Demand and supply

Objectives :

Distinguish between demanded and demand and explain what determines demand.

Distinguish between quantity supplied and supply and explain what determines supply.

Explain how demand and supply determine price and quantity in a market and explain the effects of changes in demand and supply.

Explain how price ceilings, price floors, and sticky prices cause shortages, surpluses, and unemployment.

The law of demand

Other things remaining the same, if the price of a good rises, the quantity demanded of that good decreases; if the price of a good falls, the quantity demanded of that good increases.

Why does the quantity demanded increase if the price falls?

The answer is that faced with a limited budget,people always have an incentive to find the best deals they can.

Demand schedule and demand curve

Demand is the relationship between the quantity demanded and the price of a good when all other influences on buying plans remain the same.

The quantity demanded is one quantity at one price.

A demand schedule is a list of the quantities demanded at each different price.

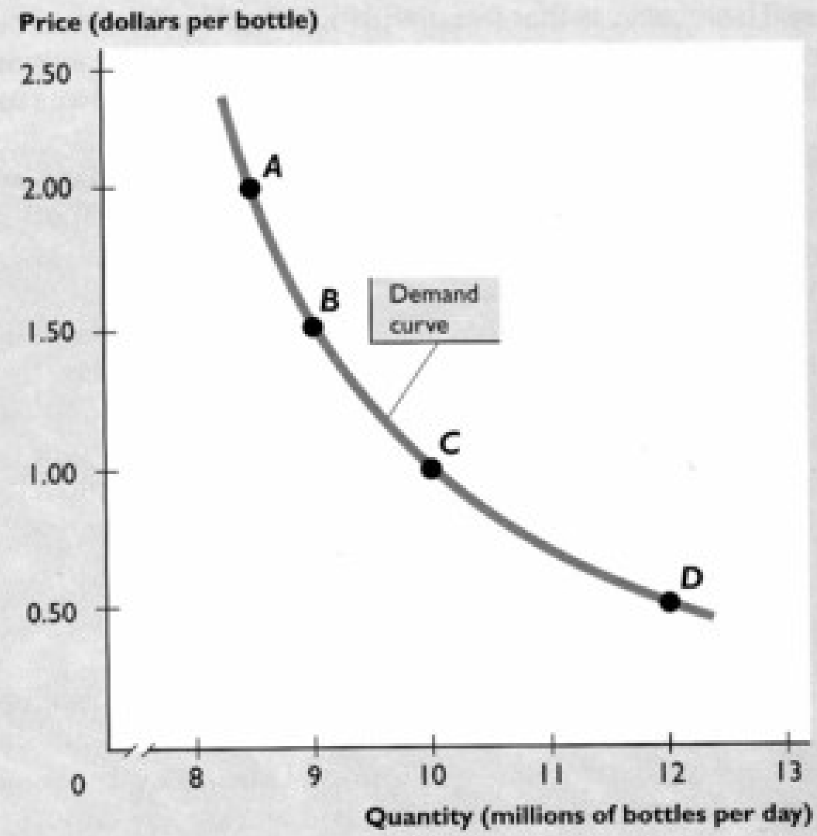
A demand curve is a graph of the relationship between the quantity demanded of a good and its price.

Demand Schedule and Demand Curve

The table shows a demand schedule, which lists the quantity of water demanded at each price if all other influences on buying plans remain the same. At a price of $1.50 a bottle, the quantity demanded is 9 million bottles a day.

The demand curve shows the relationship between the quantity demanded and price, everything else remaining the same. The downward-sloping demand curve illustrates the law of demand. When the price falls, the quantity demanded increases; and when the price rises, the quantity demanded decreases.

	Price (dollars per bottle)	Quantity demanded (millions of bottles per day)
A	2.00	8.5
B	1.50	9.0
C	1.00	10.0
D	0.50	12.0



Changes in demand

The demand curve shows how the quantity demanded changes when the price changes but all other influences on buying plans remain de same.

When the price change the result is a change in the quantity demanded.

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

1) Prices of related goods

A change in the price of one good can bring a change in the demand for a related good.

A **substitute** for a good is another good that can be consumed in its place. (butter:margarine, taxi: subway)

The demand for a good increases if the price of one substitutes rises; the demand for a good decreases if the price of its substitutes falls.

A **complement** of a good is another good that is consumed with it. (hamburger: fries)

The demand for a good decreases if the price of one its complements rises; and the demand for a good increases if the price of one of its complements falls.

2) Income

A good is a **normal good** if a rise in income brings an increase in demand and a fallin income brings a decrease in demand.

A good is **inferior good** if a rise in income brings a decrease in demand and a fall in income brings an increase in demand.

3) Expectations

Expected future income and prices influence demand.

4) Number of buyers

The greater the numbers of buyers in a market, the larger is demand.

5) Preferences.

When preferences change, the demand for one item decreases and the demand for another increases.

Change in Quantity Demanded Versus Change in Demand

❶ A decrease in the quantity demanded

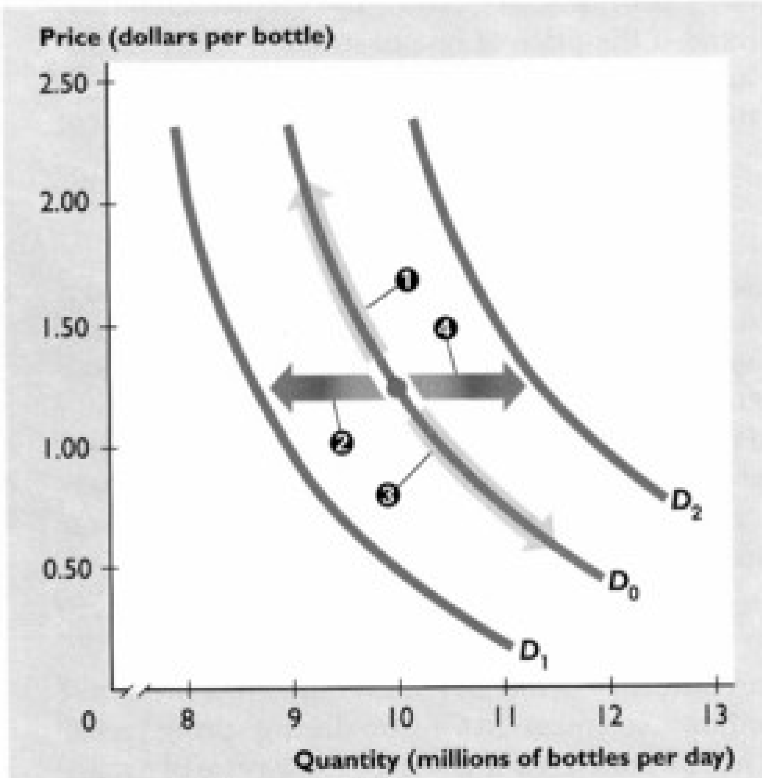
If the price of a good rises, *cet. par.*, the quantity demanded decreases. There is a movement up along the demand curve D_0.

❷ A decrease in demand

Demand decreases and the demand curve shifts leftward (from D_0 to D_1) if:

- The price of a substitute falls.
- The price of a complement rises.
- The price of the good is expected to fall or income is expected to fall in the future.
- Income decreases.*
- The number of buyers decreases.

* Bottled water is a normal good



❸ An increase in the quantity demanded

If the price of a good falls, *cet. par.*, the quantity demanded increases. There is a movement down along the demand curve D_0.

❹ An increase in demand

Demand increases and the demand curve shifts rightward (from D_0 to D_2) if:

- The price of a substitute rises.
- The price of a complement falls.
- The price of the good is expected to rise or income is expected to rise in the future.
- Income increases.*
- The number of buyers increases.

Practice problem

In the market for scooters, the following events occur, one at a time. Explain the influence of each event on the quantity demanded of scooters and on the demand for scooters. Illustrate the effects of each event by either a movement along the demand curve or a shift in the demand curve for scooters and say which event (or events) illustrates the law of demand in action. These events are:

a. The price of a scooter falls.
b. The price of a bicycle falls.
c. Citing rising injury rates, cities and towns ban scooters from sidewalks.
d. Average income increases.
e. Rumour has it that the price of a scooter will rise next month.
f. The number of buyers increases.

Supply

Quantity supplied
The amount of any good, service, or resource that people are willing and able to sell during a specified period at a specified price.

The law of supply

Other things remaining the same, if the price of a good rises, the quantity supplied of that good increases; and if the price of a good falls, the quantity supplied of that good decreases.

Supply schedule and supply curve

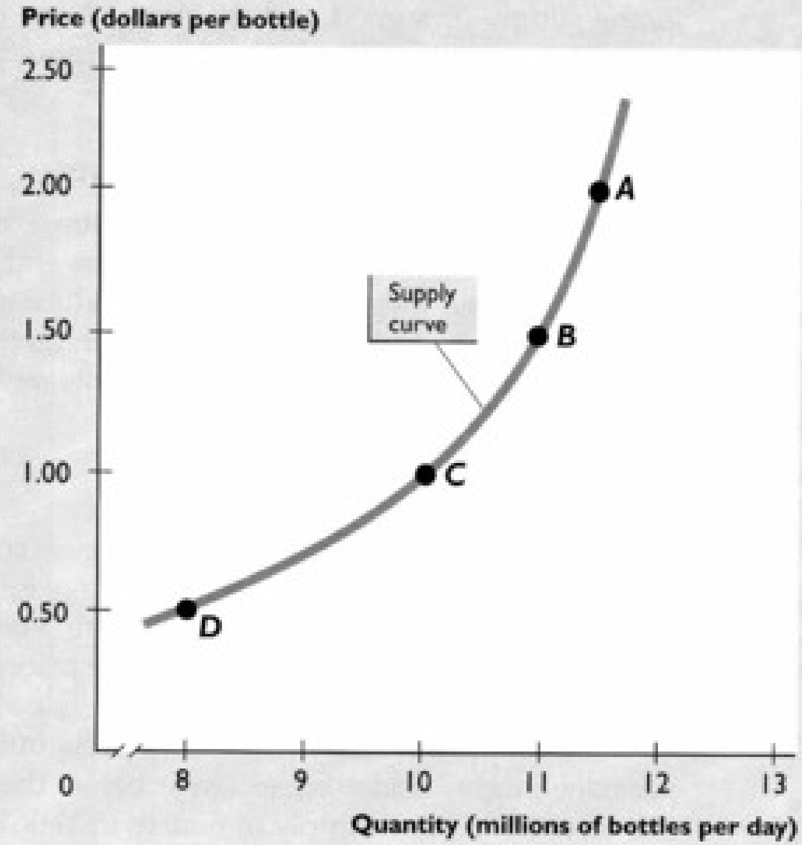
Supply is the relationship between the quantity supplied and the price of a good.

The quantity supplied is one quantity at one price.

A supply schedule lists the quantities supplied at each different price.

A supply curve is a graph of the relationship between the quantity supplied of a good and its price.

	Price (dollars per bottle)	Quantity supplied (millions of bottles per day)
A	2.00	11.5
B	1.50	11.0
C	1.00	10.0
D	0.50	8.0



The table shows a supply schedule, which lists the quantity of water supplied at each price if all other influences on selling plans remain the same. At a price of $1.50 a bottle, the quantity supplied is 11 million bottles a day.

The supply curve shows the relationship between the quantity supplied and price, everything else remaining the same. The upward-sloping supply curve illustrates the law of supply. When the price rises, the quantity supplied increases; and when the price falls, the quantity supplied decreases.

Changes in supply

When the price changes the results is a change in the quantity supplied.

When any influence on selling plans other than the price of the god changes, there is change in supply.

The main influences on selling plans that change supply are:

1) Prices of related goods

A **substitute in production** for a good is another good that can be produced in its place. The supply of a good decreases if the price of one of its substitutes in production rises; and the supply of a good increases if the price of one of its substitutes in production falls.

A **complement in production** of a good is another good that is produced along with it. Leather is a complement in production of beef. The supply of a good increases if the price of one of its complements in production rises; and the supply of a good decreases if the price of one of its complements in production falls.

2) Prices of resources and other inputs

Supply changes when the price of a resource or other input used to produce the good changes. The reason is that resource and input prices influence the cost of production. The more it costs to produce a good, the smaller is the quantity supplied of that good.

3) Expectations

Expectations about future prices influence supply.

If you think input prices are going to go up you might want to produce more now.

If you think selling prices are going to go up, you might want to wait to sell a good. (reduce the supply now increase the supply later)

4) Number of sellers

The greater the number of sellers in a market, the larger is supply.

5) Productivity

Productivity is output per unit of input. An increase in productivity lowers costs and increases supply.

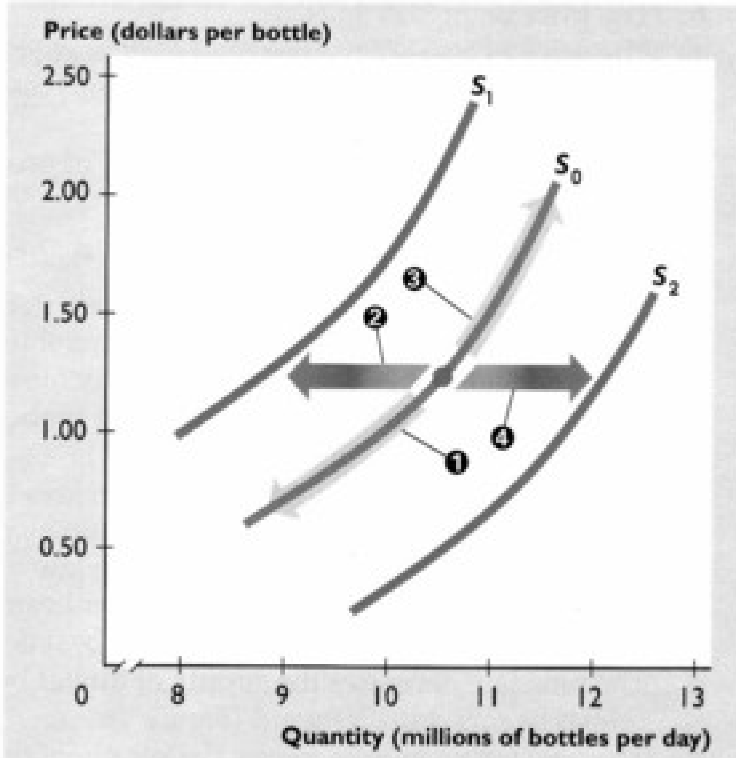
❶ A decrease in the quantity supplied

If the price of a good falls, *cet. par.*, the quantity supplied decreases. There is a movement down along the demand curve S_0.

❷ A decrease in supply

Supply decreases and the supply curve shifts leftward (from S_0 to S_1) if:

- The price of a substitute in production rises.
- The price of a complement in production falls.
- A resource price or other input price rises.
- The price of the good is expected to rise.
- The number of sellers decreases.
- Productivity decreases.



❸ An increase in the quantity supplied

If the price of a good rises, *cet. par.*, the quantity supplied increases. There is a movement up along the supply curve S_0.

❹ An increase in supply

Supply increases and the supply curve shifts rightward (from S_0 to S_2) if:

- The price of a substitute in production falls.
- The price of a complement in production rises.
- A resource price or other input price falls.
- The price of the good is expected to fall.
- The number of sellers increases.
- Productivity increases.

In the market for timber beams, several events occur one at a time. Explain the influence of each event on the quantity supplied of timber beams and the supply of timber beams. Illustrate the effects of each event by either a movement along the supply curve or a shift in the supply curve of timber beams and say which event (or events) illustrates the law of supply in action. The events are:

- **a.** The wage rate of sawmill workers rises.
- **b.** The price of sawdust rises.
- **c.** The price of a timber beam rises.
- **d.** The price of a timber beam is expected to rise next year.
- **e.** Environmentalists convince Parliament to pass a new law that reduces the amount of forest that can be cut for timber products.
- **f.** A new technology lowers the cost of producing timber beams.

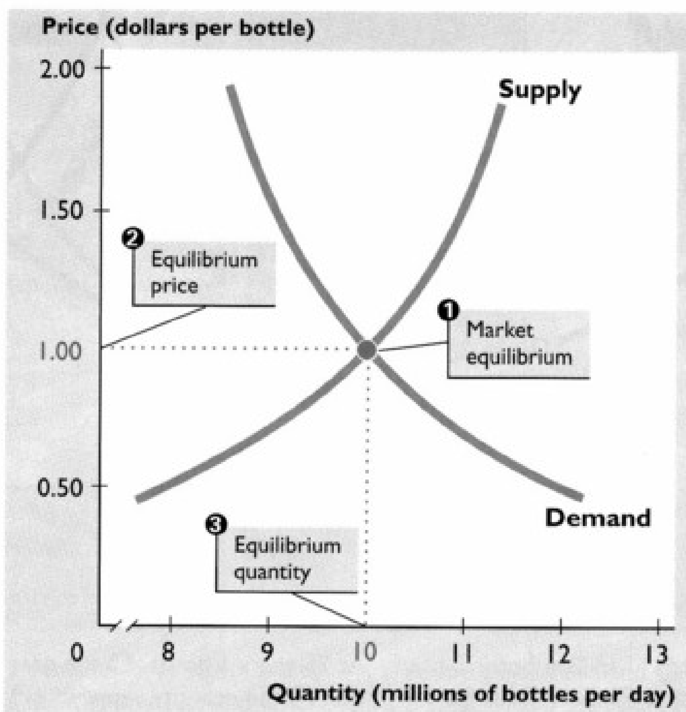
Market equilibrium

Market equilibrium occurs when the quantity demanded equals the quantity supplied.

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

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

Equilibrium price and quantity



1. Market equilibrium occurs at the intersection of the demand curve and the supply curve.
2. The equilibrium price is $1.00 a bottle.
3. At the equilibrium price, the quantity demanded and the quantity supplied are 10 million bottles a day, which is the equilibrium quantity.

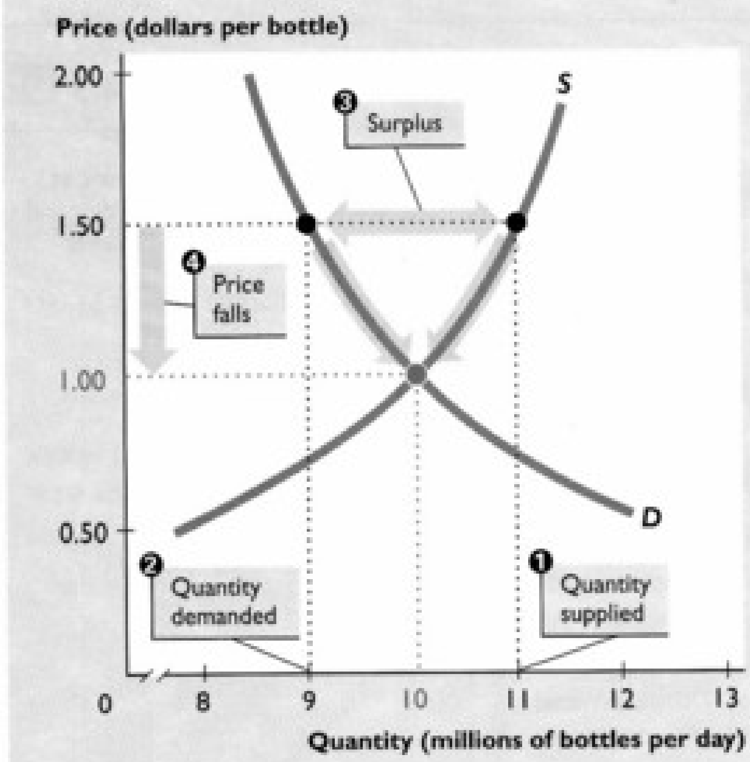
Price: a market's automatic regulator

When there is a shortage, the price rises; and when there is a surplus, the price falls.

Price is the regulator that pulls the market towards its equilibrium.

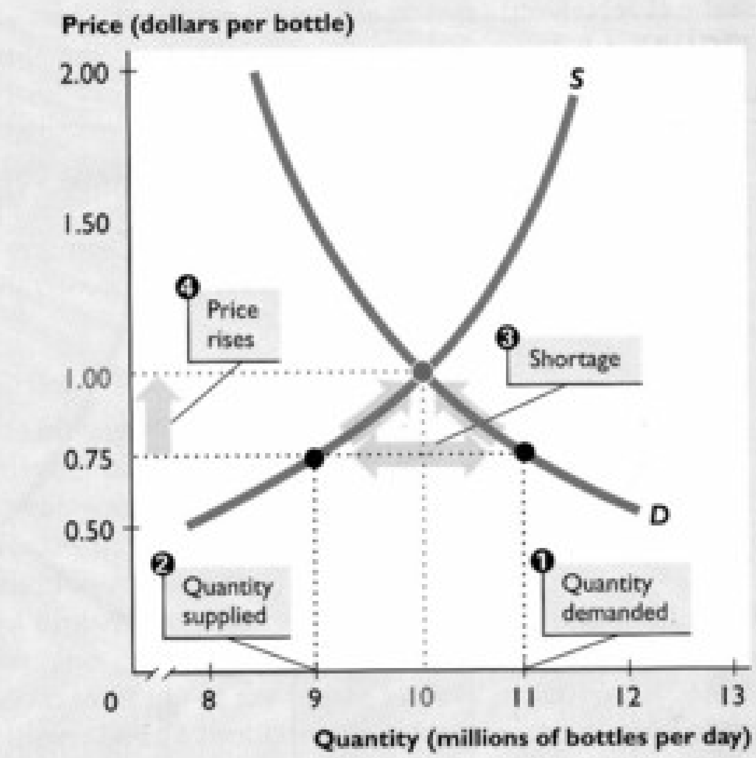
If the price is above the equilibrium price, there is a surplus or excess supply—the quantity supplied exceeds the quantity demanded—and the price falls.

If the price is below the equilibrium price, there is a shortage or excess demand—the quantity demanded exceeds the quantity supplied—and the price rises.



(a) Surplus and price falls

At $1.50 a bottle, ❶ the quantity supplied is 11 million bottles, ❷ the quantity demanded is 9 million bottles, ❸ the surplus is 2 million bottles, and ❹ the price falls.



(b) Shortage and price rises

At 75 cents a bottle, ❶ the quantity demanded is 11 million bottles, ❷ the quantity supplied is 9 million bottles, ❸ the shortage is 2 million bottles, and ❹ the price rises.

Effects of changes in Demand

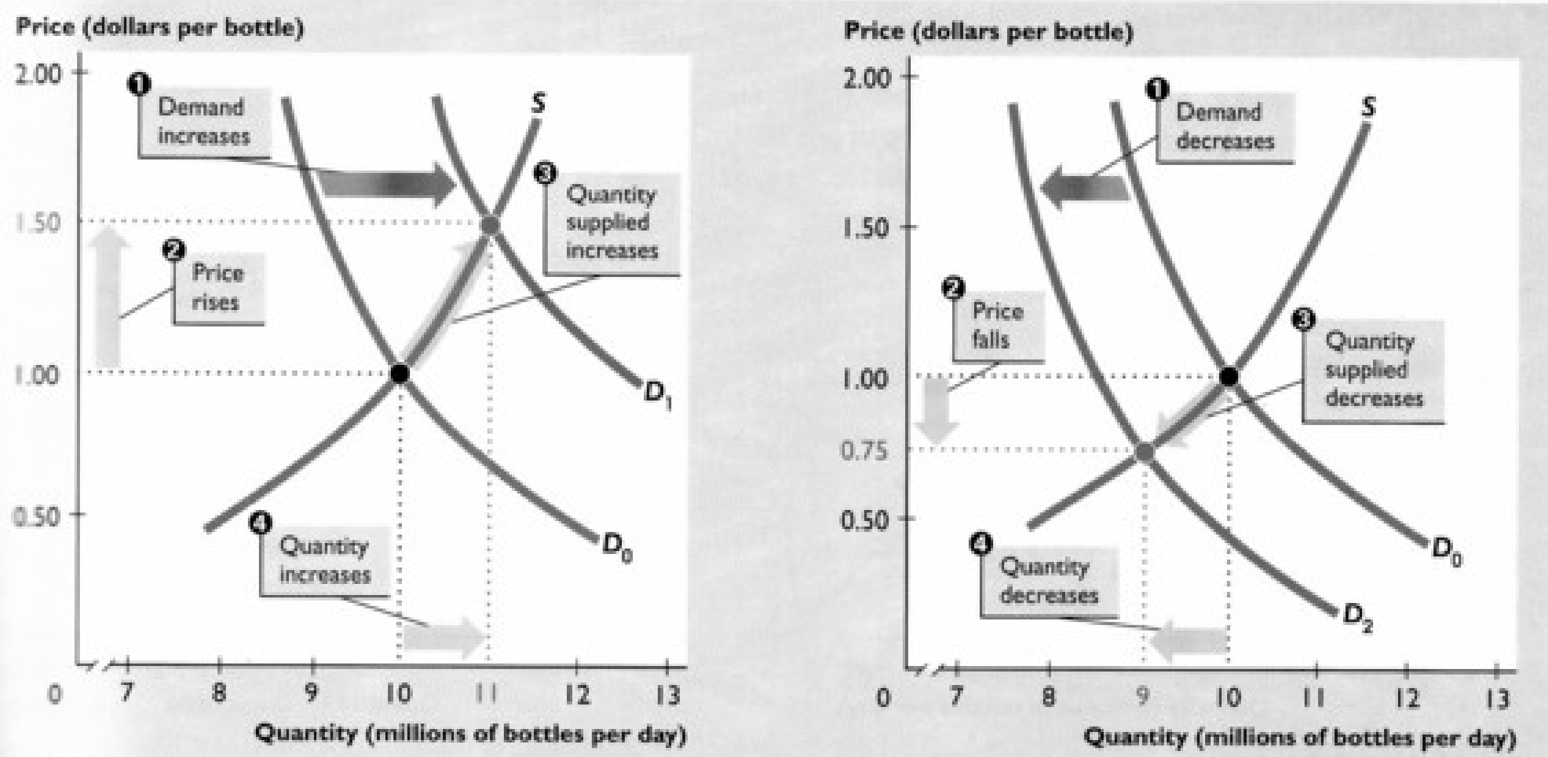
Markets are constantly hit by events that change demand and supply and bring changes in price and quantity.

Some events change only demand, some change only supply, and some change both demand and supply.

When demand changes, there is no change in supply. But there is a change in the quantity supplied—a movement along the curve.

The Effects of a Change in Demand

*e*Foundations **4.3**



(a) An increase in demand

(b) A decrease in demand

An increase in demand ❶ shifts the demand curve rightward to D_1, ❷ raises the price, ❸ increases the quantity supplied, and ❹ increases the equilibrium quantity.

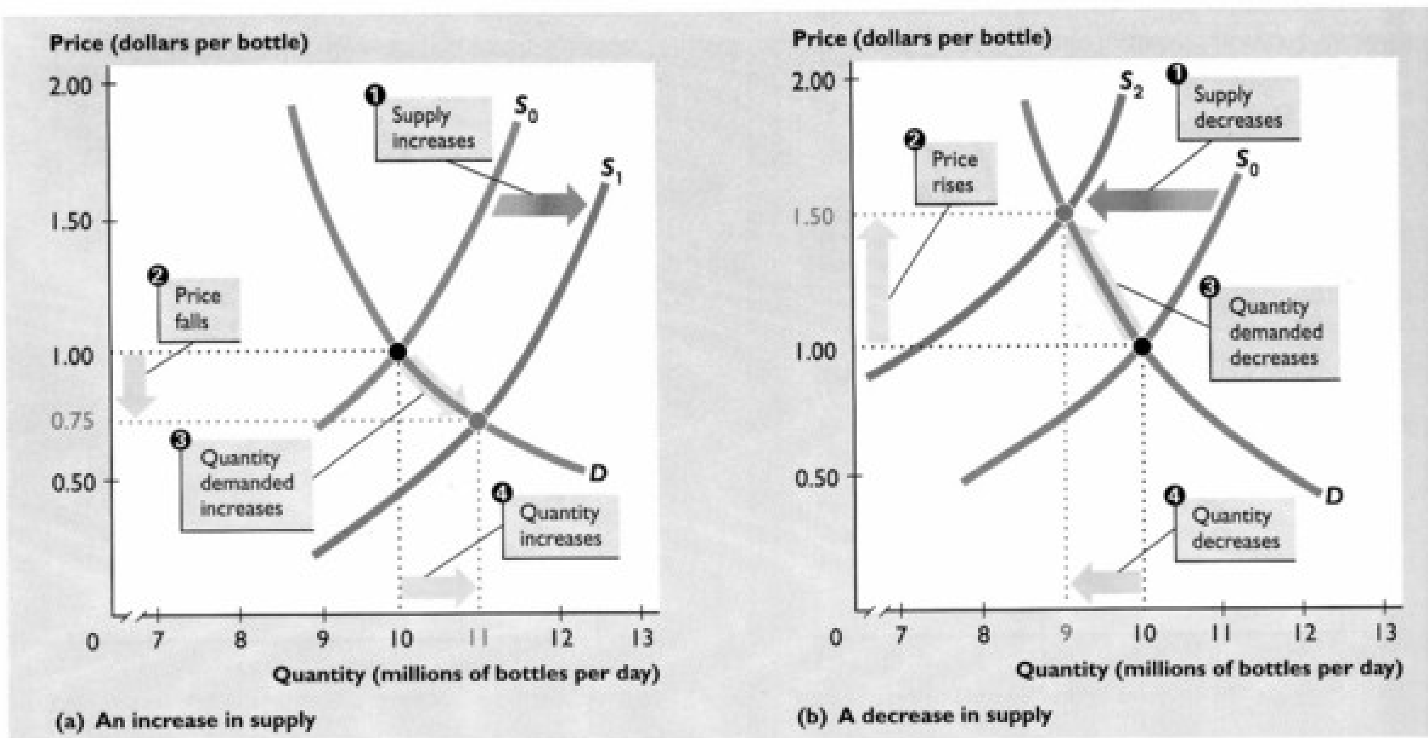
A decrease in demand ❶ shifts the demand curve leftward to D_2, ❷ lowers the price, ❸ decreases the quantity supplied, and ❹ decreases the equilibrium quantity.

Effects of changes in supply

When supply changes, there is no change in demand. But there is a change in the quantity demanded—a movement along the demand curve.

The Effects of a Change in Supply

eFoundations 4.3



(a) An increase in supply

(b) A decrease in supply

An increase in supply ❶ shifts the supply curve rightward to S_1. ❷ lowers the price, ❸ increases the quantity demanded, and ❹ increases the equilibrium quantity.

A decrease in supply ❶ shifts the supply curve leftward to S_2. ❷ raises the price, ❸ decreases the quantity demanded, and ❹ decreases the equilibrium quantity.

Changes in both demand and supply

Often, in real markets, events occur that change both demand and supply.

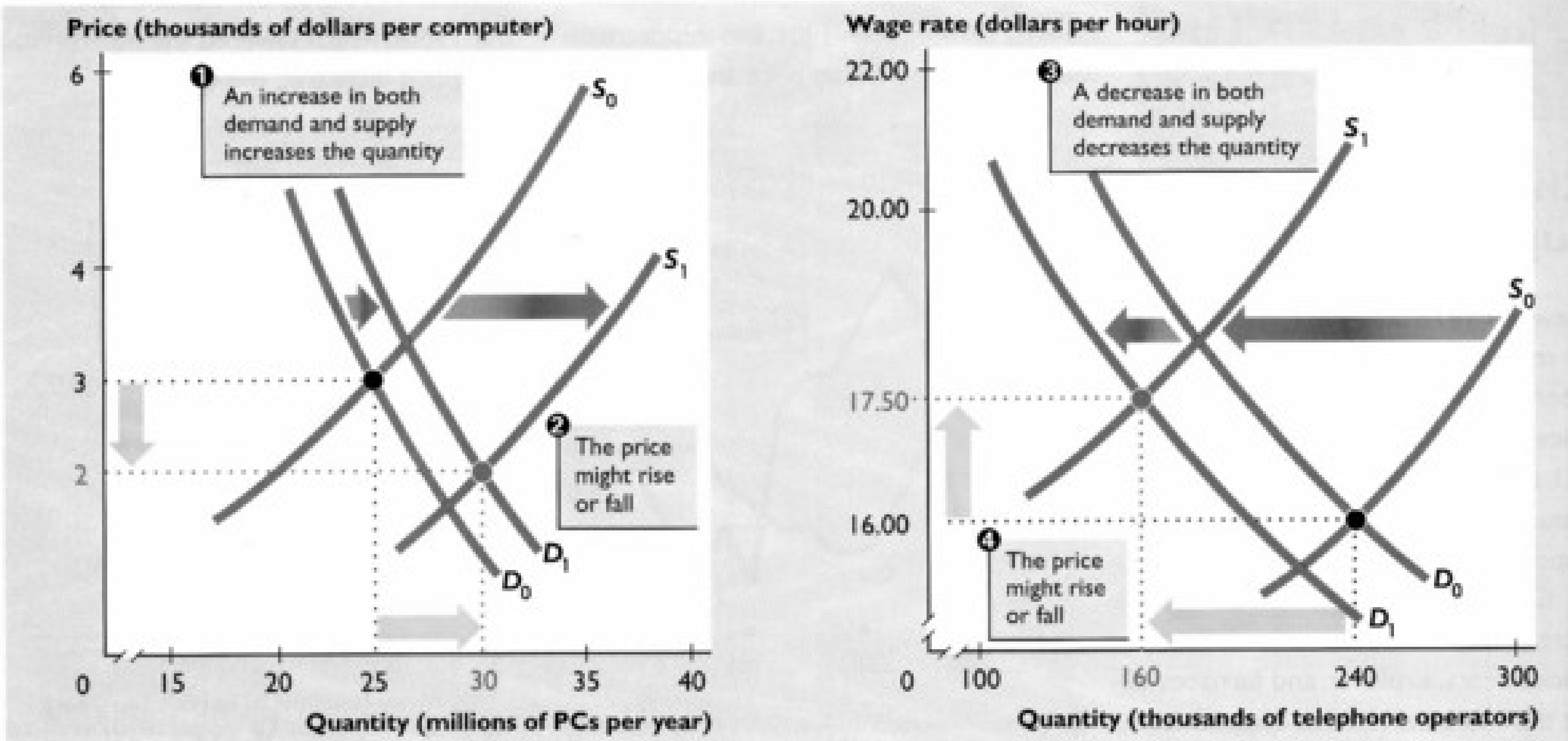
Increase in demand and increase in supply.

When demand and supply increase together, the equilibrium quantity increases. But an increase in demand raises the price, and an increase in supply lowers the price. (Change in equilibrium price is ambiguous)

Decrease in demand and decrease in supply.

A decrease in demand decreases the quantity, and a decrease in supply decreases the quantity.But a decrease in demand lowers the price, and a decrease in supply raises the price. (Change in equilibrium price is ambiguous.)

Demand and Supply Change in the Same Direction



(a) An increase in both demand and supply

(b) A decrease in both demand and supply

Increase in demand and decrease in supply

When demand increases, the price rises. When supply decreases, the price rises.

So when demand increases at the same time as supply decreases, the equilibrium price rises.

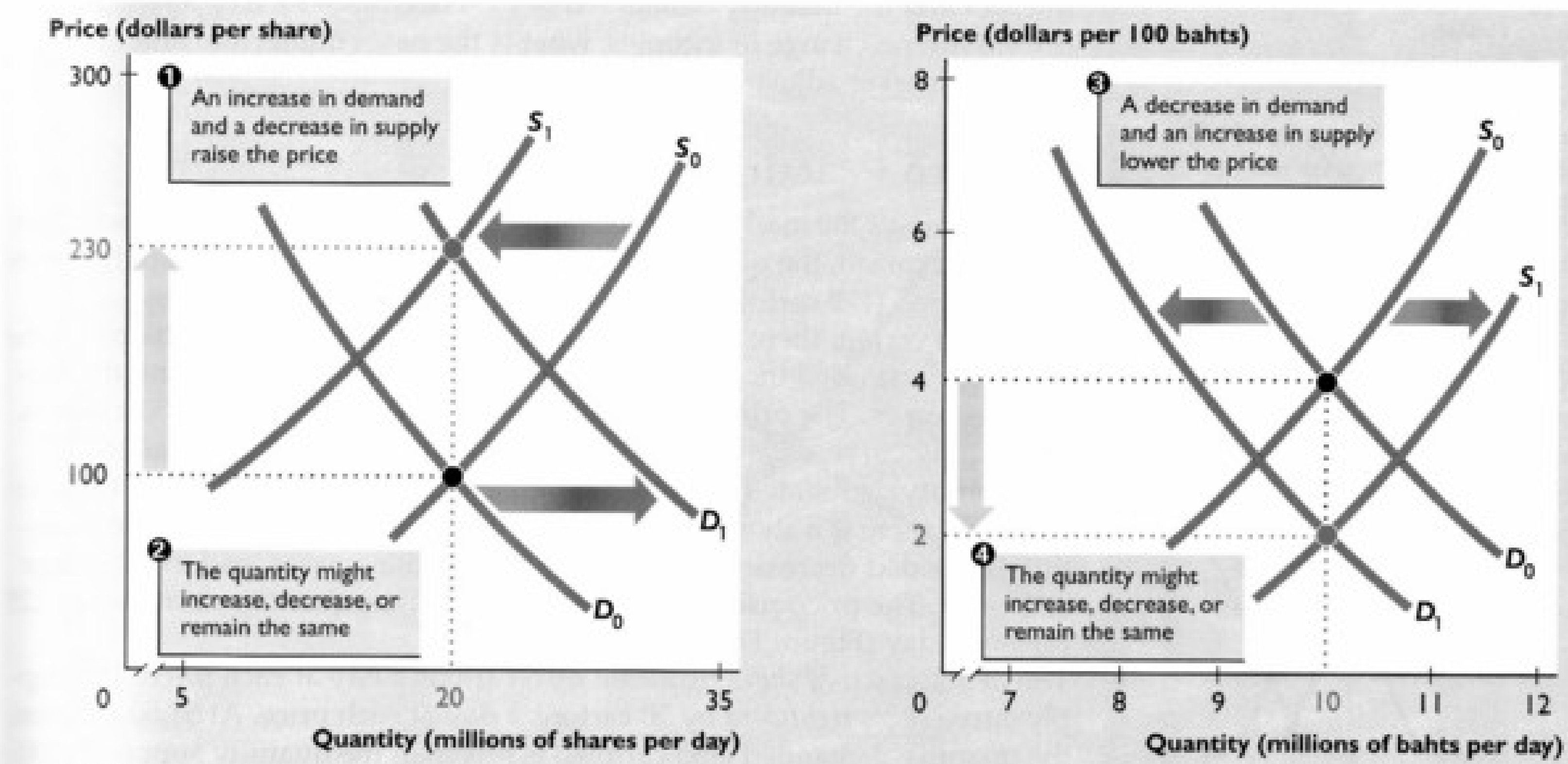
But an increase in demand increases the quantity, and a decrease in supply decreases the quantity. (the new equilibrium quantity is ambiguous.)

Decrease in demand and increase in supply

When demand decreases, the price falls. When supply increases, the price falls.

So when demand decreases at the same time as supply increases, the equilibrium price falls.

But a decrease in demand decreases the quantity, and an increase in supply increases the quantity. (the new equilibrium is ambiguous.)



(a) An increase in demand and a decrease in supply

(b) A decrease in demand and an increase in supply

Parctice

Price (dollars per carton)	Quantity demanded	Quantity supplied
	(cartons per day)	
1.00	200	110
1.25	175	130
1.50	150	150
1.75	125	170
2.00	100	190

The table shows the demand and supply schedules for milk:

a. What is the market equilibrium in the milk market?

b. Describe the situation in the milk market if the price is $1.75 a carton.

c. If the price is $1.75 a carton, explain how the market reaches equilibrium.

d. A drought decreases the quantity supplied by 45 cartons a day at each price. What is the new equilibrium and how does the market adjust to it?

e. Milk becomes more popular, and the quantity demanded increases by 5 cartons a day at each price. Improved feeds for dairy cows increase the quantity of milk supplied by 50 cartons a day at each price. If there is no drought, what is the new equilibrium and how does the market adjust to it?

Price rigidities

Price ceiling

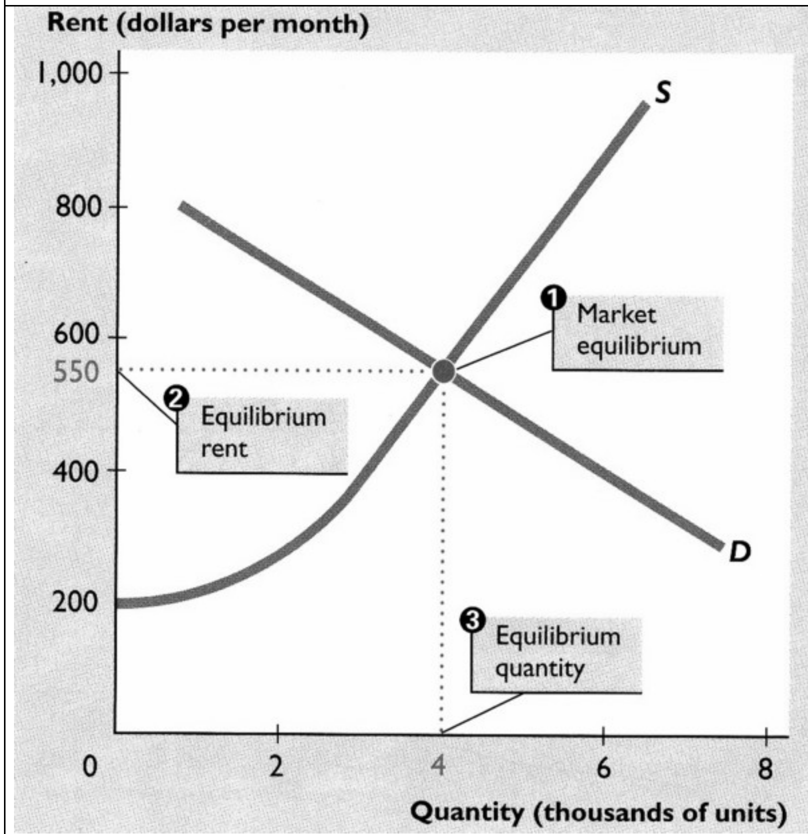
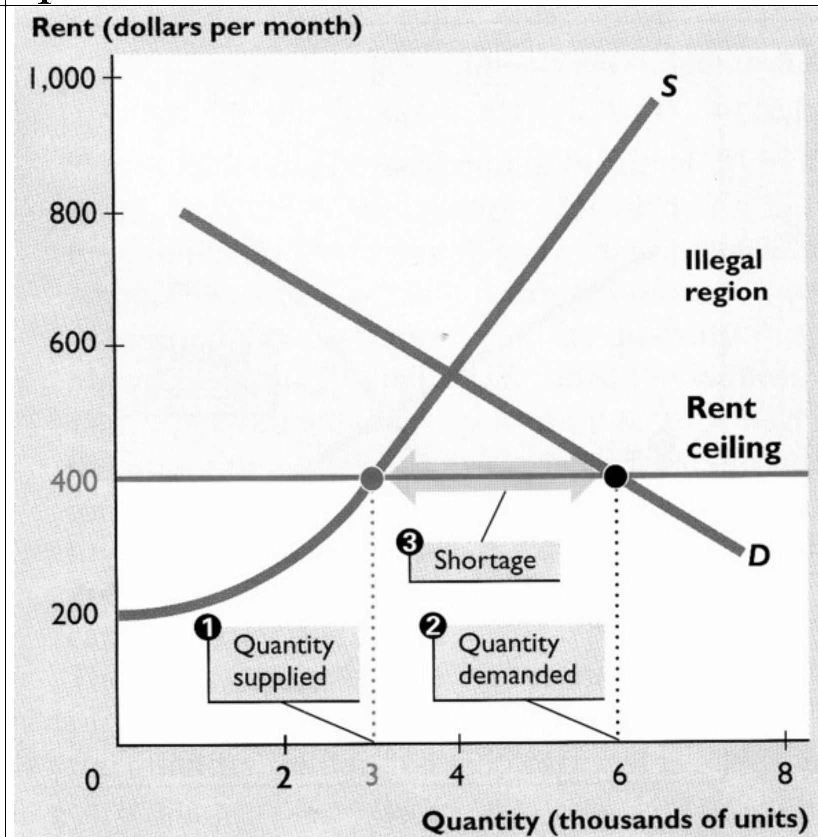
A price ceiling is the highest price at which it is legal to trade a particular good, service, or factor of production.

An example is rent ceiling on houses and apartments—a law that makes it illegal for landlords to charge a rent that exceeds a set limit.

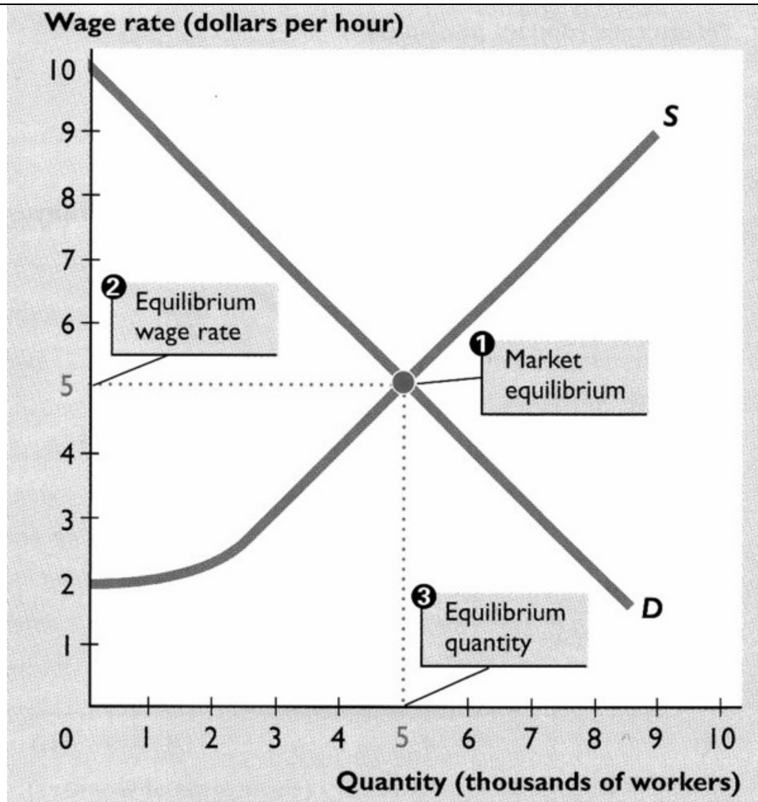
Price floor

A price is the lowest price at which it is legal to trade a particular good, service, or factor of production.

An example is the minimum wage lwa, which is a government regulation that makes hiring for less than a specified wage illegal.

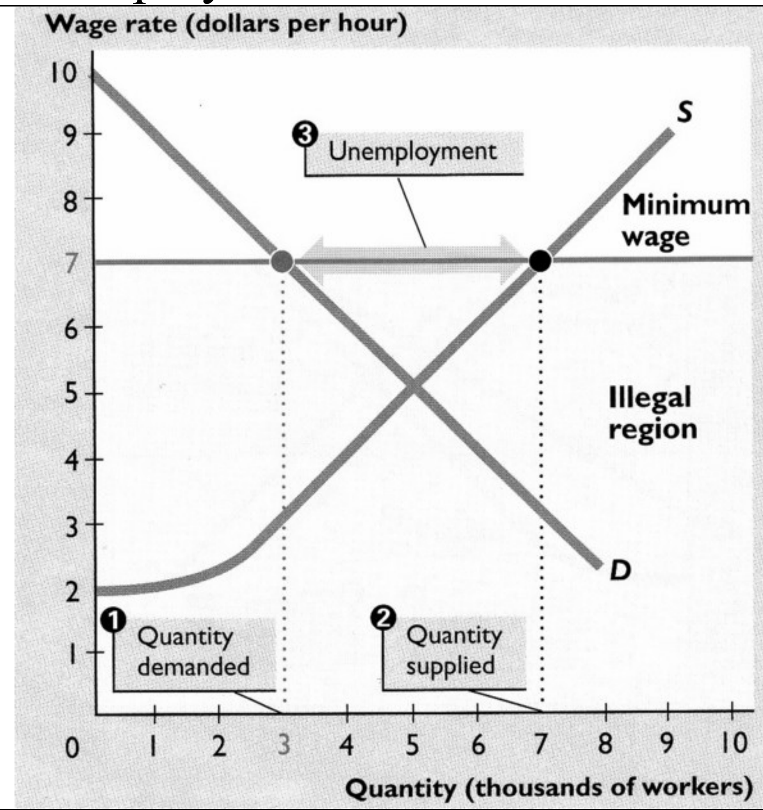
A rental apartment market	A rent ceiling creates a shortage of apartments
	
1)market equilibrium is determined by the demand for apartmetns and the supply of apartments for rent. 2) The equilibrium rent is $550 a month. 3) At the equilibrium rent, the equilibrium quantity of apartments rented is 4 000.	1) The quantity of apartments supplied decreases. 2) The quantity of apartments demanded increases to 6000 3) A housing shortage of 3000 apartments arises.

A market for fast-food servers



1) market equilibrium is determined by the demand for and the supply of fast-food servers.
2) The equilibrium wage rate is $5 an hour.
3) At the equilibrium wage rate, the equilibrium quantity of fast-ffod servers is 5,000.

A minimum wage creates unemployment



1) The quantity of labour demanded decreases to 3, 000
2) The quantity of labour supplied increases to 7,000
3) 4,000 people are unemployed.

Practice

FIGURE 1

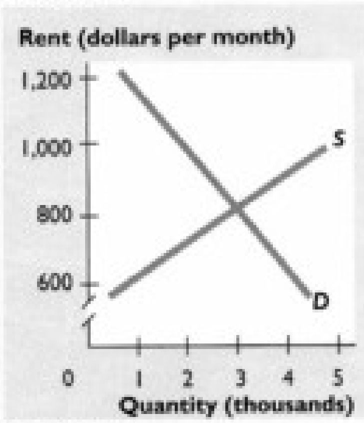
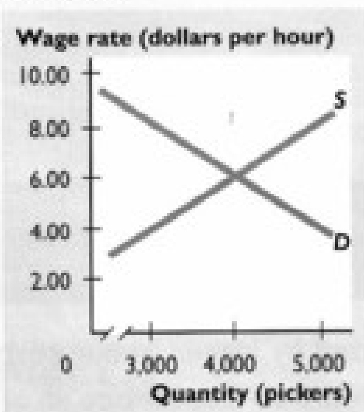


FIGURE 2



Practice Problems 4.4

1. Figure 1 shows the rental market for apartments in a Winnipeg suburb:
   a. What is the rent in this suburb and how many apartments are rented?
   b. If the city of Winnipeg imposes a rent ceiling of $900 a month, what is the rent in this suburb and how many apartments are rented?
   c. If the city of Winnipeg imposes a rent ceiling of $600 a month, what is the rent in this suburb and how many apartments are rented?

2. Figure 2 shows the market for tomato pickers in southern Ontario.
   a. What is the equilibrium wage rate of tomato pickers and what is the equilibrium quantity of tomato pickers employed?
   b. If Ontario introduces a minimum wage for tomato pickers of $4 an hour, how many tomato pickers are employed and how many are unemployed?
   c. If Ontario introduces a minimum wage for tomato pickers of $8 an hour, how many tomato pickers are employed and how many are unemployed?