Rationale: Comparative Advantage

by Sophia Tutorial

WHAT'S COVERED

This tutorial will cover the difference between absolute advantage and comparative advantage, discussing how we apply these two concepts to specialization and trade.

Our discussion breaks down as follows:

1. Why Trade?
   a. Opportunity Cost
2. Absolute Advantage
3. Comparative Advantage
4. Gains from Trade
5. Production Possibility Frontier

1. Why Trade?

So, why would countries trade with each other? Well, part of the answer is because countries have different advantages and disadvantages in terms of:

- Natural resources
- Technologies
- Labor forces, in terms of skills, education, and labor costs

EXAMPLE For example, some countries will have an advantage in labor-intensive raw materials, while others have the advantage in capital-intensive goods.

The United States has the potential to produce many goods and services because we have many natural resources, sophisticated technologies, and a trained, highly skilled, and educated workforce.

Does that mean, though, that we should not trade with others who might be slightly less efficient?

THINK ABOUT IT

If you are faster at *both* raking leaves and mowing the lawn than your spouse, does that mean that you will get both tasks accomplished by doing both and letting him or her watch you. Obviously not. It is the same idea

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with trade.

1a. Opportunity Cost

It's the same idea with trade because of the concept of **opportunity cost**. As a reminder, opportunity cost is the sacrifice made by choosing one value or opportunity over another. It is the value of the forgone opportunity or what is given up.

> EXAMPLE Whenever the United States decides to devote resources, like land, labor, and capital, to producing textiles, we give up the opportunity to use those resources to produce something else, like cars, because our land, labor, and capital are scarce. There is a limited amount of them. Therefore, what is given up is our opportunity cost.

TERM TO KNOW

Opportunity Cost
The sacrifice made by choosing one value or opportunity over another; the value of the forgone opportunity

2. Absolute Advantage

Absolute advantage is the advantage conferred between two countries where one country clearly has a lead in the production of a given good relative to the amount of needed inputs.

Let's explore the concept of absolute advantage by walking through an example in context.

> **IN CONTEXT**
>
> Suppose the United States, in a production period, can either build 21 cars or produce seven million textiles, whereas Mexico, in that same production period, can either produce eight cars or four million textiles.
>
> In this case, the United States enjoys an absolute advantage in both activities, because they are absolutely more productive.
>
> Absolute advantage is defined as advantage conferred between two countries, where one country clearly has a lead in the production of the given good relative to the amount of needed inputs.
>
> HINT
>
> An easy way to remember the concept of absolute advantage is, "Who is better at it?"

TERM TO KNOW

Absolute Advantage
Advantage conferred between two countries where one country clearly has a lead in the production of a given good relative to the amount of needed inputs

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3. Comparative Advantage

So, how should these countries divide the tasks? Well, we must figure out who has the lower cost for each activity, and this utilizes the theory of **comparative advantage**.

Comparative advantage is advantage conferred with a country to one good's production relative to another.

HINT

Another way of thinking of comparative advantage is, "Who gives up less?" This is because it depends on determining the lower opportunity cost for a specific task.

So, if the United States and Mexico divide the tasks most efficiently by specializing in the task for which they have the lower opportunity cost, then both countries will benefit.

Therefore, we need to determine who gives up less in terms of textiles when they produce cars, and who gives up less in terms of cars when they produce textiles. Let's outline the relevant information in chart form.

Output in a Production Period		
	Cars	**Textiles**
United States	21	7
Mexico	8	4

Now, as mentioned, you can see that the United States has an absolute advantage in both cars and textiles because they can produce more.

So, who should produce each good? What we have to look at now is opportunity cost.

This chart outlines the opportunity cost per country of producing one car.

Opportunity Cost of Production		
	Cars	**Textiles**
United States	1/3 Textile	3 Cars
Mexico	1/2 Textile	2 Cars

Every time the United States produces one car, the cost is what they give up in terms of textiles. In this case, they give up one-third of a textile for one car, determined by dividing textiles by cars.

When they decide to produce one textile, they give up three cars.

We calculate the same thing for Mexico, and as you can see, the United States has the lower opportunity cost in producing cars, and Mexico has the lower opportunity cost in producing textiles.

BIG IDEA

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Even though the United States has the absolute advantage in both goods, the United States has a comparative advantage in cars and Mexico has a comparative advantage in textiles.

If they specialize in trade according to this, they will both end up with more cars and textiles, known as gains from trade, which we will cover in the next section.

TERM TO KNOW

Comparative Advantage
Advantage conferred with a country to one good's production relative to another

4. Gains from Trade

This concept can be a bit tricky, so let's continue with our current example to understand it fully.

Let's say the United States is now going to devote all resources to producing cars. If you recall, in a production period, they are able to produce 21 cars.

Output in a Production Period		
	Cars	**Textiles**
United States	21	7
Mexico	8	4

For simplicity's sake, we will assume an even, one-to-one trade, so if they want, for instance, five textiles, they will have to trade away five cars, leaving them with 16 cars and five textiles.

Now, if we assume that they devote half of their resources into cars and half into textiles--producing both items--they are left with 10.5 cars and 3.5 textiles.

U.S.: Before and After Specialization		
	Cars	**Textiles**
Before	10.5	3.5
After	16	5

Their gains from trade are 5.5 cars and 1.5 textiles.

Even though the United States enjoys an absolute advantage in the production of both items, they are still better off when they specialize in trade with Mexico. In the same way that two people can get more accomplished by specializing, so can we.

BIG IDEA

Trade allows countries to enjoy more of both goods and to move beyond their previous resource and productivity constraints. Both goods can be produced at the lowest opportunity cost, which is the idea of comparative advantage.

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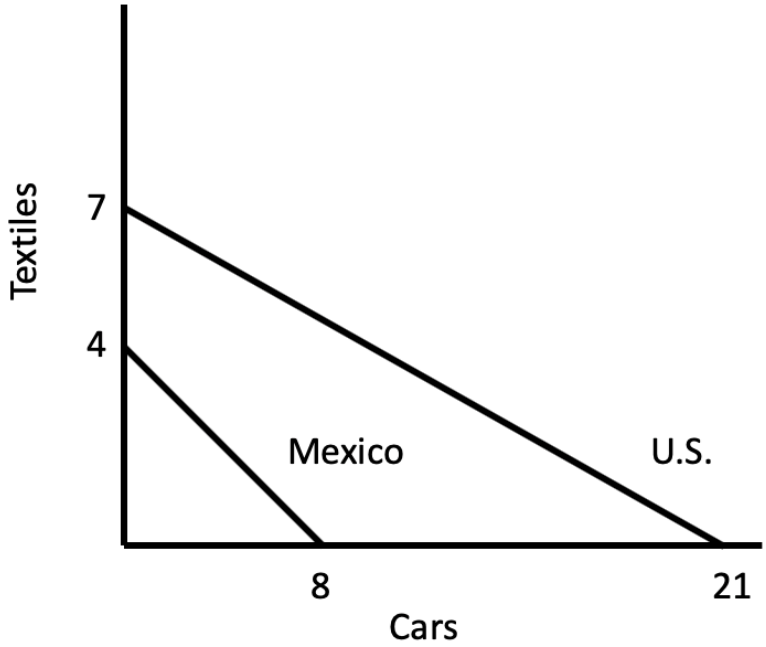
5. Production Possibility Frontier

Now, a production possibility frontier, or PPF, shows us the maximum combination of two goods that can be produced when an economy's resources are being utilized.

It is somewhat similar to the long-run aggregate supply curve, except this is a different graph completely, because here, we are not graphing the price and quantity of something.

Instead, we are graphing all the textiles that can be produced (y-axis) versus cars (x-axis). Notice that we have plotted the numbers from our previous example, that show the number of each item that each country can produce in a production period.



The x-intercept means how many cars can be produced when all resources are devoted to car production (specialization).

The y-intercept represents how many textiles can be produced with specialization in textiles.

You can easily see an absolute advantage. On the x-intercept, who can produce more? The U.S. On the y-intercept, who can produce more? Again, it is the U.S.

Comparative advantage, though, can be seen by looking at the slope. The slope represents the trade-off, or how many of one item has to be sacrificed in order to produce one more unit of the other.

If you think about it, the country with the flatter slope is going to have a comparative advantage in the item on the x-axis.

EXAMPLE The United States is giving up fewer textiles every time they produce one more car.

The country with the steeper slope is going to have the comparative advantage in the y-axis item because they will be giving up fewer of the item on the x-axis-- in this case, fewer cars when they are producing one

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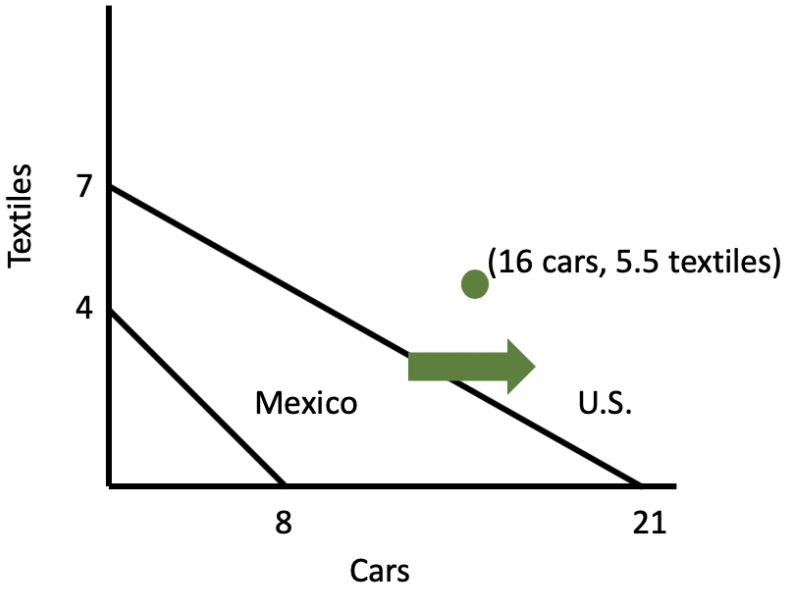
more textile.

Now, it may seem complicated, but it does make sense if you recognize that the PFF represents a trade-off for every time we produce one more, versus how many we give up in terms of the other good.

As we calculated earlier, when the United States and Mexico trade according to comparative advantage--using the United States PPF here--you can see that the United States gains 5.5 cars and 1.5 textiles.



This gain is outside of our initial possibility, which is how we can show economic growth.

BIG IDEA

Trading with other nations can help a country move beyond their PFF, allowing them to achieve economic growth.

SUMMARY

We began today's lesson by discussing **why countries trade with each other**, learning that in part, it is because countries have different advantages and disadvantages in terms of natural resources, technologies, and labor forces. Then, we learned about **absolute advantage** and **comparative advantage**, and how people and nations benefit when they specialize in whatever they enjoy the comparative advantage, or lower **opportunity cost** in--and trade. Lastly, we were able to see this whole dynamic visually on a **production possibilities frontier**, or PPF.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

Absolute Advantage
Advantage conferred between two countries where one country clearly has a lead in the production of a

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given good relative to the amount of needed inputs.

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Opportunity Cost

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