

Supply and Demand

by Sophia Tutorial



WHAT'S COVERED

This lesson will cover the laws of supply and demand.

Our discussion breaks down as follows:

1. Law of Supply
2. Shifts of Supply
3. Law of Demand
4. Shifts of Demand
5. Equilibrium

1. Law of Supply

Let's begin by defining **supply**, which is the idea that there is a fixed quantity of goods and services available for a range of price levels at any given point in time.



HINT

For supply, you have to think like a producer. Supply means "I can produce something, and I am willing to supply it at a certain price."

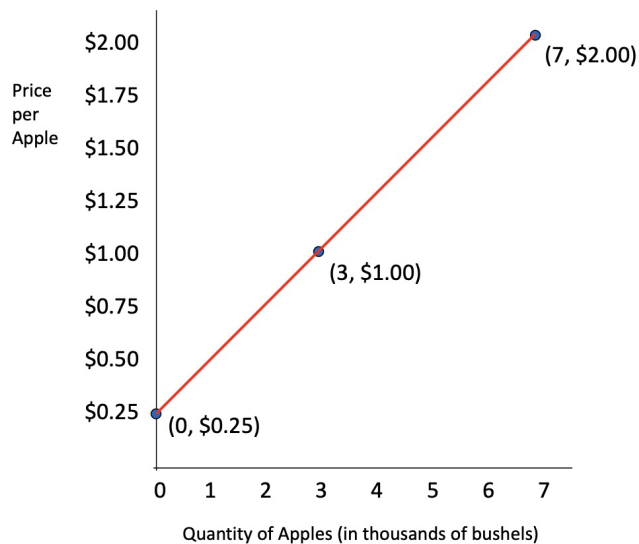


EXAMPLE For example, let's look at a farmer's willingness to supply apples. Here is a chart that outlines the different prices of apples and the quantity that he is willing to supply.

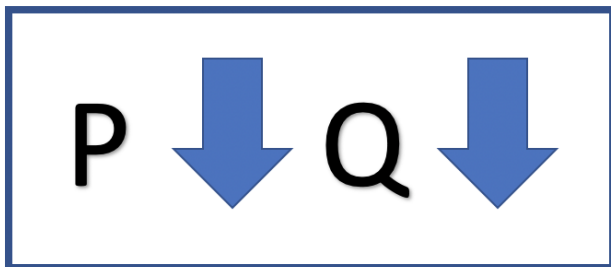
Price of Granny Smith Apples	Quantity of Granny Smith Apples Each Week
\$2.00	7
\$1.75	6
\$1.50	5
\$1.25	4

\$1.00	3
\$0.75	2
\$0.50	1
\$0.25	0

Now, if we chart those numbers, you can see that a supply curve is upward sloping. As the farmer believes he can receive a higher price for his apples, he is willing to supply a greater quantity. As the price falls, he is not willing to supply as great of a quantity.



This is basically the law of supply. Notice that price and the quantity being supplied move in the same direction, so there is a positive relationship between them for supply.



This is known as **movement along a supply curve**—or demand curve, as you will see later in the tutorial. When the price of a product changes, it is going to impact the quantity being supplied or the quantity being demanded, because we are moving up and down that curve.

However, this assumes a Latin phrase called *ceteris paribus*, which means "holding all other things constant." The idea here is that as the price of apples falls, we can expect the farmer to produce fewer apples because it is not worth his time as much.

However, what *ceteris paribus* assumes is that the price of apples is the only thing that changed. For instance, it assumes that the price of their resources, or inputs, did not change, nor did their technology. Only the price of the apples changed, which correlates to that movement along the curve.

TERMS TO KNOW

Supply

The fixed quantity of goods and services available for a range of price levels at a set point in time

Movements Along Supply (Demand) Curve

Demonstrated when the price of the product changes and impacts the quantity supplied (demanded)

Ceteris Paribus

From Latin, meaning, "holding all other things constant"

2. Shifts of Supply

However, we know that things in the world are always changing. For instance, what if fertilizer suddenly gets more expensive, or the farmer has to pay his workers more money because wages rose, or new technology is developed that makes apple picking much more efficient?

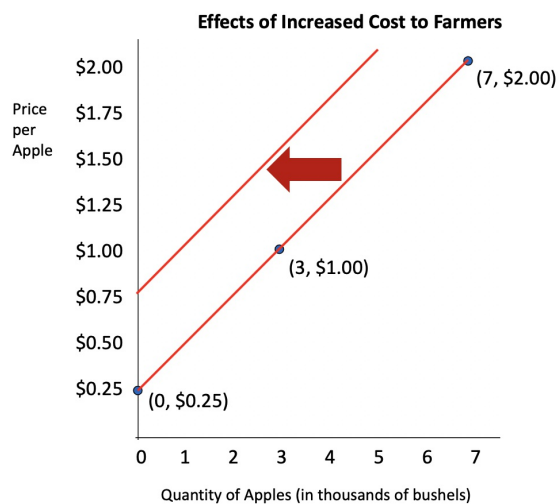
These things will not just be movements along the supply curve. The farmer will not be supplying the same amount of apples, yet the price of the product -- the apples -- is not changing. So, now we need to shift the supply curve, and note, the same rules will apply for demand.

When there is a **shifting of the supply (or demand) curve**, this means that a different quantity is going to be supplied or demanded at all prices. For supply, the shift is occurring due to more or less resource access, a decrease or increase in the price of inputs, or changes in regulation like taxes and subsidies.

➡ **EXAMPLE** If there is an increased cost to the farmer, like his fertilizer getting more expensive, he now cannot supply as many apples at every price level.

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

This is seen as a shift of the supply curve to the left, which is a decrease in supply. This happened because the price of apples did not change, so now there is an entirely new relationship between price and quantity.



As a reference, here is a list of factors that cause a shift in supply:

1. Changes in Input Prices
 - a. Land
 - b. Labor
 - c. Capital
2. Changes in Resource Access
3. Technological Changes
4. Government Policies (taxes, subsidies, etc.)



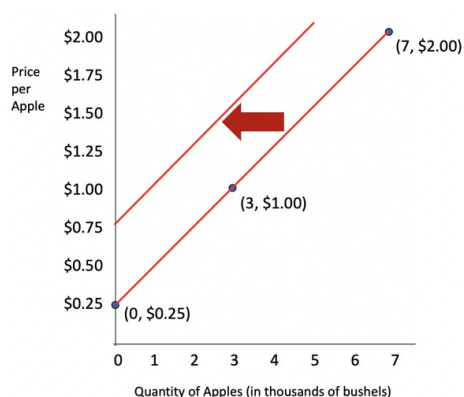
BIG IDEA

In order for there to be a shift in the supply curve, something has changed the production capabilities of a firm.

- Anything that makes it *easier or less expensive* to produce a good or service will cause an *increase in supply*, or a shift to the right.
- Anything that makes it *more difficult or more expensive* will cause a *decrease in supply*, or a shift to the left.

🔗 **EXAMPLE** As a reminder, a change in input price like an increased cost for fertilizer will cause a decrease in supply and shift to the left.

Change in Input Price



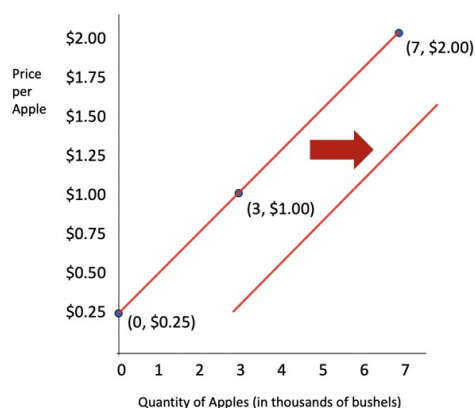
Price of apples did not change but fertilizer got more expensive. This makes it more expensive for the farmer so he will supply fewer apples at all prices now.

**Increase in Input Price =
Decrease in Supply**

**Decrease in Input Price =
Increase in Supply**

Alternatively, if technology improves and the farmer can be more efficient, they can now supply more apples at all prices, which causes a shift in supply to the right.

Change in Technology



If technology improves for apple growing or apple picking, then this will make farmers able to more efficiently supply apples! They will supply more at all prices now.

**Increase in Technology =
Increase in Supply**

**Decrease in Technology =
Decrease in Supply**



TERM TO KNOW

Shifting of Supply Curve

Movements that may cause either an increase or decrease in the quantity supplied of a given good or service for a specific price level; the shift occurs due to more or less resource access, decrease or increase in the price of inputs, or changes in regulation (taxes and subsidies)

3. Law of Demand

Now let's shift our focus to a discussion of **demand**. Demand is easier for most people to think about because

we are consumers who are purchasing stuff almost every day of our lives.

Demand is the quantity of goods and services that may be purchased at a given time, specific to a set income and range of price levels.

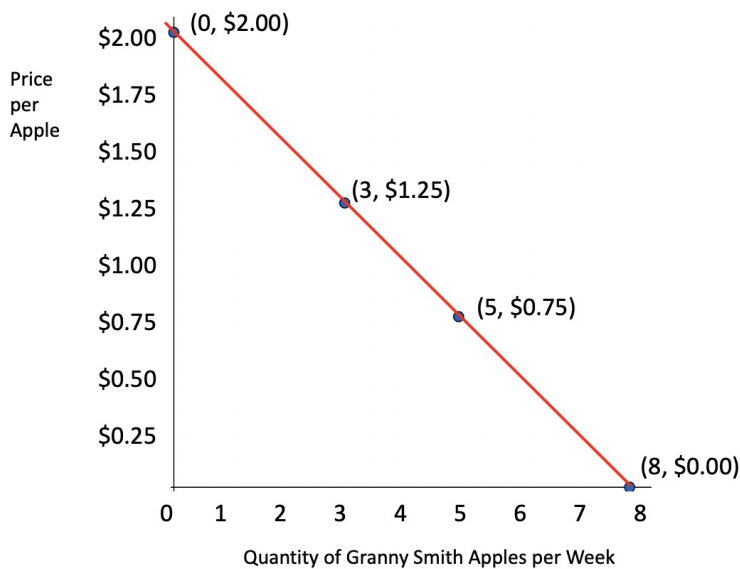


Demand translates as "I want something, and I am able to afford it, and I have a willingness to pay for the product.

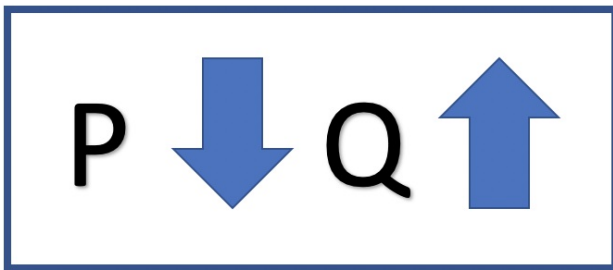
➦ **EXAMPLE** Sticking with our apple example, here is a chart detailing the prices and quantities of Granny Smith apples. Notice, though, that there is a different relationship this time, because even though producers want to sell their product for high prices, we, as consumers, do not want to buy them for high prices. We are not paying \$2 for one apple!

Price of Granny Smith Apples	Quantity of Granny Smith Apples Each Week
\$2.00	0
\$1.75	1
\$1.50	2
\$1.25	3
\$1.00	4
\$0.75	5
\$0.50	6
\$0.25	7
\$0.00	8

As the price falls, notice how the quantity demanded rises. With demand, there is an inverse relationship between price and quantity, which is the opposite relationship from supply.



This represents the law of demand. As prices fall, the quantity demanded rises; we want to buy more. As prices rise, we want to buy less.



Again, this is assuming *ceteris paribus*. As the price of Granny Smith apples goes up, yes, we want to buy fewer Granny Smith apples, but *ceteris paribus* assumes that *only* the price of green apples has changed. For instance, the price of Gala apples did not change, the price of oranges or bananas did not change, and our income did not change.



TERM TO KNOW

Demand

The quantity of goods and services that may be purchased at a given time specific to a set income and range of price levels

4. Shifts of Demand

Again, we know that things are always changing. For instance, if you have to take a significant pay cut, or perhaps you read an article saying Granny Smith apples are the least healthy apple, you likely are not going to buy the same amount of Granny Smith apples now, even though the price of Granny Smith apples did not change.

Therefore, we need a new curve.

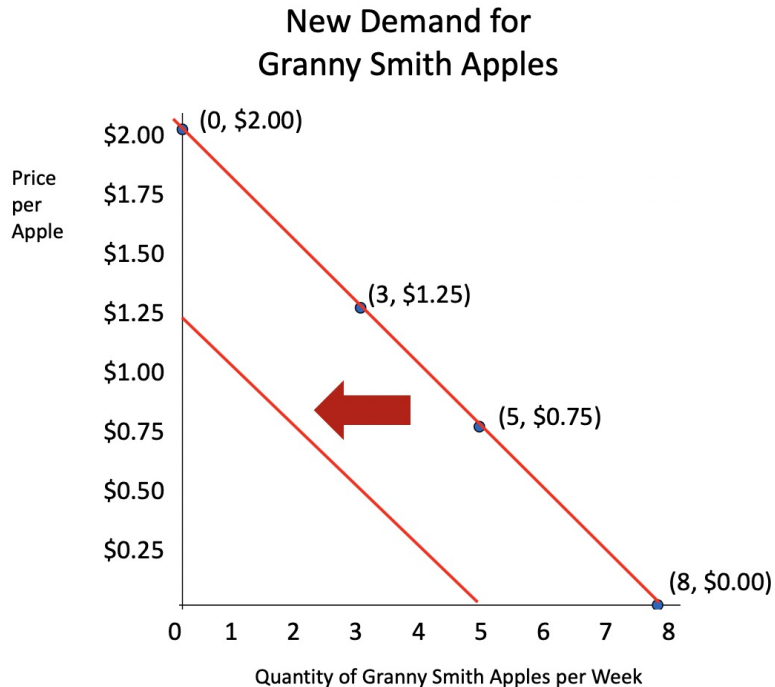
A **shifting of the demand curve** occurs because something else other than the price has changed, causing a

new relationship between price and quantity.

So, if you took that significant pay cut, you are now buying a different quantity at all prices.

Price of Granny Smith Apples	Quantity of Granny Smith Apples Each Week
\$2.00	0
\$1.75	0
\$1.50	0
\$1.25	0
\$1.00	1
\$0.75	2
\$0.50	3
\$0.25	4
\$0.00	5

Notice how demand, or the quantity being bought, fell at every single price level, which required a new demand curve, shifting to the left, to show the decrease in demand.



As a reference, these are the things that would cause a shift in the demand curve:

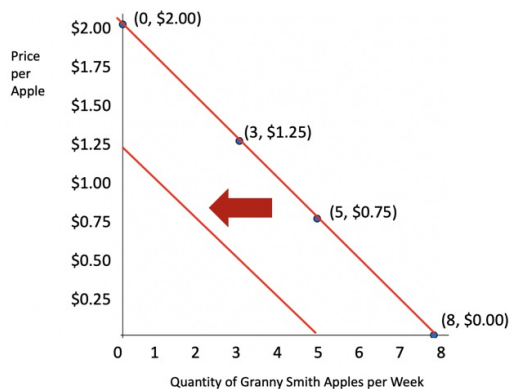
1. Changes in Income
2. Changes in Price of Related Goods
 - a. Substitutes

b. Complements

3. Changes in Tastes/Preferences/Advertising

➡ **EXAMPLE** If you make less money, you cannot afford as many apples. So the curve shifts to the left to account for the decrease in demand.

Change in Income



Price of Granny Smith Apples did not change. If I make less money, I cannot afford as many. I buy fewer apples at all prices, so we need a new curve.

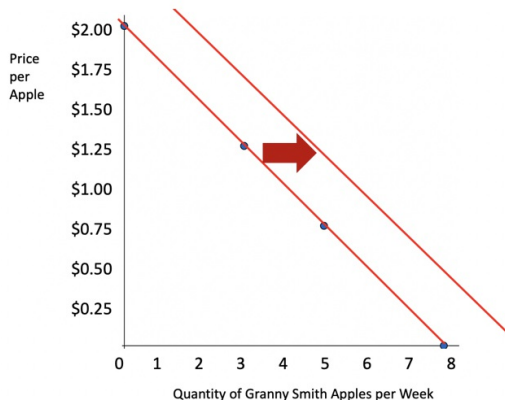
**Increase in Income =
Increase in Demand (most goods)**

**Decrease in Income =
Decrease in Demand (most goods)**

Alternatively, consider changes in the prices of related goods. If caramel apple dip goes on sale, you are going to buy more Granny Smith apples. Even though Granny Smith apples did not change in price, something else did, causing you to buy more.

The sale price of caramel apple dip causes a change in quantity demanded, or a movement along the caramel apple dip demand curve, but below you can see that you are buying more Granny Smith apples even though the price of Granny Smith apples did not go down. Therefore, it is an increase in demand to the right.

Change in Price of Related Goods



I buy more apples at all prices because the complement, caramel apple dip, changed in price.

Changes in taste and preferences are huge in the demand world. When the toy "Tickle Me Elmo" became very popular, they experienced an increase in demand. Conversely, anytime there are negative news reports, like an *E. coli* breakout in spinach, people buy less spinach at all prices.



TERM TO KNOW

Shifting of Demand Curve

Movements that may cause either an increase or decrease in the quantity demanded of a given good or service for a specific price level; the shift occurs due to income or preference changes

5. Equilibrium

Finally, let's turn our attention to discuss **equilibrium**, which is the point at which the quantity supplied at a given quantity/price combination equals the quantity demanded. This is where the supply and demand curves intersect.

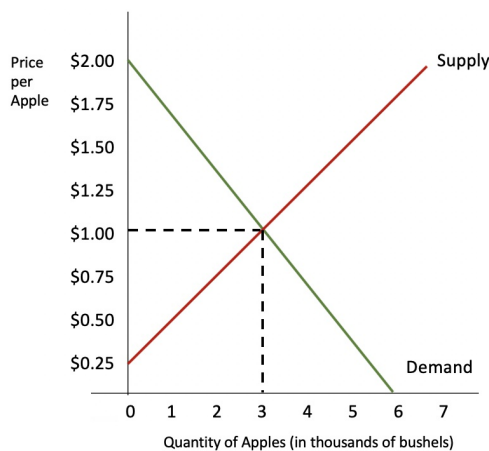
Here is a graph that combines the quantity of apples supplied and the quantity of apples demanded.

Price of Apple	Quantity of Apples Supplied	Quantity of Apples Demanded
\$2.00	7,000	0
\$1.75	6,000	1,000
\$1.50	5,000	1,500
\$1.25	4,000	2,000
\$1.00	3,000	3,000
\$0.75	2,000	4,000
\$0.50	1,000	5,000
\$0.25	0	6,000

At prices above \$1.00: $Q_s > Q_d$

At prices at \$1.00: $Q_s = Q_d$

At prices below \$1.00: $Q_d > Q_s$



Graphed in this manner, you can see that at any price above \$1, the quantity of apples supplied exceeded the quantity of apples demanded.

However, at any price below \$1, the quantity of apples demanded was much greater than the quantity of apples supplied.

There is only one price, and one price only, where the quantity supplied equals the quantity demanded.



HINT

Think of this intersection as the place where every buyer has a seller, and every seller as a buyer.

It is the only price where there is no tendency for change. If the price is too high, sellers would recognize this and lower their price, and there would be downward movement along the supply curve. As prices would lower, the quantity demanded would increase. If price were too low, suppliers would also recognize this, raise their price, and the quantity supplied would rise. As prices go up, the quantity demanded would fall, and again, it would meet in the middle at equilibrium.

In this case, equilibrium gets us to our equilibrium price of a dollar and a quantity of 3,000 bushels.



TERM TO KNOW

Equilibrium

The point at which the quantity supplied at a given quantity price combination equals the quantity demanded; where the supply and demand curves intersect



SUMMARY

Today we learned about the **laws of supply and demand**. We discussed why a supply curve is generally upward sloping and a demand curve is downward sloping. We learned about the movement along a supply or demand curve, demonstrated when the price of the product changes and impacts the quantity supplied (demanded). It is important to note, however, that this assumes *ceteris paribus*, which means "holding all other things constant"--referring to all other variables remaining unchanged while price changes.

We learned about **shifts in supply and demand**, which occur because something else other than the price has changed, causing a new relationship between price and quantity. Lastly, we learned about **equilibrium**, where supply and demand intersect.

Source: Adapted from Sophia instructor Kate Eskra.



TERMS TO KNOW

Ceteris Paribus

From Latin, meaning, "holding all other things constant."

Demand

The quantity of goods and services that may be purchased at a given time specific to a set income and range of price levels.

Equilibrium

The point at which the quantity supplied at a given quantity price combination equals the quantity demanded; where the supply and demand curves intersect.

Movements Along Supply (Demand) Curve

Demonstrated when the price of the product changes and impacts the quantity supplied (demanded).

Shifting of Demand Curve

Movements that may cause either an increase or decrease in the quantity demanded of a given good or service for a specific price level; the shift occurs due to income or preference changes.

Shifting of Supply Curve

Movements that may cause either an increase or decrease in the quantity supplied of a given good or service for a specific price level; the shift occurs due to more or less resource access, decrease or increase in the price of inputs, or changes in regulation (taxes and subsidies).

Supply

The fixed quantity of goods and services available for a range of price levels at a set point in time.

