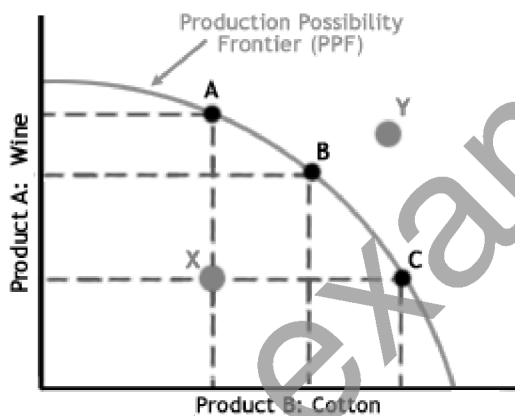


Production Possibility Frontier, Growth, Opportunity Cost and Trade

Production Possibility Frontier (PPF)

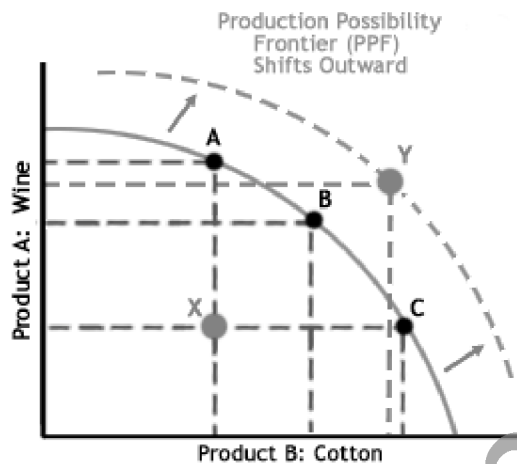
Under the field of macroeconomics, the production possibility frontier (PPF) represents the point at which an economy is most efficiently producing its goods and services and, therefore, allocating its resources in the best way possible. If the economy is not producing the quantities indicated by the PPF, resources are being managed inefficiently and the production of society will dwindle. The production possibility frontier shows there are limits to production, so an economy, to achieve efficiency, must decide what combination of goods and services can be produced.

Let's turn to the chart below. Imagine an economy that can produce only wine and cotton. According to the PPF, points A, B and C - all appearing on the curve - represent the most efficient use of resources by the economy. Point X represents an inefficient use of resources, while point Y represents the goals that the economy cannot attain with its present levels of resources.



As we can see, in order for this economy to produce more wine, it must give up some of the resources it uses to produce cotton (point A). If the economy starts producing more cotton (represented by points B and C), it would have to divert resources from making wine and, consequently, it will produce less wine than it is producing at point A. As the chart shows, by moving production from point A to B, the economy must decrease wine production by a small amount in comparison to the increase in cotton output. However, if the economy moves from point B to C, wine output will be significantly reduced while the increase in cotton will be quite small. Keep in mind that A, B, and C all represent the most efficient allocation of resources for the economy; the nation must decide how to achieve the PPF and which combination to use. If more wine is in demand, the cost of increasing its output is proportional to the cost of decreasing cotton production.

Point X means that the country's resources are not being used efficiently or, more specifically, that the country is not producing enough cotton or wine given the potential of its resources. Point Y, as we mentioned above, represents an output level that is currently unreachable by this economy. However, if there was a change in technology while the level of land, labor and capital remained the same, the time required to pick cotton and grapes would be reduced. Output would increase, and the PPF would be pushed outwards. A new curve, on which Y would appear, would represent the new efficient allocation of resources.



When the PPF shifts outwards, we know there is growth in an economy. Alternatively, when the PPF shifts inwards it indicates that the economy is shrinking as a result of a decline in its most efficient allocation of resources and optimal production capability. A shrinking economy could be a result of a decrease in supplies or a deficiency in technology.

An economy can be producing on the PPF curve only in theory. In reality, economies constantly struggle to reach an optimal production capacity. And because scarcity forces an economy to forgo one choice for another, the slope of the PPF will always be negative; if production of product A increases then production of product B will have to decrease accordingly.

Opportunity Cost

Opportunity cost is the value of what is foregone in order to have something else. This value is unique for each individual. You may, for instance, forgo ice cream in order to have an extra helping of mashed potatoes. For you, the mashed potatoes have a greater value than dessert. But you can always change your mind in the future because there may be some instances when the mashed potatoes are just not as attractive as the ice cream. The opportunity cost of an individual's decisions, therefore, is determined by his or her needs, wants, time and resources (income).

This is important to the PPF because a country will decide how to best allocate its resources according to its opportunity cost. Therefore, the previous wine/cotton example shows that if the country chooses to produce more wine than cotton, the opportunity cost is equivalent to the cost of giving up the required cotton production.

Let's look at another example to demonstrate how opportunity cost ensures that an individual will buy the least expensive of two similar goods when given the choice. For example, assume that an individual has a choice between two telephone services. If he or she were to buy the most expensive service, that individual may have to reduce the number of times he or she goes to the movies each month. Giving up these opportunities to go to the movies may be a cost that is too high for this person, leading him or her to choose the less expensive service.

Remember that opportunity cost is different for each individual and nation. Thus, what is valued more than something else will vary among people and countries when decisions are made about how to allocate resources.

C. Trade, Comparative Advantage and Absolute Advantage

Specialization and Comparative Advantage

An economy can focus on producing all of the goods and services it needs to function, but this may lead to an inefficient allocation of resources and hinder future growth. By using specialization, a country can concentrate on the production of one thing that it can do best, rather than dividing up its resources.

For example, let's look at a hypothetical world that has only two countries (Country A and Country B) and two products (cars and cotton). Each country can make cars and/or cotton. Now suppose that Country A has very little fertile land and an abundance of steel for car production. Country B, on the other hand, has an abundance of fertile land but very little steel. If Country A were to try to produce both cars and cotton, it would need to divide up its resources. Because it requires a lot of effort to produce cotton by irrigating the land, Country A would have to sacrifice producing cars. The opportunity cost of producing both cars and cotton is high for Country A, which will have to give up a lot of capital in order to produce both. Similarly, for Country B, the opportunity cost of producing both products is high because the effort required to produce cars is greater than that of producing cotton.

Each country can produce one of the products more efficiently (at a lower cost) than the other. Country A, which has an abundance of steel, would need to give up more cars than Country B would to produce the same amount of cotton. Country B would need to give up more cotton than Country A to produce the same amount of cars. Therefore, Country A has a comparative advantage over Country B in the production of cars, and Country B has a comparative advantage over Country A in the production of cotton.

Now let's say that both countries (A and B) specialize in producing the goods with which they have a comparative advantage. If they trade the goods that they produce for other goods in which they don't have a comparative advantage, both countries will be able to enjoy both products at a lower opportunity cost. Furthermore, each country will be exchanging the best product it can make for another good or service that is the best that the other country can produce.

Specialization and trade also works when several different countries are involved. For example, if Country C specializes in the production of corn, it can trade its corn for cars from Country A and cotton from Country B.

Determining how countries exchange goods produced by a comparative advantage ("the best for the best") is the backbone of international trade theory. This method of exchange is considered an optimal allocation of resources, whereby economies, in theory, will no longer be lacking anything that they need. Like opportunity cost, specialization and comparative advantage also apply to the way in which individuals interact within an economy.

Absolute Advantage

Sometimes a country or an individual can produce more than another country, even though countries both have the same amount of inputs. For example, Country A may have a technological advantage that, with the same amount of inputs (arable land, steel, labor), enables the country to manufacture more of both cars and cotton than Country B. A country that can produce more of both goods is said to have an absolute advantage. Better quality resources can give a country an absolute advantage as can a higher level of education and overall technological advancement. It is not possible, however, for a country to have a comparative advantage in everything that it produces, so it will always be able to benefit from trade.