

## Discussion 2

### Important Topics

- Comparative Advantage
- Global Production Possibility Frontiers (PPF)
- Technology Change and PPFs
- Determinants of Demand

### Problems

**Exercise 1 (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	3	$2/3$	$9/2$	$2/9$
Bob	2	$3/2$	$4/3$	$3/4$

- (a) Who has comparative advantage in tables? In chairs?

*Solution:* Bob has the lower opportunity cost for tables, so he has comparative advantage in tables. Alice has the comparative advantage in chairs.

- (b) What is the smallest number of tables that Alice will accept in trade from Bob for a chair?

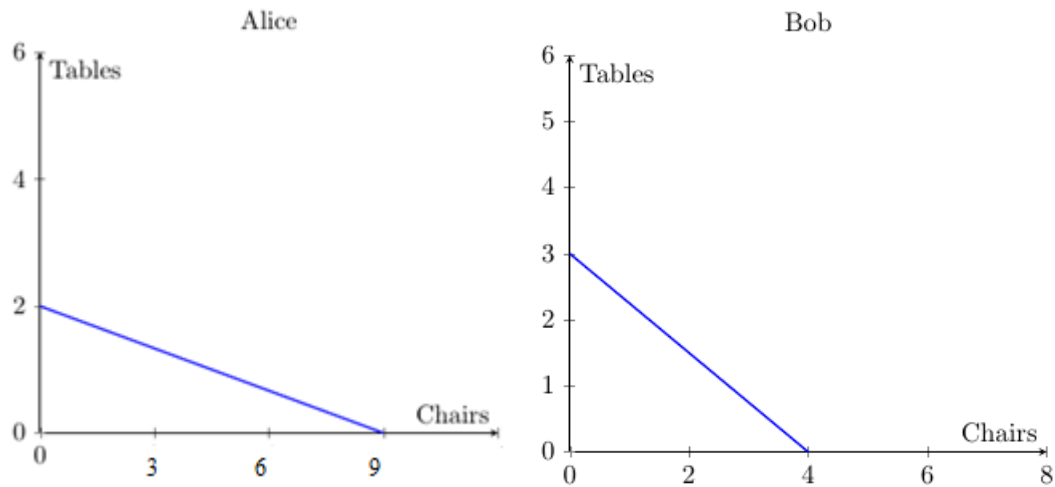
*Solution:* Since Alice opportunity cost from building a chair is  $2/9$ . She should get at least  $2/9$  of a table when trading a chair.

- (c) 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?

*Solution:* Since Alice has comparative advantage in chairs, she will specialize in chairs: it will take her six hours to complete the nine chairs needed. She then has six hours left, in which she can build 2 tables. Bob has comparative advantage in tables and will spend the whole 12 hours on tables, producing 6 tables. In total, they will produce 8 tables.

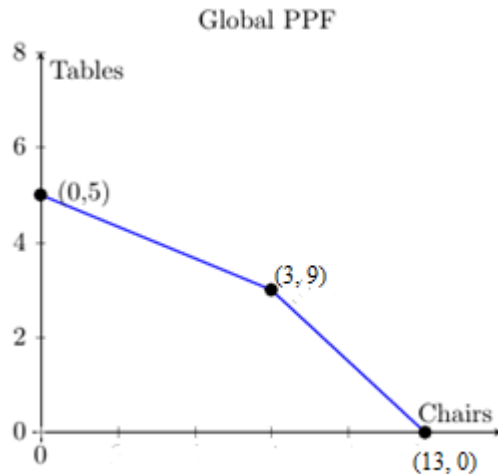
- (d) Now suppose they each have six hours. Draw the PPFs for both Alice and Bob (chairs on the horizontal axis). What is the marginal rate of transformation (MRT) for Alice and Bob?

*Solution:*



(e) Combine the two PPFs (global PPF).

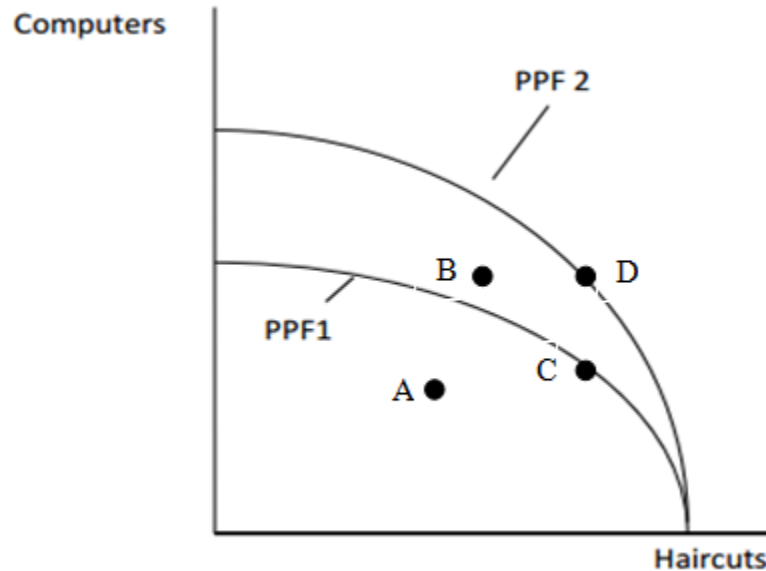
*Solution:* The Global PPF has a kink which is due to the ability to specialize and extends the PPF outward. Note that if Alice's opportunity cost of making chairs was equal to that of Bob's opportunity cost of making chairs, then the global PPF would not have a kink.



(f) What happens if we have more than 2 persons? How do you think the global PPF changes?

*Solution:* As we add more people to our world, we will see more and more kinks. Eventually, the kinks will become so numerous and so small that the joint PPF becomes a smooth curve.

**Exercise 2 (Non-linear Production Possibility Frontier)** Use this graph to answer the following questions:



- (a) If the US's production possibility starts out at PPF1, which points are feasible? which points are feasible and efficient?

*Solution: Point A and point C are both feasible, but only point C is efficient because it lies along the PPF rather than within the PPF.*

- (b) Now the PPF shifts out to PPF2, what does this tell us about how production has changed for haircuts and computers?

*Solution: Since this isn't a parallel shift, this indicates that one of the goods, in this case computers, has become easier to produce, likely due to technology changes in the production of computers.*

- (c) How will the shift from PPF1 to PPF2 affect the opportunity cost for producing haircuts?

*Solution: The opportunity cost for haircuts will go up at any given quantity of haircuts, the slope of PPF2 is higher than the slope of PPF1, indicating that the opportunity cost of producing a haircut is higher in the model depicted by PPF2.*

**Exercise 3 (Determinants of Demand)** Consider the case of Five Guys on State Street. They know that they face a downward sloping demand for regular cheeseburgers. The manager hires you to predict the following scenarios. Make a graph showing the changes described and identify which determinant of demand is invoked in each scenario.

- (a) The reduction of the price in cheeseburgers will lead to a downward movement on the demand curve of cheeseburgers. (*Determinant: Change in price of the good*)

- (b) A new campaign for weight loss identify cheeseburgers to be very unhealthy food, this advertisement will lead to a left shift of the demand curve of cheeseburgers. (*Determinant: Change in preferences*)
- (c) The price of French fries decreases, this will lead to a right shift of the demand of cheeseburgers. (*Determinant: Change in the price of a complementary good*)
- (d) The price of Wendy's cheeseburgers decreases, this will lead to a left shift of the demand curve of cheeseburgers. (*Determinant: Change in the price of a substitutable good*)