Demand and Supply Analysis

How Markets Work

Outline

1. Demand Curves

2. Supply Curves

3. Equilibrium Prices and Quantities

4. Changes to the Equilibrium

- Textbook Readings: Ch. 3

How Prices are Determined?

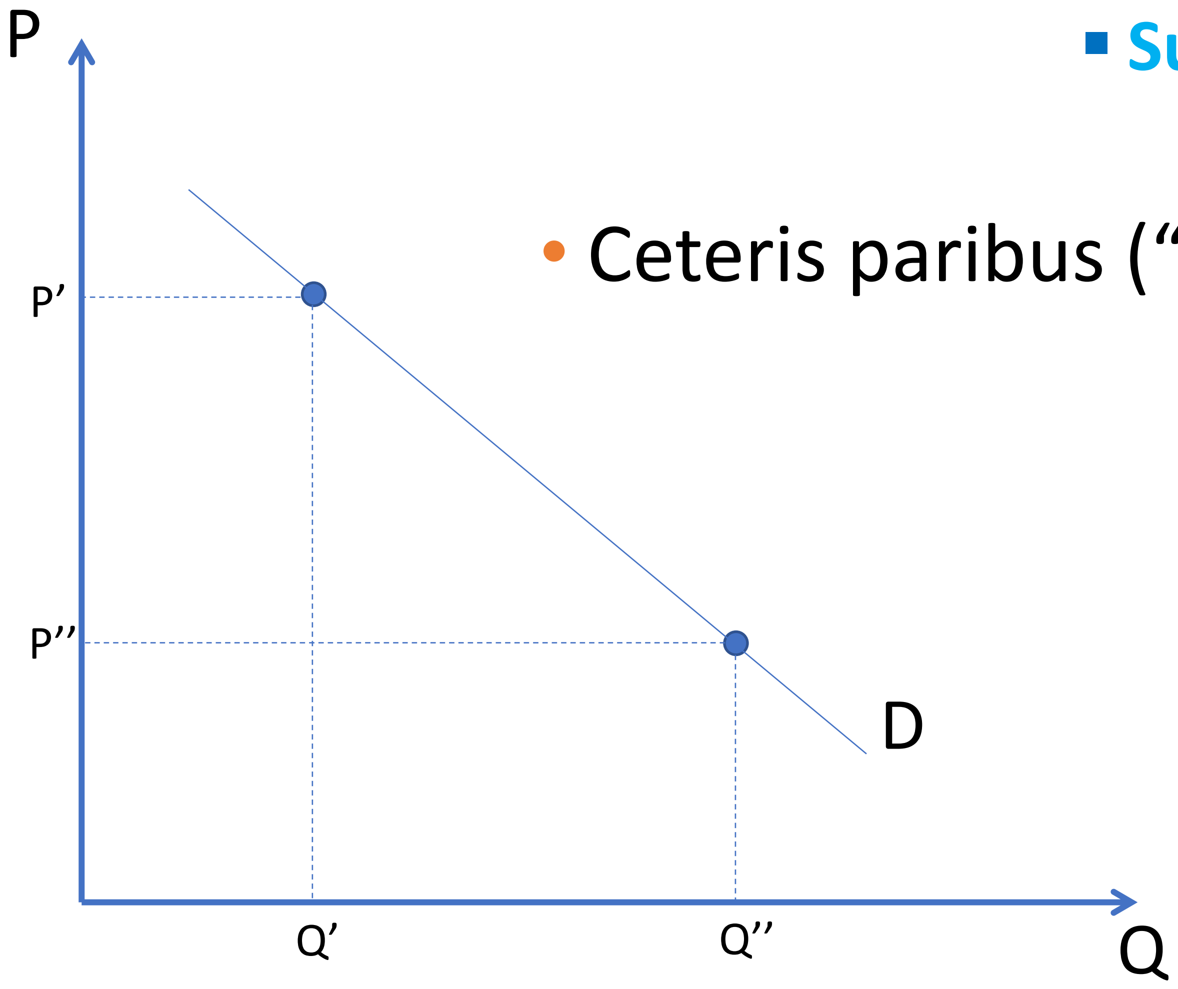
- We will explore the **model of demand and supply**
  - This tool can shed light on a lot of interesting market dynamics
- Key assumption: **perfectly competitive market**
  - **Many** buyers and sellers
  - All products sold are **identical**
  - **No barriers** to firms entering the market
- Although assumptions are restrictive, useful model when competition among sellers is intense

Demand Curves

- Demand curves relate prices to quantity consumed
  - They capture how consumer demand responds to prices
- Generally, lower prices lead to higher demand for goods
  - Law of demand

The Demand Side of the Market

- The demand curve is downward sloping
  - **Substitution** effect
  - **Income** effect
- Ceteris paribus (“all else equal”)



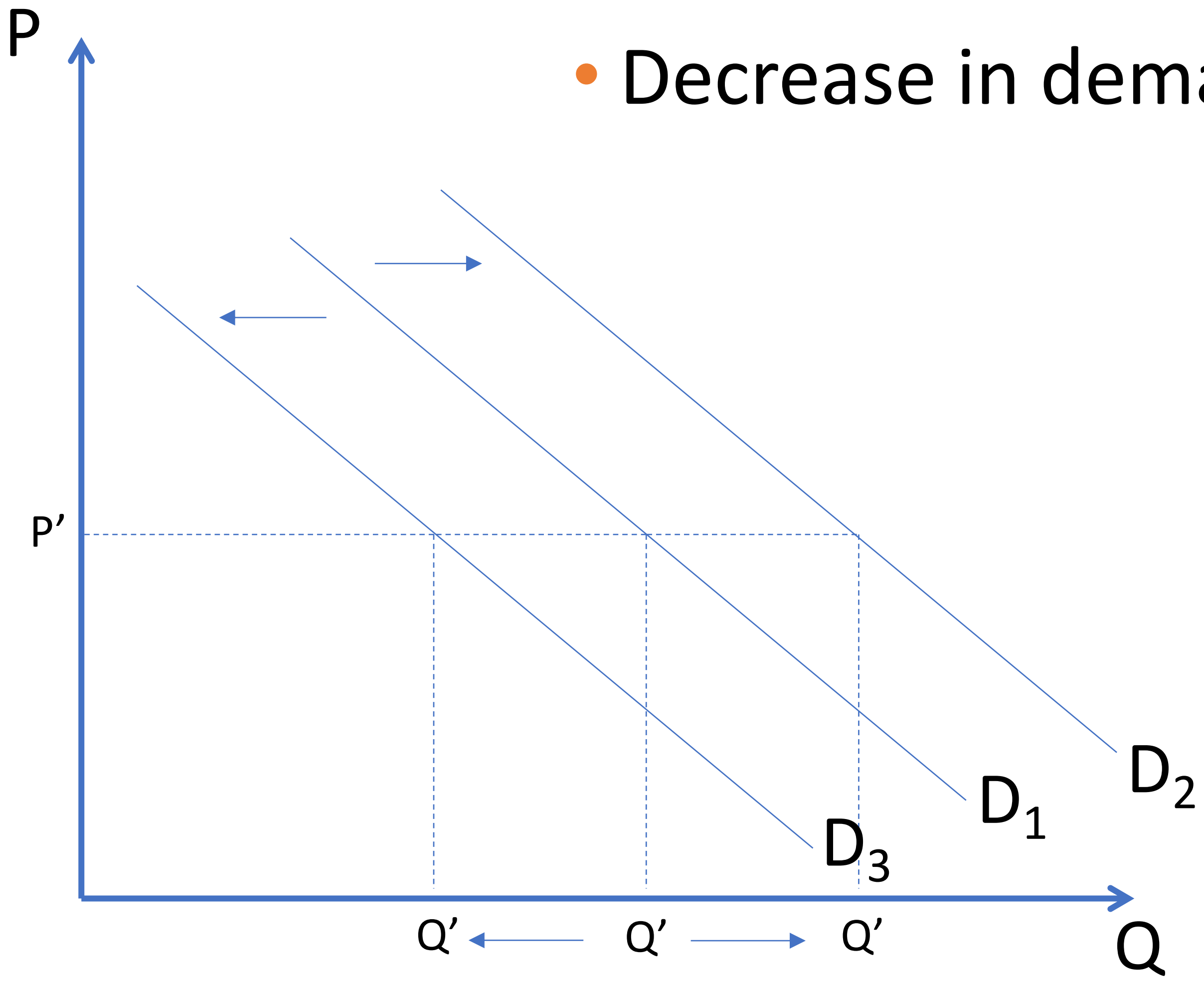
Variables that **Shift** Market Demand

- Many variables **other than price** can influence market demand
  - Change in **exogenous** factors cause demand curve to shift

- These 5 are the most important:
  - Income
  - Prices of related goods
  - Tastes
  - Population and demographics
  - Expected future prices

Demand Shocks

- Increase in demand: Right shift
- Decrease in demand: Left shift

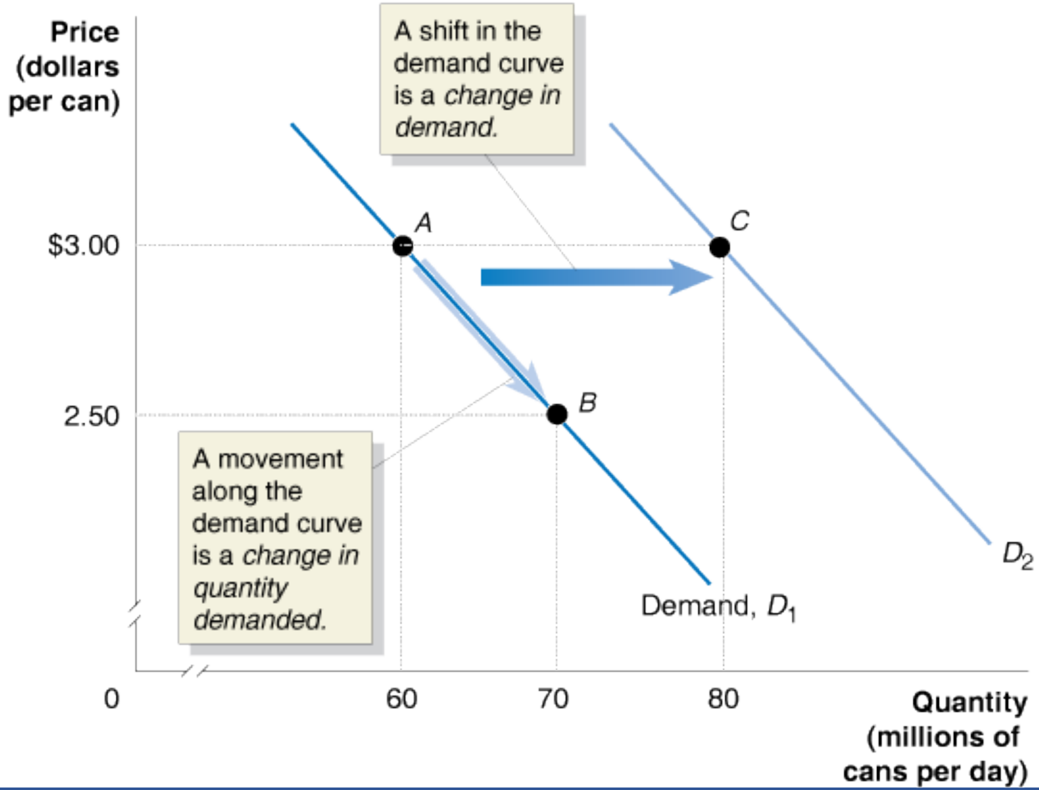


How Variables Shift Market Demand

An increase in …	shifts the demand curve to the…
Income	
Price of a **substitute** good	
Price of a **complementary** good	
Tastes	
Population and demographics	
Expected future prices	

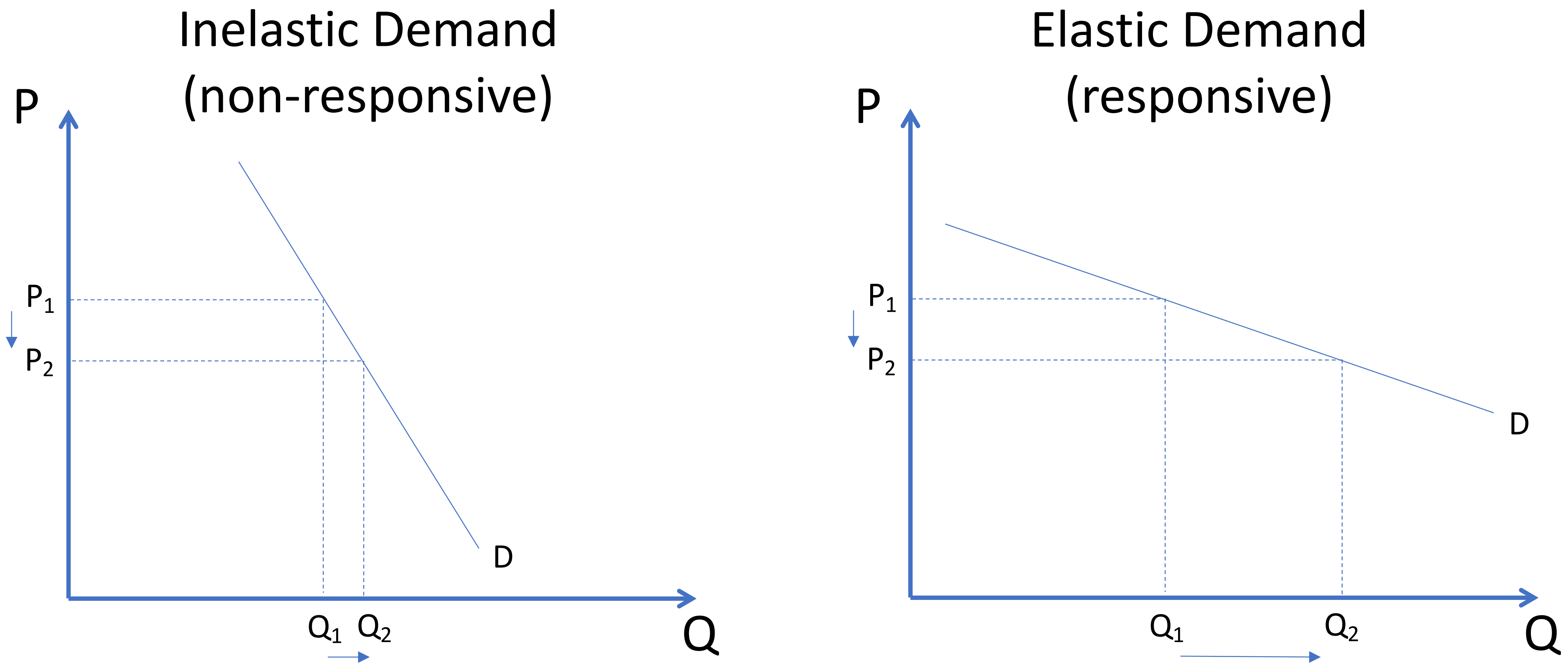
Change in Demand vs Change in Quantity Demanded

- A **movement along** the demand curve is a **change in quantity demanded**
- A **shift** of the demand curve is a **change in demand**



Inelastic vs Elastic Demand Curves

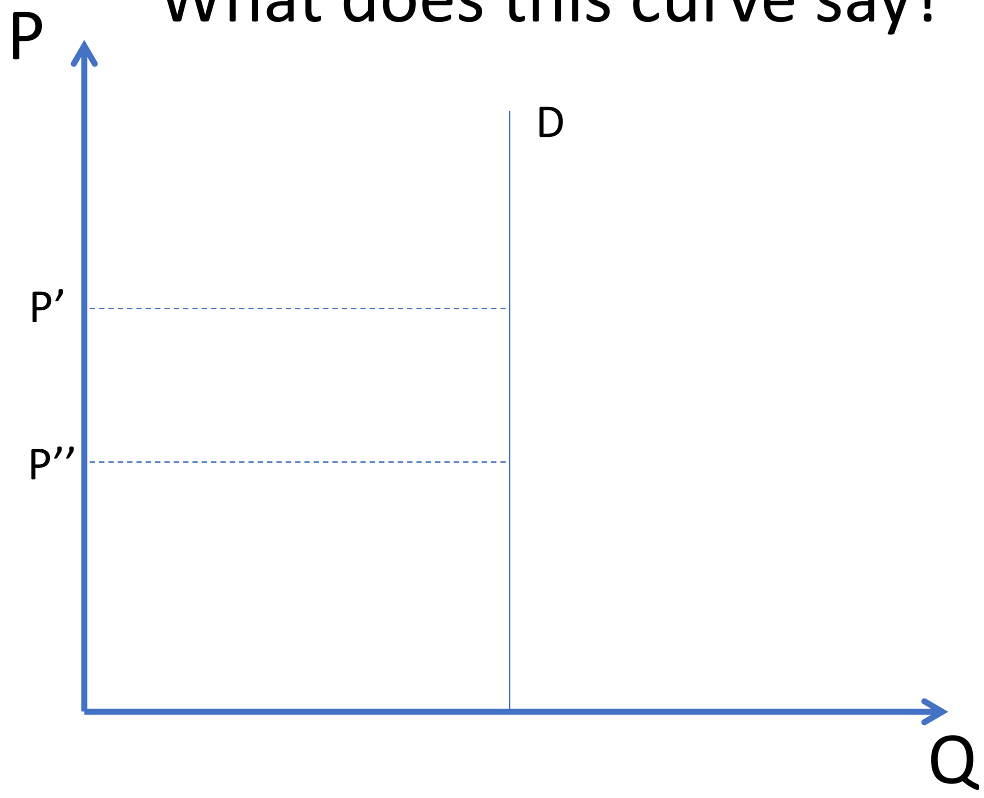
- Sometimes the slope of the curve matters: steeper, flatter?



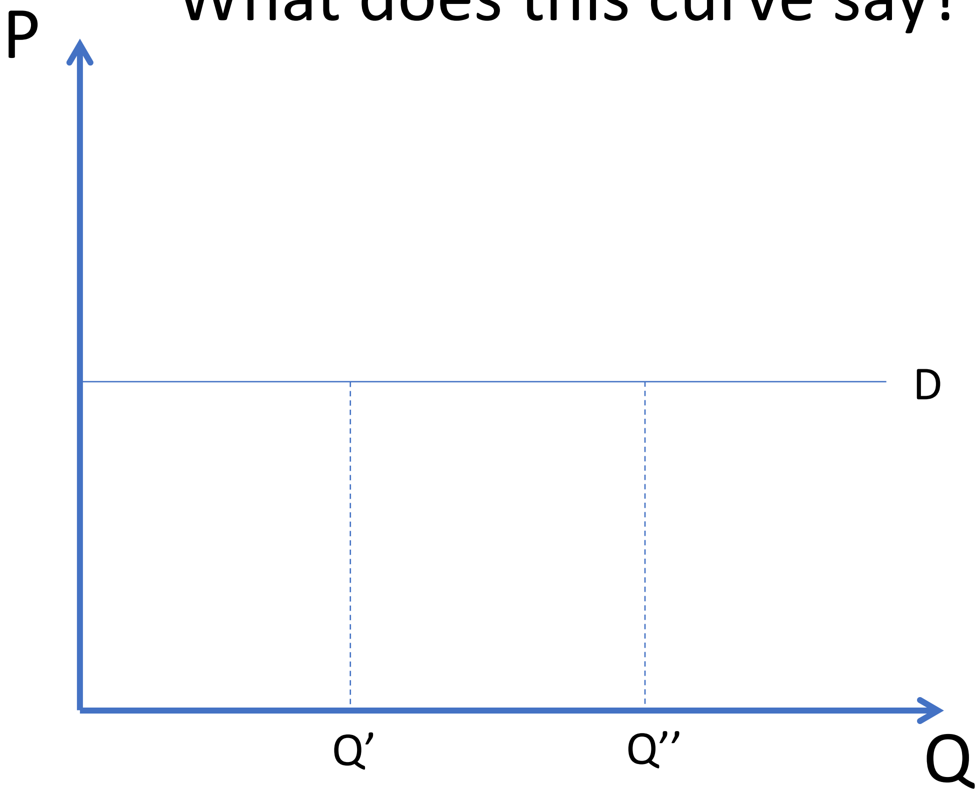
Perfectly Inelastic and Elastic Demand Curves

- Demand curves can also be vertical and horizontal lines

What does this curve say?



What does this curve say?

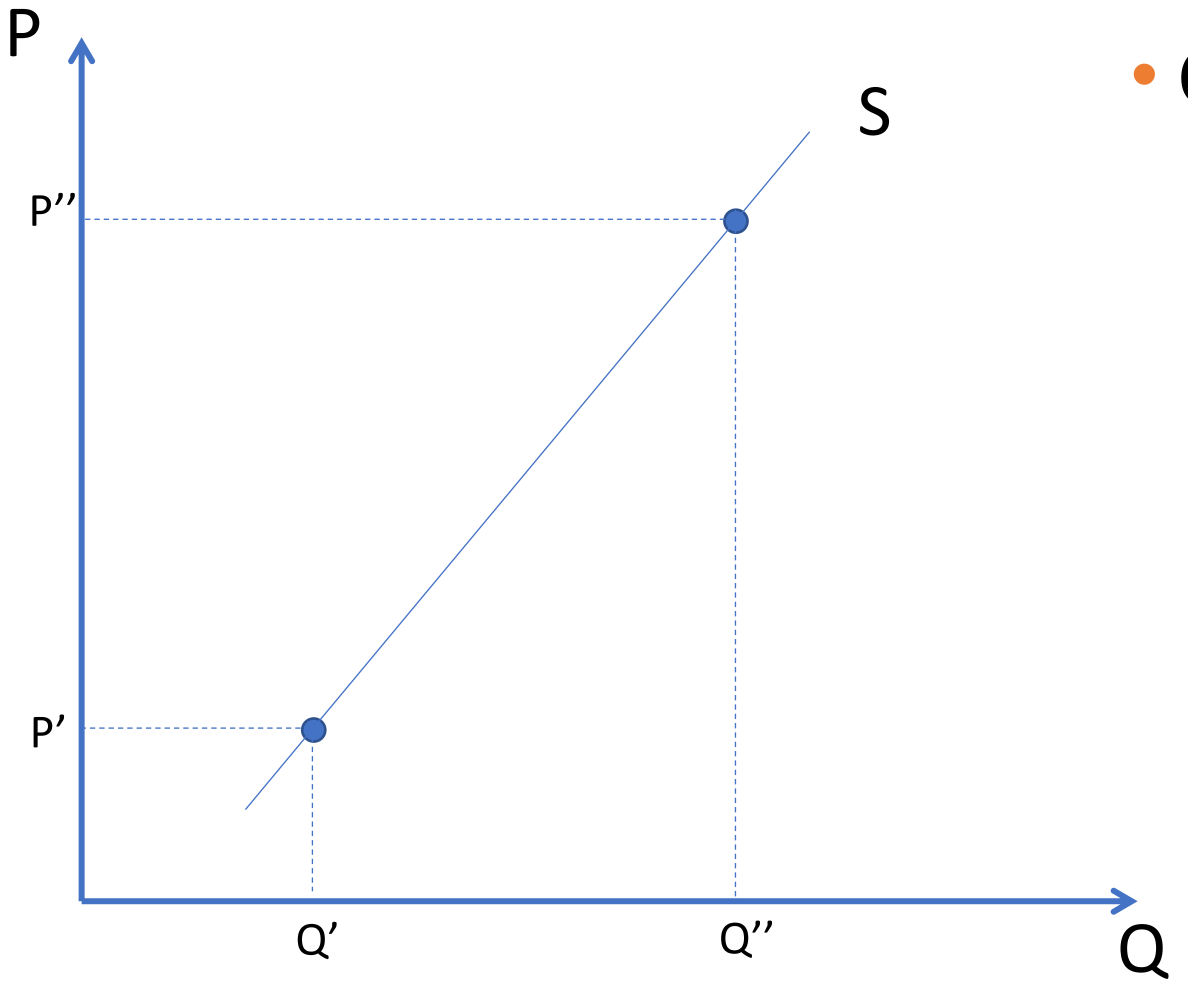


Supply Curves

- Supply curves relate prices to quantity supplied by firms
  - They capture how firms respond to prices
- Generally, higher prices lead to higher supply of goods
  - Law of supply

The Supply Side of the Market

- The supply curve is upward sloping
- Ceteris paribus



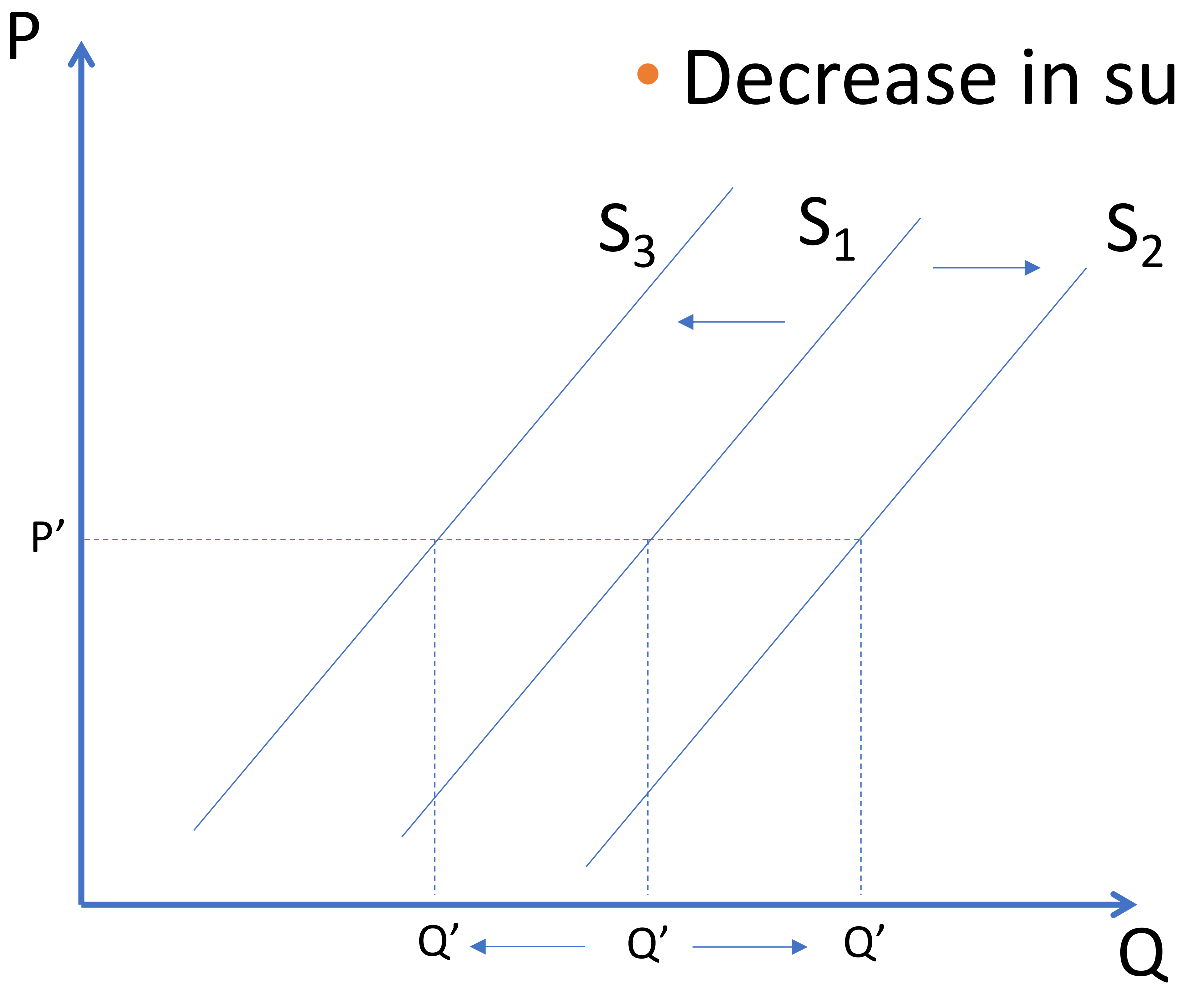
Variables that **Shift** Market Supply

- Many variables **other than price** can influence market supply
  - Change in **exogenous** factors cause supply curve to shift

- These 5 are the most important:
  - Prices of inputs
  - Technological change
  - Prices of related goods in production
  - Number of firms in the market
  - Expected future prices

Supply Shocks

- Increase in supply: Right shift
- Decrease in supply: Left shift

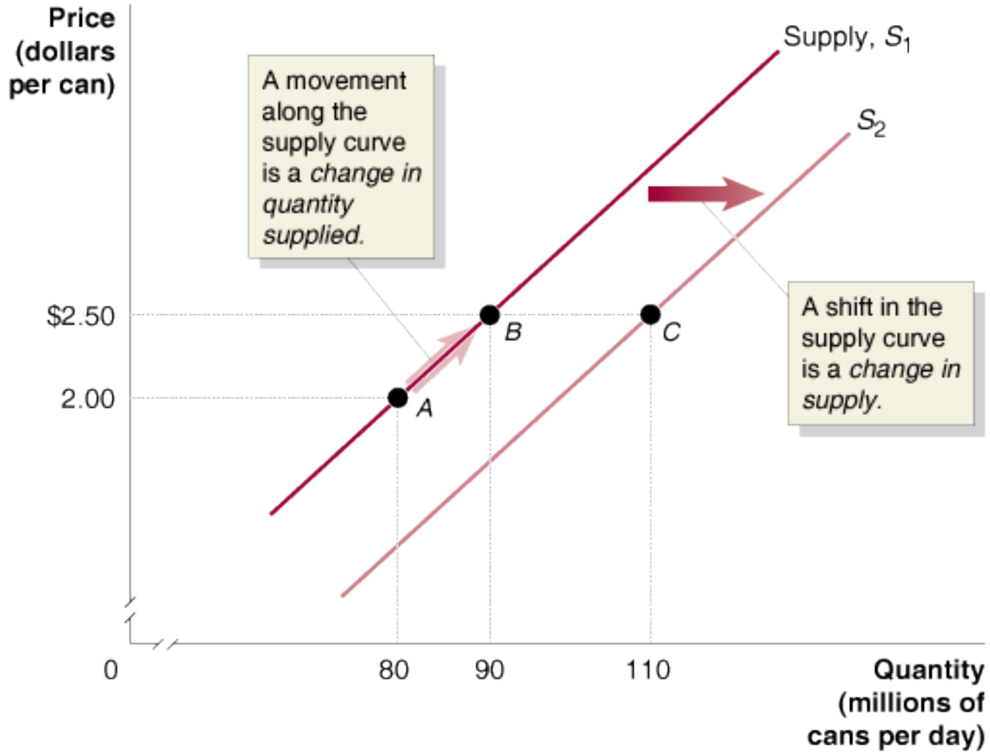


How Variables Shift Market Supply

An increase in …	shifts the demand curve to the…
Price of an input	
Productivity	
Price of a substitute **in** production	
Price of a complement **in** production	
Number of firms in the market	
Expected future prices	

Change in Supply vs Change in Quantity Supplied

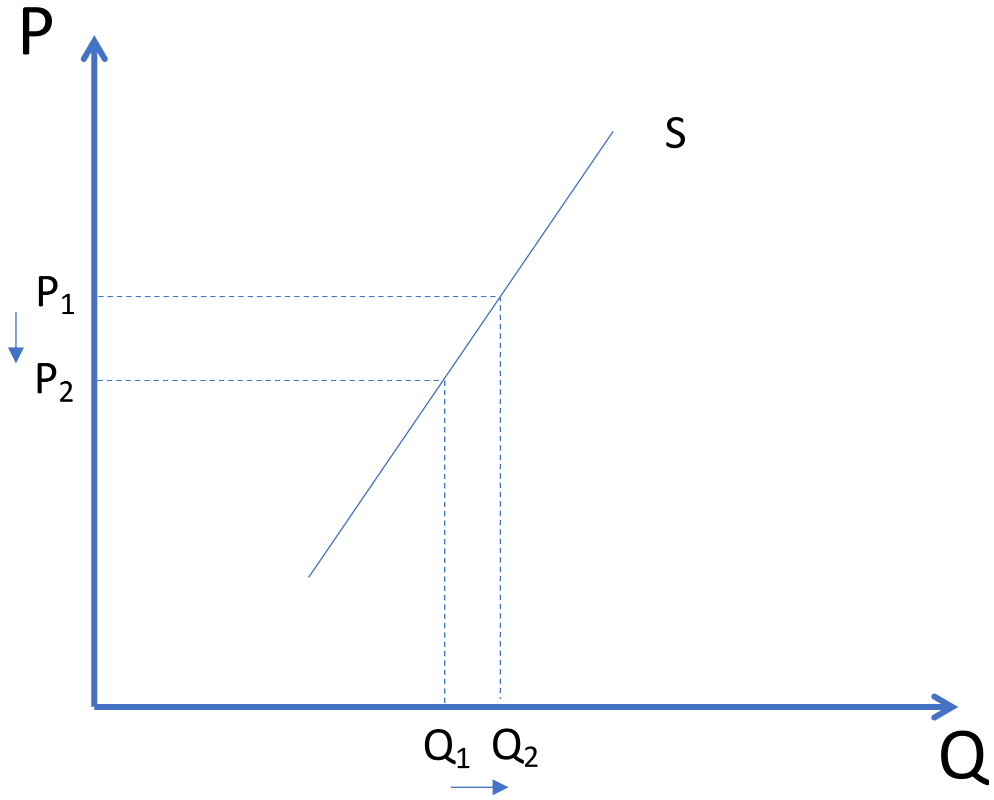
- A **movement along** the supply curve is a **change in quantity supplied**
- A **shift** of the supply curve is a **change in supply**



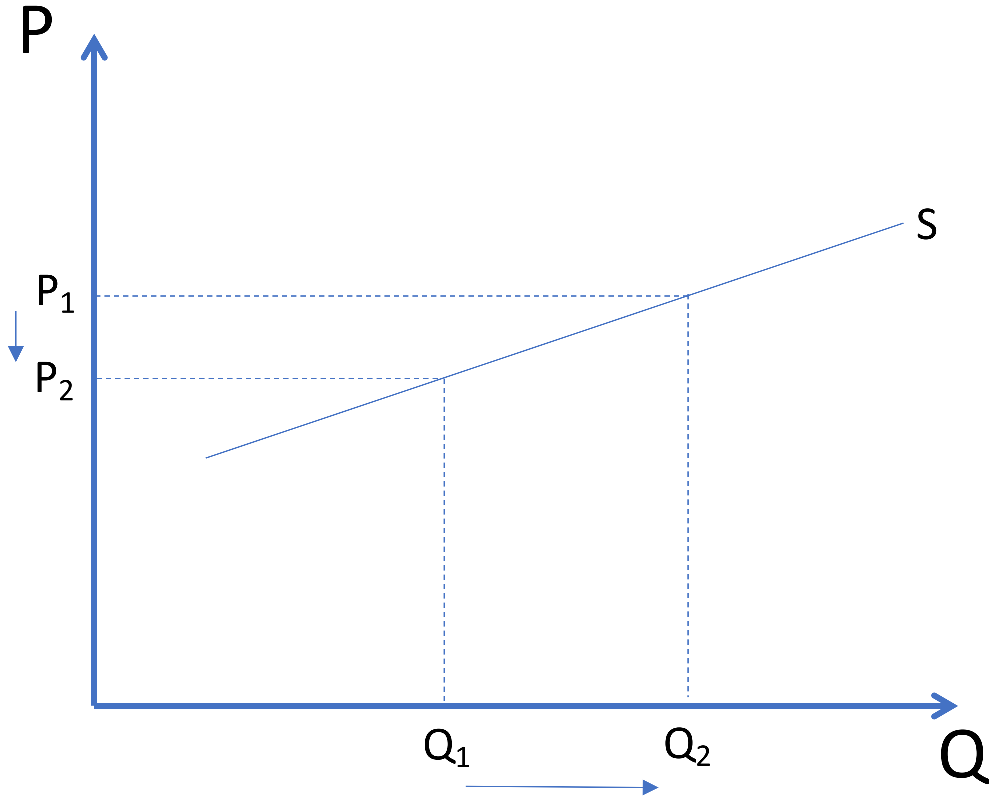
Inelastic vs Elastic Supply Curves

- Sometimes the slope of the curve matters: steeper, flatter?

Inelastic Supply

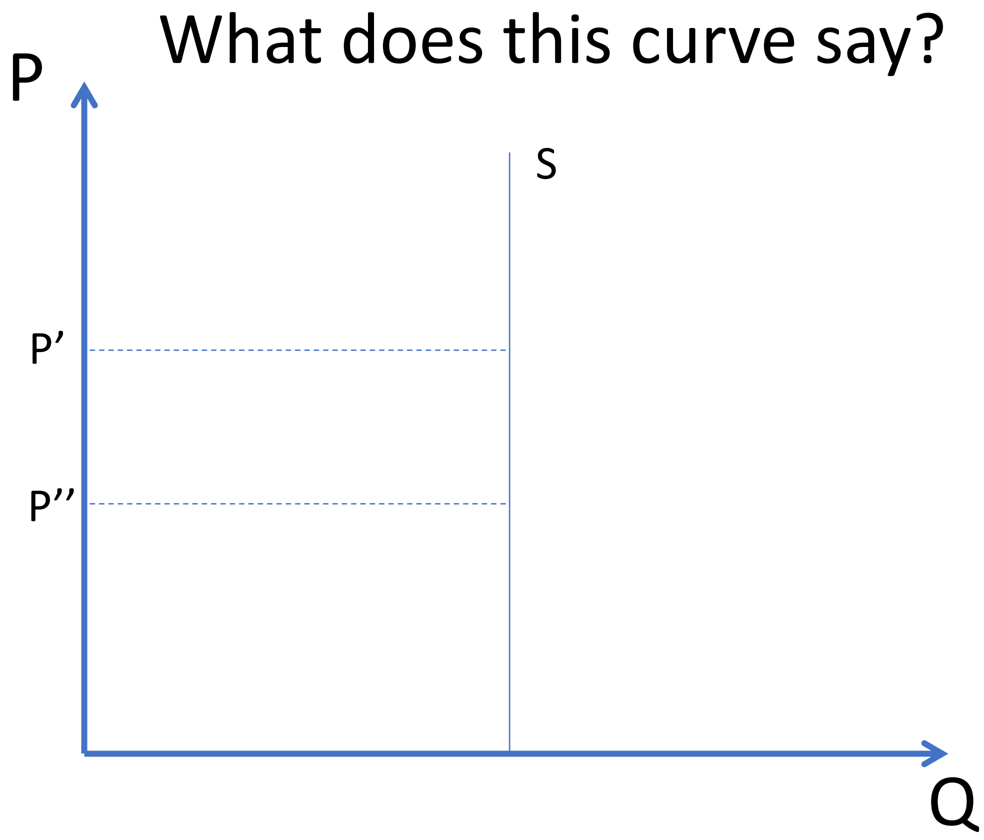


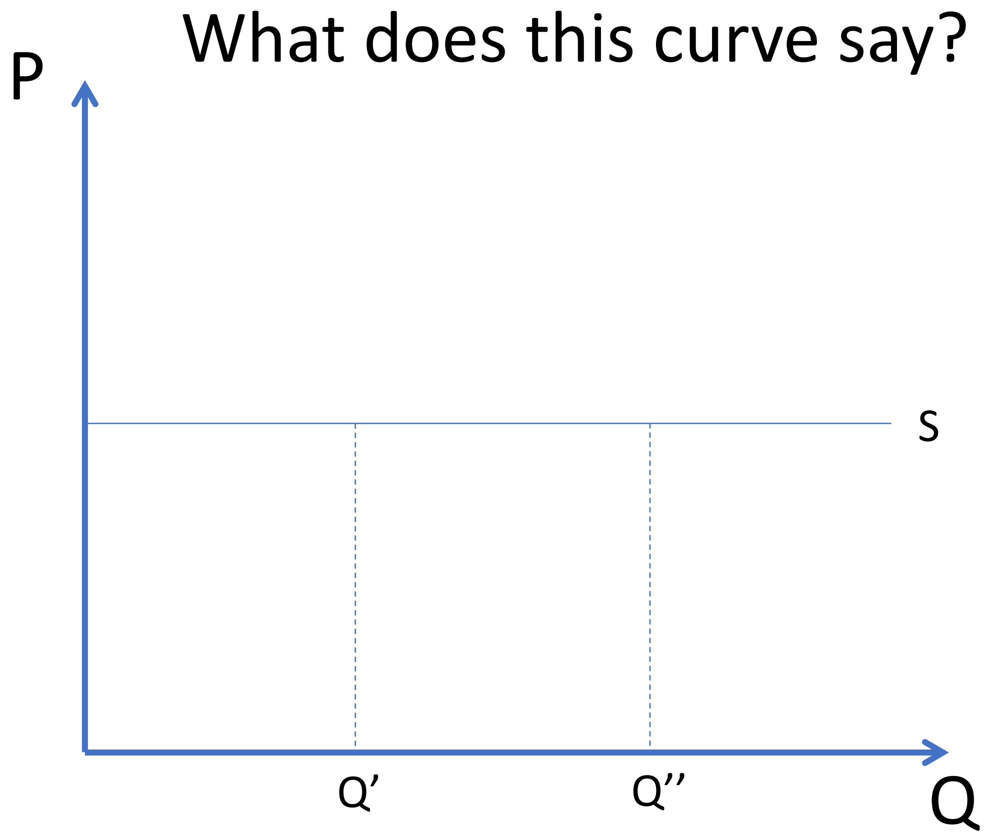
Elastic Supply



Perfectly Inelastic and Elastic Supply Curves

- Supply curves can also be vertical and horizontal lines





Elasticity

- **Elasticity**: Measure of the sensibility of the quantity demanded (or supplied) to one of its determinants
  - **Price** elasticity

$$\frac{\%\ Change\ in\ Quantity}{\%\ Change\ in\ Price} = \frac{\Delta Q / Q}{\Delta P / P}$$

  - Which industry is likely to have a more elastic **demand**, jets or food?
  - Is the **demand** for gasoline more elastic in the short run or the long run?
  - Example: Linear **supply** curve defined by points A=(2,3) and B=(6,15). What is the price elasticity at A?

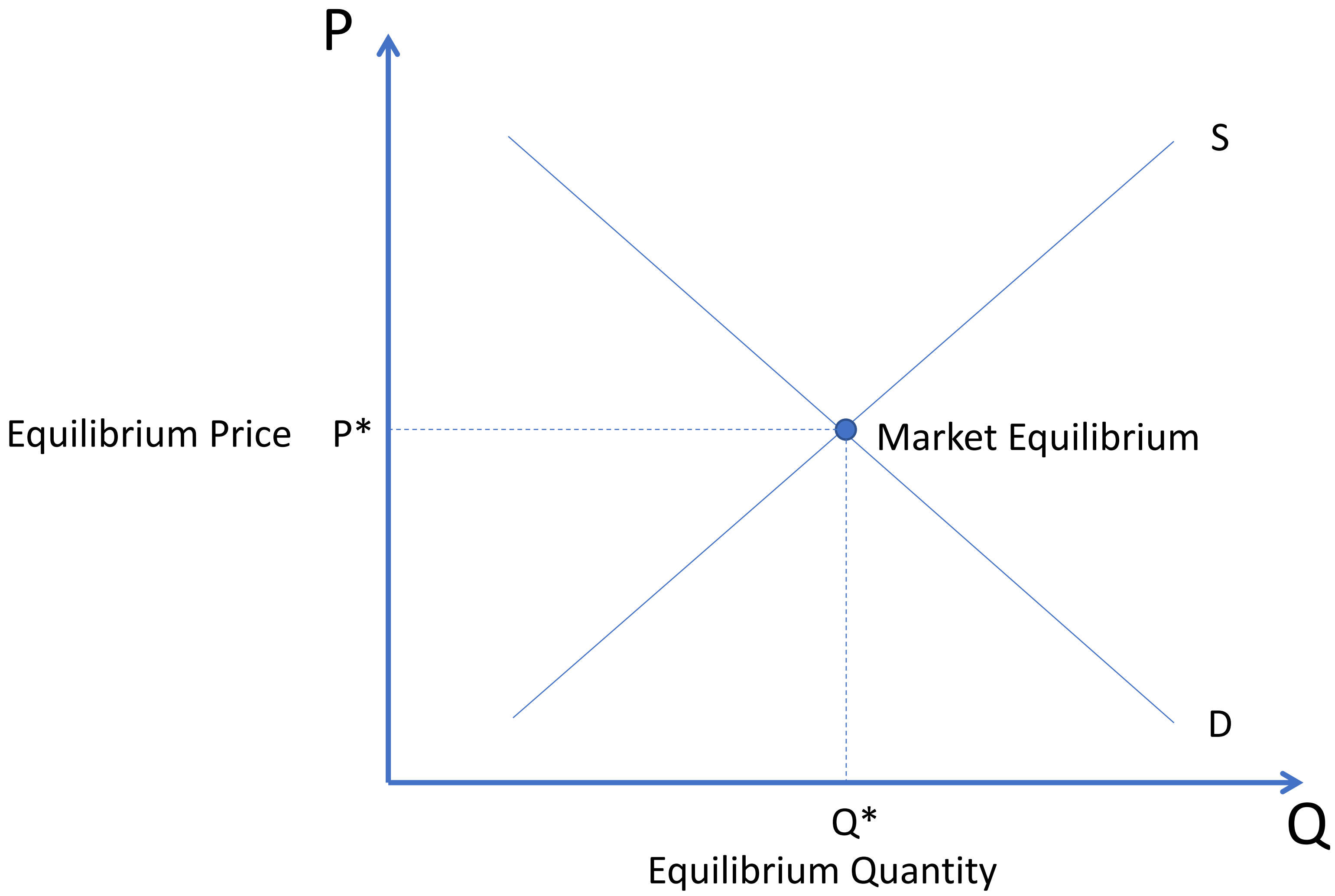
Market Equilibrium

- The purpose of markets is to **bring** buyers and sellers **together**
  - From interaction, firms produce the G & S that consumers want most

- **Equilibrium** is where demand equals supply
  - We say that in equilibrium **markets clear**

- **Interaction** of demand and supply **determines** the **quantity** of the good that is produced and the **price** at which it is sold

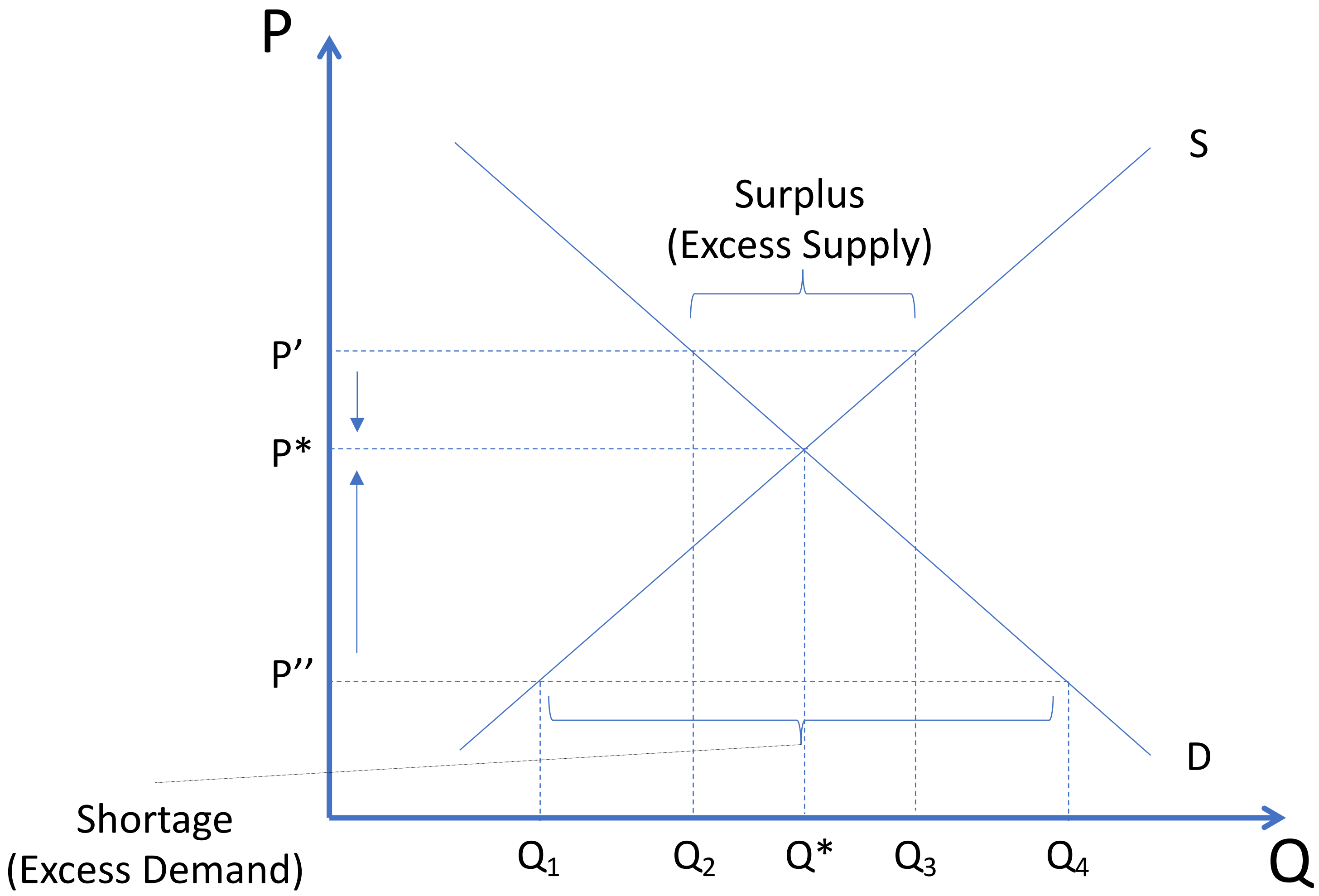
Putting Demand and Supply Together



What Happens When Markets Don't Clear?

- At some prices, supply ≠ demand
- A market that is not in equilibrium **moves towards** equilibrium
  - When the price is **above** equilibrium, there will be a **surplus**
  - When the price is **below** equilibrium, there will be a **shortage**
- Once a market is in equilibrium it **remains** in equilibrium

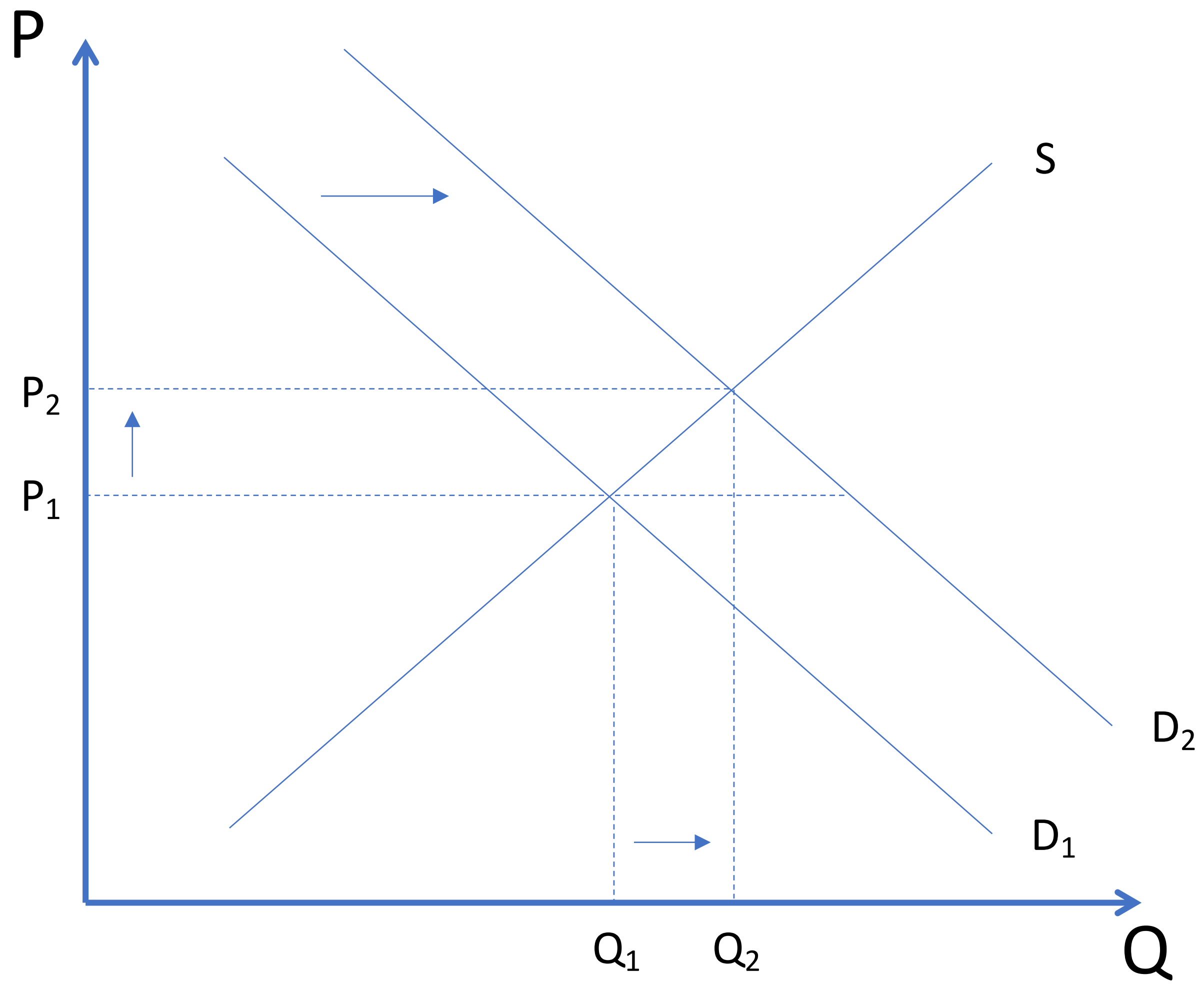
How Markets Eliminate Surpluses and Shortages



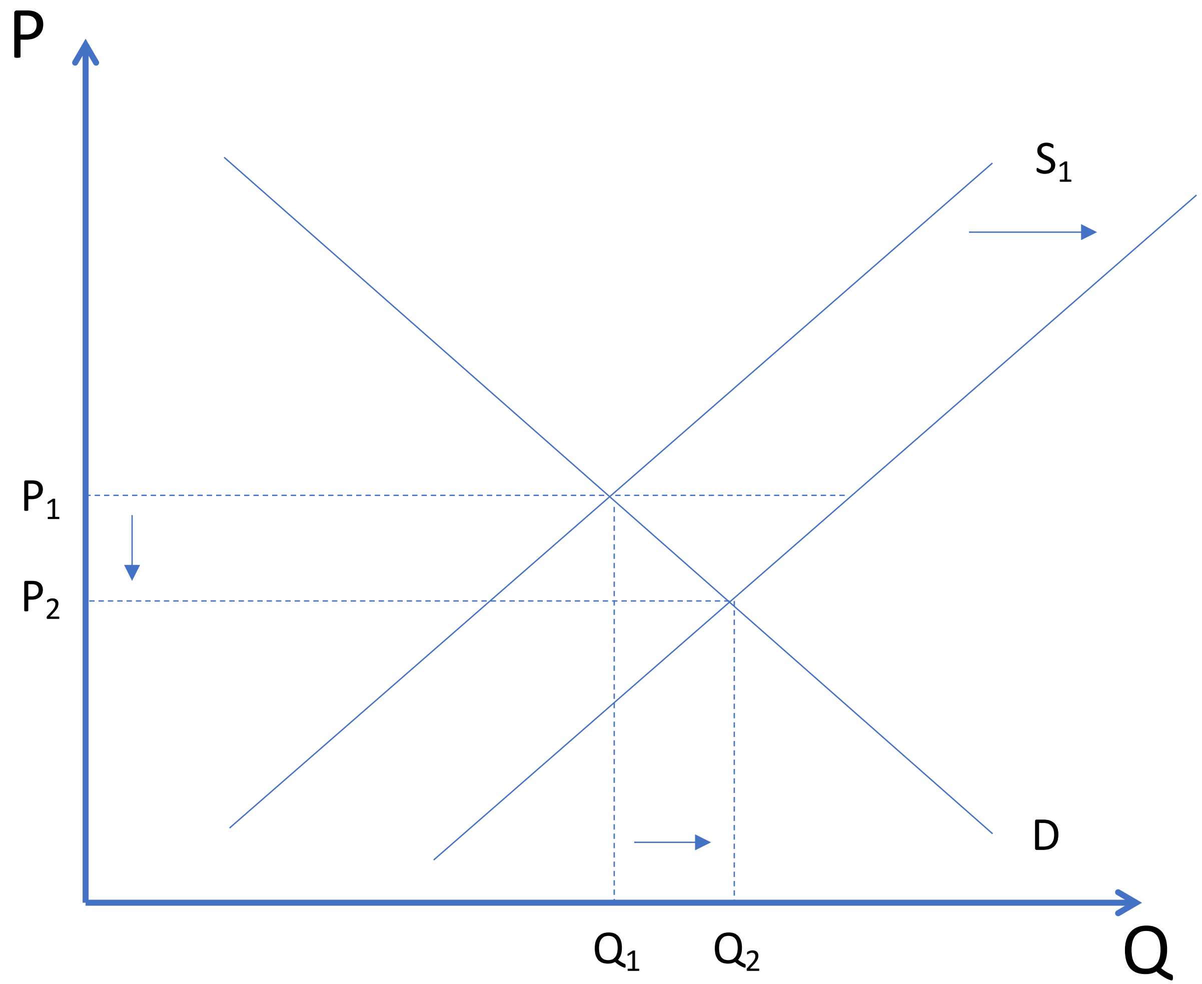
Changes in Equilibrium

- Demand and supply curves are **constantly shifting**
  - Prices and quantities that represent equilibrium are constantly changing
- **How** shifts in demand and supply curves affect the equilibrium?
- **Comparative statics**
  - Compare the new equilibrium to the old equilibrium

Effect of Shifts in Demand on Equilibrium



Effect of Shifts in Supply on Equilibrium

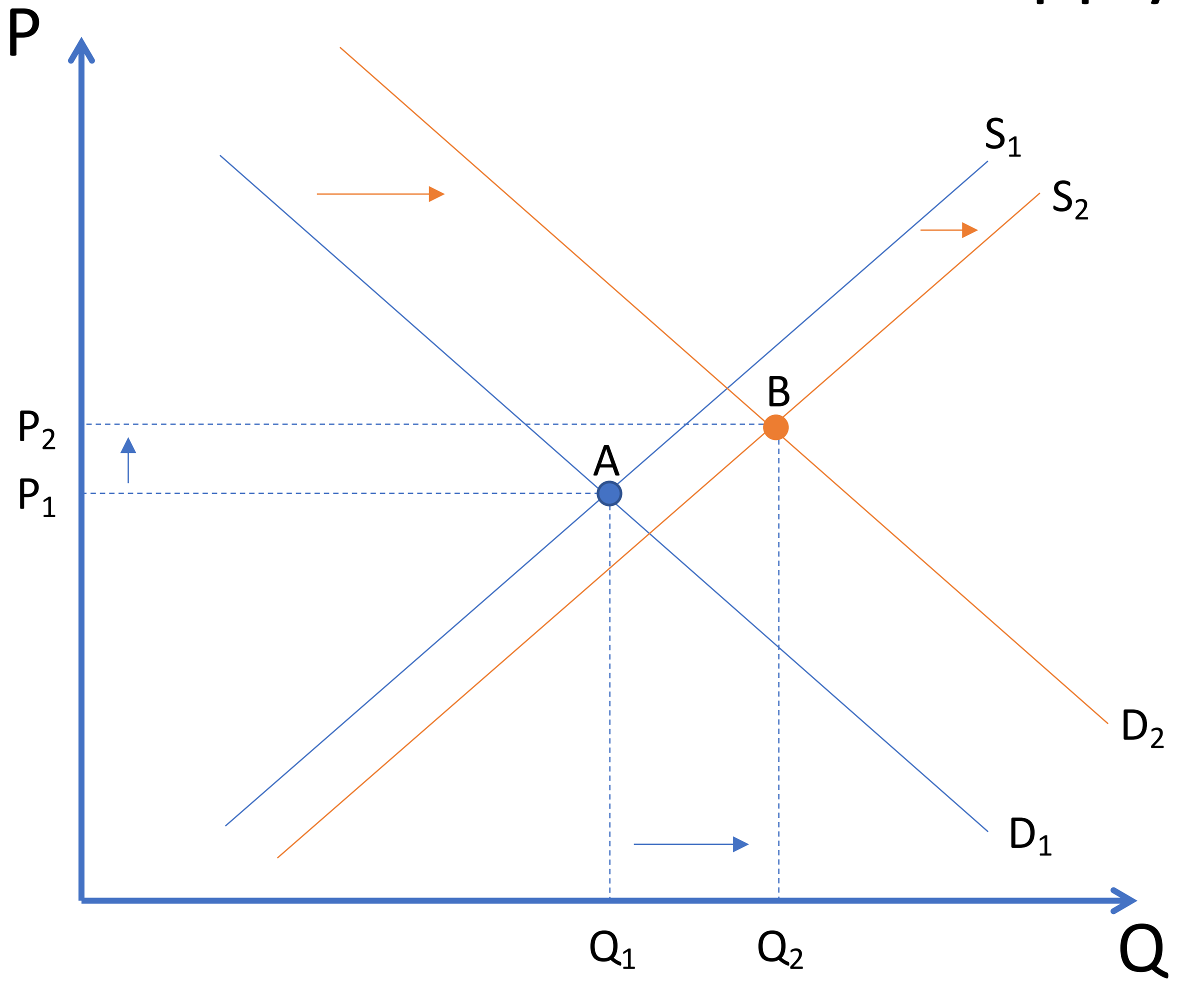


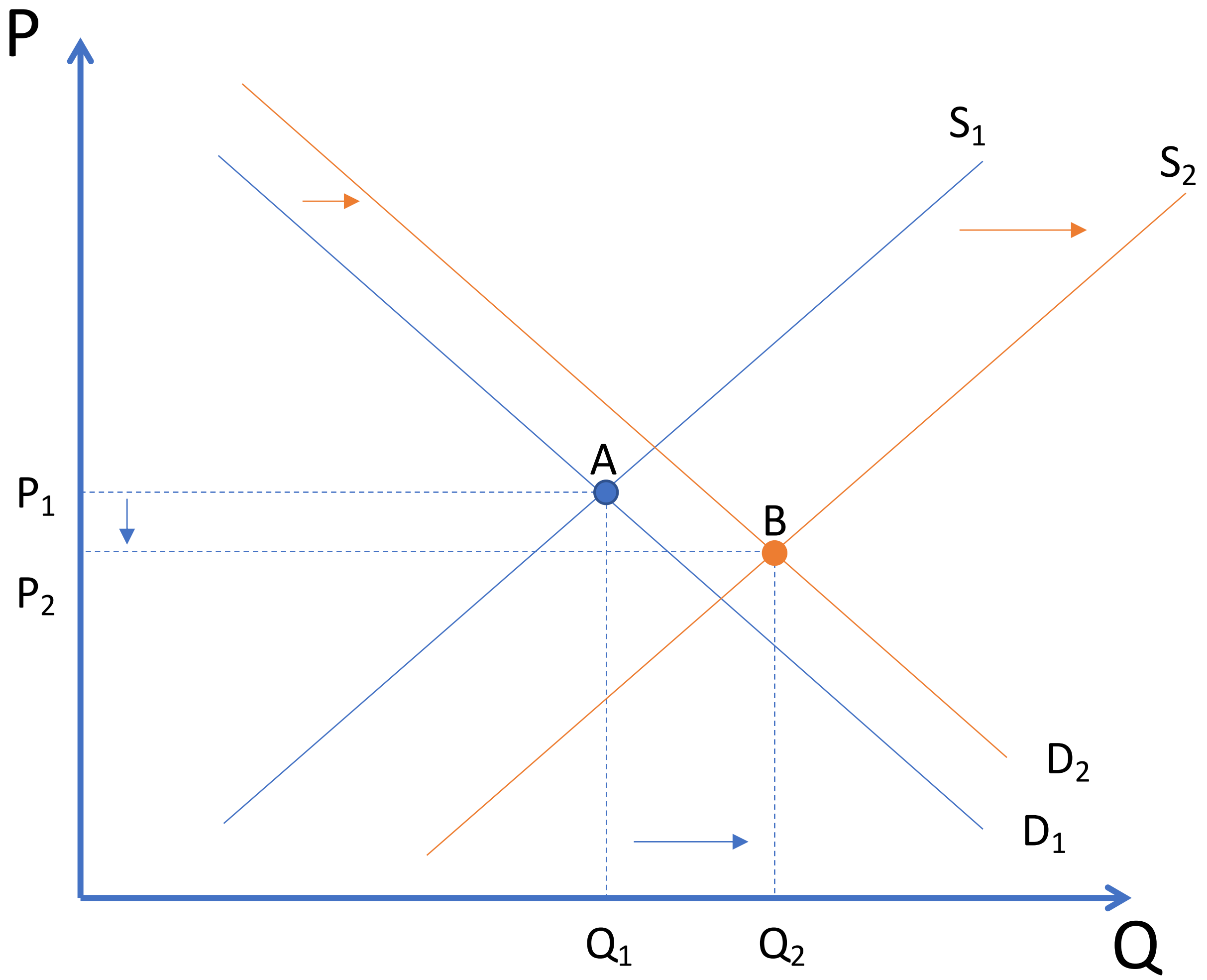
Effect of Shifts in Demand **and** Supply

- When only **one** curve shifts, easy to predict effect on equilibrium
- What happens if ***both*** curves shift?
- Whether the equilibrium price or quantity rise or fall depend on whether demand shifts **more than** supply
  - 4 cases

Shifts in Demand and Supply with Different Magnitude

- Positive supply and demand shocks





Exercise

- Suppose that the supply and demand curves in a market move at the same time. What can you say unambiguously about P or Q under the four possible scenarios?

	D moves to the left	**D moves to the right**
S moves to the left		
S moves to the right		

Exercise

- What shocks can explain a decrease in the equilibrium price?
- What shocks can explain an increase in the equilibrium quantity?
- What is the effect on the equilibrium quantity of both a negative demand shock and a negative supply shock?
  - Can we say something about the effect on the equilibrium price?

What Markets Can We Analyze?

- Oil market
- Apple stock market
- Bond market
- Loanable funds market
- Foreign exchange market
- …

- What about the labor market?

Application: Oil Market

- In late 1970s the price of oil **increased** considerably
  - Why?
- How we can approach it?
  - What sort of shocks could lead to higher prices?
  - Was it a demand shock or a supply shock?

Identifying the Shock

- An upward shift in demand?
  - Higher P
  - Higher Q
- A downward shift in supply?
  - Higher P
  - Lower Q
- Which one is it?
- What additional information is needed?
  - Oil production did not increase in those years
- Now, do we know why prices increased?

Finding the Effects of Shocks

1. Does the shock shift the demand curve, the supply curve or both?

2. Which side is the shift to?

3. How does the equilibrium change?

More Questions Answered by Microeconomics

- What are the benefits of the market equilibrium?
- What are the effects of taxes on the equilibrium?
- Do markets always work as expected?
- What if one side of the market has more information?
- What if the market is not perfectly competitive?