

## The Circular Flow of Economic Activity

Economic activity is a whole web of activity that occurs in an economy, involving exchanges between households (consumers), firms (producers), and the government in two main markets. There is a **factor market** in which the individuals in households “sell” the factors of production (land, labor, and capital) to the firms, and both individuals and firms provide “factors” to the government. In the factor market, households sell and firms buy. There is also a **product market** in which the firms “sell” their final products to household consumers, and the government provides products to both households and firms. In the products market, firms sell and households buy.

### The Circular Flow of Economic Activity in the Factor Market

- Individuals supply and sell their labor to producers in exchange for pay.
- Individuals sell their natural resources to producers in exchange for payment for those resources.
- Individuals sell their financial capital to producers in the form of loans or investments for which they expect to receive payment (interest)

- Both individuals and firms sell their factors of production (labor for individuals, and labor/products for firms) to the government in exchange for payment (government workers, government contractors, government purchases of products of everything from office supplies to fighter aircraft).

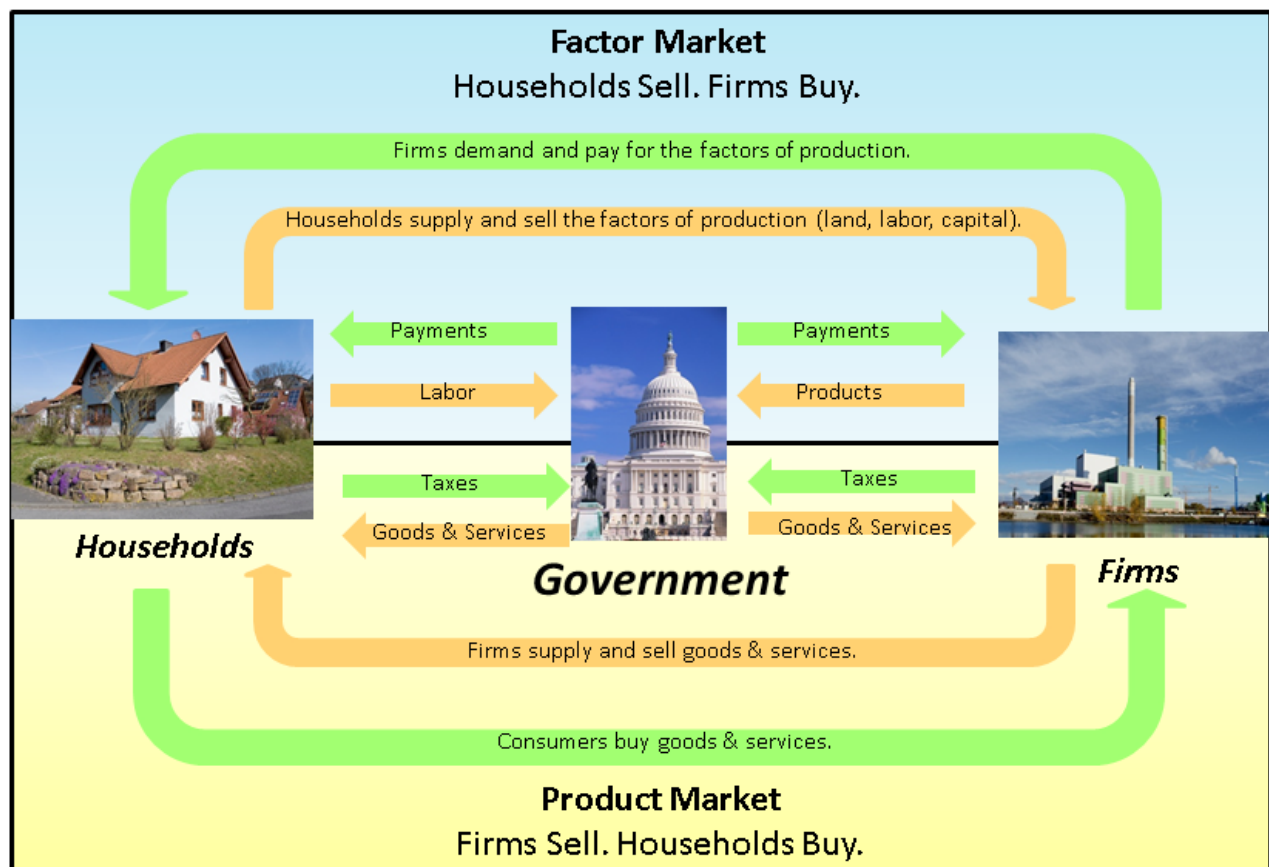
### The Circular Flow of Economic Activity in the Products Market

- Firms provide numerous goods and services in the economy for individuals to purchase; for this, the firms are paid.
- The government provides a variety of services to both individuals and firms (law enforcement, national defense, roads/highways/bridges, education, etc.) for which they are paid with taxes on both individuals and firms.

The details of who is involved in the transaction, and the amount of payment involved, is determined by the price being paid for the goods and/or services being exchanged in the transaction.

The circular flow of economic activity is illustrated below.

# Circular Flow of Economic Activity



## Price

The key factor in the effective function of a market economy is the price you have to pay for the various goods and services being sold. **Price** is the dollar amount someone must pay in order to purchase a product. Price results in a mutually beneficial transaction. To the purchaser, the product being purchased is of greater value to him/her than the money. To the seller, the money is of greater value than the product being sold. Both sides of the transaction feel that they are getting more than they are giving up.

A good example of this is if you buy a soda for \$1 from a vending machine. You are thirsty. That \$1 bill is doing nothing to satisfy your thirst. However, you would really like to have a soda. You find a vending machine that is selling sodas for \$1. Should you decide to pay that \$1 for the soda, you are, in essence, saying that at that very moment, having that soda to drink is of greater value to you than the \$1 bill. The vendor who manages the vending machine is also, in essence, saying that the \$1 bill you put into the machine is of greater value to him/her than the soda that is being dispensed. You are getting something that, to you, has greater value to you than what you are giving up. The vendor is also getting something that, to him/her, has greater value than what he/she is giving up. Both you and the vendor benefit from this transaction; the transaction is mutually beneficial.

The price of anything in a market economy is determined through the interaction of the demand for the product by consumers and the supply of the product provided by producers. The bulk of this unit will focus on how this occurs.

## Demand

**Demand** is the *quantity* of a specific good or service consumers are willing and able to purchase at *various prices* at a specific time. There are some specific elements to this definition:

**Quantity Demanded.** This is how much of a good or service consumers would want at a specific price. Each specific price will have its own quantity demanded.

**Willingness to Buy.** We are only concerned with consumers who actually would want to buy the product. If someone is not interested in buying the product, we are not concerned with their opinions on the price; only the consumers actually willing to purchase the product are considered when analyzing the demand for a product.

**Ability to Buy.** We are also only concerned with consumers who actually have the money to buy the product. You can probably think of numerous products you would love to have, but you just don't have the ability to actually purchase those products; therefore, since you would be unable to buy the product, you are not considered part of the demand for that product.

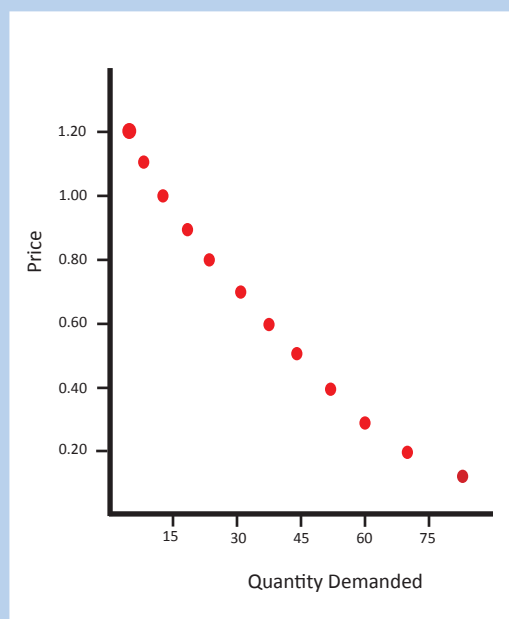
**At a Specific Time.** Demand continually changes, so this is a snapshot for a specific point in time (or period of time). You may want a product one day, and for whatever reason, no longer want it a week later. For that product, demand changed.

For any product, what you can do is determine what the quantity demanded would be at various prices. This might be done through customer surveys, estimates using historical experience or industry averages, etc. For the purpose of this example, let's assume that you do a survey of potential customers to determine how many cans of a specific brand and size of soda they would be willing to purchase at a variety of prices. For each price, you would find out how many cans of soda each customer would be willing to purchase. From this information, you could develop a demand schedule, which is simply a listing of the quantity demanded for each price. You could then take this information and graph it; the resulting graph is called a demand curve graph. You can draw a "line of best fit" through the data points to get a representative demand curve graph.

### Demand Schedule and Associated Demand Curve Graph

Example: Soda

Price (\$)	Quantity Demanded
1.20	3
1.10	7
1.00	12
0.90	18
0.80	24
0.70	30
0.60	37
0.50	45
0.40	51
0.30	60
0.20	71
0.10	83



## Overall (Market) Demand

The information in the demand schedule that is also depicted on the demand curve graph is called market demand. **Market demand** is the sum total of all quantities sold at all the various prices at which is sold. When you hear economists refer to “demand” in a generic way, they are normally referring to market demand. For example, if you see a news report that says, “demand for gasoline worldwide has increased over the past decade due to the expanding economies in China and India,” they are referring to the market demand, which reflects the various quantities demanded at various prices.

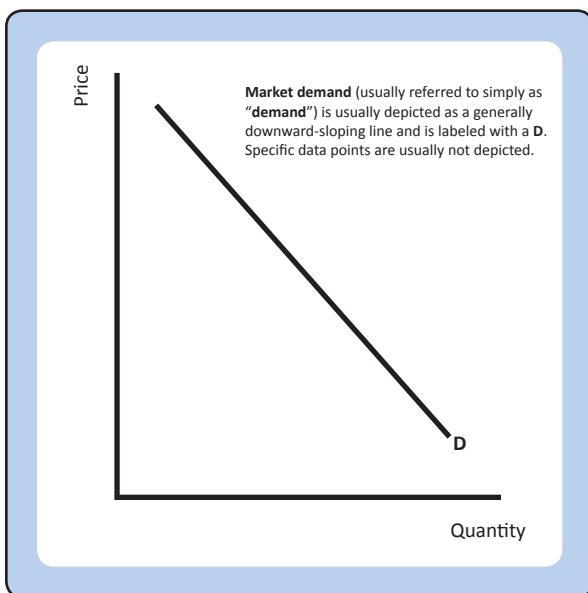
## Law of Demand

You’ll notice a basic characteristic of the information in the demand schedule which is also depicted on the demand curve graph. The quantity demanded moves in the opposite direction as the price. This is the Law of Demand. The **Law of Demand** states that *the lower the price, the more the product will be demanded*; as **price** goes **down**, the **quantity demanded** goes **up**. Another way of stating this is that the higher the price, the less the product will be demanded; as price goes up, the quantity demanded goes down. This is probably obvious to you. You realize that for any product you are willing to buy, you are able to buy more of that product at lower prices than at higher prices. You would probably be willing to buy two sodas for \$0.50 each but only one soda for \$1.00 each.

## Typical Demand Curve Graph

Notice the basic characteristics of a demand curve graph:

1. Generally downward sloping
2. Not necessarily a straight line
3. Slope (rate of change) may be shallow or steep (or both)



Although you can take the time to actually try to determine the specific quantities demanded at the various prices each time you try to draw a demand curve graph, this can be extremely difficult to do, especially since demand often changes very frequently. Usually, the use of demand curve graphs is mainly for illustrating economic concepts, so the demand curve graph is depicted as a downward-sloping line reflecting a low quantity demanded at high prices and a high quantity demanded at low prices. The actual prices and corresponding quantities are not actually depicted.

## Factors That Affect Consumers’ Spending Behavior

There are several factors that affect consumers’ spending behavior. These each have a direct effect on demand.

**Law of Diminishing Marginal Utility.** Consumers receive less additional satisfaction from each additional unit purchased. This concept was discussed in Unit 1 and is reflected in demand for all products. Think about the soda example we have been using in this discussion. Although you would probably be willing to buy more sodas at the lower prices, the additional satisfaction you would get from each additional soda is less than the previous soda. At some point, you would not want any more sodas. The important concept here to remember is that you will not usually see proportional changes in the quantity demanded based on a specific change in price. For example, you may not necessarily see a doubling in the quantity demanded each time you cut the price in half.

**Income Effect.** Because of scarcity, income is limited. If the price of a product goes up, you can’t buy as much of that product as you could at the lower price. Using the same example of soda, imagine that the price of a soda went from \$0.50 to \$0.75. If you only had \$1.00 with which to make the purchase, you would be able to buy fewer sodas, even if your desire was to buy more sodas.

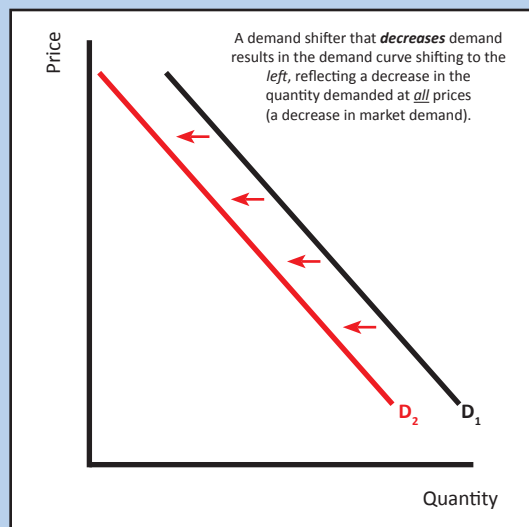
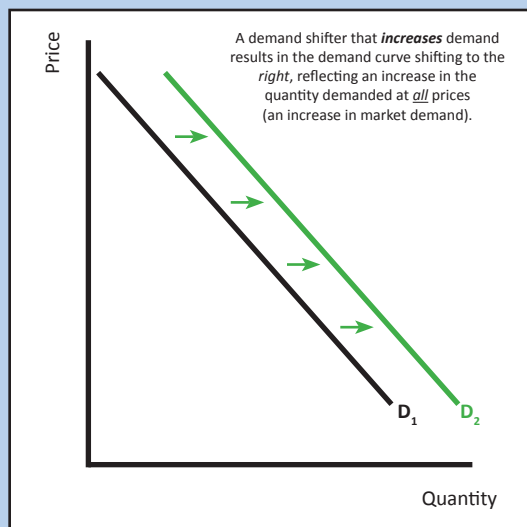
**Substitution Effect.** Sometimes, two (or more) different products can satisfy the same want. These are called **substitute goods**. If the price of a product goes up, some consumers may shift their demand to the substitute product. Imagine that two competing gas stations (Station A & Station B) were each charging the same amount for a gallon of gas. If the price of gas at Station A goes up, many of their customers who consider the purchase of gas from either station to be identical may shift their gas purchases to Station B (the substitute product). If the price of gas at Station A, however, went down, customers at Station B may shift their purchases to Station A.

All 3 factors cause consumers to react in predictable ways to a change in the price of a good or service. As consumers buy more in response to a decrease in price (or less in response to an increase in price), quantity demanded is said to “move along the demand curve.” *Only a change in price causes a change in quantity demanded.*

## Demand Shifters

Demand shifters are factors that cause a change in overall (market) demand. The quantity demanded is increased (or decreased) at **all** prices. It is **not** just movement along the demand curve. This “shift in demand” results in a need to *re-draw* the demand curve to reflect the new overall (market) demand.

Increases in demand are shown as a shifting of the demand curve to the right. This reflects an increase in the quantity demanded for each given price. Decreases in demand are shown as a shifting of the demand curve to the left. This reflects a decrease in the quantity demanded for each given price.



The following are demand shifters and will result in a change in the quantity demanded at every price (overall or market demand):

**Changes in Income.** Increases in income generally lead to increases in peoples’ demand for goods & services. Decreases in income generally lead to decreases in peoples’ demand for goods & services. Individuals whose incomes increase are willing to buy more of a given product at a given price.

**Changes in the Number of Consumers.** Increases in the number of consumers generally lead to increases in market demand for goods & services. Decreases in the number of consumers generally lead to decreases in market demand for goods & services. Imagine a new factory is built in Frederick County, and the owners of the factory bring in 1,000 workers from their other factories to get the Frederick County factory into operation. Those 1,000 new workers will increase the market demand for all types of goods and services in the area, from housing (homes, apartment rentals, etc.) to consumer items (groceries, clothing, cars, dining out, etc.). The opposite would occur if a major employer had to shut down, and many of the workers left the area. The loss of consumers would result in decreases in the market demand for those goods and services.

**Changes in Consumer Tastes & Preferences.** When consumers view a specific product more favorably, this leads to an increase in demand for that product. For example, the popularity of certain fashion clothing increases when a celebrity wears that clothing; more consumers buy that type of fashion.

When consumers view a specific product less favorably, this leads to a decrease in demand for that product. For example, in 2012, there was a major peanut butter recall due to the discovery of salmonella bacteria in some brands that resulted in dozens of reports of salmonella poisoning throughout the U.S. Not only did those products get recalled, but demand for peanut butter in general dropped significantly across all brands as consumers worried that they might get sick from eating peanut butter.

**Changes in Consumer Expectations.** Prices don’t actually have to rise or fall to cause consumers to change their behavior. The expectation that the price may rise or fall may be enough for consumers to change their behavior. Generally speaking, if you expect the price of a product you use to go up, you may increase your demand for the product now so you get it before the price goes up. If you expect the price to go down, you may reduce your demand now and wait for the price goes down. What if your car had only half a tank of gas in it, and you knew you could drive for at least another week before you had to fill up in order to prevent yourself from running out of gas. If you thought the price of gas was going to go up by \$0.10 per gallon in the next week, you may decide to fill up now instead of waiting until you absolutely needed it because you knew it was going to cost you more if you waited (leaving you less spending money to use on your other wants and needs). Conversely, if you expected the price of gas to go down \$0.10 per gallon in the next week, you may delay your purchase for that week, knowing that you had a chance of paying less for the gas (leaving you more spending money to use on your other wants and needs).



**Changes in the Price of Substitute Goods.** When two products are **substitute goods**, consumers consider them identical enough to use either to satisfy the same want. If the price of a product that people use instead of yours goes up, consumers generally will purchase more of your product. If the price of the substitute product goes down, consumers using your product may start wanting the substitute instead. Remember the illustration earlier in this unit when we discussed the substitution effect. If Gas Station A's price for gas goes up relative to Gas Station B's price, consumers who consider gas from Station A and Station B to be substitutes for each other will increase their demand for Station B's gas (the substitute good for Station A's gas).

**Changes in the Price of Complementary Goods.** **Complementary goods** are goods that are used together. For example, hot dogs and hot dog buns are complementary products that are normally used together. When the price of that complimentary good goes up, demand for it will go down; so will demand for the other product. If hot dogs got more expensive, demand for hot dogs would decrease; since consumers aren't buying as many hot dogs, their demand for hot dog buns would also decrease. If the price of the complementary good goes down, demand for it will go up; and so will demand for the other product. If hot dogs got less expensive, demand for hot dogs would increase; since consumers are buying more hot dogs, the demand for hot dog buns will also increase.

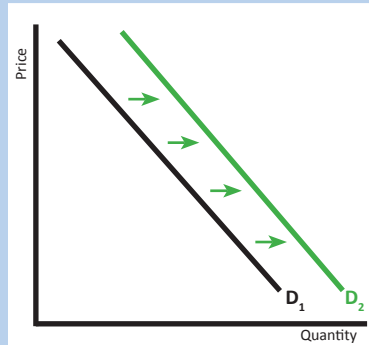
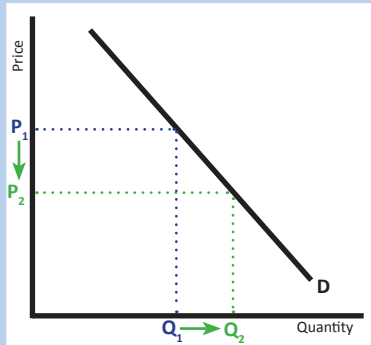


The vehicle market effectively illustrates the demand shifters. (clockwise) If consumer incomes increase, they are more likely to want to replace an aging vehicle. As more teenagers reach driving age (increase in the number of consumers), they want to buy vehicles to drive. As more and more drivers seek to "go green" (increase in tastes and preferences), they want to buy electric or hybrid vehicles. If consumers who plan to buy a vehicle believe that the price of that vehicle will go down in the near future (change in consumer expectations), they will delay buying that vehicle. If the price of hybrid vehicles goes down, consumers may shift their demand away from less fuel efficient vehicles (which ultimately might cost them more in the long run because they have to buy more gas) and buy more hybrids (the substitute good). If the price of vehicles in general goes down and more consumers buy cars, the demand for gasoline (a complementary good) goes up.

(Images courtesy of [www.cardealerdaily.com](http://www.cardealerdaily.com), [www.parentingtheteendriver.org](http://www.parentingtheteendriver.org), [www.the-green-site.com](http://www.the-green-site.com), [www.bostondealers.org](http://www.bostondealers.org), [bendbulletin.com](http://bendbulletin.com), & Microsoft Photo Gallery)

### The Difference Between a Change in Quantity Demanded Due to a Price Change and a Change in Market Demand Due to a Shift in Demand

If there is a **change in price**, the **only** thing that occurs is a **change in the quantity demanded** based on what the current, overall market demand is at all prices. In this example, a reduction in price from  $P_1$  to  $P_2$  results in an increase in the quantity demanded from  $Q_1$  to  $Q_2$ . There is **no** change to market demand (the actual curve).



If there is a **shift in demand** due to one of the demand shifters, the **entire market demand changes**, resulting in change in the quantity demanded at **all** prices. In this example, a demand shifter resulted in an increase in overall market demand, from  $D_1$  to  $D_2$ , and there is a greater quantity demanded at **every** price.

## Supply

**Supply** is the *quantity* of a specific good or service that producers are willing and able to sell at *various prices* at a given time. There are some specific elements to this definition:

**Quantity Supplied:** This is how much of a good or service producers would provide at a specific price. Each specific price would have its own quantity supplied.

**Willingness to Sell:** We are only concerned with producers who actually would want to sell the product. If a producer is not willing to participate in that market, we are not concerned with his/her opinions on the price of that product, only the producers who would actually be willing to provide that product.

**Ability to Sell:** We are only concerned with producers who actually have the resources to sell the product. If a producer is not already a part of that market, and does not have the resources to enter that market, they would not be factored into the overall supply of that product.

**At a Specific Time:** Supply continually changes, so this is a snapshot for a specific time (or period of time).

Just as with determining demand, you can also determine supply through producer surveys, finding out how many of the product each producer would be willing to produce at each price. Let's relate this concept to the same soda example we used when discussing demand. Now, however, we will examine price and quantity from the perspective of the soda producers. At each possible price, each producer would have a certain quantity of that soda he/she would be willing to provide at that price. From this information, you can develop a supply schedule, which is simply a listing of the quantity supplied at each price. You could then take this information and graph it; the resulting graph is called a supply curve graph. You can draw a "line of best fit" through the data points to get a representative supply curve graph.

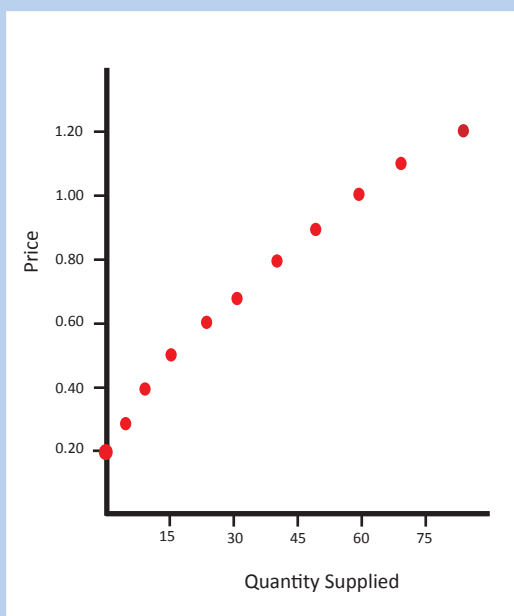
## Overall (Market) Supply

The information in the supply schedule that is also depicted on the supply curve graph is called market supply. **Market supply** is the sum total of all quantities provided at all the various prices at which it could be sold. When you hear economists refer to "supply" in a generic way, they are normally referring to market supply. For example, if you see a news report that says, "the supply of new automobiles increased in the U.S. last year," they are referring to the market supply, which reflects the various quantities supplied at various prices.

### Supply Schedule and Associated Supply Curve Graph

Example: Soda

Price (\$)	Quantity Supplied
1.20	85
1.10	72
1.00	60
0.90	49
0.80	39
0.70	30
0.60	22
0.50	15
0.40	9
0.30	4
0.20	0
0.10	0



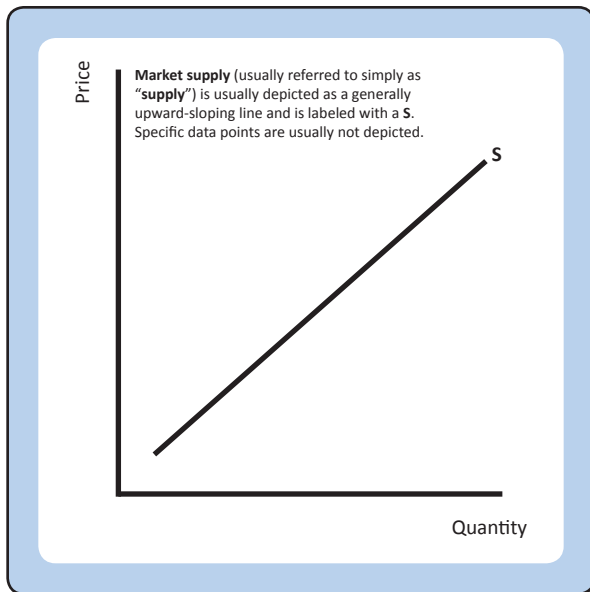
## Law of Supply

You'll notice a basic characteristic of the information in the supply schedule which is also depicted on the supply curve graph. The quantity supplied moves in the same direction as the price. This is the Law of Supply. The **Law of Supply** states that *the lower the price, the less willing producers are to sell the product; as price goes down, the quantity supplied goes down*. Another way of stating this is that the higher the price, the more willing producers are to sell the product; as price goes up, the quantity supplied goes up. If you think about this, it makes sense. From a producer perspective, the higher the price you think you can charge for a product, the more willing you would be to devote your scarce resources to the production of that product because it would make more profit for you (assuming all of your costs stayed the same). The incentive to produce that product, based on potential profit, is higher.

## Typical Supply Curve Graph

Notice the basic characteristics of a supply curve graph:

1. Generally upward sloping
2. Not necessarily a straight line
3. Slope (rate of change) may be shallow or steep (or both)



## Reasons Price & Quantity Move in the Same Direction for Supply

**Production Decisions by Existing Producers.** Producers seek to maximize profits & minimize losses in everything they do. They will increase their production of a good or service if they expect the profits on that item to increase. If you look at the soda example, existing producers of that soda would want to increase the production of that soda if they thought they could charge a higher price for it. Conversely, they will decrease their production of a good or service if they expect the profits on that item to decrease or result in a loss. At the lower prices, producing that soda would not be as profitable for them as other potential uses for their resources, so they would be less willing to produce those sodas at the cost of not producing something else.

**Market Entries & Exits.** When the price of a good or service increases, new firms may enter the market because they see potential for a profit. Continuing with our soda example, the cost of production for some potential producers might be higher than other producers, and if they produced the soda but could only sell it at the low price, they might actually lose money. At lower prices, they would not be willing to produce that soda. However, at the higher prices, it may now be more appealing for those potential producers to enter the market. When the price of a good or service decreases, some firms may exit the market because they want to avoid losses. The cost to them may exceed what the decreased selling price is. Each individual producer has his/her own unique production costs (labor costs, materials

costs, overhead expenses like rent and advertising); these costs are not identical to every producer. Some producers with high production costs may not be able to afford to stay in the market at lower prices, while those with lower production costs can still stay in that market.

Firms all have scarce resources that have alternative uses. They will generally allocate their resources toward those activities that are the most efficient use of those resources (profit motive). They will generally allocate their resources away from those activities that are unable to generate their desired profit or result in a loss.

Both factors cause producers to react in predictable ways to a change in the price of a good or service. As producers provide more in response to an increase in price (or less in response to a decrease in price), quantity supplied is said to “move along the supply curve.” *Only a change in price causes a change in quantity supplied.*



Brick-and-mortar retailers, like this running shoe store, have costs (rent, utilities, employees, advertising, etc.) that online stores may not have. At lower prices, this store would have more difficulty covering those costs and possibly making a profit. For a specific shoe they sell (or might sell), the incentive to sell that shoe is higher when the price at which it can be sold is higher; this incentive might convince the owner to start selling that shoe or, if he already does sell the shoe, to stock and sell more of that shoe.

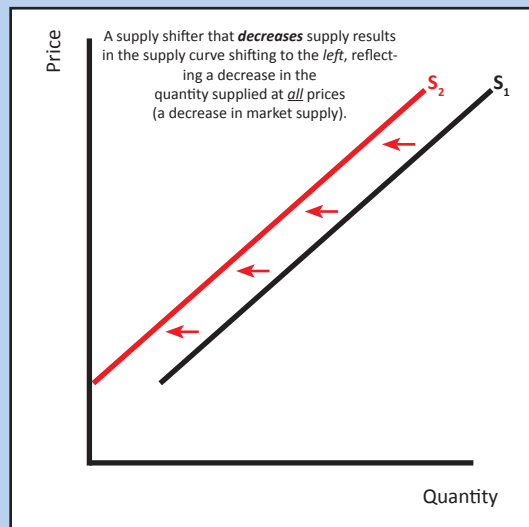
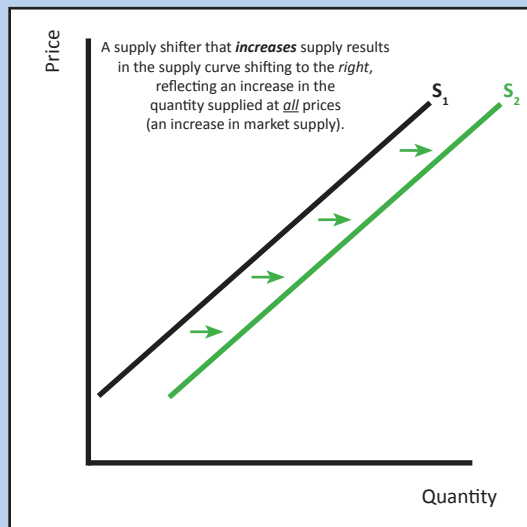
(Image courtesy of Runner's Retreat)

## Supply Shifters

**Supply shifters** are factors that cause a change in the overall supply of that product. The quantity supplied is increased (or decreased) at all prices. This is *not* just movement along the supply curve. This shift in supply results in a need to redraw the supply curve to reflect the new overall market supply.

Increases in supply are shown as a shifting of the supply curve to the right. Decreases in supply are shown as a shifting of the supply curve to the left.





The following are supply shifters and will result in a change in the quantity supplied at every price (overall or market supply):

**Change in the Cost of Inputs.** When the cost of an input (factor of production) goes down, the product becomes more profitable at any given price, so supply goes up. If the cost of an input goes up, the product becomes less profitable and supply goes down.

**Change in the Number of Producers.** When new producers enter a market, their production is added to the existing production, so supply goes up. When producers exit a market, their production is no longer being added to the market, so supply goes down.

**Change in Conditions Due To Natural Disasters or International Events.** Natural disasters (like drought, crop freezes, hurricanes, etc.) can destroy crops or other resources needed for production, so supply goes down. International events (wars, threat of wars, etc.) can destroy resources or make them unavailable, so supply goes down.

**Change in Technology.** Technological advances can reduce the amount of labor needed to produce a good, thereby reducing costs and increasing productivity. Technological advances that lower costs generally lead to supply going up.

**Change in Producer Expectations.** Producers often make supply decisions based on the expectation that prices will rise or fall. The price doesn't actually have to change; just the expectation that it might is enough for some producers. If producers expect the future price of a product to fall, they may decide to increase production now to take advantage of the current higher price. This will cause supply of that product to go up. However, if producers expect the future price of a product to rise, they may hold off on production now (or produce now but store the product in warehouses instead of selling it) so they might take advantage of the higher future price. This will cause supply of that product to go down.

**Change in Government Policy.** Government actions can influence decisions by producers. Government often provides loans, grants, tax credits, or subsidies (direct cash payments) to producers in order to entice them to produce a product. This will increase the supply of that product. Government may increase taxes on a product (or producers of a product), making it less profitable to produce that product. These taxes are another "cost of doing business" for companies, and increasing that cost can lead to some producers' efforts becoming less profitable and an inefficient use of their scarce resources (time, capital, etc.). This will decrease the supply of that product.



The supply of bread is a good illustration of supply shifters. When the cost of wheat (an input) goes up, bread making becomes less profitable & supply will drop. If more producers enter the market, the supply will go up. If there is a drought that destroys the wheat crop, the supply of bread will go down. Technology that improves the ability to bake bread at a lower cost will increase supply. The expectation that prices will rise in the future will lower supply now as bread producers will wait until the price goes up to produce bread. If Congress passes a bread tax, making it less profitable to produce bread, the supply of bread will go down.

(Images courtesy of the Chicago Board of Trade, [www.zpst.org](http://www.zpst.org), [www.windward.org](http://www.windward.org), [www.nuwireinvestor.com](http://www.nuwireinvestor.com), [www.betweenonline.com](http://www.betweenonline.com))



## Market Equilibrium

**Market equilibrium** is the point where buyers & sellers agree. It is where “supply equals demand.” There are two components to equilibrium: the equilibrium price and the equilibrium quantity. **Equilibrium Price** is the price at which the quantity demanded by consumers is equal to the quantity producers are willing to supply. This is also called *market-clearing price*. All consumers willing to purchase at that price are able to satisfy their want for that product. Also, all producers who produce the product at that price are able to sell all of their products. **Equilibrium Quantity** is the quantity that is both demanded and supplied at that price.

Think back to the soda example we used earlier in examining demand and supply. If you plot both the demand and supply schedules on the same graph (shown to the right), you will see that they intersect. The equilibrium price ( $P_E$ ) for the sodas would be \$0.70, and the equilibrium quantity ( $Q_E$ ) would be 30 sodas. At the equilibrium price (\$0.70), the quantity that suppliers are willing to provide is equal to the quantity that consumers demand.

Since estimating demand is very difficult to do, what suppliers do is set a price for their product and provide the quantity of the product they are willing to provide at that price. They are then hoping that, at the price they set, the quantity demanded will be equal to the quantity they are willing to provide. However, they may set it too high or low; if they do, surpluses or shortages occur.

## Surplus

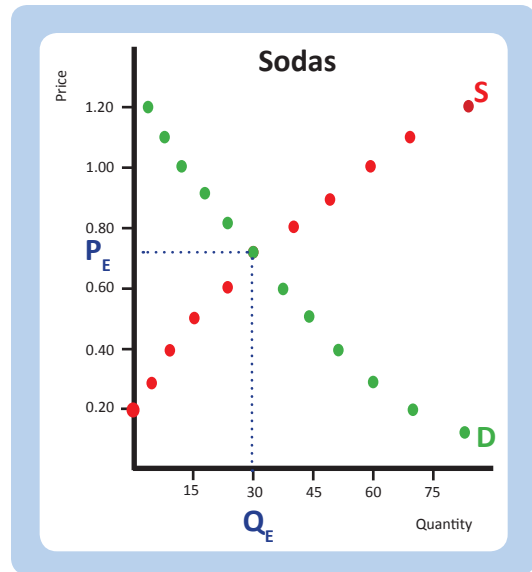
A **surplus** results when the *price is too high*. The producer sets the price at which the amount he/she is willing to produce is more than the amount consumers are willing to buy at that price. This is an inefficient use of resources. Resources that could be used in more productive ways is instead tied up in inventory sitting on a shelf that no one wants to buy at that price.

## Shortage

A **shortage** results when the *price is too low*. The producer sets price at which the amount he/she is willing to produce is less than the amount consumers are willing to buy at that price. This results in both unsatisfied consumer demand and lost sales & profits for producers.

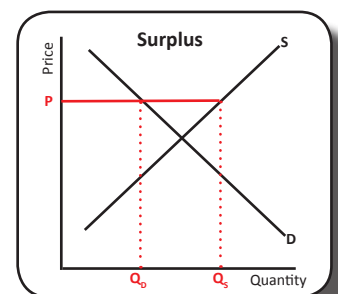
## Prices Move To Bring Markets into Balance

Prices have an important function in a market economy, as they move to bring the markets into balance, satisfying the optimal number of both consumers and producers. It all starts with the producers (suppliers). Producers set a price. They know what quantity they are willing to provide at that price. They are hoping that the quantity demanded for the product at that price will equal what they produced.



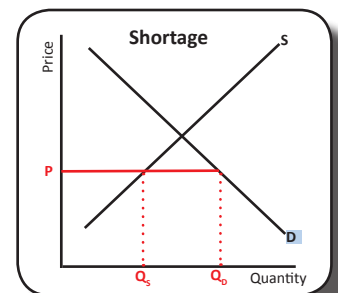
If producers set price too high, **surpluses** will occur. Producers will have excess quantities of the product that consumers are unwilling to buy at that price. At that point, producers will lower the price. The lower price will create an incentive for some existing producers to reduce production; other producers, because of the lower price, will decide to exit the market. At the same time, the lower price will create an incentive for more consumers to enter the market to take advantage of the lower price.

If producers set price too low, **shortages** will occur. Consumers will have unsatisfied demand. At that point, consumers will start to bid higher prices for the product, driving the price up. The higher price will create an incentive for existing producers to increase production; it will also lure new producers into the market. At the same time, the higher price will convince some consumers to exit the market because they are unwilling to pay the higher price.



If the price is set too high, the producer has a surplus (above). The producer will reduce the price to lure more customers and will produce less. If the price is set too low, there will be a shortage (below). Consumers will force the price up, and more production will enter the market.

(Images courtesy [www.feedblitz.com](http://www.feedblitz.com) & [www.freebies2deals.com](http://www.freebies2deals.com))



## Unit 4 - Supply, Demand, and the Role of Price

The pressure to avoid surpluses and shortages results in price moving toward equilibrium. The Law of Supply & Law of Demand work together to push the price of a good or service to a level where the quantity demanded and the quantity supplied are equal. This is why markets are said to be governed by the laws of supply & demand.

### How Do Shifts in Demand or Supply Affect Markets?

Shifts in Demand or Supply change the market's equilibrium point. Shifts in market demand & market supply make changes to equilibrium that are predictable. These changes to equilibrium are easily visualized on a graph of demand & supply.

#### 3 Questions to Ask About Demand & Supply Shifts

1. Does the event affect demand or supply?
2. Does the event shift the demand or supply curve to the right or to the left?
3. What are the new equilibrium price & quantity, and how have they changed as a result?

#### An Event Increases Market Demand

Suppose market demand *increases* due to one (or several) of the demand shifters previously discussed. There is a larger quantity demanded at all prices. This is illustrated by a shift of the demand curve to the right. The results are:

- Equilibrium Price *increases*
- Equilibrium Quantity *increases*

Why does an increase in demand result in an increase in equilibrium price and equilibrium quantity? An increase in demand means that, at any price, more consumers are willing and able to make that purchase. Those consumers will start to outbid each other for the item (**price increase**). Producers, seeing that it will be more profitable to provide that product, will begin to produce more of that product. Existing producers will increase production, and some new producers may enter the market (**quantity increase**).

#### An Event Decreases Market Demand

Suppose market demand *decreases* due to one (or several) of the demand shifters previously discussed. There is a lower quantity demanded at all prices. This is illustrated by a shift of the demand curve to the left. The results are:

- Equilibrium Price *decreases*
- Equilibrium Quantity *decreases*

Why does a decrease in demand result in a decrease in equilibrium price and equilibrium quantity? A decrease in demand means that, at any price, fewer consumers are willing and able to make that purchase. Producers will start to underbid each other for the item to try to get customers to buy their product (**price decrease**). Producers, seeing that it will be less profitable to

provide that product, will begin to produce less of that product. Existing producers will decrease production, and some producers may exit the market (**quantity decrease**).

#### An Event Increases Market Supply

Suppose market supply *increases* due to one (or several) of the supply shifters previously discussed. There is a larger quantity supplied at all prices. This is illustrated by a shift of the supply curve to the right. The results are:

- Equilibrium Price *decreases*
- Equilibrium Quantity *increases*

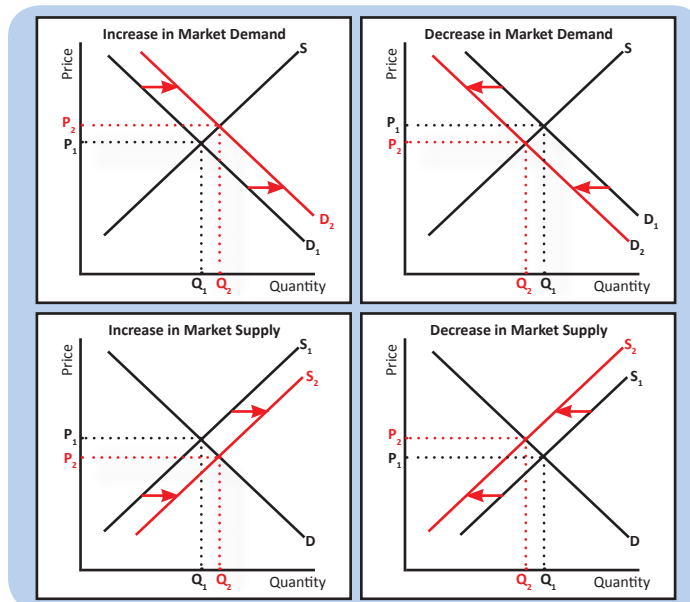
Why does an increase in supply result in a decrease in equilibrium price and increase in equilibrium quantity? An increase in supply means that, at any price, more producers are willing and able to provide that product. Producers will start to underbid each other for the item to try to get customers to buy their product (**price decrease**). Consumers will see that it is more affordable to buy that product and will begin to buy more of the product (**quantity increase**).

#### An Event Decreases Market Supply

Suppose market supply *decreases* due to one (or several) of the supply shifters previously discussed. There is a smaller quantity supplied at all prices. This is illustrated by a shift of the supply curve to the left. The results are:

- Equilibrium Price *increases*
- Equilibrium Quantity *decreases*

Why does a decrease in supply result in an increase in equilibrium price and decrease in equilibrium quantity? A decrease in supply means that, at any price, fewer producers are willing and able to provide that product. Producers will start to raise their price for the item to try to cover the additional costs of production (**price increase**). Consumers will see that it is less affordable to buy that product and will begin to buy less of the product (**quantity decrease**).



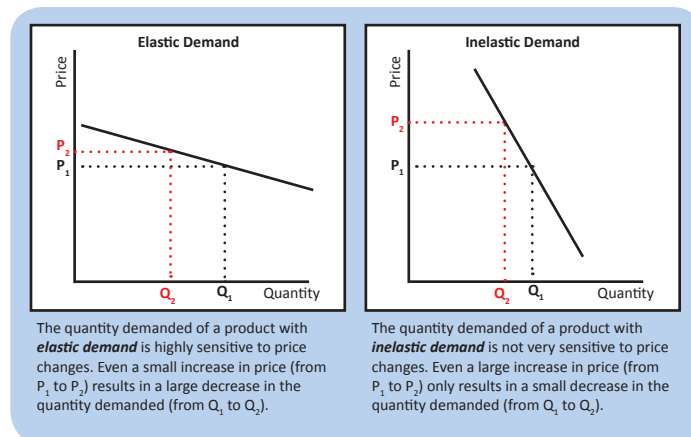
## Elasticity

**Elasticity** is the degree to which a quantity demanded or quantity supplied changes in response to a change in price. The quantity demanded or supplied for some products is highly sensitive to changes in price. For other products, the quantity demanded or supplied is not sensitive to changes in price.

### Elasticity of Demand

A product for which the quantity demanded changes significantly for a given change in price is referred to as having **elastic demand**. If a product has elastic demand, a small change in price results in a large change in the quantity demanded. The graph of demand curve is relatively flat.

A product for which the quantity demanded changes minimally for a given change in price is referred to as having **inelastic demand**. For a product with inelastic demand, a small change in price results in a small change in the quantity demanded. The graph of the demand curve is relatively steep.



### Factors that Influence Elasticity of Demand

**Availability of Substitutes.** The quantity demanded for a product tends to be *elastic* when it has more close substitutes. If the product's price changes, consumers just start buying the substitutes. For example, if the price of one specific brand of canned vegetables goes up, there are many other brands available. The quantity demanded for a product tends to be *inelastic* when it has few substitutes. In this case, consumers don't have other options for purchase, so they still continue to buy the product. Gasoline is a good example; even when the price goes up, consumers still have to buy it because there are no substitutes to power a car.

**Price Relative to Income.** "Big ticket" items whose price will take a larger portion of a consumer's income tend to be *elastic*. Any price increase will tend to take a large additional chunk of the consumer's income. For example, if the price of a car goes up by \$1,000, that is a significant amount of money, and a consumer may think twice about buying that car. A price decrease,

though, will allow the consumer to save a much larger portion of his/her income. Inexpensive items tend to be *inelastic*. Price increases will tend to take very little additional income, and a price decrease will allow the consumer to save a very small portion of his/her income. If, for example, the price of a pack of gum goes up by 5 cents, it will have very little impact on a consumer's budget, so he/she will probably still buy that gum.

**Necessities versus Luxuries.** A product that is very needed by the consumer will have *inelastic* demand. In this case, the consumer must have the product, so he/she is willing to pay whatever is necessary. If the price of electricity goes up, the consumer will still need to pay for it to run his/her household. A product that is a "nice to have" luxury that is not critical for day-to-day living will have more *elastic* demand. The consumer can easily do without the product, so he/she just stops buying it. If the price of, for example, movie tickets goes up, the consumer may decide to go to the movies less frequently, buying fewer movie tickets.

**Time Needed to Adjust to Price Change.** A product for which a lot of time is needed to adjust to price changes has *inelastic* demand. The consumer may need time to adjust lifestyle & purchasing habits to compensate for the price change. If the price of gas goes up, the consumer may need time to adjust his/her habits (cut down on driving, car pool, etc.); in the meantime, he/she will still need to buy gas at the same level. However, a product for which little time is needed to adjust to price changes has *elastic* demand. The consumer can adjust lifestyle & purchasing habits quickly. If the price of beef goes up, the consumer may just switch to eating more pork or chicken. The time needed to adjust to the price increase is minimal.



Gasoline is very demand inelastic. There are no real substitutes, it is a necessity, and consumers don't have much time to adjust to a price change. The quantity of gasoline demanded is not affected much by price changes. Laptop computers, however are very demand elastic. There are a wide variety of substitutes for a specific brand & model, it is expensive, it is more of a luxury than a necessity, and most consumers have time to adjust to any price changes. The quantity of a specific brand & model of laptop is significantly affected by price changes.

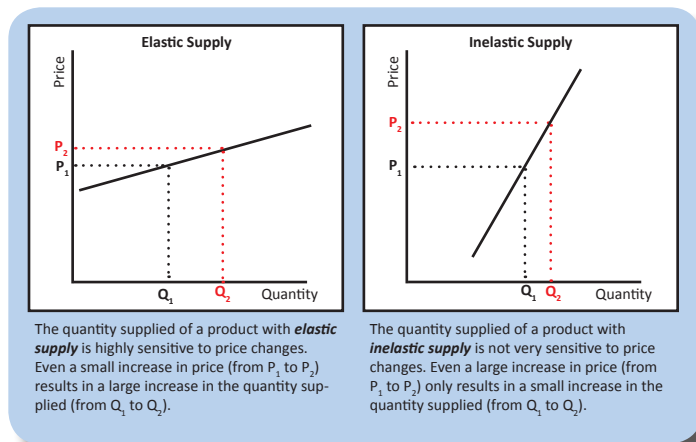
(Images courtesy of Microsoft Photo Gallery & [www.the-minds-eye.org](http://www.the-minds-eye.org))



## Elasticity of Supply

A product for which the quantity supplied change significantly for a given change in price is referred to as having *elastic* supply. A small change in price results in a large change in the quantity supplied. The graph of the supply curve is relatively flat.

A product for which the quantity supplied changes minimally for a given change in price is referred to as having *inelastic* supply. A small change in price results in a large change in the quantity supplied. The graph of supply curve is relatively steep.



## Factors That Influence Elasticity of Supply

**Availability of Inputs.** If the factors of production needed to produce a product are readily available to respond to an increase in price, the product has *elastic* supply. The producer can more easily get the resources needed to increase production if the price of the product increases. If a business makes apple pies, the inputs (flour, eggs, apples, sugar, cinnamon, etc.) are all readily available; if the producer can raise prices, he/she can easily adjust production. If the factors of production are not readily available to respond to an increase in price, the product has *inelastic* supply. Medical care has inelastic supply. The availability of additional medical professionals is low, since it takes years of school and training to be qualified to treat patients; even if the price of medical care goes up, it will take years for the incentive created by the price increase to be met with additional providers.

**Mobility of Inputs.** This is how quickly a producer can get the inputs from their source to where he/she needs them for production. A product for which the producer can quickly get the inputs from their source has *elastic* supply because the producer can more quickly get the inputs needed to increase production. A producer of cornbread in Iowa has the primary input (corn) readily available, and can get that resource quickly. A product that will take a while for the producer to get the inputs from their source has *inelastic* supply. In this case, the producer cannot quickly get the inputs needed to increase production. Someone who produces cornbread in Hawaii, however, does not have quick access to additional quantities of corn, since they must be brought in from the mainland.

**Storage Capacity.** This relates to how easily the product can be stored as it moves from producer to consumer. A product that can be stored more easily if the price goes down or up has *elastic* supply because it can be warehoused and saved until price goes back up. Peanut butter is shelf-stable, and it can be stored in warehouses; a producer who anticipates a price increase can increase production and store that additional stock of peanut butter until he/she is ready to sell it. A product that is perishable and therefore not stored easily for long periods of time has *inelastic* supply. In this case, the product will go bad before it can be sold if it is taken off the shelves when price goes down. Bananas (and other fresh fruits and vegetables), spoil quickly and cannot be stored for long periods of time; a supplier cannot stock up on these items now and store them until the price goes up on them.

**Time Needed to Adjust to a Price Change.** A product for which production can be adjusted quickly has *elastic* supply. The producers can more rapidly adjust production in response to a price change. Many factories are not running at 100% capacity; if there is a price change, they can ramp up production to take advantage of a higher price. A product for which production cannot be adjusted quickly has *inelastic* supply. In this case, it is more difficult for producers to adjust production in response to a price change. Crops like fruits, vegetables, and grains, require months between planting and harvesting; although they are abundant, farmers would need months to increase their production in response to an increase in price.

Some products have *elastic* supply in some respects but *inelastic* supply in other respects. For example, grains like corn, wheat, and soybeans have elastic supply in relation to mobility of inputs and storage capacity; they are easily transported in bulk and can be stored for extended periods of time; however, they have *inelastic* supply in relation to availability of inputs (dependent on rain for growth) and time needed to adjust to a price change. The factors all have different amounts of influence on the overall elasticity of supply for an individual product to determine its overall elasticity.



Many packaged products (like peanut butter) are *supply elastic*. The availability and mobility of the inputs is high, it is easily stored and transported, and factories producing peanut butter can usually increase production. Coffee, however, is (for the most part) *supply inelastic*. Although it is easily transported and stored, is only grown in a few parts of the world, and production cannot easily or quickly be increased in order to respond to a price increase.  
(Images courtesy of [www.csmonitor.com](http://www.csmonitor.com) & [www.pickywallpapers.com](http://www.pickywallpapers.com))

## Roles of Prices in a Modern Mixed Economy

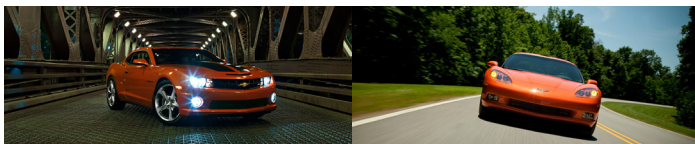
### Prices Convey Information to Consumers & Producers

For consumers, the price of a product signals the opportunity cost of buying that product. The higher the price, the higher the opportunity cost. Money is obviously a scarce resource for consumers; they generally do not have enough money to satisfy every economic want or need they have. For example, if you were considering the purchase of a flat screen TV for \$400, you probably start thinking about everything else you would do with that money if you don't spend it on the TV (savings, dining out, gas, clothes, other entertainment, etc.). The higher the price, the more you know you will have to give up.

For producers, price tells producers what consumers want. Prices above or below equilibrium will result in surpluses or shortages, letting the producer know if he/she has overestimated or underestimated demand. If the producer sees an item sitting on the shelf and not selling, he/she knows that there is not enough demand at that price; the first reaction will probably be to lower the price to see if that increases demand. If the producer sees that he/she is having difficulty maintaining the supply of an item because it is selling so quickly, he/she knows there is enough demand to justify a small price increase without alienating customers.

Producers use prices to appeal to the consumers they hope will buy their products. If you want to target customers that have lower incomes, you will sell products at lower prices. If you want to target customers that have higher incomes, you will sell products at higher prices. General Motors, for example, targets lower-income customers with modestly priced Chevrolets that sell for under \$20,000; they target higher-income customers with expensive sports cars like the Corvette that sell for in excess of \$50,000.

Consumers use price as a measure of the quality of the product. Products of high quality made with a high degree of skill and/or using expensive materials and technology tend to have higher prices. The consumer need not know the details; the price is a measure of that. A typical consumer may not be aware of the differences in the engineering, craftsmanship, and technology required in producing a Corvette compared to a Camaro; the price is a good indicator of those differences.



The price of both the Chevy Camaro (about \$25,000 in 2013) and Chevy Corvette (over \$50,000 in 2013) is one of the ways General Motors (who produces both) appeals to and conveys information to the target markets for each vehicle. (Images courtesy of [www.chevrolet.com](http://www.chevrolet.com))

### Prices Create Incentives to Work & Produce

Remember Principle #4 for thinking like an economist (from Unit 1): Incentives Matter (people respond to incentives). For the producer, price represents potential for profit. Rising prices motivate existing firms to produce more and new firms to enter the market. Falling prices serve as incentive for firms to cut back on production and avoid losses.

Consumers driving prices up on tablet computers incentivizes producers to produce more, and also incentivizes new producers to develop their own tablet computers to sell. This entry of new producers & increase in supply from existing producers eventually drives the price back down, but the incentive for the initial increase was the increase in price.

### Prices Allow Markets to Respond to Changing Conditions

Prices go up when unexpected events occur due to natural disasters or international events. Higher prices incentivize firms to figure out new ways to get the products to consumers. More costly ways of producing the product that were once unprofitable may now be profitable. Prices give markets the flexibility they need to reach equilibrium even under changing conditions.

A good example of this was the gas shortages due to Hurricanes Katrina & Rita in 2005. When those hurricanes hit the Gulf Coast, 30% of the US's refining capacity was damaged or halted. As prices went up, refiners throughout the world rushed fuel to the US to meet the demand at the higher price. As more fuel arrived in the US, and the damaged or halted refineries went back on line, gas prices dropped again to below pre-Katrina prices. Had prices not been allowed to go up, there would have been no incentive for those producers to utilize more expensive ways to get the fuel to the US consumers, and shortages would have continued for much longer.

### Prices Allocate Scarce Resources Efficiently

Prices guide resources to their most efficient use. Always remember that scarce resources have alternative uses. Prices will guide those resources to the use that has the most value to consumers. Producers "automatically" (due to the incentives created by the price) adjust to produce more of what is making money & less of what is losing money.

Wood has numerous alternative uses (building houses, furniture, paper, toothpicks, etc.). If a major disaster hits a region of the country (like a hurricane causing billions of dollars of damage to a large portion of the country), there will be an increase in demand for lumber to build houses, and those involved in building houses will start to outbid the other users of wood. Unless that furniture maker, paper mill, or toothpick manufacturer is willing to pay the higher price for wood, the wood will go to the consumers for whom, at that time, value that wood more; this is reflected in the price.

### Price Controls

A **price control** is when someone places limits on how high or low a certain price may be. This is illegal if businesses do it; it is called price fixing and restrains trade. However, it is legal if the government does it. It is normally done by the government if they think that the market would set price “unfairly” high for consumers or “unfairly” low for producers. There are two types of price controls: price floors and price ceilings.

#### Price Floor

A **price floor** is a *minimum* price for a product that is *above* the market price. The government implements price floors for the following reasons:

- They want to protect industries who they feel may not survive if price is allowed to drop to market equilibrium price.
- They want to ensure minimum profitability for businesses in that industry.

A good example of this is with milk. The government wants to protect the farmers in the milk industry, ensuring that they make enough money to stay profitable and operational. This distorts the market for milk.

As with any product whose price is set above equilibrium, surpluses occur for that product. There have been years when there were huge surpluses of milk because of the incentive to producers caused by the government-set price floor.

The government has several options for dealing with the surpluses due to a price floor:

- The government can buy up the surplus itself (increase market demand for product)
- The government can pay producers not to produce (reduce market supply for product)

Because of the price floor for milk set by the government, the government has purchased millions of gallons of milk (or milk-related products like cheese or powdered milk) and either given it away (to schools, food banks, even foreign countries suffering from famine) or put it in storage (where much of it rotted). They have also paid billions of dollars annually to entice producers not to produce as much.

With price floors, the consumer is hurt because he/she pays price higher than what he/she would pay without the price floor. This is an inefficient use of consumer’s scarce resource (money). Also, the consumer ends up paying higher taxes to cover government payments to producers. Not only are milk prices higher than they would otherwise be without the market distortion, the consumer ends up also paying higher taxes that pay for milk he/she didn’t even have the opportunity to consume.

#### Price Ceiling

A **price ceiling** is a *maximum* price for a product that is set *below* the market equilibrium. The government implements price ceilings to protect consumers from paying what, according to

the government, is “too much” for a product. A good example of this is government-directed rent controls on apartments in some major metropolitan areas like New York City. The rent control on apartments has distorted the rental housing market in New York City.

As with any other price set below equilibrium, shortages occur for that product. Because of rent control in New York City, there are many people who are, at best, part-time residents who maintain one (or several) apartments because they are so inexpensive; it turns out to be cheaper for them than a hotel room. Other residents take advantage of renting apartments by themselves where, if the price were higher, they would live at home or have roommates. On the supplier side, many building owners are unable to afford to maintain their buildings with the relatively low rent they would receive for renting, and they either convert the apartments to condominiums (and sell each apartment/condo individually) or simply board up the building and let it sit vacant.

When shortages occur due to government-imposed price ceilings, the government normally deals with the shortage by rationing the product. **Rationing** is government-controlled distribution of the limited supply of the good or service. The city government in New York City does not ration apartments, though. A good example of government rationing occurred in the 1970s when the U.S. imposed a price ceiling on gasoline. They implemented an odd-even rationing system, where consumers could only buy fuel for their vehicle on odd days if their license plate ended in an odd number, or an even day if their license plate ended in an even number.

In the market, though, shortages are dealt with in a different way, normally through the formation of a “black market.” A **black market** is an illegal market in which product is traded at a higher price or in higher quantities than those allowed by law. In New York City, some landlords creatively get around the rent controls. They rent the apartment at the rent controlled price, but they only rent to applicants who also agree to rent some other asset (like a lamp or chair) for the apartment for what would otherwise be an outrageously high price. The combination of the rent control amount and the amount paid to rent that other asset effectively raises the “price” of the apartment to what the market price would normally be absent the rent controls.



Price floors on milk have resulted in the U.S. government buying massive amounts of milk, including powdered milk (shown above). A price ceiling on gas in the 1970s resulted in shortages, long lines for gas, and rationing. (Images courtesy of the New York Times and [www.google.com](http://www.google.com))