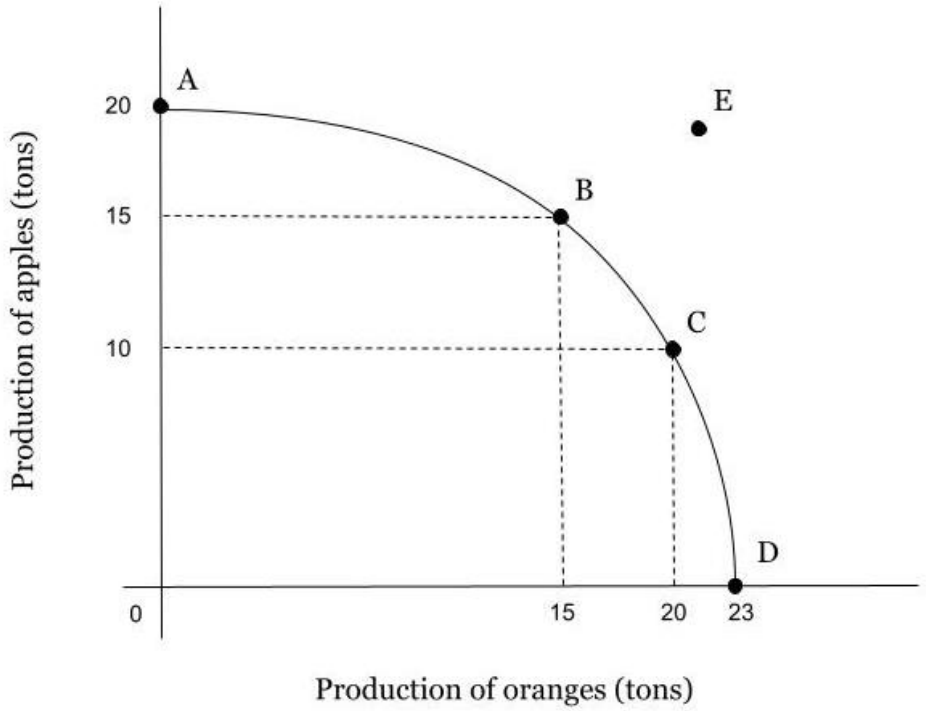
Opportunity Cost: the best alternative that we give up, or forgo, when we make a choice or decision.

Comparative Advantage: the advantage that one (an individual or country) can produce a good or service at a lower opportunity cost than the other (individuals or countries).

Absolute Advantage: the advantage that one (an individual or country) can produce more of a good or service than the others (individuals or countries).

Production Possibilities Frontiers: graph that visualizes all the ways that one (an individual or country) can produce goods or services, if all resources and technologies are used.

Figure 1: Example of PPF



For example, consider a farmer's decision to produce apples and oranges. Figure 1 above shows the combinations of apples and oranges she can produce, assuming she uses all the resources available to her.

At point A, the farmer is choosing only to produce apples, and at point D she is choosing only to produce oranges. Suppose the farmer moves from point B to point C, then she is reducing her production of apples to increase production of oranges. Point E is outside of the farmer's production possibilities.

Marginal Rate of Transformation (MRT): *absolute value* of the slope of the PPF. In the above example, the MRT is the amount of apples (in tons) the farmer forgoes in production, in order to produce an additional ton of oranges. Notice the slope in Figure 1 becomes steeper as production of oranges increases. This is an example of the Law of Increasing Opportunity Cost.

Determinants of PPF: Several different factors can shift the PPF and change the total output of an economy, including but not limited to

- New resources
- Better technology
- Cost of services increases

We see examples of how these factors impact the PPF in Exercises 3, 4, and 6.

Exercises

Opportunity Costs and Trade

Erika can chop 10 logs each hour and gather 5 coconuts each hour. Jon can chop 4 logs each hour and gather 8 coconuts each hours. Both work a standard 8 hour work day.

1. Assuming that Erika and Jon both want to consume twice as many logs as coconuts, what is the total log and and total coconut consumption if they do not specialize and trade?
2. Now assume that Erika and Jon specialize. Who specializes in gathering coconuts? Assuming that they each perfectly specialize, what is the total consumption of coconuts? Of logs?
3. Comment on the result from question 2. If Jon and Erika choose to trade and still want to consume twice as many logs as coconuts, will they perfectly specialize? Why or why not?

Opportunity Costs and Global PPFs

Alice builds 2 tables in 6 hours and 3 chairs in 2 hours. Bob builds 1 table in 2 hours and builds 2 chairs in 3 hours. Fill in the table below in terms of the amount of time it takes to build each unit:

	Tables	Chairs	OC tables	OC chairs
Alice				
Bob				

1. Who has comparative advantage in tables? In chairs?
2. Suppose Alice and Bob must make exactly nine chairs during a twelve hour work day. How many tables will they be able to finish in addition to the nine chairs?
3. Now suppose they each have six hours. Draw the PPFs for both Alice and Bob (chairs on the horizontal axis). What is the marginal rate of transformation (MRT) for Alice and Bob?
4. Now combine the two PPFs to construct the global PPF.
5. What happens if we have more than 2 people? How do you think the global PPF changes?

Multiple Choice Practice

Exercise 1:

Consider a curved PPF which plots the tradeoff between corn production (y-axis) and wheat production (x-axis). At any particular point at the edge of the frontier, where maximum production capacity is reached, how would you measure the opportunity cost of producing corn?

(a) The absolute value of the slope

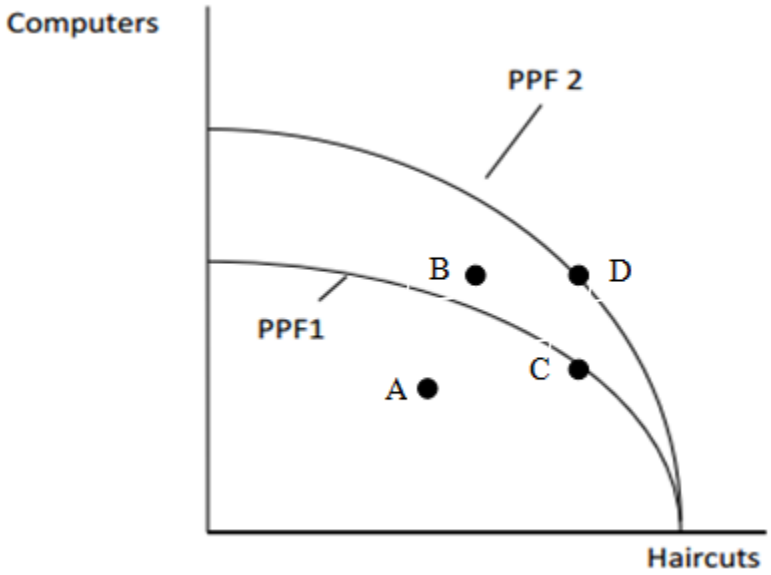
(b) 1

(c) The reciprocal of the absolute value of the slope

(d) Cannot determine without more information

Exercises 2 - 4: Non-linear Production Possibilities Frontier

Exercises 2 - 4 refer to the following chart. Use this graph of the U.S.'s production possibility frontier (PPF) to answer the following questions:



2. If the US's production possibility starts out at PPF1,which points are feasible? Check all that apply.

   ☐ Point A

   ☐ Point B

   ☐ Point C

   ☐ Point D

3. Now the PPF shifts out to PPF2. What does this tell us about how production has changed for haircuts and computers?
   (a) There are fewer barbers in the economy
   (b) Computers require fewer resources to produce
   (c) There is more demand for computers
   (d) The U.S. started buying computers from other countries rather than producing them
4. How will the shift from PPF1 to PPF2 affect the opportunity cost for producing haircuts?
   (a) The opporunity cost of producing haircuts will increase
   (b) The opporunity cost of producing haircuts will decrease
   (c) The opporunity cost of producing haircuts will not change
   (d) The shift will only affect the opportunity cost of producing computers

Exercise 5:

Wakanda is a developed nation that is skilled in producing advanced technological goods. It also benefits from a workforce with high levels of human capital. Wakanda can produce one unit of goods for every unit of services, and in a given year it can produce up to 8 million goods. Until now, Wakanda did not trade with other countries, and it produced equal levels of goods and services. Now Wakanda considers trade with the UK, which can produce 3 units of goods for every unit of services. The UK can produce at most 6 million goods; previously it produced 3 million units of goods and 1 million units of services.

If Wakanda and the UK decide to trade based on the theory of comparative advantage, which of the following is true?

I. Since Wakanda has an absolute advantage in producing both goods, it would be worse off trading with the UK.

II. The UK should specialize in services and Wakanda should specialize in goods.

III. Total production of services can increase above 5 million while maintaining the total level of goods produced before trade.

(a) I and II

(b) I and III

(c) II and III

(d) III only

Exercise 6:

(Continuing from Exercise 5 setup) Now suppose that both countries benefit from a technological discovery. Now Wakanda can produce up to 9 million goods or up to 8 million services. Meanwhile, the UK can now produce up to 6 million goods or up to 8 million services. The two countries trade based on the theory of comparative advantage. Which of the following is true?

(a) Wakanda's opportunity cost of producing services decreased.

(b) The UK should specialize in services and Wakanda should specialize in goods.

(c) The global production possibilities frontier is no longer bowed outward.

(d) All of the above.