

## Chapter 2: Demand & Supply

- Demand
- Supply
- Market Equilibrium
- Examples
- Price ceiling/floor

## Build a model

- buyers
- sellers
- & their interaction

## Use the model

- to predict
  - the impact of changes
- to explain
  - changes that occur

## Demand

- behavior of buyers
- relationship between
  - quantity demanded of a good
  - price
  - holding other factors constant

## quantity demanded (Qd)

- amount of good or service
  - unit of measure
- per unit of time
- "2 bottles of water per day"

## Law of Demand

If the price of a good



then the Qd



***holding other things constant!!!***

## Why?

- higher price makes you feel poorer
  - income effect
- higher price on one good, substitute other goods.
  - substitution effect

## Example: bottles of water per day

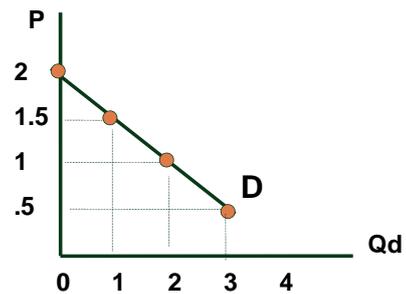
Describe demand in 2 ways:

- Demand schedule
  - a list of Qd at each price
- Demand curve
  - a graph of demand schedule

## Demand Schedule

	P	Qd
Price = \$/bottle	\$2.00	0
	\$1.50	1
Qd = bottles/day	\$1.00	2
	\$.50	3

## Demand curve



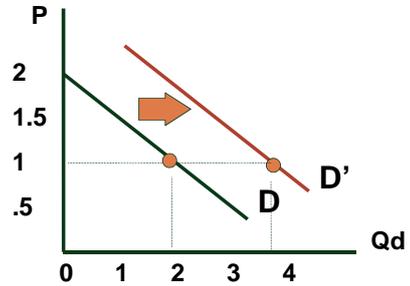
- individual demand
  - **demand curve for 1 buyer**
- market demand\*\*
  - **demand curve for all buyers**
  - **add up individual Qd for each price**

## Changes in Demand

- recall our assumption
  - hold other things constant
  - allow only price to change
- but what if other factors do change?
  - change in demand
  - shift to a new demand curve

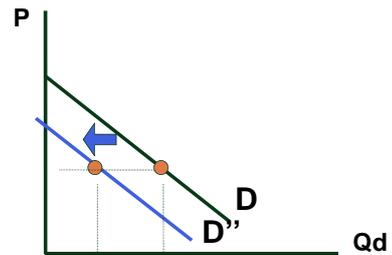
increase in demand

- increase in  $Q_d$  at every price
- demand curve shifts to the right



decrease in demand

- decrease in  $Q_d$  at every price
- demand curve shifts to the left



Factors affecting demand

- income
- prices of related goods
- buyer expectations
- # of buyers
- preferences

income

- for normal goods, an increase in income will increase demand
- examples:  
CDs, bottled water,  
eating out,

- for **inferior goods**,
- an increase in income will
- decrease the demand
- examples:
  - **ramen noodles,**
  - **check-cashing service**

## Prices of related goods

- what are related goods?
  - **substitutes**  
e.g. Snapple, Coke
  - **complements**  
goods consumed with water  
e.g. pretzels

## substitutes

- if price of Snapple rises,
  - people switch to water
  - increase in demand for water
- if price of Snapple falls,
  - people switch from water to Snapple
  - decrease in demand for water

## complements

- if price of pretzels rises
  - eat fewer pretzels,  
so drink less water,
  - demand for water falls

## buyer expectations

- buyers can expect change in
  - future income
  - future prices
 and act to change demand today

- expect price of water to rise next month,
  - **buy a case today,**
  - **increase demand today**

## # of buyers

- size of population
- demographics
  - age
  - gender
  - race

- if there are more buyers
  - **increase market demand for water**
  - **could be due to**
    - **more people overall**
    - **more people who like water**

## preferences

- what do we want to buy?
- change in our likes/dislikes
  - acid washed jeans?
  - tattoos?
- change in technology
  - 5 1/4" floppies?
  - DVDs?

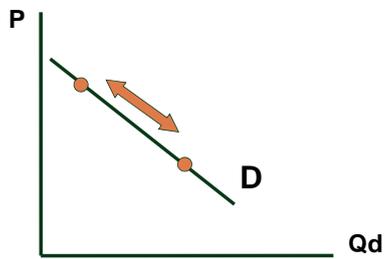
- if drinking more water
  - beneficial to health,
  - **increase in demand for bottled water**

## Important!!

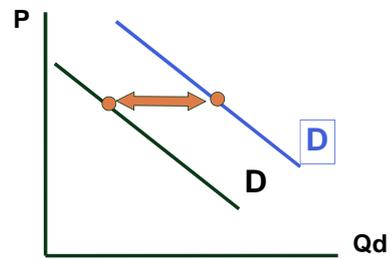
- **Change in demand**
  - occurs when other factors change
  - shift to a new demand curve
- **change in demand**
  - NOT caused by change in price of the good

- **Change in quantity demanded**
  - occurs when prices change
  - -- movement along existing demand curve

### Change in Qd



### Change in Demand



### Supply

- behavior of sellers
- relationship between
  - quantity supplied of a good
  - price
  - holding other factors constant

### Law of Supply

If the price of a good   
then the Qs 

***holding other things constant!!!***

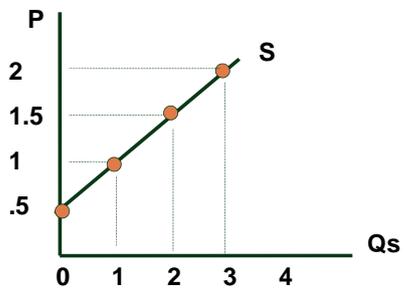
### Why?

- Holding costs constant
- higher price means higher profit margin

### Supply Schedule

	P	Qs
Price = \$/bottle	\$2.00	3
	\$1.50	2
Qs = bottles/day	\$1.00	1
	\$.50	0

### Supply curve



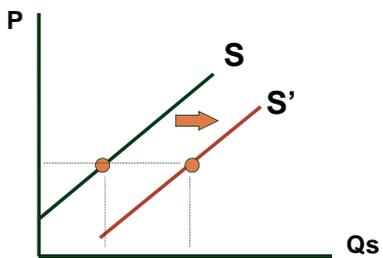
- Individual supply
  - **supply curve for 1 supply**
- market supply\*\*
  - **supply curve for all sellers**
  - **add up individual Qs for each price**

### Changes in Supply

- if other factors do change,
  - change in supply
  - shift to a new supply curve

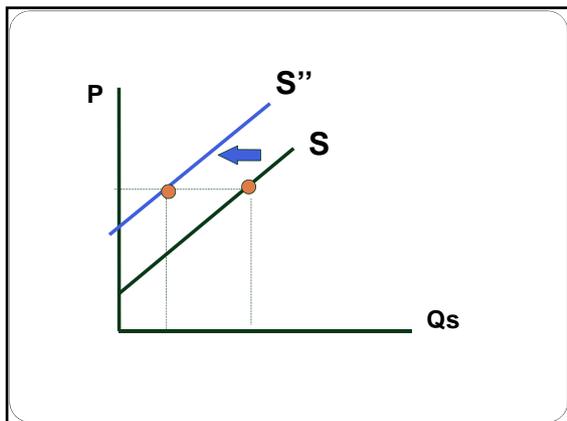
### increase in supply

- increase in Qs at every price
- supply curve shifts to the right



### decrease in supply

- decrease in Qs at every price
- supply curve shifts to the left



### Factors affecting supply

- Cost of inputs
- prices of related goods
- seller expectations
- # of seller
- productivity

### Cost of inputs

- As input prices get higher, supply decreases
- example: increase in cost of
  - bottles
  - labor
  - electricity

### Prices of related goods

- Substitutes in production
  - a good that can be made instead of bottled water
    - e.g. bottled tea
- If price of bottled tea increases, switch to tea production, supply of bottled water falls

- Complements in production
  - **good that is produced with other good**
    - **e.g. Beef & leather**
  - **if price of beef rises,**
    - **Qs of beef rises,**
    - **& supply of leather rises**
    -

### Seller expectations

- Expect input prices to rise in future
  - increase supply today
- expect price of good to rise in future
  - decrease supply today

### # of sellers

- As more sellers supply good,
  - market supply increases

### Productivity

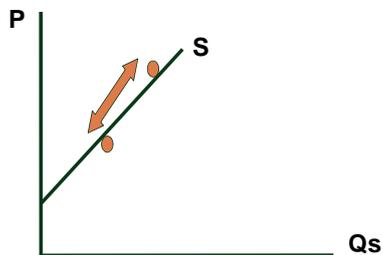
- Amount of output per unit of input
  - bottles of water per hour of labor
- Increase in productivity lowers cost
  - increases supply
- what makes productivity increase?
  - Technology
  - human capital

### Important!!

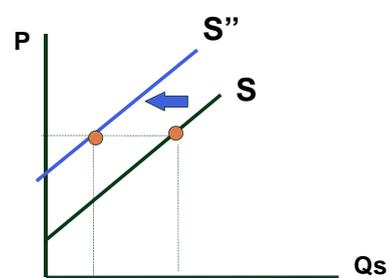
- Change in supply
  - occurs when other factors change
  - shift to a new supply curve (right or left)
- change in quantity supplied
  - NOT caused by change in price of the good

- Change in quantity supplied
  - occurs when prices change
- -- movement along existing supply curve

### Change in Qs

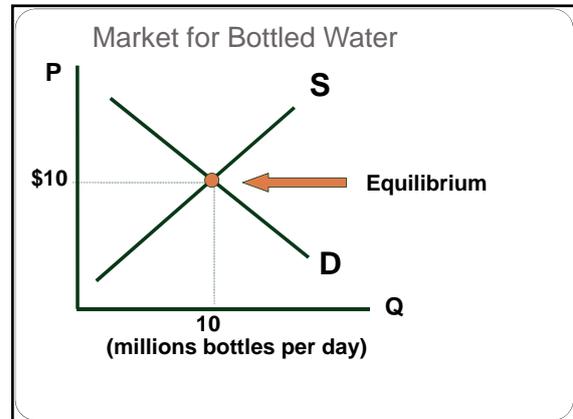


### Change in Supply



## Market Equilibrium

- What will be the price of bottled water?
  - Price at which  $Q_s = Q_d$ 
    - equilibrium price
    - equilibrium quantities



## Why is this an equilibrium?

- If  $Q_s > Q_d$ 
  - surplus
  - price falls until  $Q_s = Q_d$
- If  $Q_s < Q_d$ 
  - shortage
  - price rises until  $Q_s = Q_d$

## Changes in equilibrium

- If supply and/or demand changes (shifts left or right), then equilibrium will change too.

## Example 1

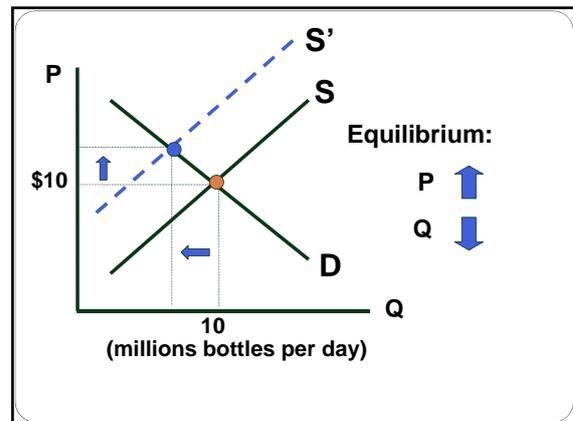
- Market for bottled water
- price of plastic bottles rises
- what happens to equilibrium?

## Which curve is affected?

- buyers or sellers?
- Supply curve
  - bottles are an input

### Increase or decrease in supply?

- Increase in cost of input
- supply decreases
  - shift LEFT



### note

- Change in supply causes change in equilibrium price
- BUT
- Change in price does NOT cause a change in supply

### Example 2

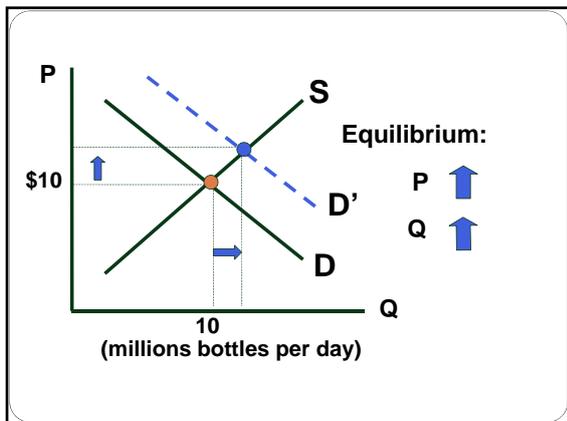
- Market for bottled water
- sugar is found to be harmful to health
- what happens to equilibrium?

### Which curve is affected?

- Demand curve
  - health concerns increase preferences for water

### Increase or decrease in demand?

- Increase in preference for water
- demand increases
  - shift RIGHT



**Example 3**

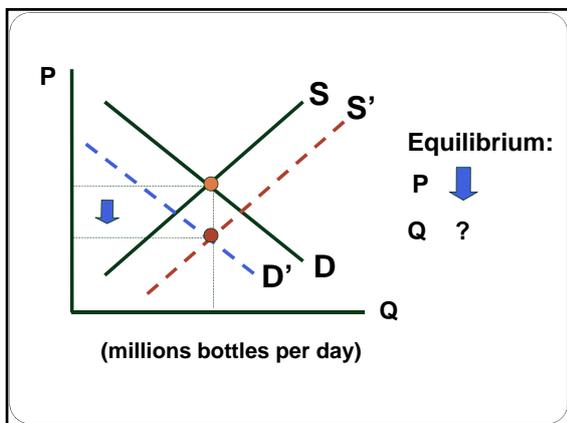
- Market for bottled water
- incomes fall & sellers expect utilities to rise

**Which curve is affected?**

- Demand curve
  - income falls
- Supply curve
  - seller expectations change
  - expect costs to rise

**Increase or decrease?**

- Demand decreases (left)
  - income falls & bottled water is normal good
- Supply increases (right)
  - make more water today before costs go up

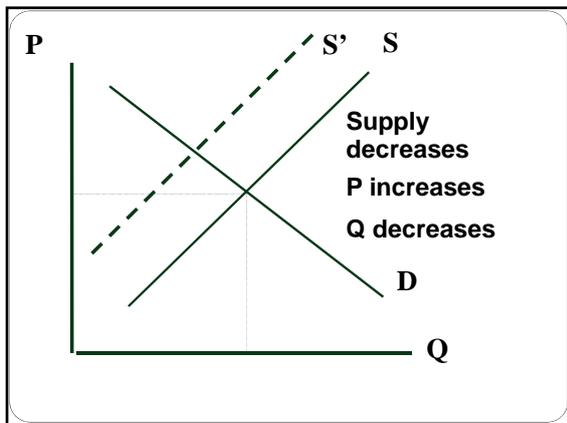


**Example 4: Leather sandals**

Market for leather sandals

A. Mad cow disease

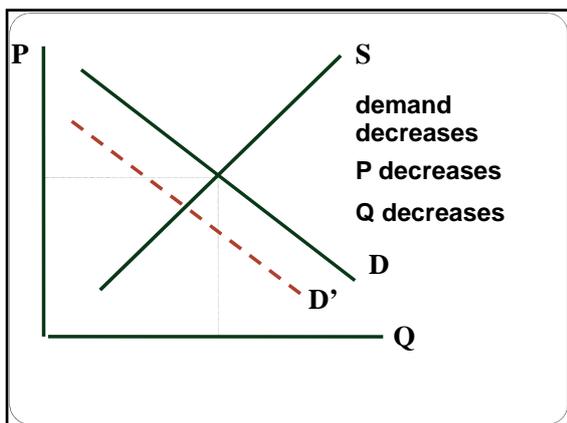
- must destroy 20% of herds
- what happens to equilibrium



**B.**

PETA

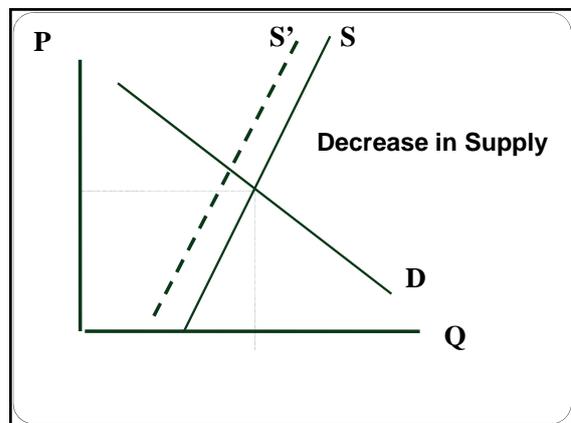
- campaign against leather products
- what happens to equilibrium?



**Example 5: Natural Gas Prices**

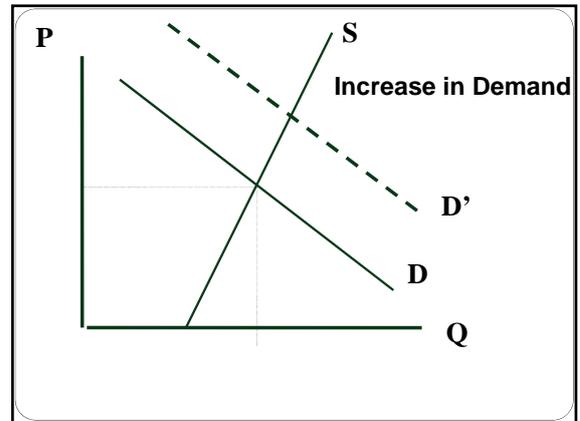
- Winter 2000-2001 prices increased over 100%
- why?

- 3 possible causes:
- 1. Supply decreases
- or
- 2. Demand increases
- or
- 3. both



### Why would S fall?

- regulation
  - tougher to drill
  - increase costs
- hot summer (2000)
  - depletes inventories



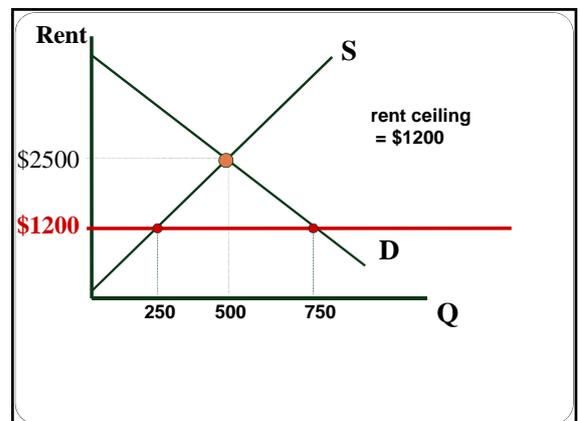
- Why would D rise?
  - booming economy (2000)
  - EPA rules
    - fewer coal plants, more gas plants
  - cold winter

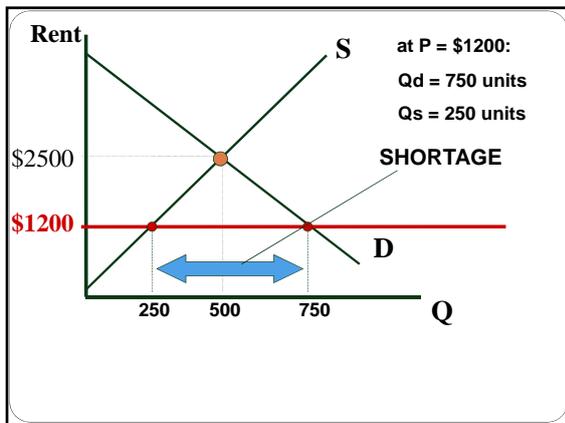
### Why did P rise?

- both falling supply & rising demand
  - but demand was most important

### Price ceiling

- gov't regulation sets maximum price
- example: rent control in NYC
- what happens?





### who gets housing?

- those willing to pay more
  - bogus fees: "key money"
- those who look harder
  - loss of time
- those who get lucky
  - Monica on *Friends*

### Result

- Price does not ration scarce good
- too few apt. units
- lost resources in searching
- price ceiling is inefficient

### Why have rent control?

- intended to help make housing affordable
- secondary effect
  - shortage
  - run-down buildings
  - rent-controlled apts. go to the "connected"

### More practice?

- course web site, related links
  - Explorations in Supply & Demand
  - AmosWeb