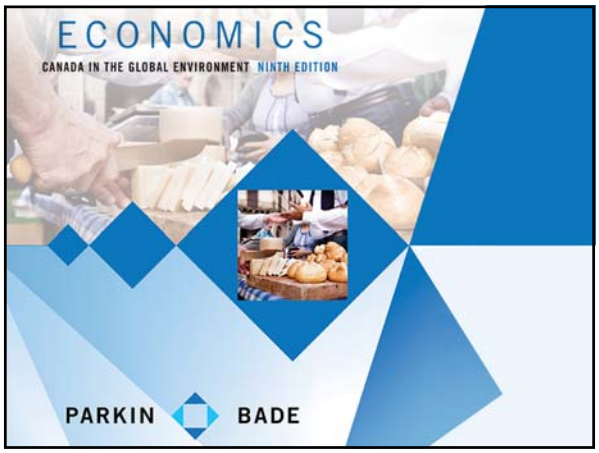


3 DEMAND AND SUPPLY

After studying this chapter, you will be able to:

- Describe a competitive market and think about a price as an opportunity cost
- Explain the influences on demand
- Explain the influences on supply
- Explain how demand and supply determine prices and quantities bought and sold
- Use the demand and supply model to make predictions about changes in prices and quantities

Markets and Prices

A *market* is any arrangement that enables buyers and sellers to get information and do business with each other.

A **competitive market** is a market that has many buyers and many sellers so no single buyer or seller can influence the price.

The **money price** of a good is the amount of money needed to buy it.

The **relative price** of a good—the ratio of its money price to the money price of the next best alternative good—is its *opportunity cost*.

Demand

If you demand something, then you

1. Want it,
2. Can afford it, and
3. Have made a definite plan to buy it.

Wants are the unlimited desires or wishes people have for goods and services. Demand reflects a decision about which wants to satisfy.

The **quantity demanded** of a good or service is the amount that consumers plan to buy during a particular time period, and at a particular price.

Demand

The Law of Demand

The **law of demand** states:

Other things remaining the same, the higher the price of a good, the smaller is the quantity demanded; and …

the lower the price of a good, the larger is the quantity demanded.

Why does a change in the price change the quantity demanded? Two reasons:

- Substitution effect
- Income effect

Demand

Substitution Effect

When the relative price (opportunity cost) of a good or service rises, people seek substitutes for it, so the quantity demanded of the good or service decreases.

Income Effect

When the price of a good or service rises relative to income, people cannot afford all the things they previously bought, so the quantity demanded of the good or service decreases.

Demand

Demand Curve and Demand Schedule

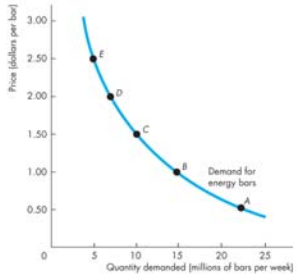
The term **demand** refers to the entire relationship between the price of the good and quantity demanded of the good.

A **demand curve** shows the relationship between the quantity demanded of a good and its price when all other influences on consumers' planned purchases remain the same.

Demand

Figure 3.1 shows a demand curve for energy bars.

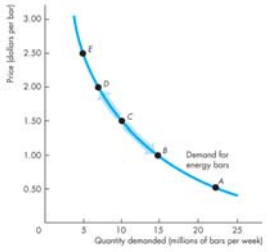
	Price (dollars per bar)	Quantity demanded (millions of bars per week)
A	0.50	22
B	1.00	15
C	1.50	10
D	2.00	7
E	2.50	5



Demand

A rise in the price, other things remaining the same, brings a decrease in the quantity demanded and a movement up along the demand curve.

A fall in the price, other things remaining the same, brings an increase in the quantity demanded and a movement down along the demand curve.



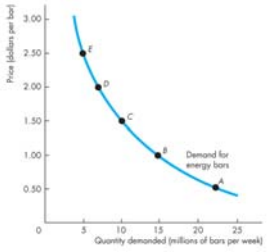
Demand

Willingness and Ability to Pay

A demand curve is also a *willingness-and-ability-to-pay* curve.

The smaller the quantity available, the higher is the price that someone is willing to pay for another unit.

Willingness to pay measures *marginal benefit*.



Demand

A Change in Demand

When some influence on buying plans other than the price of the good changes, there is a **change in demand** for that good.

The quantity of the good that people plan to buy changes at each and every price, so there is a new demand curve.

When demand *increases*, the demand curve shifts *rightward*.

When demand *decreases*, the demand curve shifts *leftward*.

Demand

Six main factors that change demand are

- The prices of related goods
- Expected future prices
- Income
- Expected future income and credit
- Population
- Preferences

Demand

Prices of Related Goods

A **substitute** is a good that can be used in place of another good.

A **complement** is a good that is used in conjunction with another good.

When the price of a substitute for an energy bar rises or when the price of a complement of an energy bar falls, the demand for energy bars increases.

Demand

Expected Future Prices

If the price of a good is expected to rise in the future, current demand for the good increases and the demand curve shifts rightward.

Income

When income increases, consumers buy more of *most* goods and the demand curve shifts rightward.

A **normal good** is one for which demand increases as income increases.

An **inferior good** is a good for which demand decreases as income increases.

Demand

Expected Future Income and Credit

When income is expected to increase in the future or when credit is easy to obtain, the demand might increase now.

Population

The larger the population, the greater is the demand for all goods.

Preferences

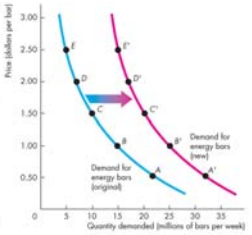
People with the same income have different demands if they have different preferences.

Demand

Figure 3.2 shows an increase in demand.

An increase in income increases the demand for energy bars and shifts the demand curve rightward.

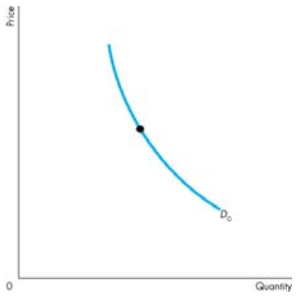
Original demand schedule (Original income)			New demand schedule (New higher income)		
	Price (dollars per bar)	Quantity demanded (millions of bars per week)		Price (dollars per bar)	Quantity demanded (millions of bars per week)
A	0.50	22	A′	0.50	32
B	1.00	15	B′	1.00	25
C	1.50	10	C′	1.50	20
D	2.00	7	D′	2.00	17
E	2.50	5	E′	2.50	15



Demand

A Change in the Quantity Demanded Versus a Change in Demand

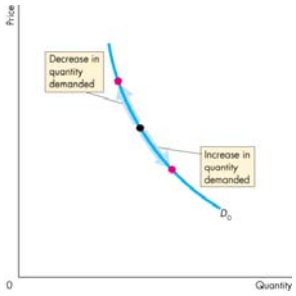
Figure 3.3 illustrates the distinction between a change in demand and a change in the quantity demanded.



Demand

Movement Along the Demand Curve

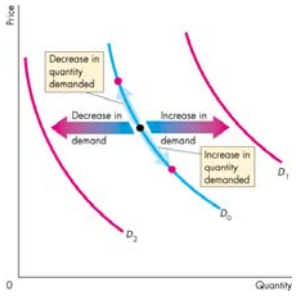
When the price of the good changes and other things remain the same, the quantity demanded changes and there is a movement along the demand curve.



Demand

A Shift of the Demand Curve

If the price remains the same but one of the other influences on buyers' plans changes, demand changes and the demand curve shifts.



Supply

If a firm supplies a good or service, then the firm

1. Has the resources and the technology to produce it,
2. Can profit from producing it, and
3. Has made a definite plan to produce and sell it.

Resources and ***technology*** determine what it is possible to produce. Supply reflects a decision about which technologically feasible items to produce.

The **quantity supplied** of a good or service is the amount that producers plan to sell during a given time period at a particular price.

Supply

The Law of Supply

The **law of supply** states:

Other things remaining the same, the higher the price of a good, the greater is the quantity supplied; and

the lower the price of a good, the smaller is the quantity supplied.

The law of supply results from the general tendency for the marginal cost of producing a good or service to increase as the quantity produced increases (Chapter *2*, page 35).

Producers are willing to supply a good only if they can at least cover their marginal cost of production.

Supply

Supply Curve and Supply Schedule

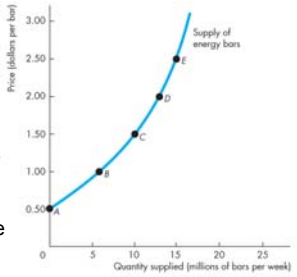
The term **supply** refers to the entire relationship between the quantity supplied and the price of a good.

The **supply curve** shows the relationship between the quantity supplied of a good and its price when all other influences on producers' planned sales remain the same.

Supply

Figure 3.4 shows a supply curve of energy bars.

	Price (dollars per bar)	Quantity supplied (millions of bars per week)
A	0.50	0
B	1.00	6
C	1.50	10
D	2.00	13
E	2.50	15



A rise in the price, other things remaining the same, brings an increase in the quantity supplied.

Supply

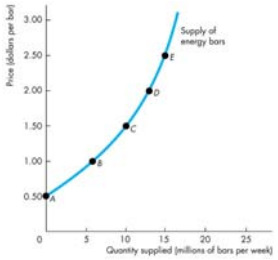
Minimum Supply Price

A supply curve is also a *minimum-supply-price* curve.

As the quantity produced increases, marginal cost increases.

The lowest price at which someone is willing to sell an additional unit rises.

This lowest price is *marginal cost*.



Supply

A Change in Supply

When some influence on selling plans other than the price of the good changes, there is a **change in supply** of that good.

The quantity of the good that producers plan to sell changes at each and every price, so there is a new supply curve.

When supply *increases*, the supply curve shifts *rightward*.

When supply *decreases*, the supply curve shifts *leftward*.

Supply

The six main factors that change supply of a good are

- The prices of factors of production
- The prices of related goods produced
- Expected future prices
- The number of suppliers
- Technology
- State of nature

Supply

Prices of Factors of Production

If the price of a factor of production used to produce a good rises, the minimum price that a supplier is willing to accept for producing each quantity of that good rises.

So a rise in the price of a factor of production decreases supply and shifts the supply curve leftward.

Supply

Prices of Related Goods Produced

A *substitute in production* for a good is another good that can be produced using the same resources.

The supply of a good increases if the price of a substitute in production falls.

Goods are *complements in production* if they must be produced together.

The supply of a good increases if the price of a complement in production rises.

Supply

Expected Future Prices

If the price of a good is expected to rise in the future, supply of the good today decreases and the supply curve shifts leftward.

The Number of Suppliers

The larger the number of suppliers of a good, the greater is the supply of the good. An increase in the number of suppliers shifts the supply curve rightward.

Supply

Technology

Advances in technology create new products and lower the cost of producing existing products.

So advances in technology increase supply and shift the supply curve rightward.

The State of Nature

The state of nature includes all the natural forces that influence production—for example, the weather.

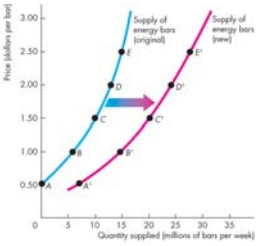
A natural disaster decreases supply and shifts the supply curve leftward.

Supply

Figure 3.5 shows an increase in supply.

An advance in the technology increases the supply of energy bars and shifts the supply curve rightward.

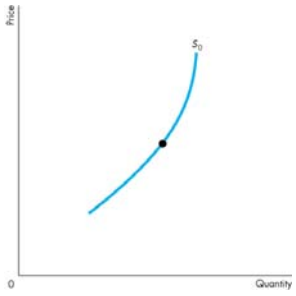
Original supply schedule (Old technology)			New supply schedule (New technology)		
	Price (dollars per bar)	Quantity supplied (millions of bars per week)		Price (dollars per bar)	Quantity supplied (millions of bars per week)
A	0.50	0	A'	0.50	7
B	1.00	6	B'	1.00	15
C	1.50	10	C'	1.50	20
D	2.00	13	D'	2.00	25
E	2.50	15	E'	2.50	27



Supply

A Change in the Quantity Supplied Versus a Change in Supply

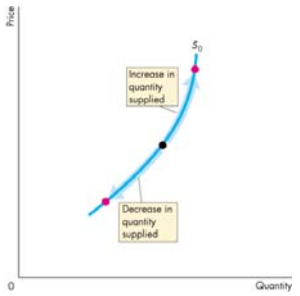
Figure 3.6 illustrates the distinction between a change in supply and a change in the quantity supplied.



Supply

Movement Along the Supply Curve

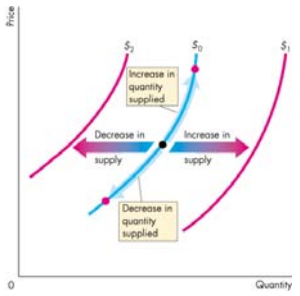
When the price of the good changes and other influences on sellers' plans remain the same, the quantity supplied changes and there is a movement along the supply curve.



Supply

A Shift of the Supply Curve

If the price remains the same but some other influence on sellers' plans changes, supply changes and the supply curve shifts.



Market Equilibrium

Equilibrium is a situation in which opposing forces balance each other. Equilibrium in a market occurs when the price balances the plans of buyers and sellers.

The **equilibrium price** is the price at which the quantity demanded equals the quantity supplied.

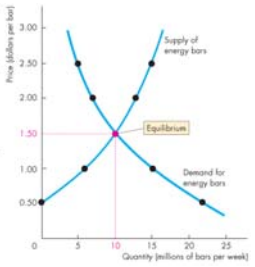
The **equilibrium quantity** is the quantity bought and sold at the equilibrium price.

- Price regulates buying and selling plans.
- Price adjusts when plans don't match.

Market Equilibrium

Figure 3.7 illustrates the market equilibrium—the price at which quantity demanded equals quantity supplied.

Price (dollars per bar)	Quantity demanded (millions of bars per week)	Quantity supplied (millions of bars per week)
0.50	22	0
1.00	15	6
1.50	**10**	**10**
2.00	7	13
2.50	5	5



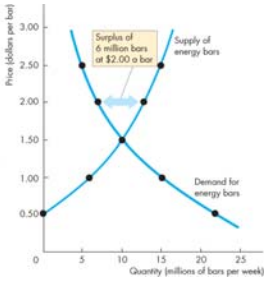
Market Equilibrium

Price as a Regulator

Price (dollars per bar)	Quantity demanded (millions of bars per week)	Quantity supplied (millions of bars per week)	Shortage (–) or surplus (+) (millions of bars per week)
0.50	22	0	–22
1.00	15	6	–9
1.50	10	10	0
2.00	7	15	+6
2.50	5	5	+10

If the price is $2.00 a bar, the quantity supplied *exceeds* the quantity demanded.

There is a *surplus* of 6 million energy bars.

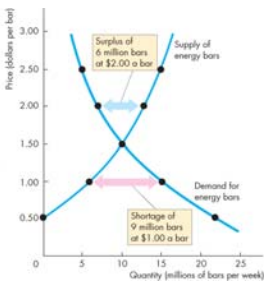


Market Equilibrium

Price (dollars per bar)	Quantity demanded (millions of bars per week)	Quantity supplied (millions of bars per week)	Shortage (–) or surplus (+) (millions of bars per week)
0.50	22	0	–22
1.00	**15**	**6**	**–9**
1.50	10	10	0
2.00	7	15	+6
2.50	5	5	+10

If the price is $1.00 a bar, the quantity demanded *exceeds* the quantity supplied.

A *shortage* of 9 million bars.

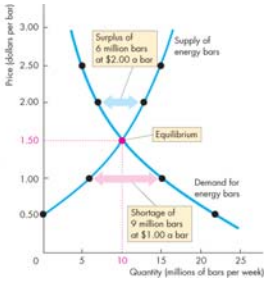


Market Equilibrium

Price (dollars per bar)	Quantity demanded	Quantity supplied	Shortage (–) or surplus (+)
	(millions of bars per week)		
0.50	22	0	–22
1.00	15	6	–9
1.50	**10**	**10**	**0**
2.00	7	15	+6
2.50	5	5	+10

If the price is $1.50 a bar, the quantity supplied *equals* the quantity demanded.

No shortage or surplus of bars.



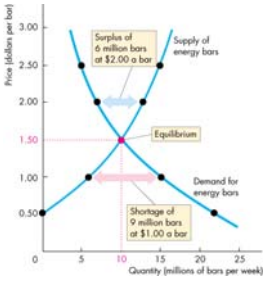
Market Equilibrium

Price Adjustments

At prices above the equilibrium price, a *surplus* forces the price down.

At prices below the equilibrium price, a *shortage* forces the price up.

At the equilibrium price, buyers' plans and sellers' plans agree and the price doesn't change until an event changes demand or supply.



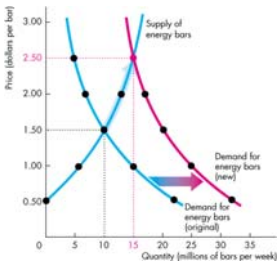
Predicting Changes in Price and Quantity

An Increase in Demand

Figure 3.8 shows that when demand increases the demand curve shifts rightward.

At the original price, there is now a *shortage*.

The price rises, and the quantity supplied increases along the supply curve.



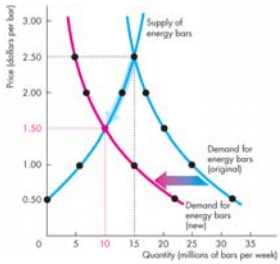
Predicting Changes in Price and Quantity

A Decrease in Demand

The figure shows that when demand decreases the demand curve shifts leftward.

At the original price, there is now a *surplus*.

The price falls, and the quantity supplied decreases along the supply curve.



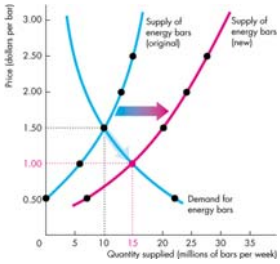
Predicting Changes in Price and Quantity

An Increase in Supply

Figure 3.9 shows that when supply increases the supply curve shifts rightward.

At the original price, there is now a *surplus*.

The price falls, and the quantity demanded increases along the demand curve.



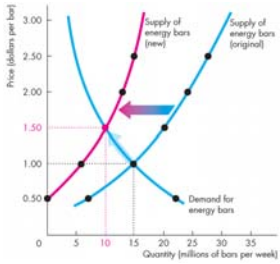
Predicting Changes in Price and Quantity

A Decrease in Supply

The figure shows that when supply decreases the supply curve shifts leftward.

At the original price, there is now a *shortage*.

The price rises, and the quantity demanded decreases along the demand curve.



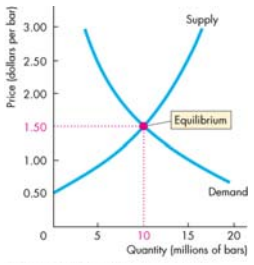
Predicting Changes in Price and Quantity

Changes in Both Demand and Supply

A change in both demand and supply changes the equilibrium price and the equilibrium quantity.

Figure 3.10 illustrates changes in the same direction.

Figure 3.11 illustrates changes in opposite directions.

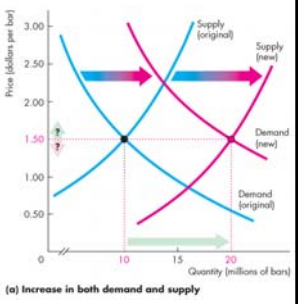


Predicting Changes in Price and Quantity

Both Demand and Supply Change in the Same Direction

An increase in demand and an increase in supply *increase* the equilibrium quantity.

The change in equilibrium price is *uncertain* because the increase in demand raises the price and the increase in supply lowers it.

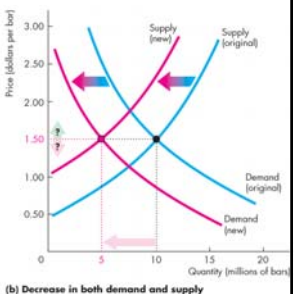


(a) Increase in both demand and supply

Predicting Changes in Price and Quantity

A decrease in both demand and supply *decreases* the equilibrium quantity.

The change in equilibrium price is *uncertain* because the decrease in demand lowers the price and the decrease in supply raises the price.



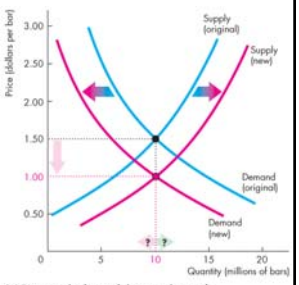
(b) Decrease in both demand and supply

Predicting Changes in Price and Quantity

Both Demand and Supply Change in Opposite Directions

A decrease in demand and an increase in supply *lowers* the equilibrium price.

The change in equilibrium quantity is *uncertain* because the decrease in demand decreases the quantity and the increase in supply increases it.

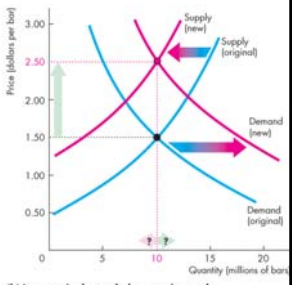


(a) Decrease in demand; increase in supply

Predicting Changes in Price and Quantity

An increase in demand and a decrease in supply *raises* the equilibrium price.

The change in equilibrium quantity is *uncertain* because the increase in demand increases the quantity and the decrease in supply decreases it.



(b) Increase in demand; decrease in supply