Shifts in Supply

by Sophia Tutorial

WHAT'S COVERED

This tutorial will cover shifts in supply, comparing what causes movement along a supply curve versus factors that cause a shift of the supply curve.

Our discussion breaks down as follows:

1. Law of Supply: A Review
2. Shifts in Supply
3. Causes of Shifts in Supply
   a. Changes in Input Prices
   b. Changes in Technology
   c. Changes in Prices of Related Goods (Substitutes and Complements in Production)
   d. Government Policies

1. Law of Supply: A Review

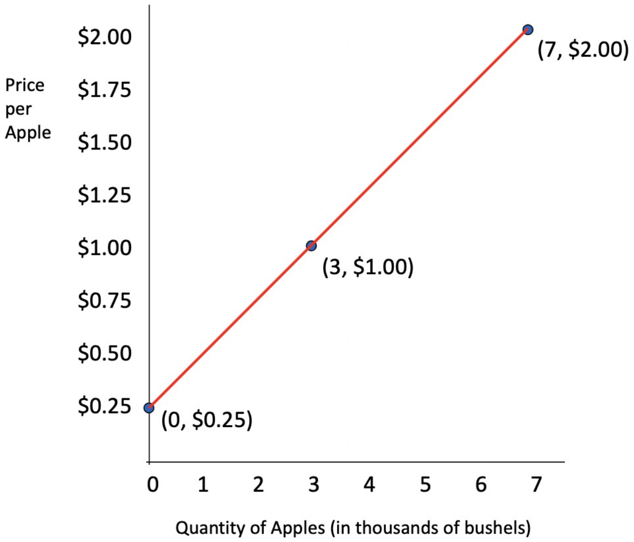
In review, the **law of supply** states that if the price of the good decreases, the quantity supplied decreases. It works the other way as well; when the price of a good increases, so does the quantity supplied.

There is a positive relationship between price and quantity with supply. Therefore a **movement along the supply curve** is caused by a change in price, assuming that everything else is held constant, defined as ceteris paribus.

Here are a supply schedule and a supply curve for a farmer's willingness to supply apples.

Price of Granny Smith Apples	Quantity of Granny Smith Apples Each Week
$2.00	7
$1.75	6
$1.50	5

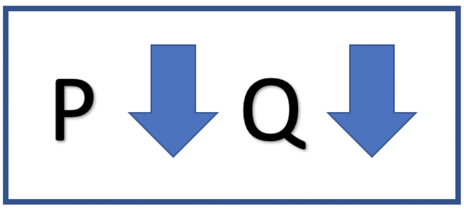
$1.25	4
$1.00	3
$0.75	2
$0.50	1
$0.25	0



You can see that as the price of the apples goes up, he is willing to supply a greater quantity (in thousands of bushels). Notice, too, that as the price goes up, we can move along the curve to the right.

As the price falls, the quantity he is willing to produce also falls with it, with a corresponding move down and to the left along the supply curve.

Again, it is a positive relationship between price and quantity, where they move in the same direction, so as the price is changing, we simply move along the curve. We do not need a new curve.



As mentioned, the law of supply and ceteris paribus tells us that as the price of apples falls, we can expect that farmers supply fewer apples--ceteris paribus meaning to hold everything else constant.

This assumes, then, that only the price of apples has changed. For instance, the price of their resources or inputs did not change, so fertilizer did not get more expensive. Their technology for growing apples did not change either--just the price of apples.

TERMS TO KNOW

Law of Supply

If the price of a good decreases, the quantity supplied decreases

Movement Along Supply Curve
Movement caused by a change in price, assuming all other variables are held constant

2. Shifts in Supply

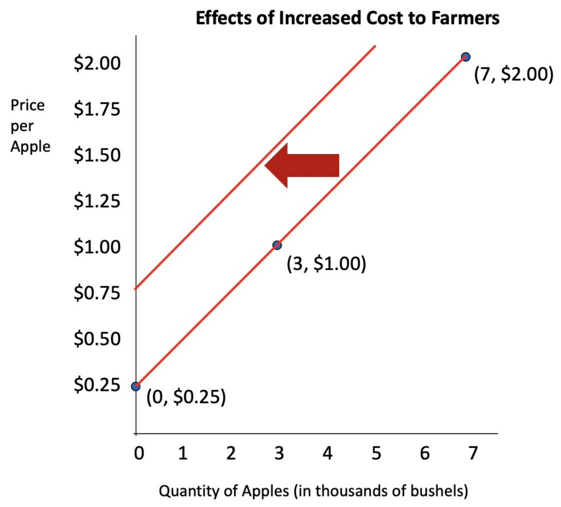
However, in the real world, we know that things change all the time. What if fertilizer does get more expensive, or if farmers have to pay their workers more money because wages rose? What if a new technology is developed for apple picking that makes it much more efficient?

Will farmers still supply the same amount of apples if these things happen? Obviously not. In this case, they would not be supplying a different quantity because of a price change; it will be due to another reason.

If there was an increased cost to the farmer because of an increase in labor cost, or a higher cost for fertilizer, notice what might happen to his numbers. At all of these prices, he is supplying a lower quantity of apples.

Price of Granny Smith Apples	Quantity of Granny Smith Apples Each Week
$2.00	5
$1.75	4
$1.50	3
$1.25	2
$1.00	1
$0.75	0
$0.50	0
$0.25	0

Now, the farmer is supplying less, but it is not because the price fell, so we are not able to find that price-quantity relationship along the original supply curve. We cannot simply move along that curve to find a new relationship. We need a new supply curve.



There is a completely different relationship now between the price and the quantity that the farmer is able and willing to supply. This is what we mean when we say there has been a shift of the supply curve.

HINT

Note that in this example, a shift to the left is a decrease in supply, because the farmer is willing and able to supply fewer apples at every price.

Therefore, a **shift in supply** is defined as changes other than the price of the good itself that are affecting production decisions for a particular good.

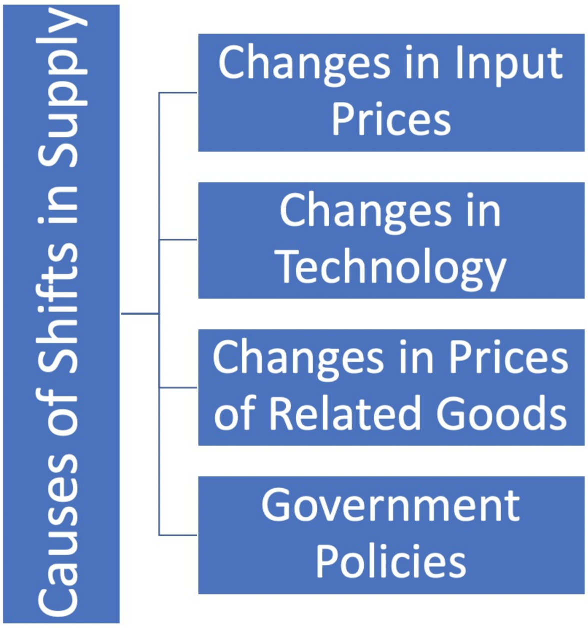
TERM TO KNOW

Shift in Supply

Changes other than the price of the good itself that affect production decisions for a particular good

3. Causes of Shifts in Supply

Here is a summary of the factors that can impact producers and cause a shift in supply; we will discuss each of them in further detail.

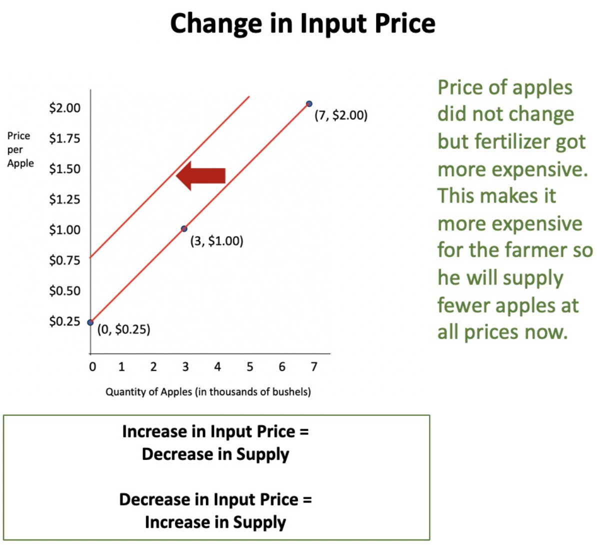


HINT

Keep in mind that anything that makes it easier or less expensive to produce something will create an increase in supply and shift the curve to the right. Anything that makes it more difficult or more expensive to produce something will cause a decrease in supply and a shift of the supply curve to the left.

3a. Changes in Input Prices

Again, this supply graph shows the impact of a change in an input price. The price of apples did not change. However, if fertilizer got more expensive, it also makes it more expensive for the farmer. Therefore, he will supply fewer apples at all prices, which represents a decrease in supply.

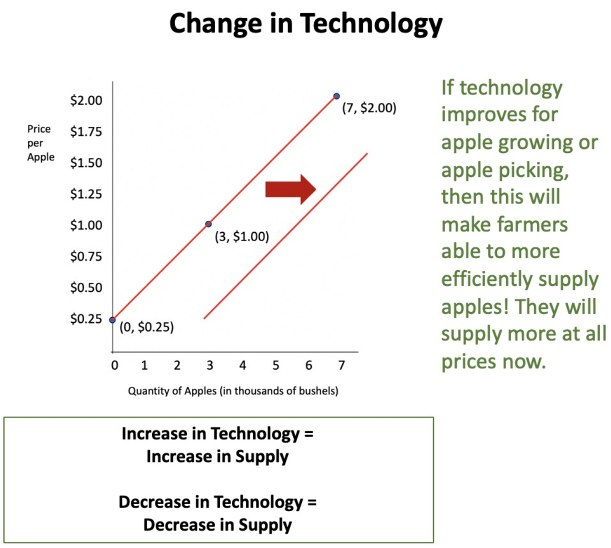


An increase in input prices causes a decrease in supply because production became more expensive. A decrease in an input price, like cheaper land, labor, or capital, would create an increase in supply, shifting the curve to the right instead.

3b. Changes in Technology

Now, if technology improves for apple growing or apple picking, then farmers will be able to supply apples

more efficiently. They will supply a greater quantity at all prices.
Therefore, an increase in technology would create a shift to the right or an increase in supply, shown below. Conversely, a failure of technology could certainly decrease the supply.



3c. Changes in Prices of Related Goods

Next, we will discuss the impact of changes in prices of related goods, focusing on substitutes and complements in production.

- **Substitutes in production and consumption** is a good that you buy instead of another one in regards to consumption, but in production, it is a bit different, as you will see.

  Now, if the market price of apples goes up, we know that the law of supply tells us that the quantity supplied for apples would increase, demonstrated by moving along the supply curve to the right.

  However, let's talk about a substitute in production. Perhaps pear growing and apple growing are substitutable for one another. If apples are more expensive in price, maybe some pear farmers may actually decide to plant apples instead of pears, because they could potentially make more money as apple farmers.

  Therefore, the supply of pears would actually shift because farmers were planting fewer pears when the price did not change for pears. It follows that the supply curve for pears would shift to the left as a decrease, all because the price of apples went up. Pears can be seen as a substitute for apples in production.

  For substitutes in production, when the price of a substitute in production increases--like the apples going up in price--the supply of the other good will actually decrease--in this case, pears.

- **Complements in production and consumption** are things that go together, and again, this lesson's definition focuses more on the consumption end of it, but in production, it will be a bit different.

  So, many farmers produce two products, because one is a byproduct of the others.

  EXAMPLE Wheat and hay are complement in production, as are beef and leather.

If the price of wheat goes up, according to the law of supply, we know that this would cause a change in quantity supplied for wheat or movement along the wheat curve. Farmers would produce more wheat, but only because the price went up.

Now that they are producing more wheat, though, they will also be producing more hay. Hay did not go up in price, yet farmers are supplying more at all prices. This, then, would be a change in the supply of hay, or a shift of the supply curve for hay to the right.

Therefore, for complements in production, when the price of a complements in production increases, the supply of the other good will increase.

TERMS TO KNOW

Substitutes (Production and Consumption)
As the price of one good increases, the demand for an alternative good that meets the same producer or consumer need increases

Complements (Production and Consumption)
A good for which the demand increases as the price of an associated good decreases

3d. Government Policies
Briefly, government policies, such as subsidies and taxes, can also impact a producer's ability to supply.

BIG IDEA

The bottom line is to be able to differentiate between quantity supplied and a change in supply. A change in the price of a good will cause a change in quantity supplied or cause movement along the curve, just as it did with demand. A change in any other factor could potentially shift the supply curve, which is when we can say that there has been a change in supply, meaning an increase or decrease in supply. It is important to keep in mind that different situations will shift the curve more than others.

SUMMARY

We started today's lesson with a review of the **law of supply**, recalling how movement along a supply curve is due to a change in the price of that good. We also learned that a shift of the supply curve, or a **shift in supply**, is caused by a change in any other variable that could potentially impact suppliers' ability to produce or their cost of production. These **causes of shifts in supply** include **changes in input prices**, **changes in technology**, **changes in prices of related goods** like **substitutes and complements in production**, or **government policies**.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

Complements (Production and Consumption)
A good for which the demand increases as the price of an associated good decreases.

Law of Supply
If the price of a good decreases, the quantity supplied decreases.

Movement Along Supply Curve
Movement caused by a change in price, assuming all other variables are held constant.

Shift in Supply
Changes other than the price of the good itself that affect production decisions for a particular good.

Substitutes (Production and Consumption)
As the price of one good increases, the demand for an alternative good that meets the same producer or consumer need increases.