PPF, Opportunity cost, Comparative vs Absolute Advantages

Production Possibility Frontier shows the maximum quantities of two goods that can be produced in an economy. It shows the trade-offs that we face when we decide which good to allocate more resources.

Opportunity cost is the options we must give up when we decide to produce one good over another or choosing one option over other options.

In the above scenario, both countries can produce the same amount of Y so neither have absolute advantage in the production of Y. Country B can produce more X, so country B has the absolute advantage in the production of X. On the other hand, comparative advantages look at opportunity cost.

If country A wants to produce a units of product Y, it has to give up b units of product X. Thus the opportunity cost of producing 1 unit of Y for country A is b/a; and also for country B is c/a. The opportunity cost of producing 1 unit of X for country A is a/b; and for country B is a/c. Since it cost country A less to produce the same amount of Y, country A has the comparative advantage product Y. Country B has the comparative advantage in the production of product X. Each country will specialize in the production of the product which it has the comparative advantage. If the two countries trade, then the price range for 1 unit of Y is equal to the range between the two opportunities costs for 1 unit of Y.

In this case, the price range is b/a and c/a.

Example 1: Opportunity Cost

Suppose the UW Lacrosse Club plays a game of lacrosse for 2 hours every Thursday night. The fee a player must pay in order to participate in each game is $10. Troy is thinking about playing this Thursday. Troy is also considering other alternative uses of his time is selling pizza and earning $8 per hour.

What is the opportunity cost of playing Lacrosse this Thursday night?

a. $8
b. $10
c. $16
d. $26
Example 2: PPF, Opportunity Cost, and Comparative Advantage

China and the US both produce manufacturing goods and financial service. Suppose that in one month, China can produce 12 units of manufacturing goods and 0 unit of financial service, or 0 unit of manufacturing goods and 6 unit of financial service, or any combination lying on the line between these two points. During the same amount of time, US can produce 15 units of manufacturing goods and 0 units of financial services, or 0 unit of manufacturing goods and 15 units of financial service, or any combination lying on the line between these two points.

(1) Draw the PPFs for both China and US (Put manufacturing goods on the horizontal axis).
(2) Find in the above graph the points that are feasible but inefficient for China, the points that are both feasible and efficient for China, and the points that are not feasible for China. Do the same things for US.
(3) Which country has the absolute advantage in producing manufacturing goods? Which country has the absolute advantage in producing financial service?
(4) What is the opportunity cost for China to produce one more unit of manufacturing goods? What about US?
(5) What is the opportunity cost for China to produce one more unit of financial service? What about US?
(6) Which country has the comparative advantage in producing manufacturing goods? Which country has the comparative advantage in producing financial service?
(7) If the two countries are allowed to trade with each other, which country will specialize in producing manufacturing goods? Which country will specialize in producing financial service?
(8) If the two countries are going to trade with each other, which is the price range (in terms of units of manufacturing goods) acceptable for both China and the US for one unit of financial service?

Production Possibility Frontier (PPF)

Example 3

Use the graph below to answer the following questions about an economy that produces two goods: guns and butter. The line on the graph represents PPF of the economy.

a. At which points production is efficient? Which points are feasible? Which points are not feasible?

b. Assume this economy initially produces 7 units of butter. If instead they decide to produce 9 units of butter, what is the opportunity cost? What happens to the opportunity cost of butter as the economy moves from point B to point D?