



CHAPTER

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

# Market 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.
  - The law of demand results from
    - 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.

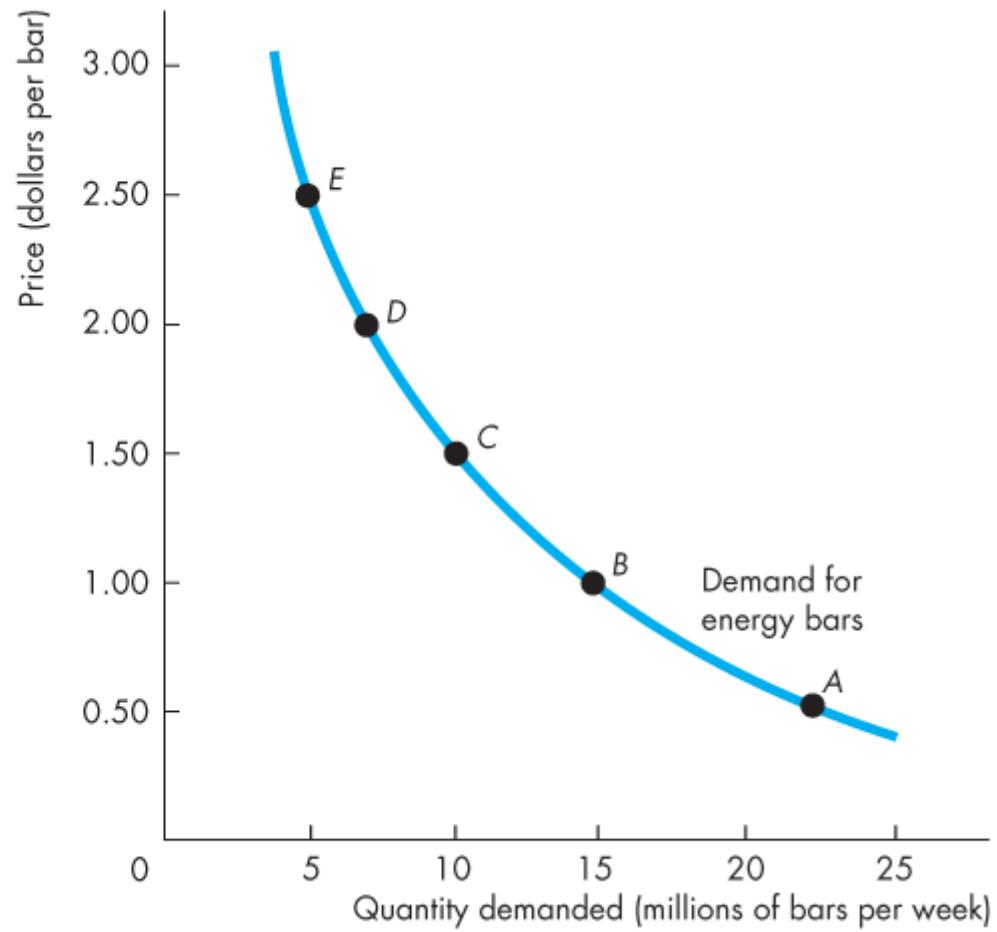
# Demand

- 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

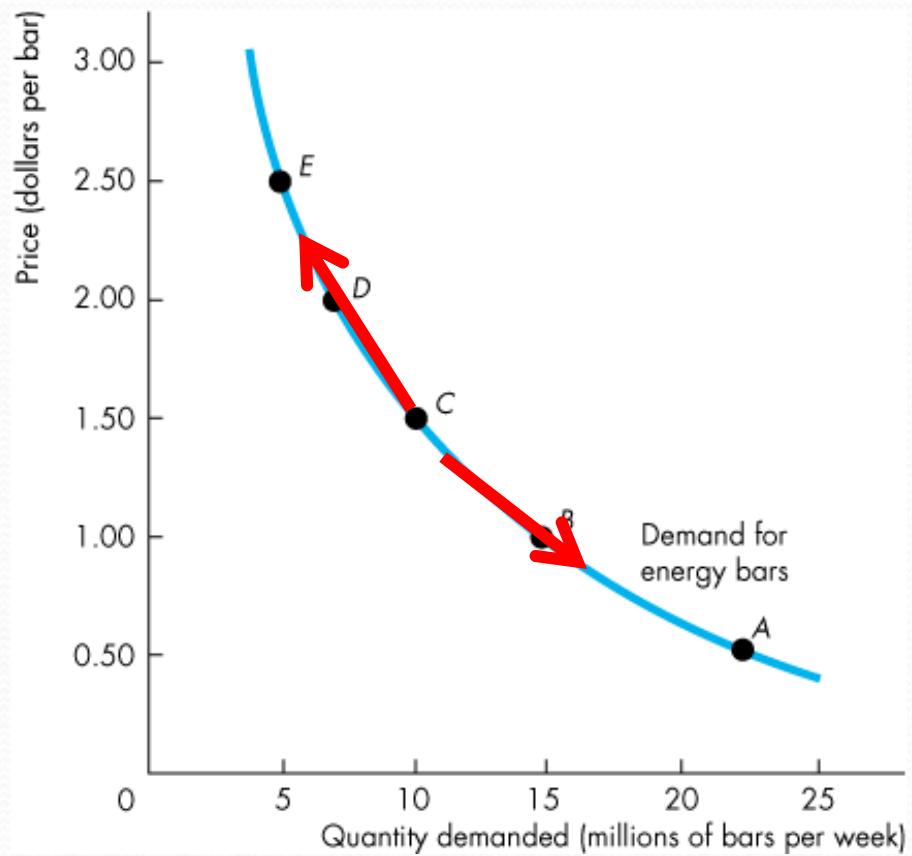
- Figure 3.1 shows a demand curve for energy bars.

	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



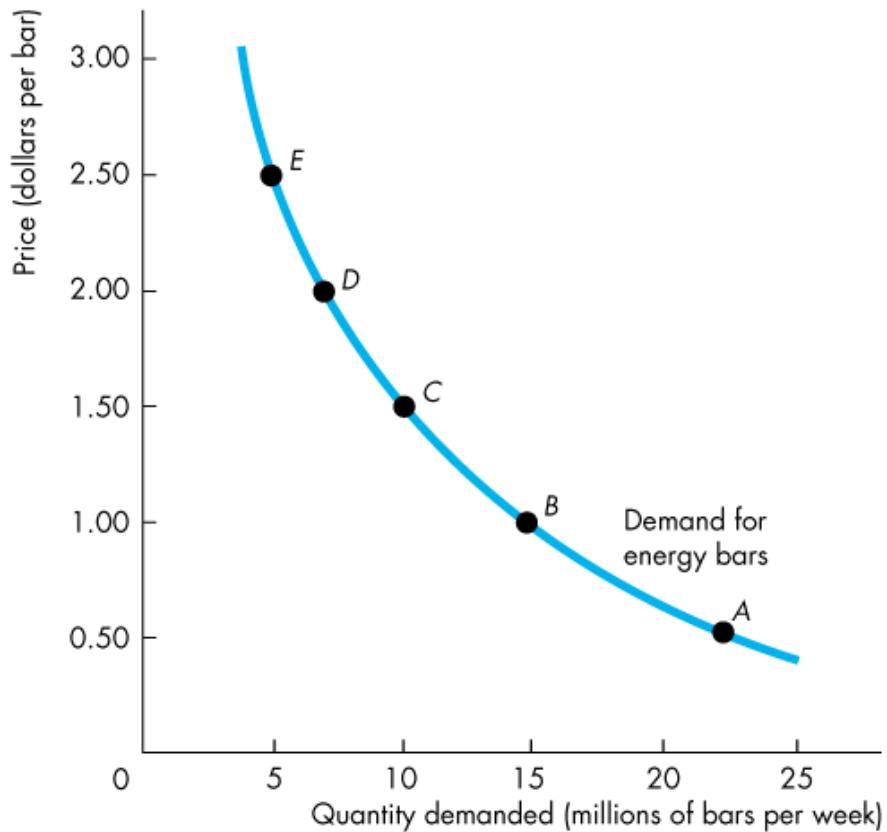
# Demand

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

P complementary good ↑  $\Rightarrow D \downarrow$  (shifts left)

P substitute good ↑  $\Rightarrow D \uparrow$  (shift right)

# Demand

- **Expected Future Prices**
- If the expected future price of a good rises, 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 expected future income increases or when credit is easy to obtain, the demand might increase now.

- **Population ↑**  $\Rightarrow$  consumer size ↑  $\Rightarrow D↑$

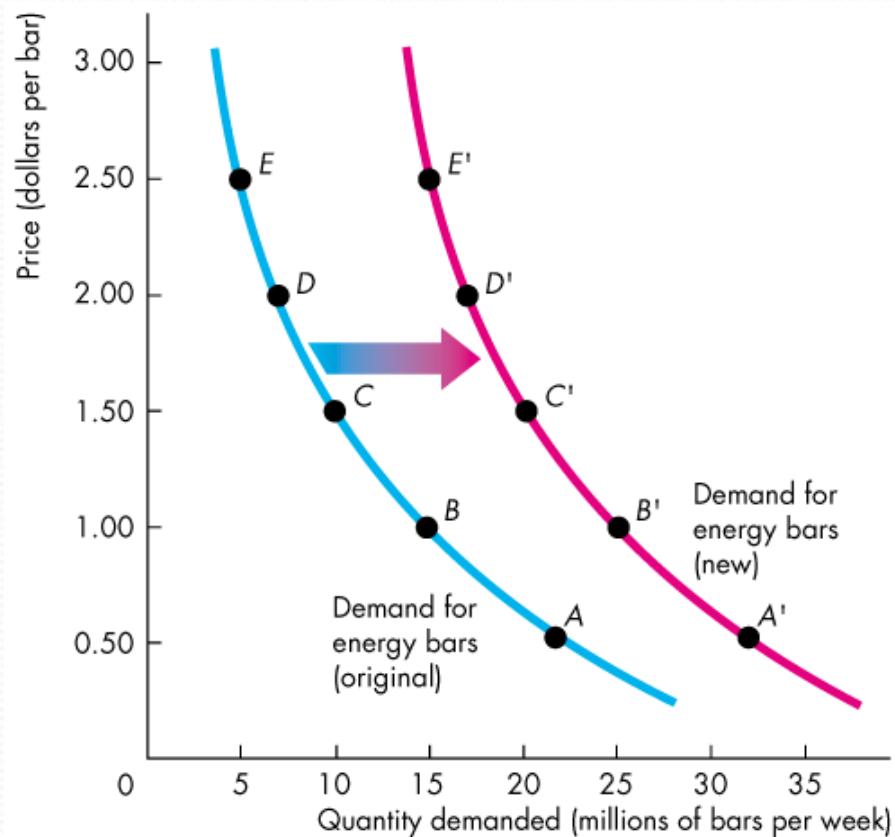
- The larger the population, the greater is the demand for all goods.

- **Preferences ↑**  $\Rightarrow D↑$

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

# Demand

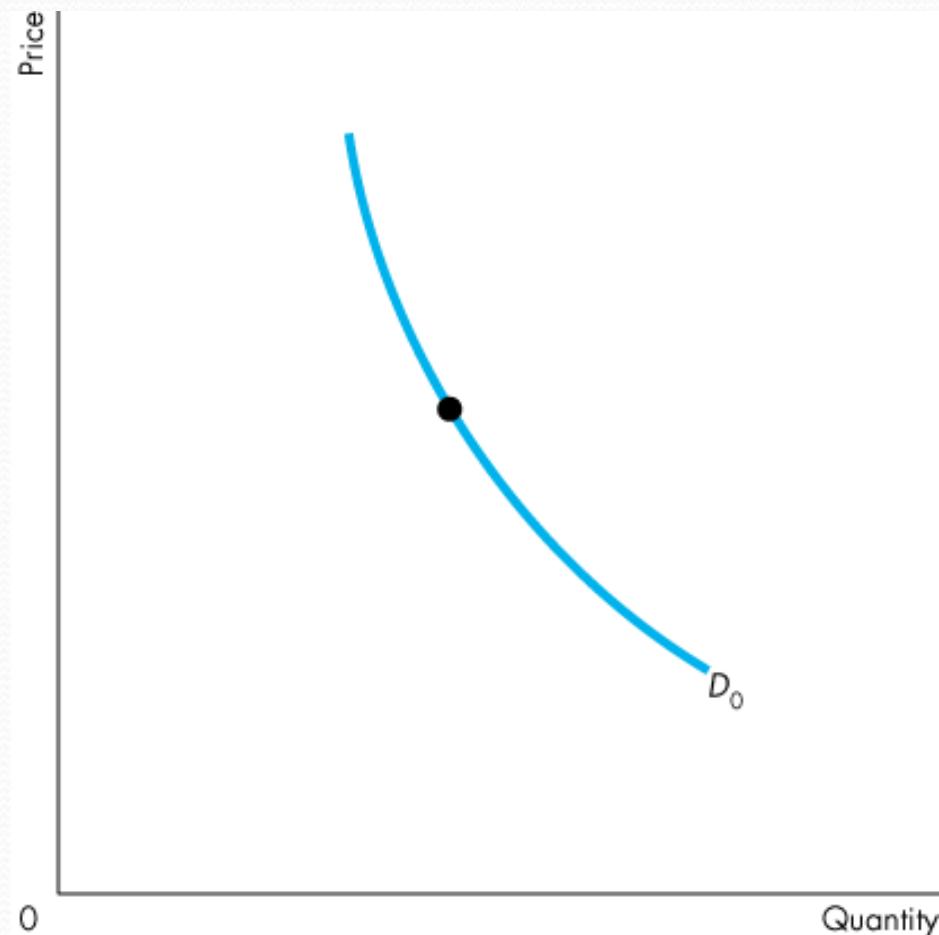
- Figure 3.2 shows an increase in demand.
- Because an energy bar is a normal good, an increase in income increases the demand for energy bars.



# Demand

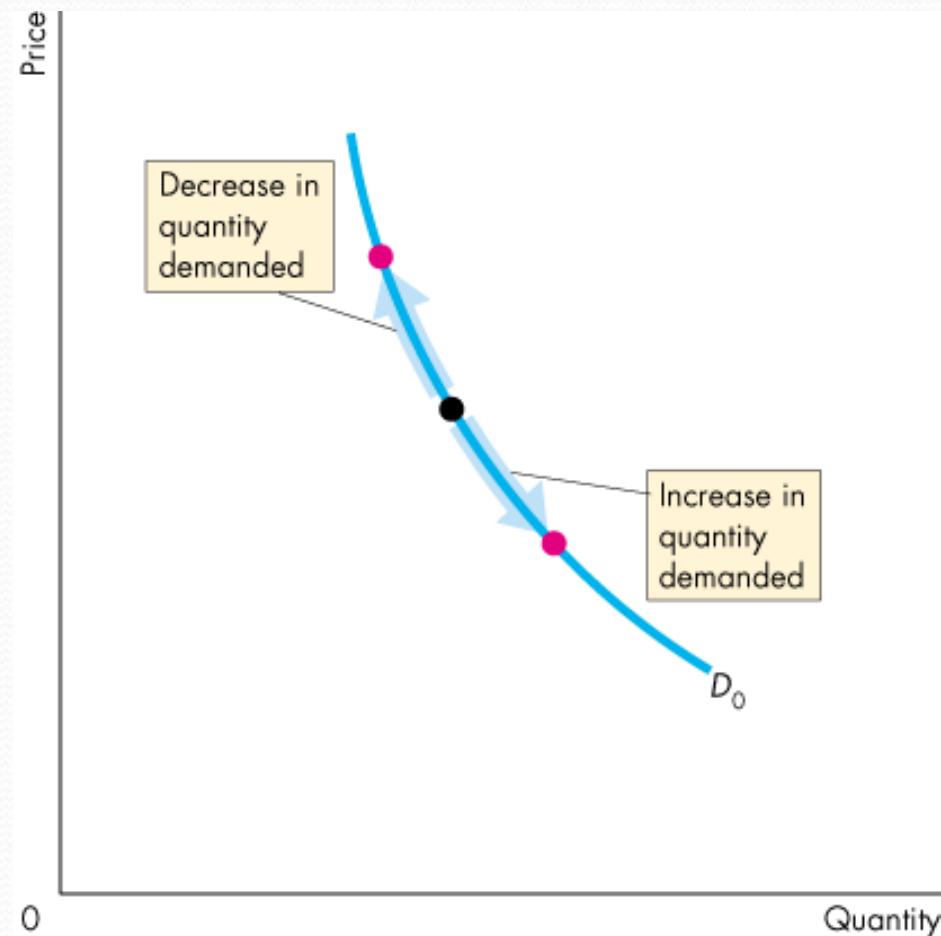
- A Change in the Quantity Demanded Versus a Change in Demand

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



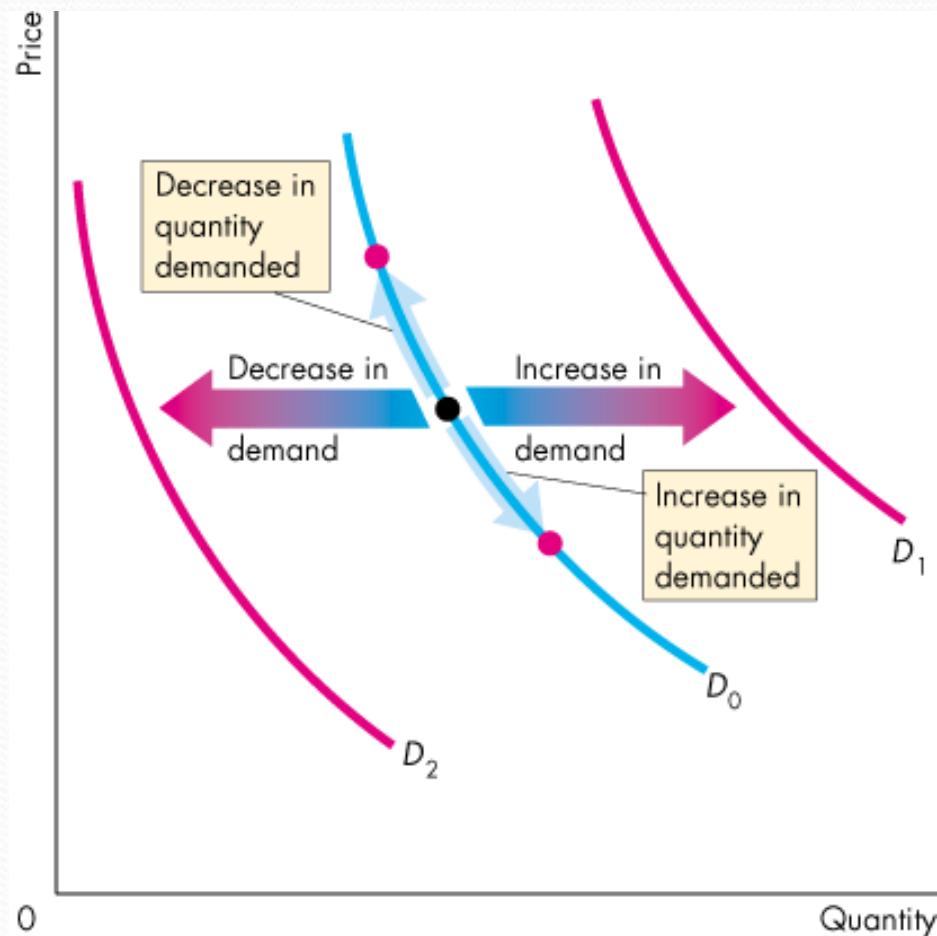
# Demand

- **Movement Along the Demand Curve**
- When the price of the good changes and everything else remains 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

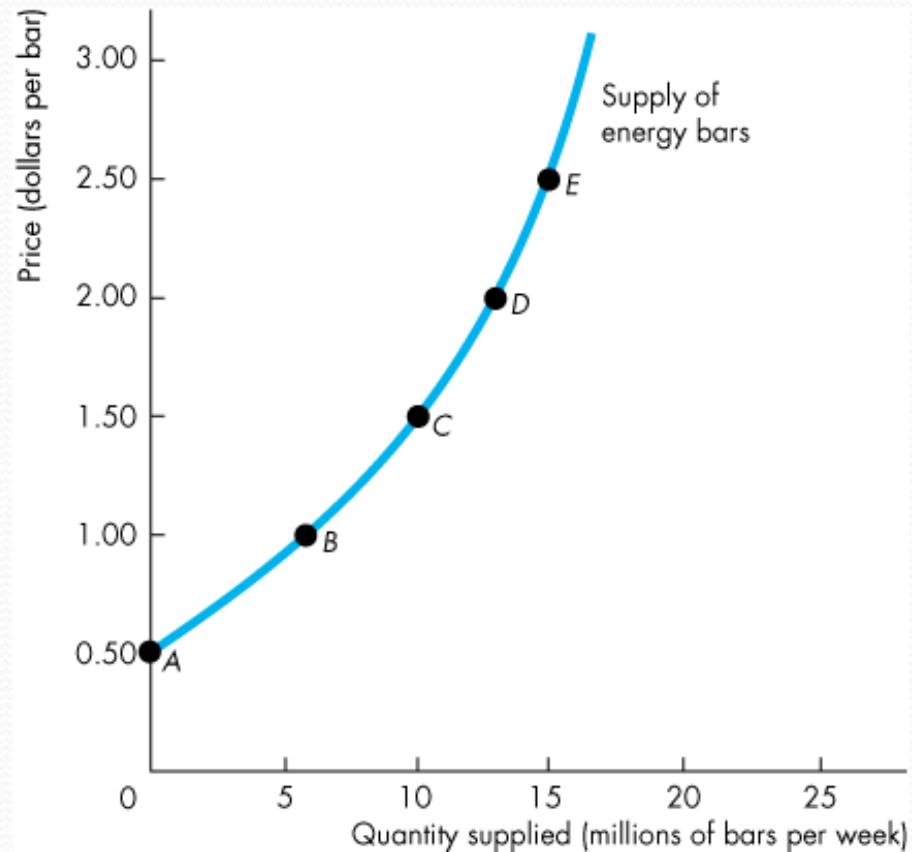
- The Law of Supply
  - The **law of supply** states:
  - Other things remaining the same, the higher the price of a good, the greater is the quantity supplied; and
  - the lower the price of a good, the smaller is the quantity supplied.
  - The law of supply results from the general tendency for the marginal cost of producing a good or service to increase as the quantity produced increases (Chapter 2, page 33).
  - 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.
- A rise in the price of an energy bar, other things remaining the same, brings an increase in the quantity supplied.



# 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 five 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** (*Say labour*)
- 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 expected future price of a good rises, the 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**

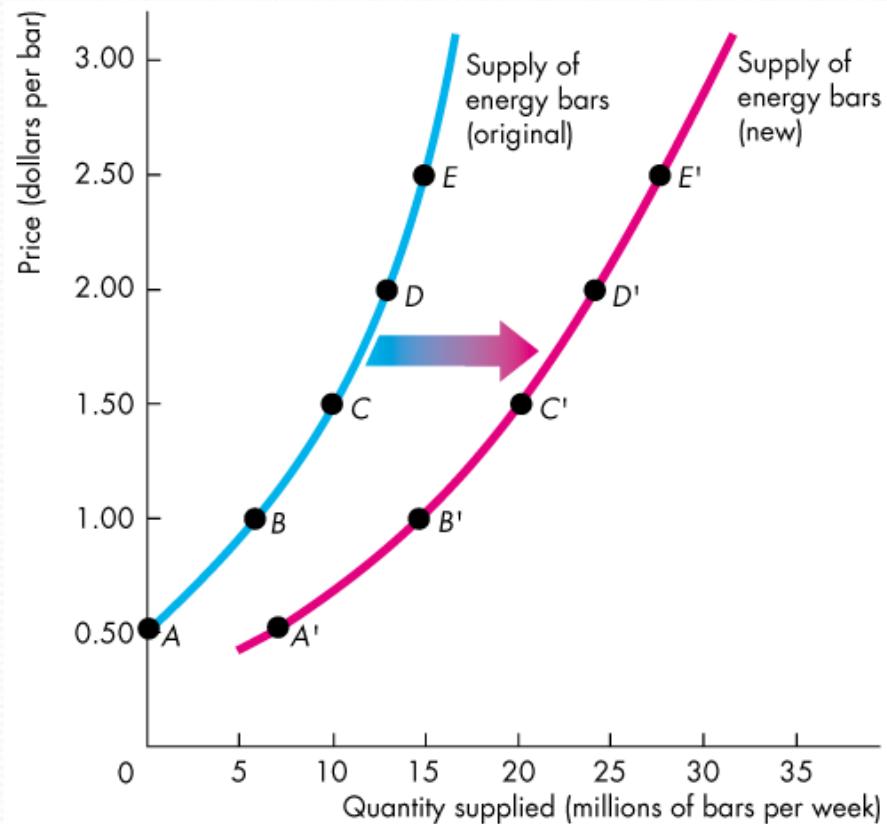
- Advances in technology create new products and lower the cost of producing existing products.
- So advances in technology increase supply and shift the supply curve rightward.

- **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.

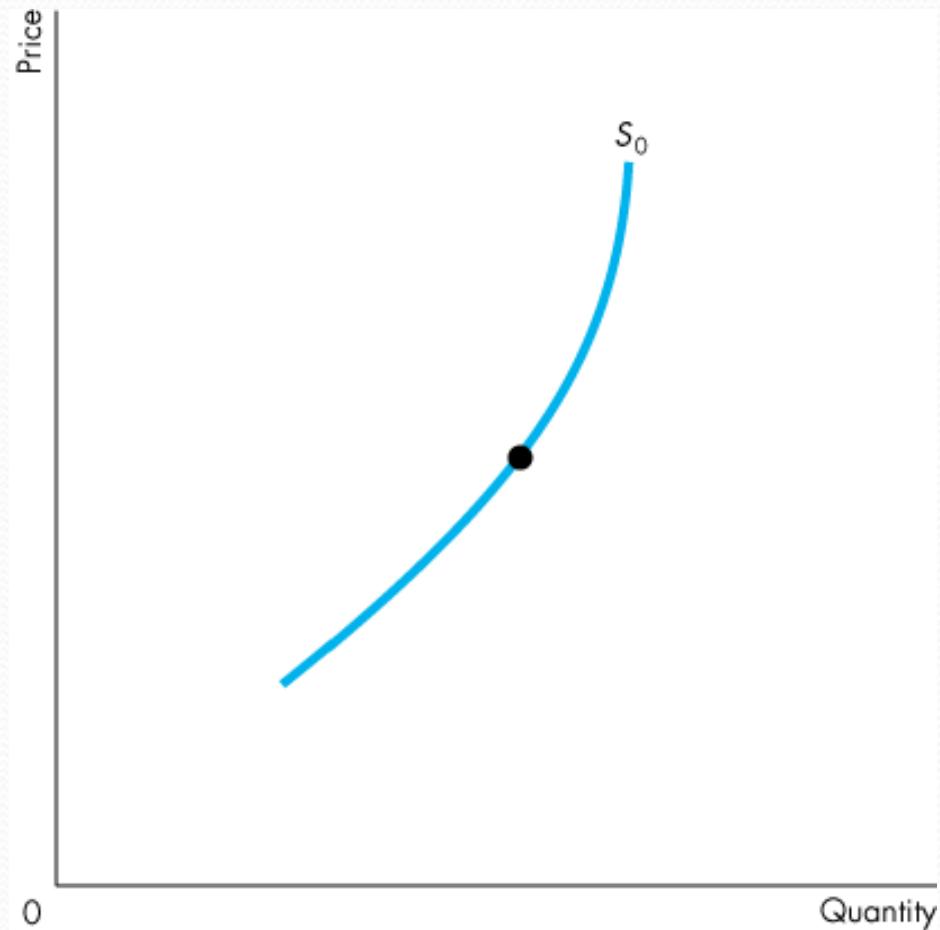
# Supply

- Figure 3.5 shows an increase in supply.
- An advance in the technology for producing energy bars increases the supply of energy bars and shifts the supply curve rightward.



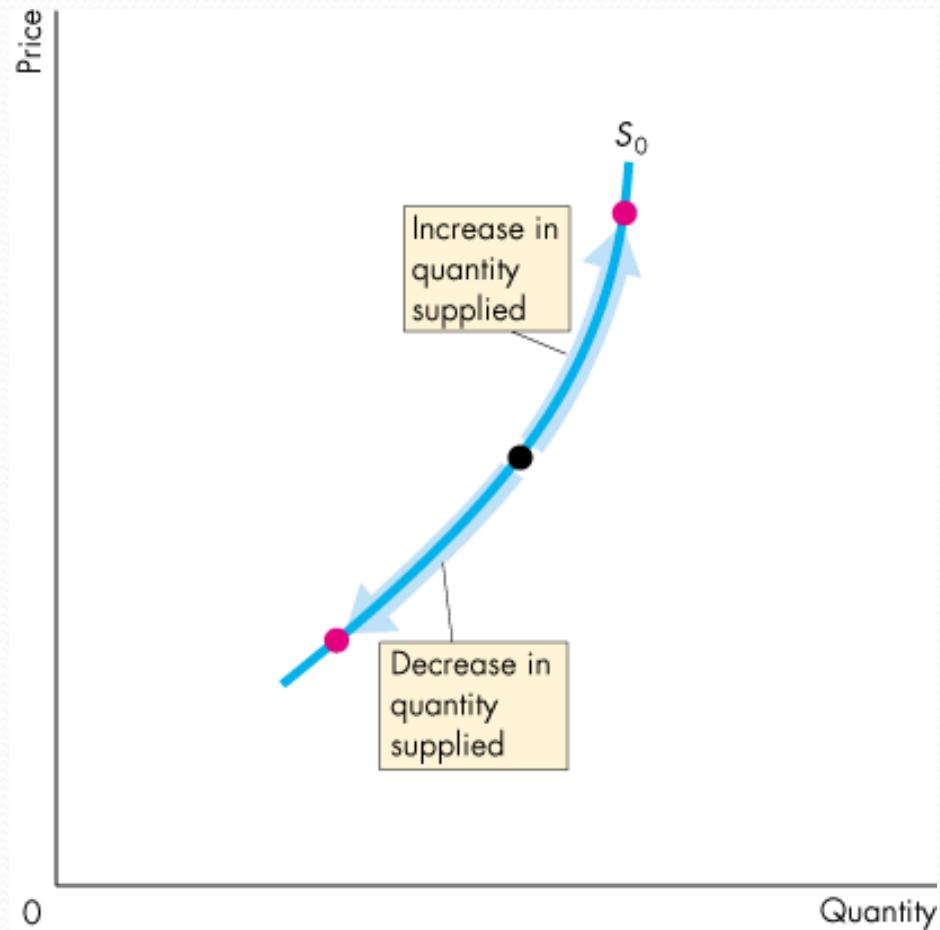
## Supply

- 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.



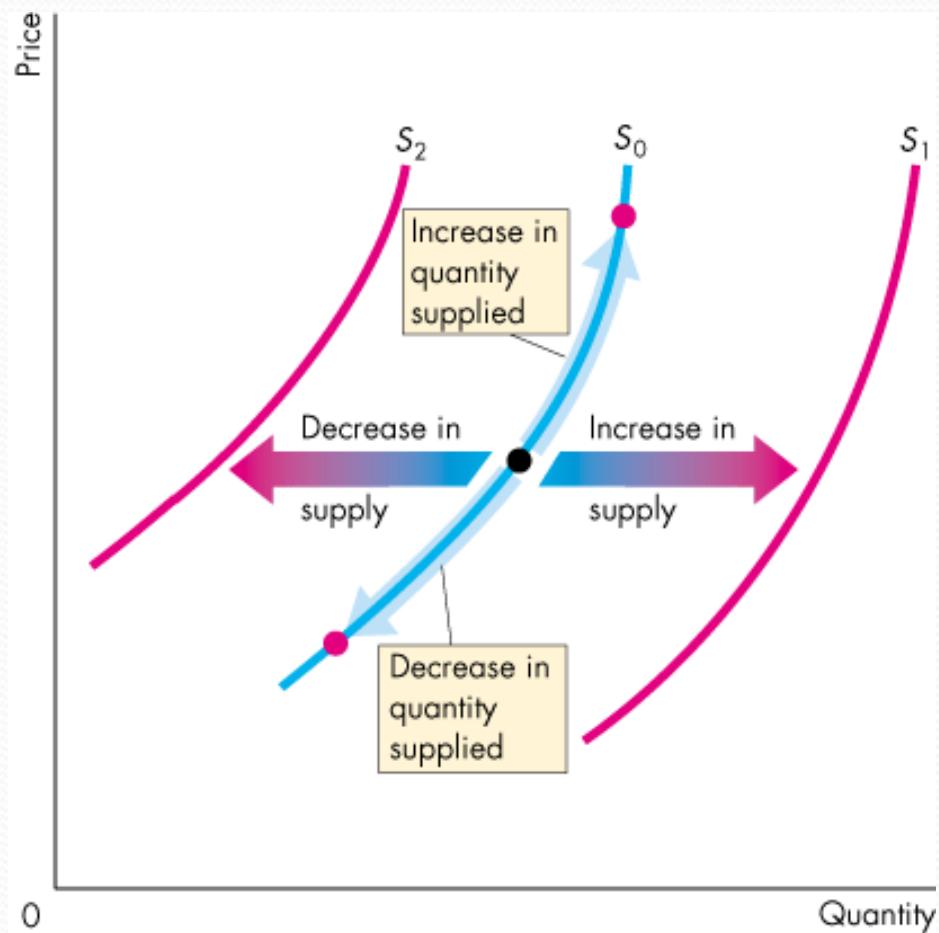
# Supply

- **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.



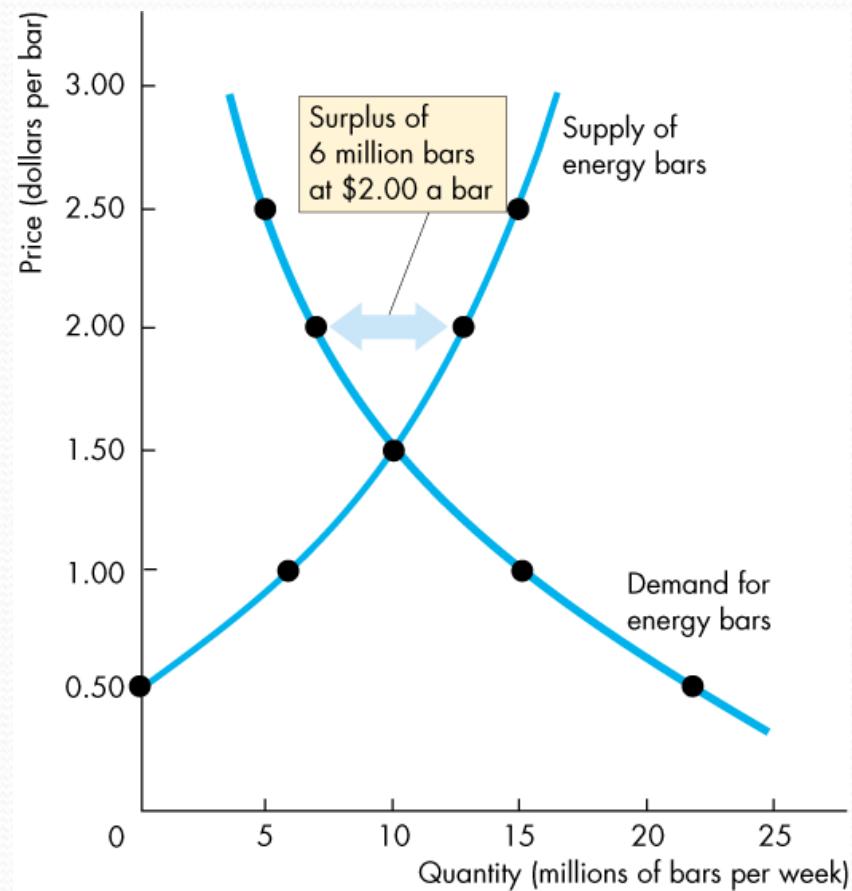
# Market Equilibrium

- *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

- Price as a Regulator

- Figure 3.7 illustrates the equilibrium price and equilibrium quantity.
- If the price is \$2.00 a bar, the quantity supplied *exceeds* the quantity demanded.
- There is a *surplus* of 6 million energy bars.

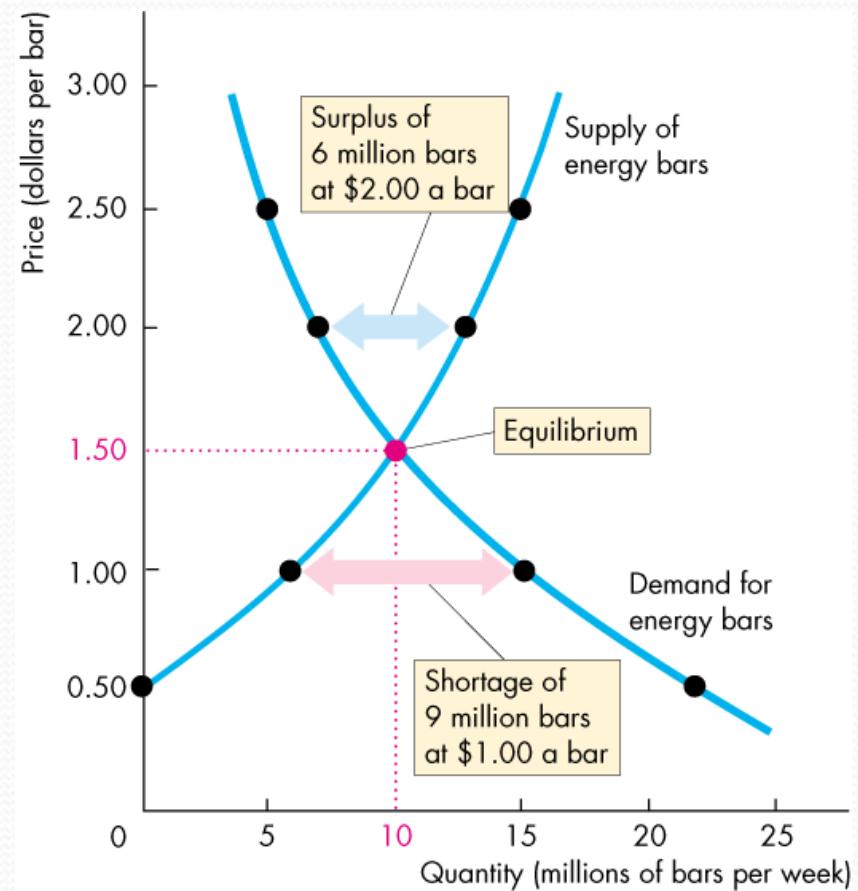


# Market Equilibrium

- If the price is \$1.00 a bar, the quantity demanded exceeds the quantity supplied.
- There is a *shortage* of 9 million energy bars.

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

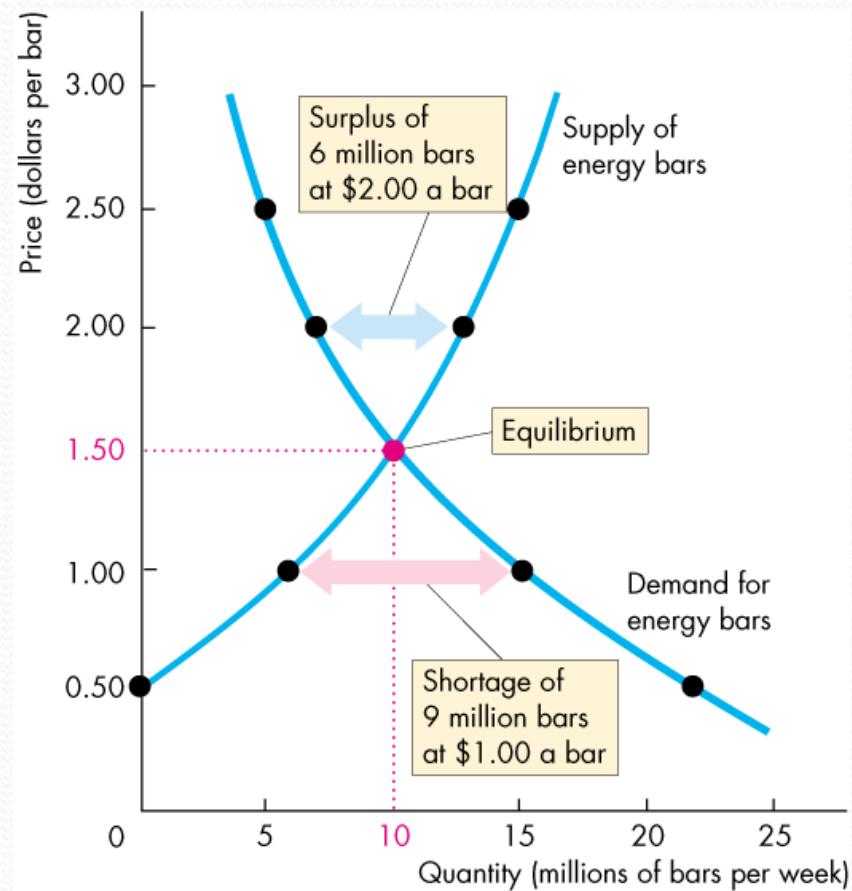
There is neither a shortage nor a surplus of energy bars.



# Market Equilibrium

- Price Adjustments

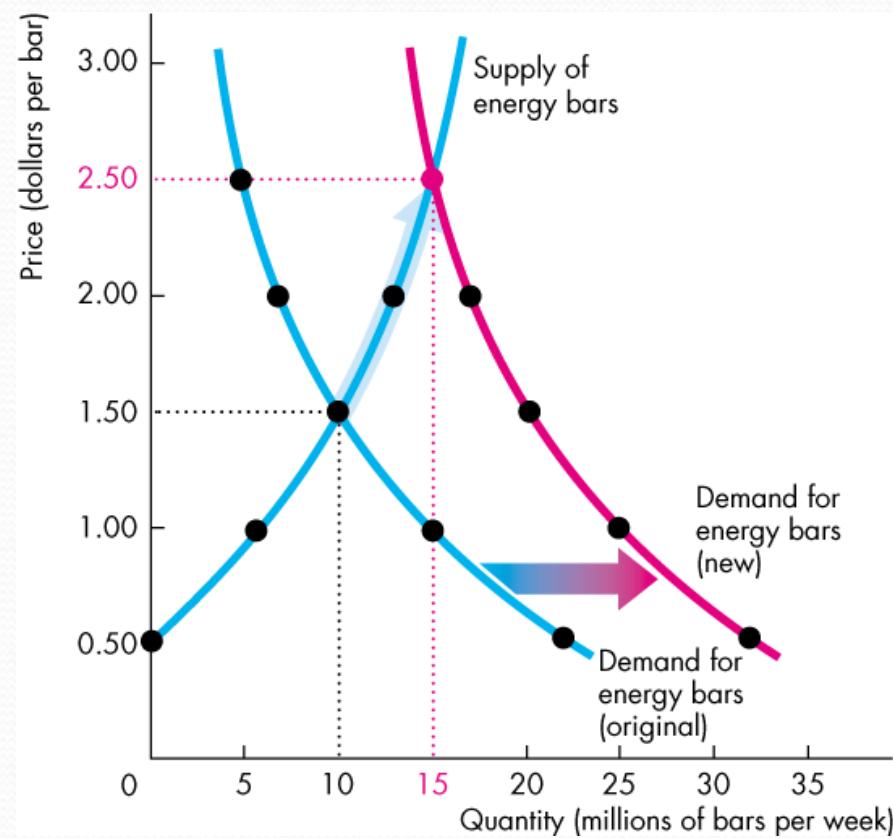
- At any price above the equilibrium price, a *surplus* forces the price down.
- At any price below the equilibrium price, a *shortage* forces the price up.
- At the equilibrium price, buyers' plans and sellers' plans agree and the price doesn't change until some event changes either demand or supply.



# 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*.

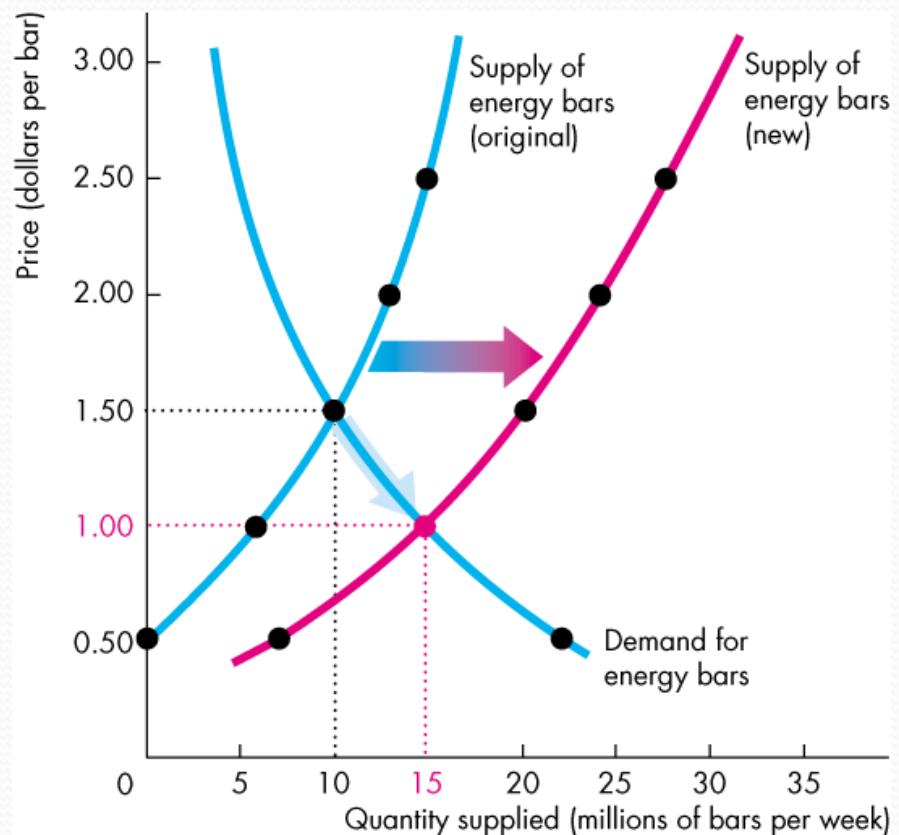
The price rises, and the quantity supplied increases along the supply curve.



# Predicting Changes in Price and Quantity

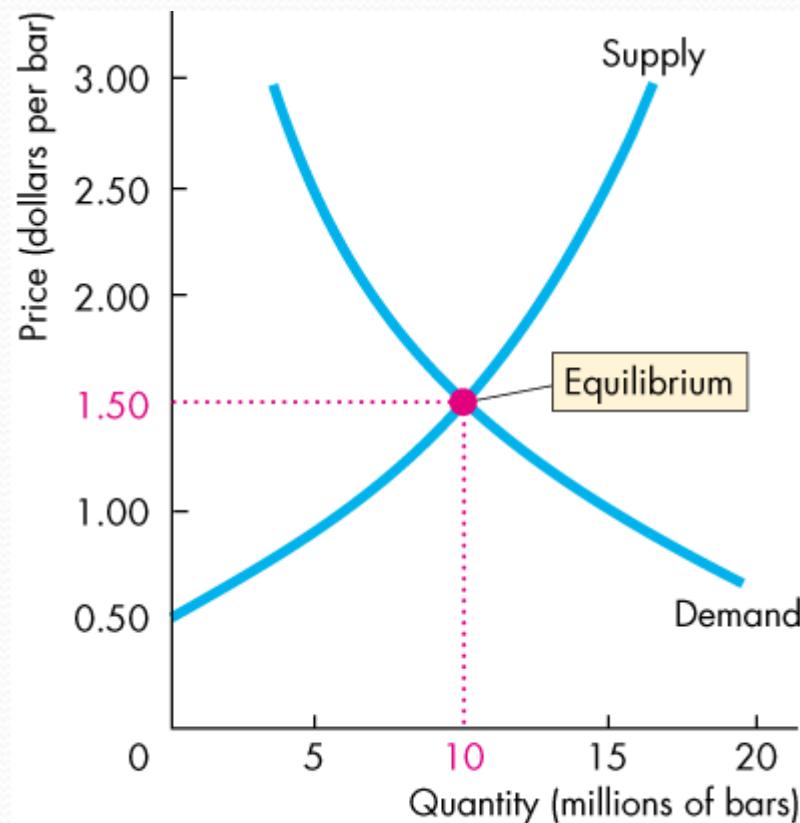
- An Increase in Supply
  - Figure 3.9 shows that when supply increases the supply curve shifts rightward.
  - At the original price, there is now a *surplus*.

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



# Predicting Changes in Price and Quantity

- All Possible Changes in Demand and Supply
  - A change demand or supply or both demand and supply changes the equilibrium price and the equilibrium quantity.



(a) No change in demand or supply

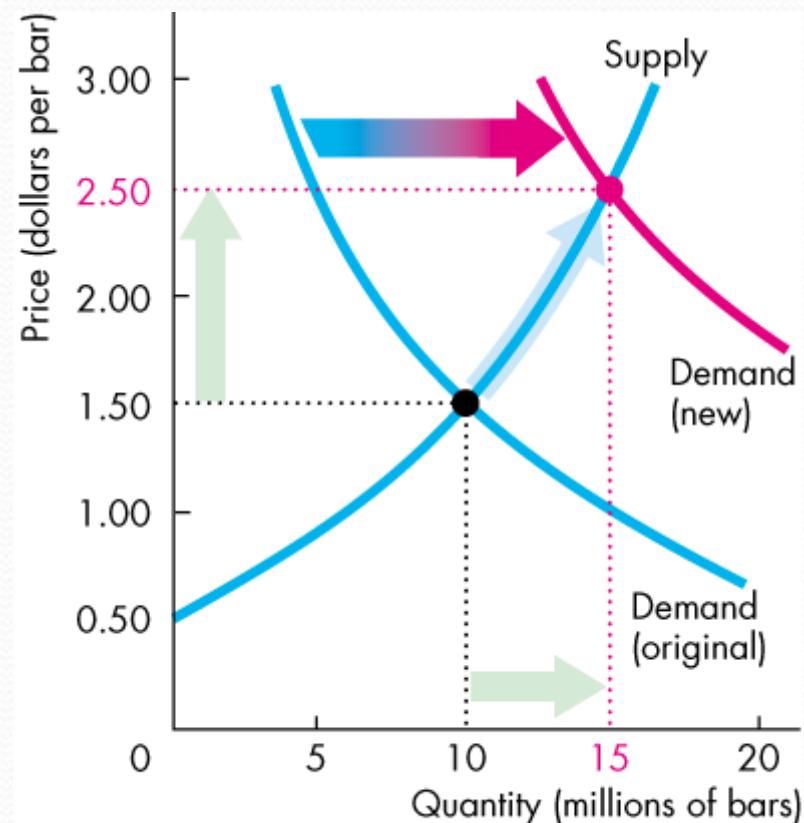
# Predicting Changes in Price and Quantity

## Change in Demand with No Change in Supply

When demand increases,

there is a movement up along the supply curve.

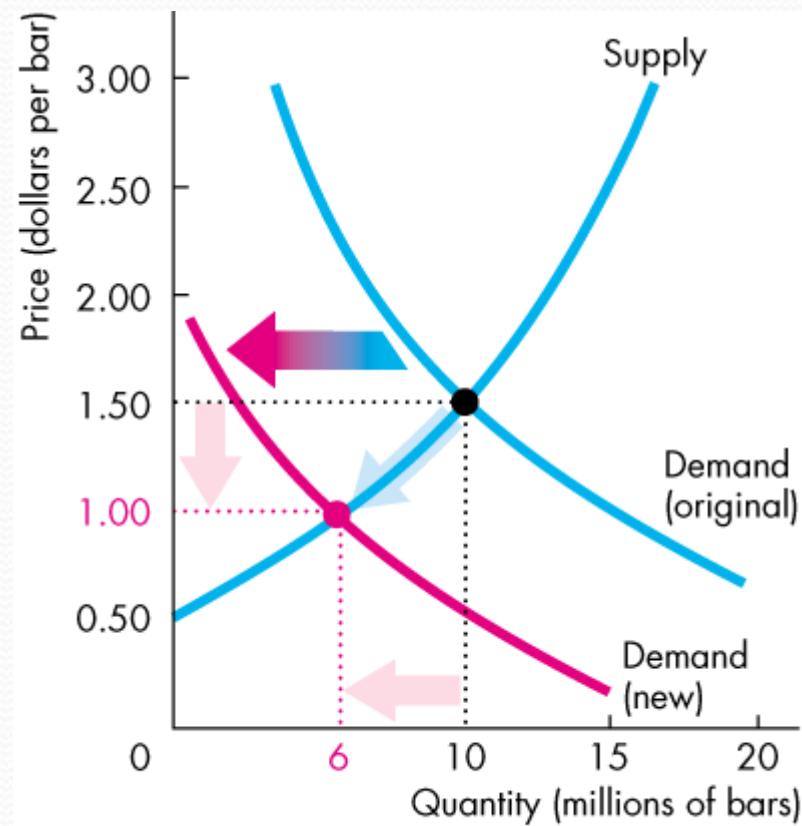
The equilibrium price *rises* and the equilibrium quantity *increases*.



**(b) Increase in demand**

# Predicting Changes in Price and Quantity

When demand decreases, the equilibrium price *falls* and the equilibrium quantity *decreases*.



(c) Decrease in demand

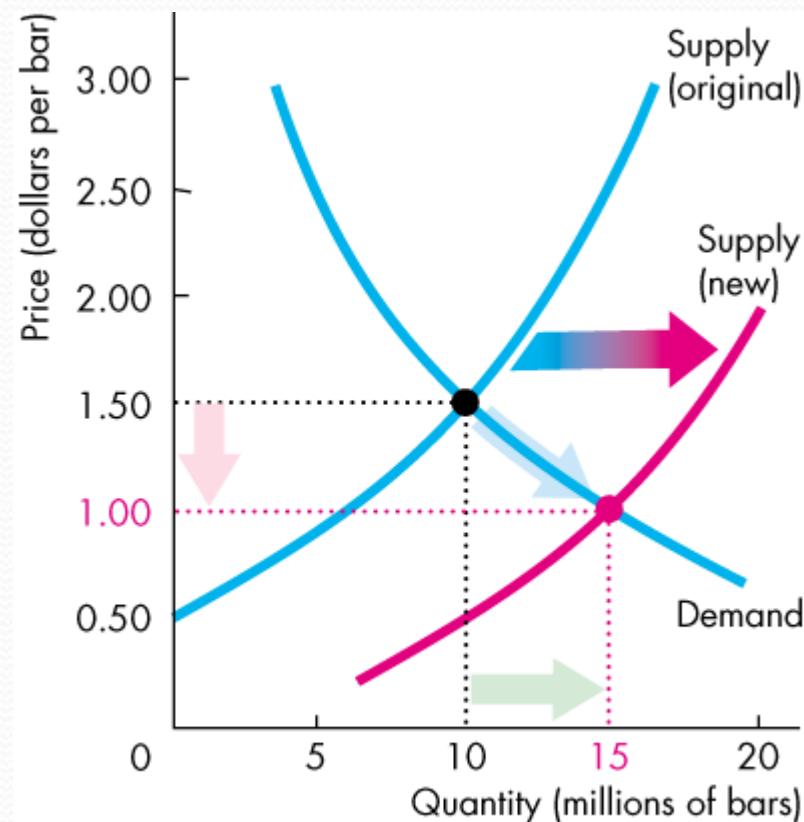
# Predicting Changes in Price and Quantity

## Change in Supply with No Change in Demand

When supply increases,

there is a movement down along the demand curve.

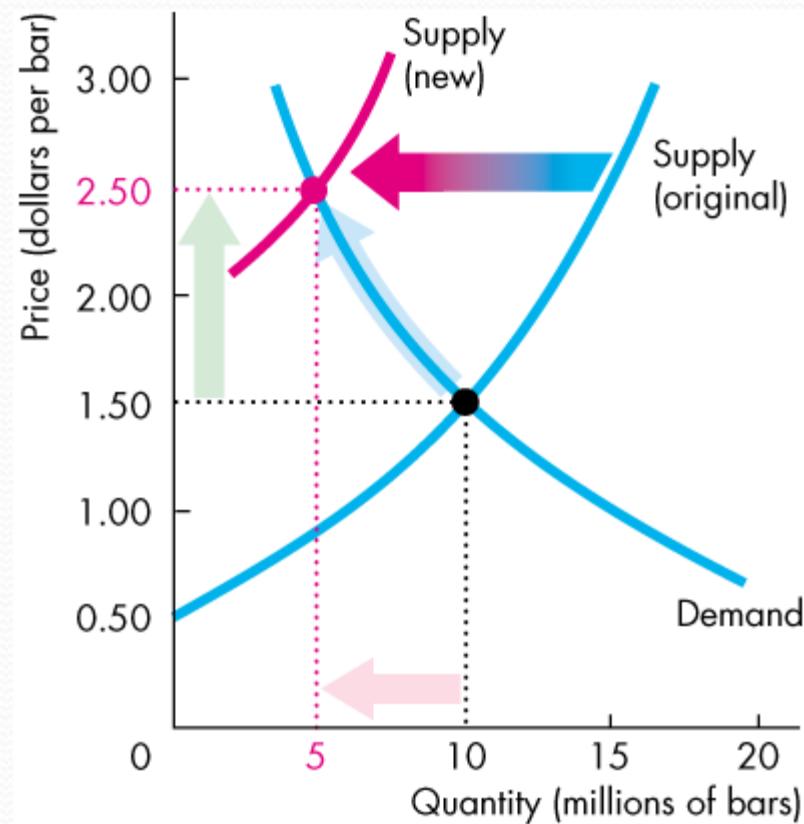
The equilibrium price *falls* and the equilibrium quantity *increases*.



(d) Increase in supply

# Predicting Changes in Price and Quantity

When supply decreases,  
the equilibrium price *rises*  
and the equilibrium  
quantity *decreases*.



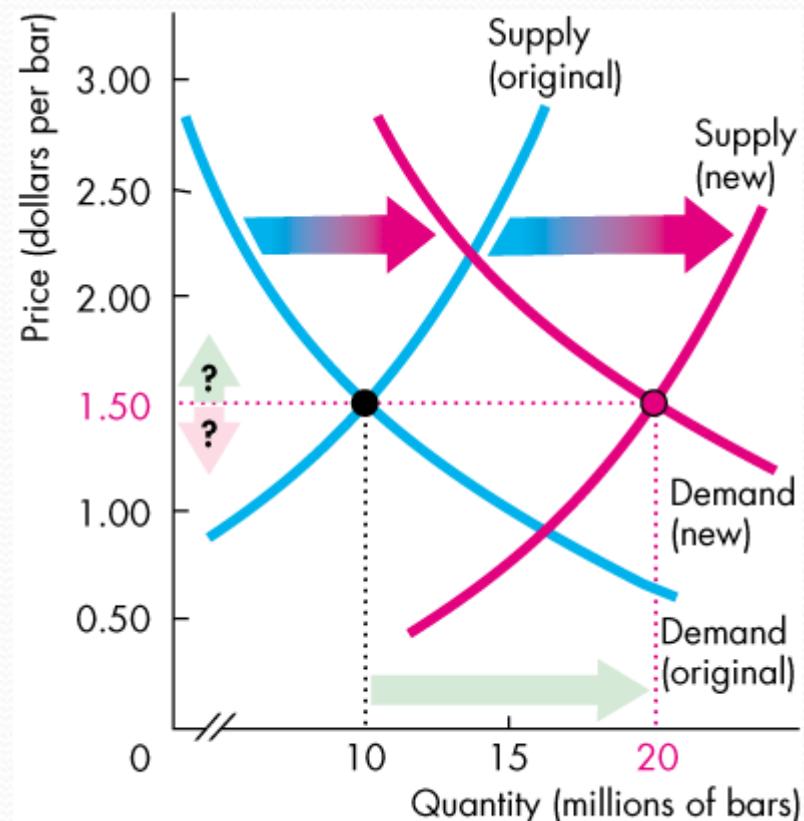
(g) Decrease in supply

# Predicting Changes in Price and Quantity

## Increase in Both Demand and Supply

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 equilibrium price and the increase in supply lowers it.



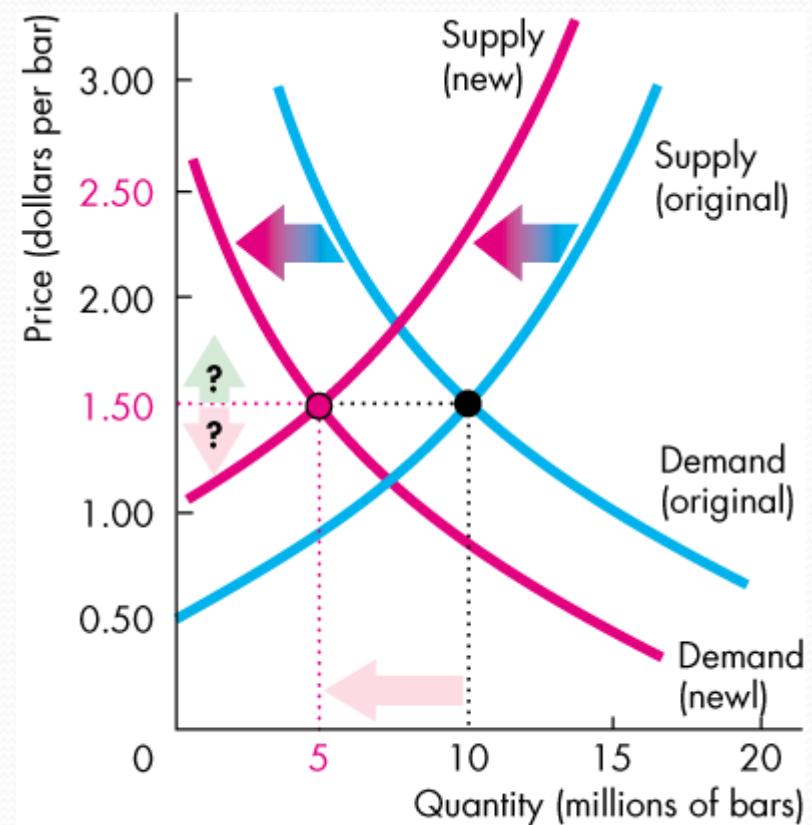
(e) Increase in both demand and supply

# Predicting Changes in Price and Quantity

## Decrease in Both Demand and Supply

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 equilibrium price and the decrease in supply raises it.



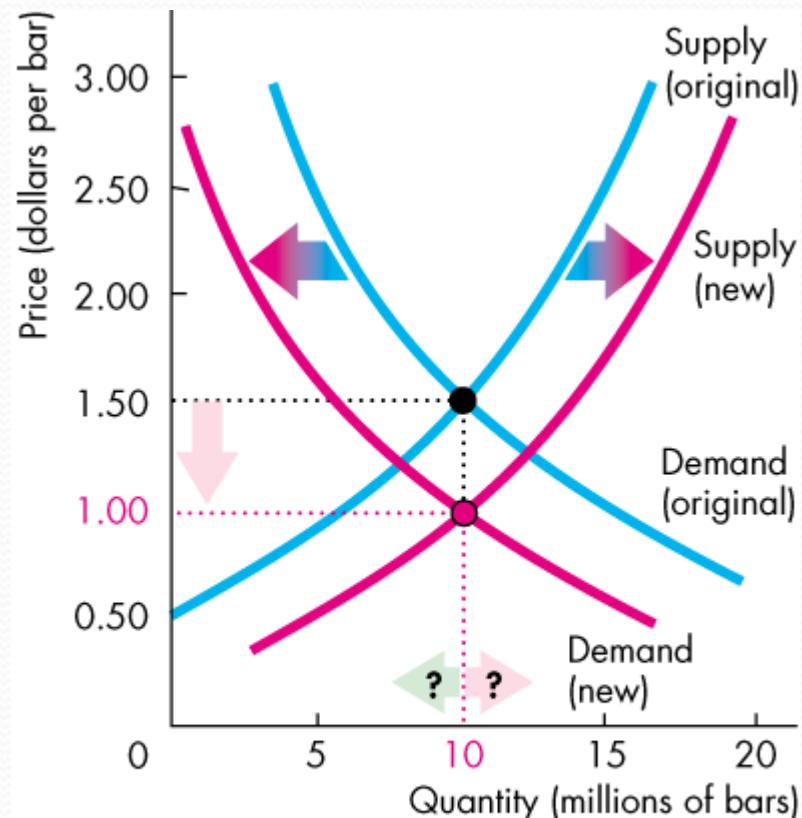
(i) Decrease in both demand and supply

# Predicting Changes in Price and Quantity

## Decrease in Demand and Increase in Supply

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 equilibrium quantity and the increase in supply increases it.



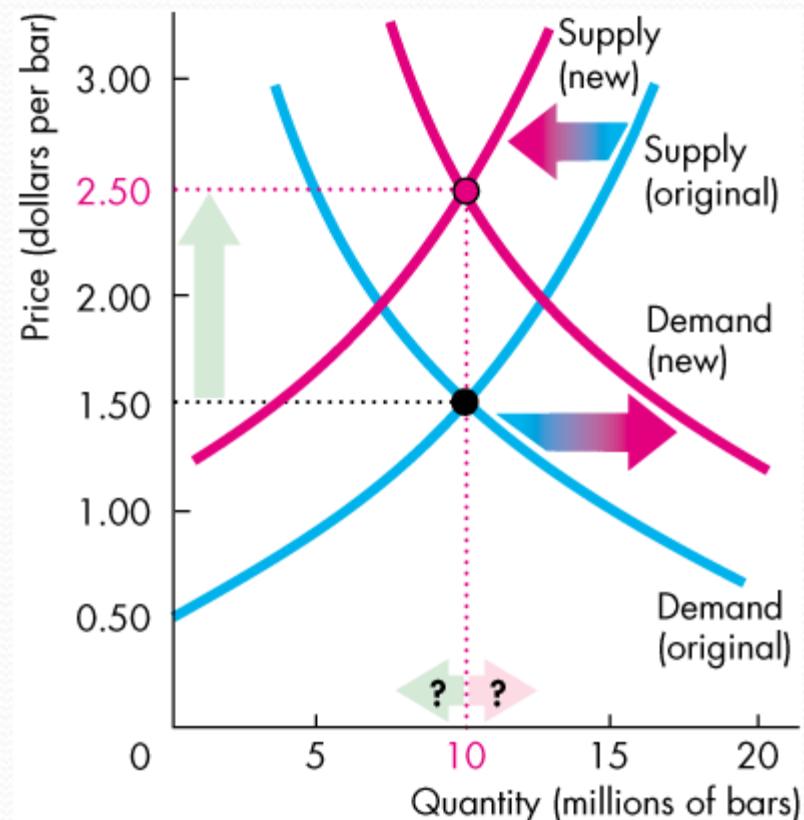
(f) Decrease in demand and increase in supply

# Predicting Changes in Price and Quantity

## Increase in Demand and Decrease in Supply

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 equilibrium quantity and the decrease in supply decreases it.



(h) Increase in demand and decrease in supply