

**Demand** is a relationship between the price of an item and the quantity demanded. The term *demand* as used in economics is not a fixed number. It signifies how the quantity buyers purchase varies with price, assuming that *all other influences on the amount buyers buy, other than the price of the item*, are held fixed. For example, the demand for cars over a year indicates how the annual quantity demanded varies as the price of cars changes, *other things being equal*. The other things held constant are all influences on the decision to buy *other than* the price of cars, such as income available for spending, wealth, or consumer preferences. Similarly, the demand for subway rides in a city isolates the relationship between the price of a ride and the number of rides demanded over a given period.

The **law of demand** states that, in general, other things being equal, the lower the price of a good, the greater the quantity of that good buyers will purchase over a given period. Conversely, the law implies that buyers will purchase less of a good over any given period if its price increases while nothing else changes. The law is relevant to all goods and services. For example, the lower the price of subway rides, other things being equal, the greater the quantity demanded.

A **demand curve** is a graph of the data comprised by a demand schedule.

The downward slope of the demand curve reflects the law of demand. It's also useful to interpret points on a demand curve as indicating how the willingness of buyers to pay varies with the quantity of an item actually available in a market over a period of time. The demand curve indicates that the smaller the amount of eggs offered for sale each month, the more buyers are willing to pay. Conversely, the greater the amount of eggs available, the less buyers are willing to pay.

### Changes in Relative Price

A **change in relative price** of a good is an increase or decrease in the price of that good relative to the average change in the prices of all goods. The relative price of a good may not always change when its money price changes. For example, suppose an average of the money prices of all goods goes up by 3 percent over a year. If the money price of cars also goes up by that amount, the relative price of cars will be unchanged. If college tuition increases by 10 percent over the same year, its relative price will have risen because its money price has increased by a percentage that exceeds the average. Similarly, if the money price of athletic shoes increases by only 1 percent, the relative price of athletic shoes will have fallen over the year even though the money price has gone up.

### Changes in Quantity Demanded

In general, the demand curve is *downward-sloping*. The negative slope reflects the inverse relationship between price and quantity demanded according to the law of demand. Along the demand curve, quantity demanded increases as the price of the good decreases. A **change in quantity demanded** is a change in the amount of a good buyers are willing and able to buy in response to a change in the price of a good. *A change in quantity demanded is represented by a movement along a given demand curve caused by an increase or decrease in the price of the good.*

### Changes in Demand

A **change in demand** is a change in the relationship between the price of a good and the quantity demanded caused by a change in something other than the price of the good.

A change in demand implies a movement of an entire demand curve for a good. A new demand schedule must be drawn up, because the quantity demanded by consumers *at each price* changes. *(Be careful not to confuse a change in demand with a change in quantity demanded. A change in demand is a response to a change in a demand influence other than the price of the good, while a change in quantity demanded is a response to a change in a good's own price.)*

Using logic and observation, we can make hypotheses about the possible impact of changes in various influences on the demand for a good:

1. *Changes in consumer income.* An increase in available income increases the *ability* of consumers to buy an item. Increases in income tend to increase the demand for most goods, while decreases in income tend to decrease the demand for most goods.

Although the demand for most goods increases as income goes up, there are some exceptions. The demand for less expensive cuts of meat, low-quality clothing, and secondhand furniture declines for many people as their income goes up. Goods whose demand declines as income increases are called **inferior goods**. Goods whose demand increases when income goes up are called **normal goods**.

2. *Changes in wealth.* Wealth is the net accumulated savings in a nation. Wealth includes such assets as real estate, stocks and bonds, money in the bank, and other financial assets such as mutual funds. Declines in real estate values and in the values of stocks in 1990 caused a decrease in wealth that made many people cut back on spending and reduced the demand for such goods as new homes, furniture, and cars.

3. *Changes in the prices of other goods.* Our willingness to buy a particular item also depends on the prices of related items. Alternatives, items that serve a purpose similar to that of a given item, are **substitutes** for that item.

The demand for a good can also be influenced by a change in the price of its complements. **Complements** are goods whose use together enhances the satisfaction a consumer obtains from each of them. For example, a decrease in the price of DVDs is likely to increase the demand for DVD players because these two goods complement each other. Similarly, if the price of gas goes up significantly, the demand for cars may go down because cars and gas are complements.

4. *Changes in expectations of future prices.* The demand for an item also depends on expectations buyers have about future events. In particular, if you as a buyer expect the price of an item to increase next week, you're likely to buy more of the item this week. If an item can be stored, as is the case for shampoo or socks, you'll increase your demand and stock up. Expectations of future price increases therefore tend to shift current demand curves outward.

5. *Changes in tastes or fashion.* The general appeal of an item to buyers can change from time to time. If your taste for an item changes, your demand for it may decrease because you're less willing to buy it at any price. For example, the demand for long-playing records has decreased in recent years as you and other buyers have been attracted by the superior sound quality of CDs.

6. *Changes in the number of buyers served by the market.*

## Supply

The **quantity supplied** is the quantity of a good sellers are willing and able to make available in the market over a given period at a certain price, *other things being equal*. In this case the *other things* being held equal are all the previously listed supply influences other than the price of the good itself.

### The Law of Supply and the Market Supply Curve

The price is the payment a seller receives for each unit of a good sold. Just as changes in relative price influence incentives to buy a good, so do changes in relative price influence incentives to sell a good. Naturally, the higher the price per unit of a good, other things being equal, the greater the potential gain from supplying it. The **law of supply** states that, in general, other things being equal, the higher the price of a good, the greater the quantity of that good sellers are willing and able to make available over a given period.

A **supply curve** is a graph of the data from a supply schedule that shows how quantity supplied varies with price.

Note that you can also interpret points on a supply curve as indicating the price sellers will accept to make each possible quantity available to buyers. The greater the quantity buyers want to purchase, the higher the price necessary to induce sellers to make the desired quantity available.

**Changes in Quantity Supplied** The upward slope of the supply curve reflects the law of supply. As the price increases, the quantity supplied over a period goes up. A **change in quantity**

**supplied** is a change in the amount sellers are willing to sell over a period in response to a change in the price of the good. Changes in quantity supplied represent movements along a given supply curve in response to price changes, while all other factors affecting the willingness of sellers to sell are unchanged. For example, if the price of eggs declined from \$2 to \$1.75 per dozen, there would be a *decrease in quantity supplied* and the quantity sellers would make available to the market would decline from 9,000 dozen to 8,000 dozen per week. Similarly, if the price increased from \$1 to \$1.25 per dozen, there would be an *increase in quantity supplied* as sellers would be willing to increase the quantity available for sale from 5,000 dozen to 6,000 dozen per week. **Changes in Supply**

A **change in supply** is a change in the relationship between the price of a good and the quantity supplied in response to a change in a supply determinant other than the price of the good. A change in supply implies a shift of the entire supply curve. A new supply schedule must be drawn up because the quantity supplied by sellers at each price will change.

Among the important changes in economic conditions that can cause changes in supply are the following:

1. *Changes in the prices of the inputs necessary to produce and sell a good.* The possible profit at any given price depends on the prices a seller must pay for the economic resources to produce a good. Increases in input prices and costs associated with selling the good result in less profit for selling any given quantity. This decreases the supply of the good. Conversely, a decrease in input prices increases the profitability of selling the good and results in an increase in supply. Suppose, for example, there's an increase in the price of chicken feed. This is likely to decrease the willingness of egg producers to make eggs available at a given price, because it's now more expensive to produce any given quantity of eggs.

2. *Changes in the technology available to produce a good.* Improvements in technology tend to increase the input from economic resources used to produce a good. Assuming that input prices are unchanged, advances in technology lower the cost per unit of output and tend to increase the profit possible from selling the good at various prices. For example, an improvement in the technology of producing CD players lowers the unit and marginal costs of making CD players available. The lower costs increase the potential profit and thus encourage existing sellers to supply more CD players while attracting new sellers to the market.

3. *Changes in the prices of other goods that can be produced with the seller's resources.* The opportunity cost of producing and selling any one good is the sacrifice of the opportunity to sell some other good. Changes in the prices of alternative goods change the opportunity cost of producing a given good, resulting in changes in its supply. For example, given the price of T-shirts, an increase in the price of sweatshirts could decrease the supply of T-shirts if manufacturers use their facilities to produce more sweatshirts and fewer T-shirts. This would shift the supply curve for T-shirts to the left. Similarly, a decrease in the price of sweatshirts could increase the supply of T-shirts, shifting the supply curve for this item to the right.

4. *Changes in the number of sellers serving the market.* Other things being equal, an increase in the number of sellers increases the supply of a good. For example, an increase in the number of firms producing laser printers increases the number of printers available at any given price. Over long periods of time, changes in the number of sellers in a market are a very important determinant of supply. The number of sellers in a market changes with the profitability of producing a good.

Other important determinants can also affect the supply of particular goods. For example, weather can affect the supply of agricultural commodities. A frost in Florida that ruins the citrus crop can decrease the supply of oranges in the market over a year. Expectations about future prices of goods and services and inputs can also affect current supply, as can taxes and subsidies.

### **Market Equilibrium Price and Quantity**

An **equilibrium** prevails when economic forces balance so that economic variables neither increase nor decrease. **Market equilibrium** is attained when the price of a good adjusts so that

the quantity buyers will buy at that price is equal to the quantity sellers will sell. When a market equilibrium has been attained, forces of supply and demand balance so that there's no tendency for the market price or quantity to change over a given period. The equilibrium price acts to ration the good so that everyone who wants to buy the good will find it available. Similarly, at the equilibrium price, everyone who wants to sell the good will be able to do so successfully. For example, equilibrium in the personal stereo market requires that the price of personal stereos be such that the quantity demanded equals the quantity supplied. When quantity demanded equals quantity supplied, the market is said to *clear*.

A **shortage** exists in a market when the quantity demanded of a good exceeds the quantity supplied over a given period. For example, there will be a monthly shortage of compact disc players if at the current market price the monthly number of players that sellers will make available falls short of the monthly number that the buyers will purchase.

A **surplus** exists in a market when the quantity supplied of a good exceeds the quantity demanded over a given period. There would be a monthly surplus of gas if the monthly quantity supplied by sellers exceeded the monthly quantity demanded by buyers at a certain price. At the market equilibrium price of a good, there can be neither surpluses nor shortages in the market. When a market clears, the good is rationed, because there are neither surpluses nor shortages.

### Self-Equilibrating Markets

If the equilibrium price isn't initially established in a market, competition among buyers for goods, and among sellers for sales, will set up forces that cause the price to change. Whenever price exceeds its equilibrium level, there will be a surplus of goods on the market. Goods brought to market will go unsold. Sellers of eggs will accept lower prices rather than allow their weekly supply of eggs to spoil. In the case of goods whose quality doesn't deteriorate over time, sellers will accept lower prices to avoid the costs of maintaining inventory or transporting goods back to the point of production. *A surplus results in downward pressure on price.* As price falls, weekly quantity supplied declines and weekly quantity demanded increases, serving to eliminate the surplus. The weekly surplus in the egg market will be completely eliminated when the price reaches the equilibrium level, where quantity demanded equals quantity supplied each week.

A shortage implies that some buyers willing and able to pay the price of a good will find the good unavailable in the market. Although eggs seem to be a bargain when their price is below the market equilibrium level, there aren't enough of them to go around! Competition among consumers for the available weekly quantity of eggs supplied will inevitably increase the price. Some consumers will be willing to pay more than the prevailing price rather than go without eggs. *A shortage therefore results in upward pressure on market price.* As market price increases, weekly quantity supplied will also increase, while weekly quantity demanded will decline. This will continue until quantity demanded once again equals quantity supplied at the market equilibrium price and the shortage has been eliminated.

As you can see, a competitive market tends to be self-equilibrating as a result of the competition among many buyers and sellers. The competition among buyers for available goods and among sellers for sales ensures that prices will adjust to achieve an equilibrium.

### The Impact of Changes in Demand on Market Equilibrium

Changes in either demand or supply can change market equilibrium prices and quantities. You can now begin to use supply and demand analysis to forecast what will happen to prices and quantities sold in response to these changes in demand and supply. Changes in demand affect market equilibrium. For example, suppose there's a decrease in demand for eggs because of growing concern about their high cholesterol content. Recall that a decrease in the demand for eggs means an inward shift of the entire demand curve.

The decrease in demand, other things remaining unchanged, sets up the following chain of events in the market. First, the price declines as a surplus develops at the original price. Second, sellers *respond* to the decrease in price by decreasing the quantity supplied. Finally, as the quantity supplied declines, a new equilibrium is attained at a price for which quantity demanded on the new demand curve equals quantity supplied on the existing supply curve. *Notice that*

*sellers do not respond directly to the decrease in demand. Instead, they respond to the decline in price caused by the decrease in demand.* This illustrates the role of price as a *signal* through which buyers communicate a change in their desires to sellers.

The reasoning for an increase in demand is exactly the reverse.

### **The Impact of Changes in Supply on Market Equilibrium**

Remember that a change in the supply of a good is represented by a shift of the entire supply curve caused by a change in some influence other than price. Note that *buyers do not respond directly to the decrease in supply. Instead, they respond to the increase in market price caused by the decrease in supply.* Once again, you can see how price serves as communication between buyers and sellers. Buyers are motivated to reduce the quantity demanded in response to the higher price caused by the decrease in supply.

The reasoning is similar for an increase in supply.