Presentation to accompany

Principles of Microconomics, Fourth Edition

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Lecture 3

Previously...

- Gains from Trade
  - absolute advantage
  - comparative advantage
  - specialization
  - trade (exchange rate, trading line)

Previously...

- Tiger Woods mowing his lawn
  - even if a country has absolute advantage in production of both commodities, trade can be beneficial (Tiger plays golf and moans fast)
- Surgeon typing his bills
  - even if a surgeon has absolute advantage in both surgery and typing, he hires secretary

Plan for Today

- Individual and market supply and demand
- Changes in supply and demand
- Market equilibrium

Demand and Supply

- Supply and demand are the two words that economists use most often

- Supply and demand are the forces that make market economies work

- Modern microeconomics is about supply, demand, and market equilibrium

Demand and Supply

- A market is a group of buyers and sellers of a particular good or service

- The terms supply and demand refer to the behavior of people ... as they interact with one another in markets

Buyers determine demand
Sellers determine supply

Competitive Markets

A competitive market is a market in which there are many buyers and sellers so that each has a negligible impact on the market price

Competition: Perfect and Not

- Perfect Competition
  - products are the same
  - numerous buyers and sellers so that each has no influence over price
  - buyers and sellers are price takers

- Monopoly
  - one seller, and seller controls price

Competition: Perfect and Not

- Oligopoly
  - few sellers
  - not always aggressive competition
- Monopolistic Competition
  - many sellers
  - slightly differentiated products
  - each seller may set price for its own product

Demand

- Quantity demanded is the amount of a good that buyers are willing and able to purchase
- Law of Demand
  The law of demand states that, other things equal, the quantity demanded of a good falls when the price of the good rises
- Demand Schedule
  The demand schedule is a table that shows the relationship between the price of the good and the quantity demanded

Demand

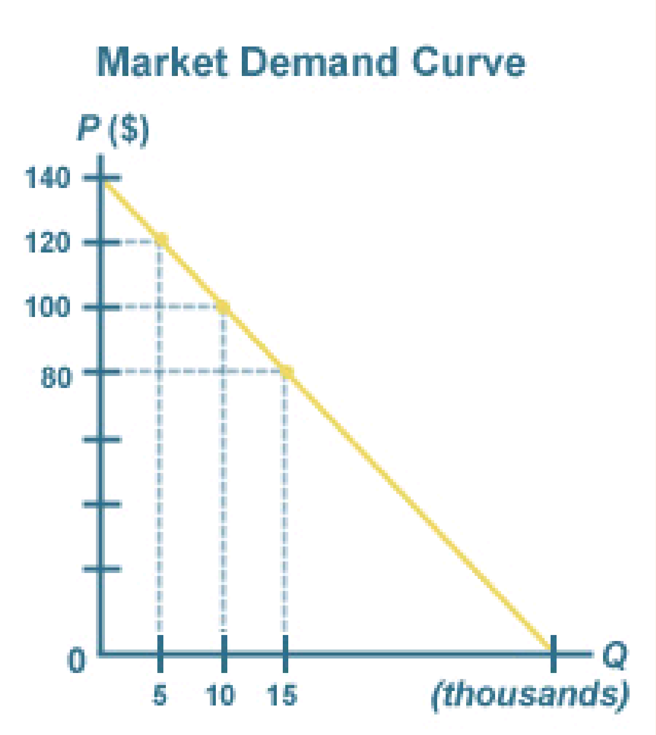
- Example of demand schedule

Demand Schedule

P	Q_d (thousands)
\$140	0
\$120	5
\$100	10
\$80	15
\$60	20
\$40	25
\$20	30
\$0	35

Demand

- Demand curve is a graph of the relationship between the price of a good and the quantity demanded



Demand

- Market demand:
  refers to the sum of all individual demands
  for a particular good or service

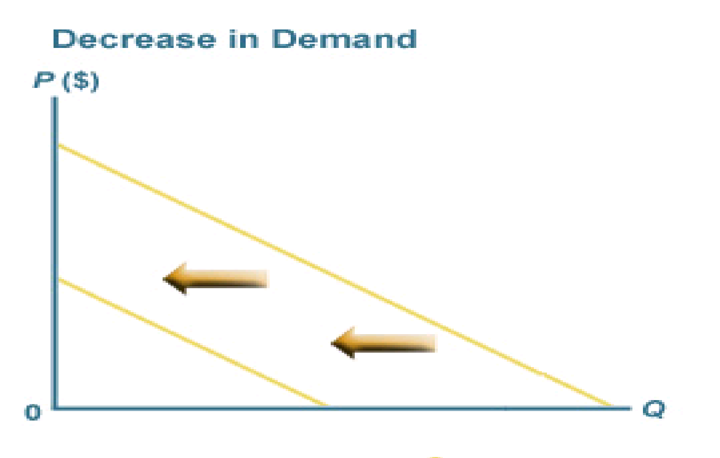
- Graphically, individual demand curves are summed horizontally to obtain the market demand curve

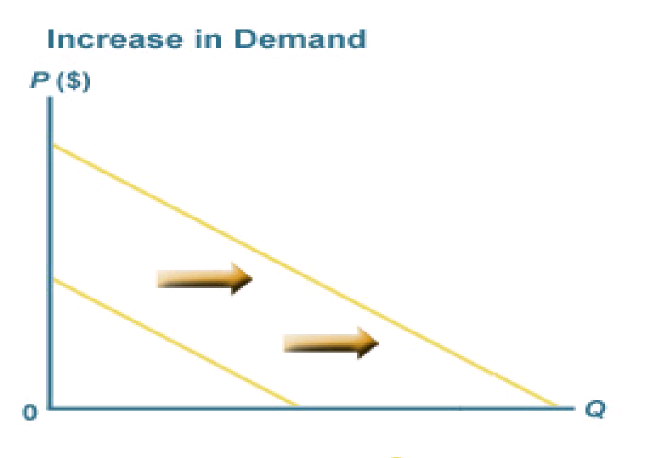
Change in Demand

- Change in quantity demanded
  - movement along the demand curve caused by a change in the price of the product (ceteris paribus); inflation, change in tax rate
- Shifts of demand curve
  - shift of the whole demand caused by a change in anything but the price; income, prices of related goods, tastes, expectations, number of buyers

Change in Demand

- **Horizontal** shift of the curve
  - to the left
  - to the right





Change in quantity at every price

Factors that Influence Demand

- Income

  Normal good:
  a good for which, other things equal, an increase in income leads to an increase in demand

  Inferior good:
  a good for which, other things equal, an increase in income leads to a decrease in demand

Factors that Influence Demand

- Price of related goods

  Substitutes:
  two goods for which, other things equal, an increase in the price of one leads to an increase in the demand for the other

  Complements:
  two goods for which, other things equal, an increase in the price of one leads to a decrease in the demand for the other

Factors that Influence Demand

- Taste
  Factors that affect taste of consumers
- Seasonal factors
  Do you already have your sunhat?
- Population
  Current trends?
- Expectations
  Buying car now vs. after you finish college

Factors that Influence Demand

- Policies available to the government
  e.g. to influence smoking (alcohol, drug consumption,...)

Demand Function - Math

- Demand – relationship between price and quantity = function

$$\mathbf{P = f(Q_D)} \sim Q_D = f(P)$$

- Dependent/Independent variables

- Demand function (linear)

$$Q_D = 12 - 4P$$

- Inverse demand function

$$P = 3 - Q_D/4$$

Demand Function - Math

- Linear demand function in general

  $$\mathbf{P = a - bQ_D}$$

  a – *y*-intercept
  (-b) – slope of the function

Supply


UNDER CONSTRUCTION
20-FOOT HIGH
BORDER
FENCE
Raul's 21-FOOT
LADDER
RENTALS
OPEN
SOON!
U.S.
MEXICO

Supply

- Quantity supplied is the amount of a good that sellers are willing and able to sell
- Law of Supply
  The law of supply states that, other things equal, the quantity supplied of a good rises when the price of the good rises
- Supply schedule
  The supply schedule is a table that shows the relationship between the price of the good and the quantity supplied

Supply

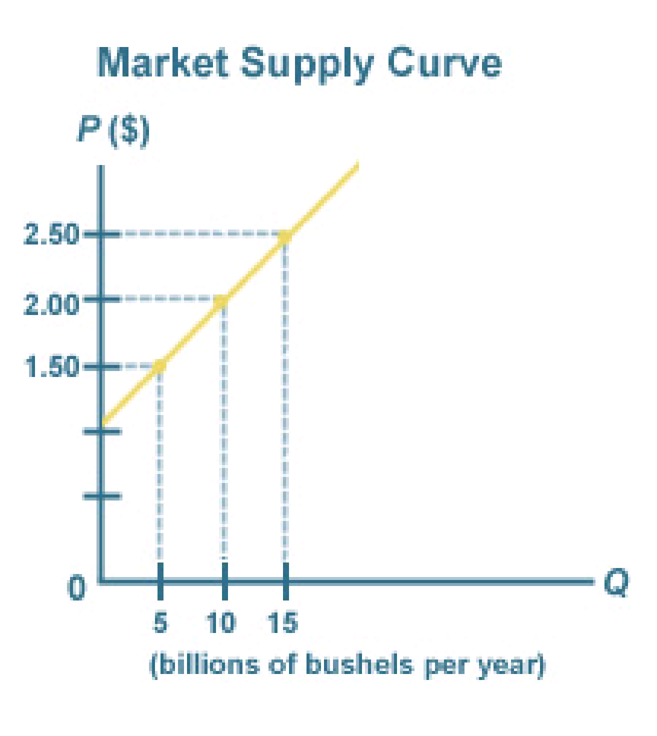
- Example of supply schedule

Supply Schedule

P	Q_s
$1.00	0
$1.50	5
$2.00	10
$2.50	15
$3.00	20
$3.50	25
$4.00	30

Supply

- Supply curve is a graph of the relationship between the price of a good and the quantity supplied



Supply

- Market supply:
  refers to the sum of all individual supplies for all sellers of a particular good or service

- Graphically, individual supply curves are summed horizontally to obtain the market supply curve

Change in Supply

- Change in quantity supplied
  - movement along the supply curve caused by a change in the price of the product (ceteris paribus); inflation, change in tax rate
- Shifts of supply curve
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Change in Supply

- **Horizontal** shift of the curve
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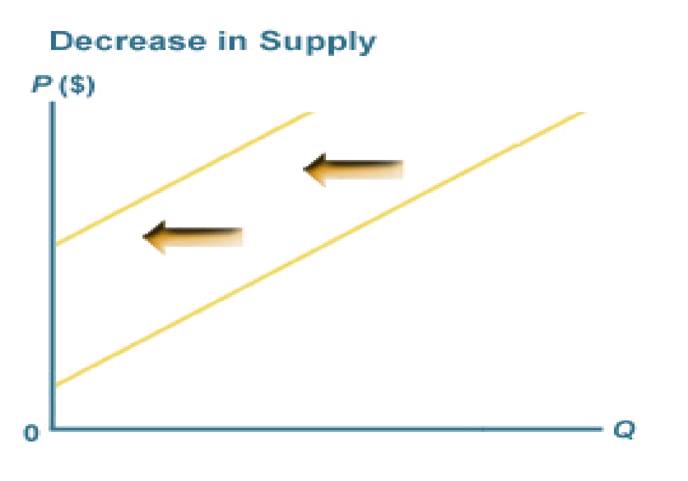
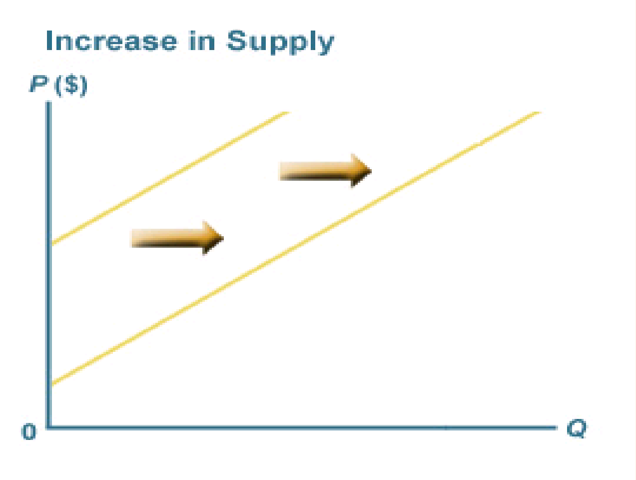




Change in quantity at every price

Factors that Influence Supply

- Input prices and taxes
  Lower profitability of production
- Technology and government regulations
  Better technology – cheaper production – positive impact
- Profitability of substitutes in production
  Supply of more profitable products increases
- Number of firms in the market
- Expectations
  Role of inventories

Supply Function - Math

- Supply – relationship between price and quantity = function

$$Q_S = f(P) \sim P = f(Q_S)$$

- Supply function (linear)
  $$Q_S = 1 + 4P$$

- Inverse supply function
  $$P = (Q_S - 1)/4$$

Supply Function - Math

- Linear supply function in general

  $$P = c + dQ_S$$

  c – *y*-intercept
  d – slope of the function

Supply and Demand

Equilibrium:

refers to a situation in which the price has reached the level where quantity supplied equals quantity demanded

Equilibrium

Equilibrium Price:

The price that balances quantity supplied and quantity demanded

On a graph, it is the price at which the supply and demand curves intersect

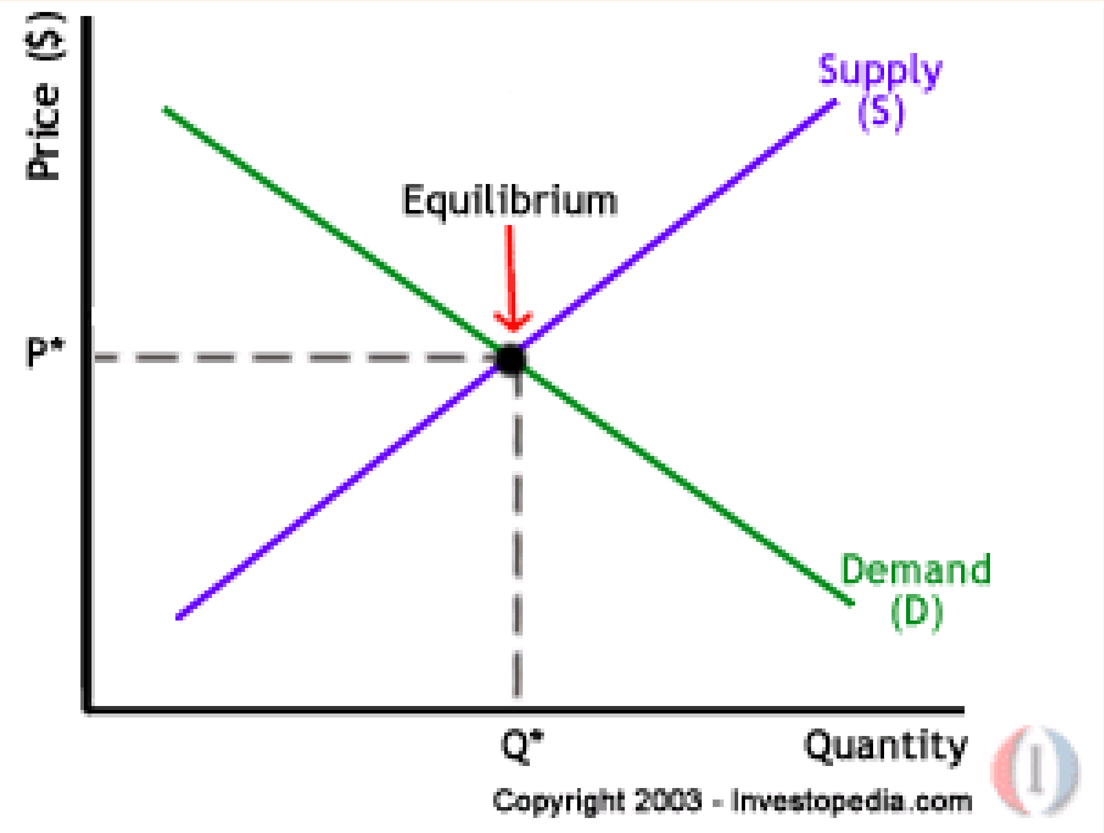
Equilibrium Quantity:

The quantity supplied and the quantity demanded at the equilibrium price

On a graph it is the quantity at which the supply and demand curves intersect

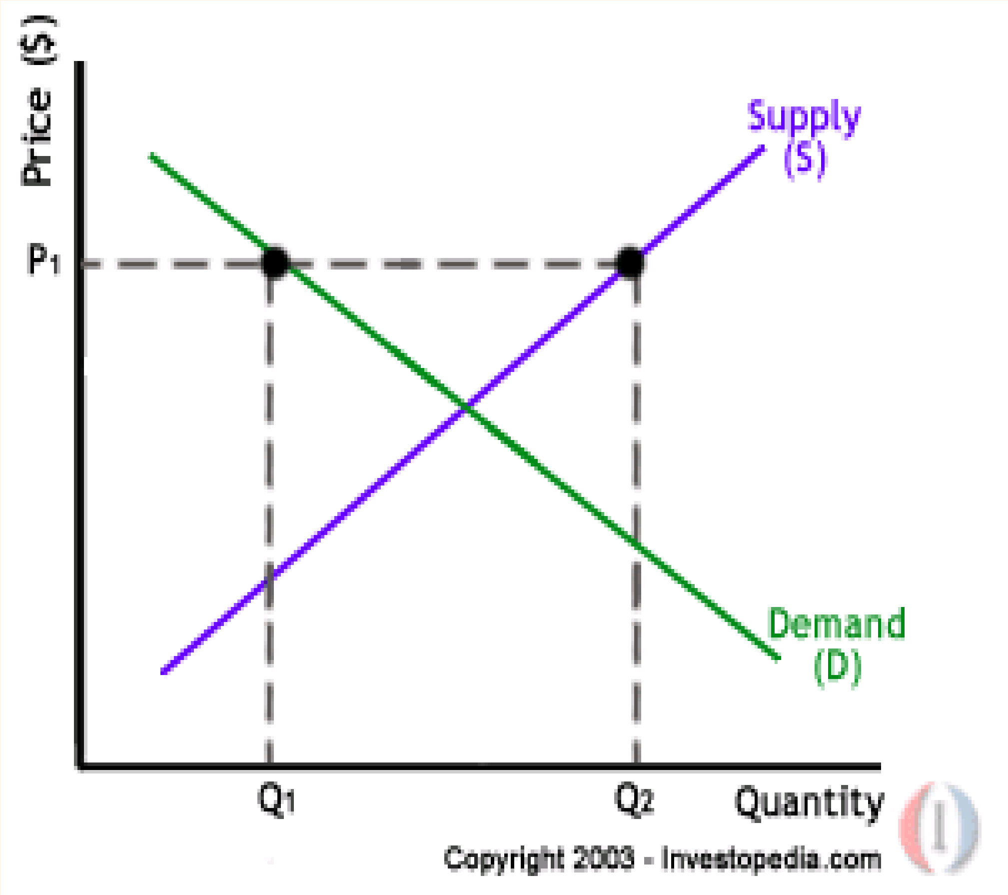
Equilibrium

- equilibrium Price P* and equilibrium quantity Q*



Disequilibrium - Surplus

- If price is too high...

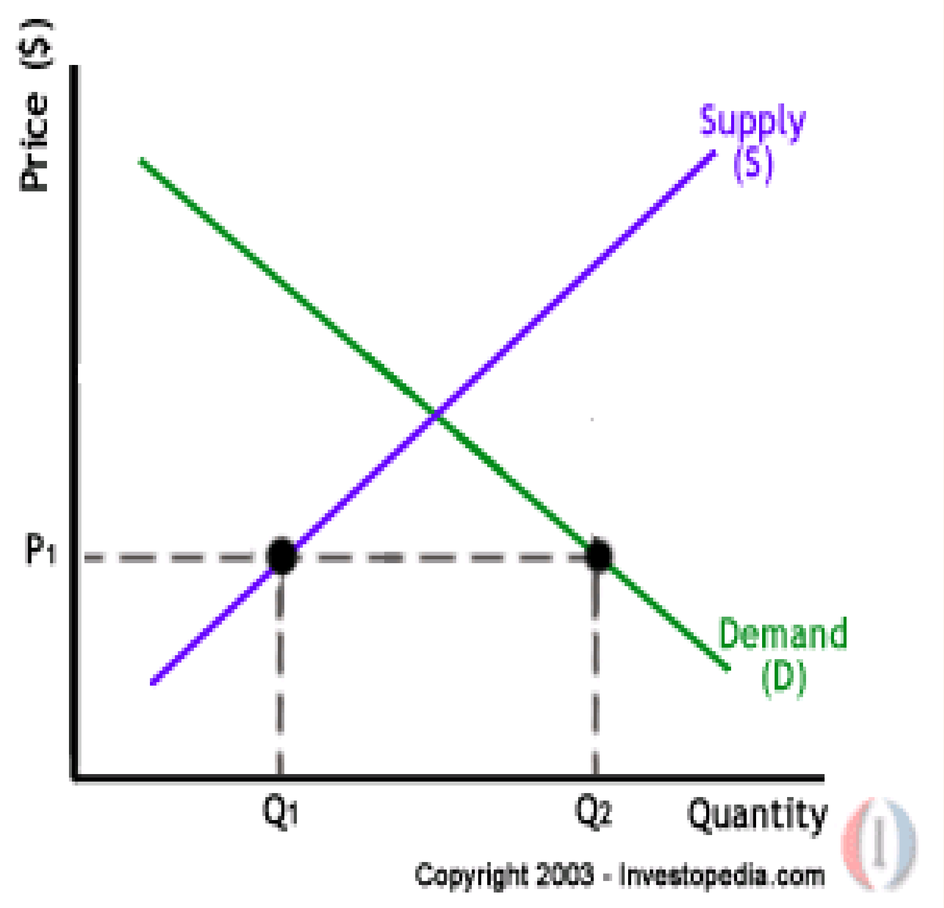


Disequilibrium - Surplus

- Surplus:
  when **price > equilibrium price**, then quantity supplied > quantity demanded
- there is excess supply or a surplus
- Action:
  Suppliers will lower the price to increase sales, thereby moving toward equilibrium

Disequilibrium - Shortage

- If price is too low...



Disequilibrium - Shortage

- Shortage:
  when **price < equilibrium price**, then quantity supplied < quantity demanded
- there is excess demand or a shortage
- Action:
  Suppliers will raise the price due to too many buyers chasing too few goods, thereby moving toward equilibrium

Equilibrium

- Law of supply and demand:

  The claim that the price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance

Equilibrium - Math

- In equilibrium:
  $P_D = P_S$ and $Q_D = Q_S$

- Price and quantity supplied & quantity demanded are equal

- Solving a system of 2 equations – get P*, Q*
  $P = a - bQ_D$
  $P = c + dQ_S$

Change in Equilibrium

Potential changes are analyzed in three steps:

1. Decide whether the event shifts the supply or demand curve (or both)
2. Decide whether the curve(s) shift(s) to the left or to the right
3. Use the supply-and-demand diagram to see how the shift affects equilibrium price and quantity

Change in Equilibrium

Comparative statics analysis – comparing situations in equilibrium

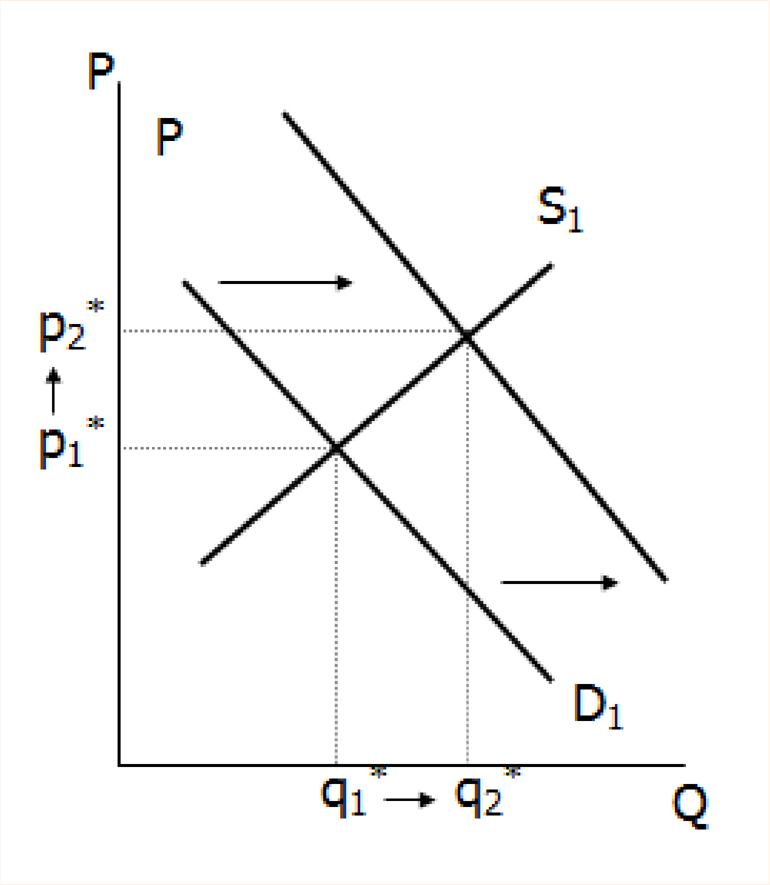
- Carefully distinguish movement along the curve vs. shift of the curve
- i.e. change in quantity supplied/demanded vs. change in supply/demand

Change in Equilibrium

Increase in demand:

- demand increases
- supply stays constant

- result:
    - increase in the equilibrium price
    - increase in the equilibrium quantity

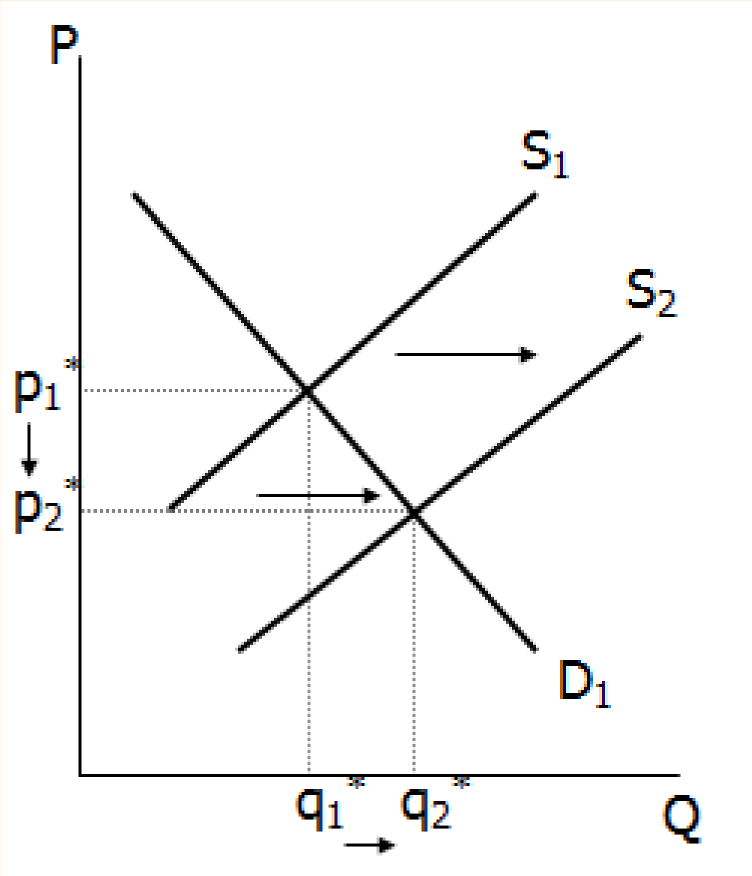


Change in Equilibrium

Increase in supply:

- supply increases
- demand stays constant

- result:
  - decrease in the equilibrium price
  - increase in the equilibrium quantity



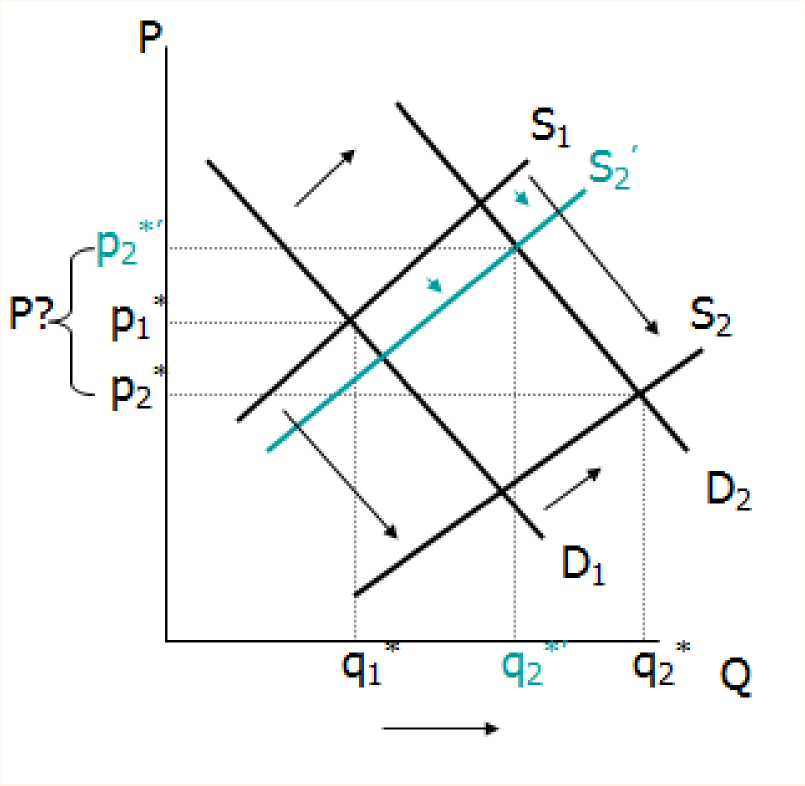
Change in Equilibrium

Increase in supply and demand:

- supply increases
- demand increases

- result:
  - indeterminate change in the equilibrium price
  - increase in the equilibrium quantity

  - change in price can be determined if size of shifts is known



Change in Equilibrium

Various changes in supply and demand:

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand	*P* same *Q* same	*P* down *Q* up	*P* up *Q* down
An Increase in Demand	*P* up *Q* up	*P* ambiguous *Q* up	*P* up *Q* ambiguous
A Decrease in Demand	*P* down *Q* down	*P* down *Q* ambiguous	*P* ambiguous *Q* down

Summary I

- The demand curve shows how the quantity of a good depends upon the price.

- According to the law of demand, as the price of a good falls, the quantity demanded rises. Therefore, the demand curve slopes downward.

- In addition to price, other determinants of how much consumers want to buy include income, the prices of complements and substitutes, tastes, expectations, and the number of buyers. If one of these factors changes, the demand curve shifts.

Summary II

- The supply curve shows how the quantity of a good supplied depends upon the price.
- According to the law of supply, as the price of a good rises, the quantity supplied rises. Therefore, the supply curve slopes upward.
- In addition to price, other determinants of how much producers want to sell include input prices, technology, expectations, and the number of sellers. If one of these factors changes, the supply curve shifts.

Summary III

- Market equilibrium is determined by the intersection of the supply and demand curves.
- At the equilibrium price, the quantity demanded equals the quantity supplied.
- The behavior of buyers and sellers naturally drives markets toward their equilibrium.

Summary IV

- To analyze how any event influences a market, we use the supply-and-demand diagram to examine how the even affects the equilibrium price and quantity.

- In market economies, prices are the signals that guide economic decisions and thereby allocate resources.