CHAPTER 3

Supply and Demand

LEARNING OBJECTIVES

After learning about this chapter, you should know

LO3-1 The nature and determinants of market demand.

LO3-2 The nature and determinants of market supply.

LO3-3 How market prices are established.

LO3-4 What causes market prices and quantities to change.

LO3-5 How government price controls affect market outcomes.

Supply and Demand

- That great big board outside the gas station allows you to keep constant track of how the price of gas changes.

  …or it may be a huge source of aggravation to you.
- Why do gasoline prices fluctuate so much?
- What causes its price to rise? …to fall?

Supply and Demand II

- The goal of this chapter is to explain how supply and demand really work.
  - **What** determines the price of a good or service?
  - **How** does the price of a product affect its production and consumption?
  - **Why** do prices and production levels often change?

Market Participants

- Market participants are trying to obtain the maximum return from the scarce resources they have.
  - **Consumers:** maximize the utility (satisfaction of unmet wants) they can get from available incomes.
  - **Businesses:** maximize profits by selling goods that satisfy demand while keeping costs low.
  - **Government:** maximize the general welfare of society.
- These motives explain most market activity.

Specialization and Trade

- Most of us cannot produce everything we want to consume.
  - We face time, talent, and resource constraints.
- We should **specialize** in what we can produce at a lower opportunity cost than others.
- Produce more than we need for ourselves and trade the excess for the goods we want to consume (which are produced by other specialists).

Application: International Trade

- This same logic applies to international trade.
  - The U.S. specializes in production in which they have a lower opportunity cost, use some and sell the excess to other countries.
  - Other countries specialize in production in which they have a lower opportunity cost, use some and sell the excess to the U.S.
- Because of this, both nations are able to consume more than if they had to produce everything for themselves.

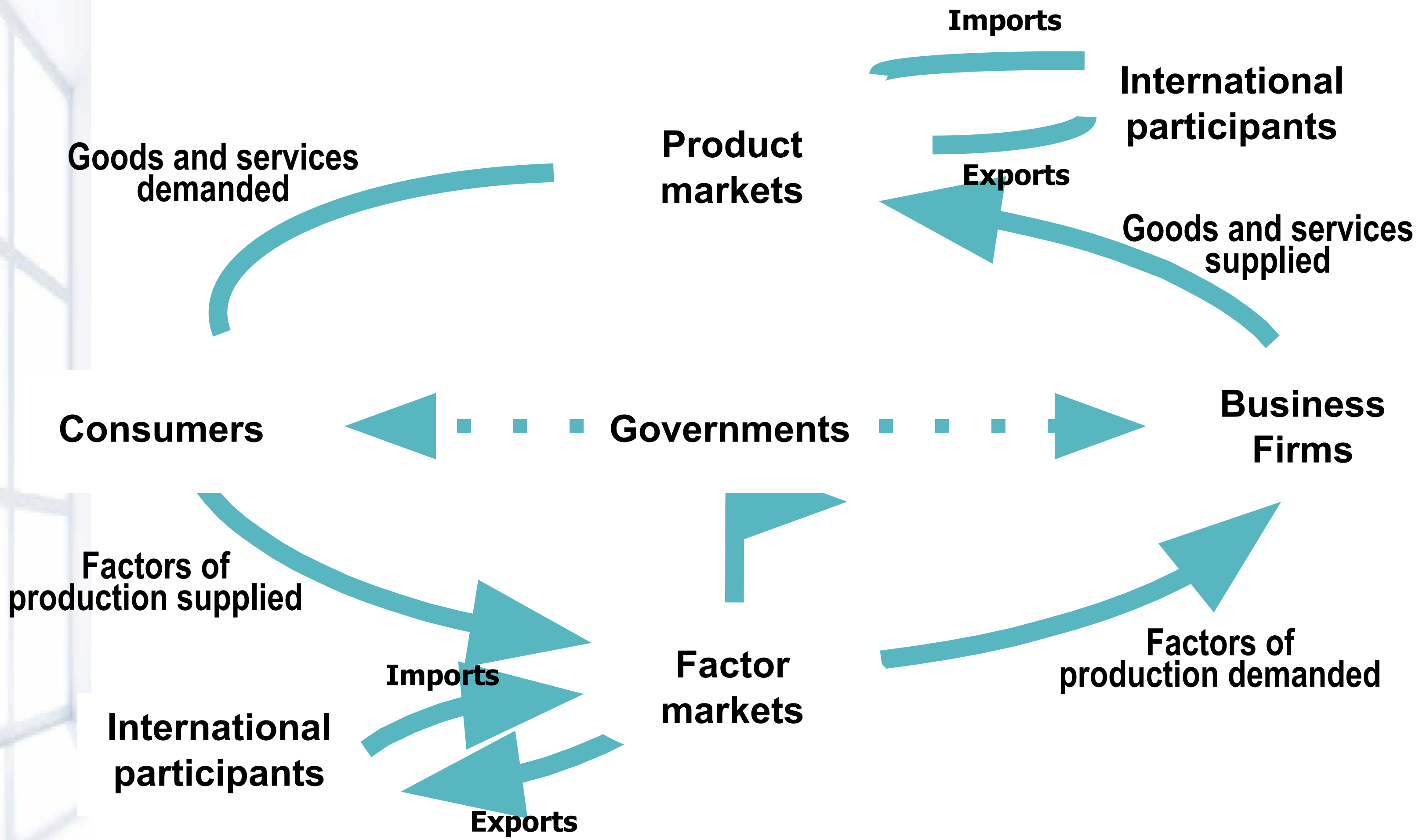
The Circular Flow

- Two markets (factor market and product market) and four participants:
- **Consumers:**
  - Supply factors of production (e.g., labor) to business firms in the **factor market** in exchange for income.
  - Purchase goods and services in the **product market**.
- **Business firms:**
  - Produce goods and services for the **product market** using the factors of production they purchased in the **factor market**.

The Circular Flow II

- **Governments:** acquire resources in the **factor market** and provide services to both consumers and firms.
- **International participants:** supply imports and purchase exports in the **product market** and buy and sell resources in the **factor market**.

The Circular Flow III



Exercise

- Write down a product market in which you participated recently.
  - *Were you a buyer or seller?*

- Write down a factor market in which you participated recently.
  - *Were you a buyer or seller?*

Locating Markets

- A **market** exists wherever an exchange (transaction) takes place.

- Every market transaction involves an exchange of dollars for goods and service (in product markets) or resources (in factor markets).
  - In the circular flow, goods and services or resources flow one way, and dollars flow the opposite way.

Supply and Demand

- **Supply:** the ability and willingness to **sell** specific quantities of a good at alternative prices in a given time period, *ceteris paribus.*

- **Demand:** the ability and willingness to **buy** specific quantities of a good at alternative prices in a given time period, *ceteris paribus.*

- ***Ceteris paribus:*** the assumption that nothing else is changing.

The Law of Demand

- **Law of demand:** in a given time period, the quantity demanded of a good increases as its price falls, *ceteris paribus* (and *vice versa*).
- Inverse relationship between price (P) and quantity demanded (Qd).
- A <u>downward-sloping</u> curve on a market diagram.

Individual Demand and Market Demand

- **Each of us has demand for a good or a service if we are willing and able to pay for it.**
- The amount we buy depends on its price.
  - If the price goes up, we buy less
  - If the price goes down, we buy more
- **Market demand** is the collective summation of all buyers' individual demands.

Demand Schedule and Curve

Price	Quantity Demanded
$50	1
45	2
40	3
35	5
30	7
25	9
20	12
15	15
10	20

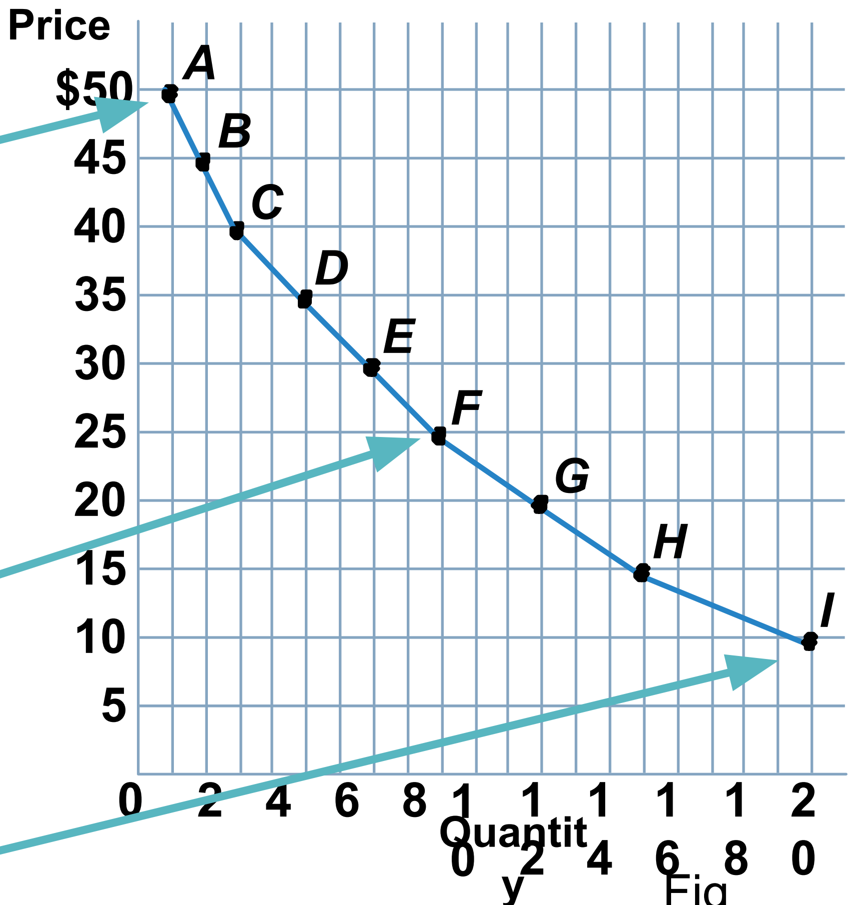


Fig 3.2

Factors That Set Demand Behavior (Determinants of Demand)

- Tastes
- Income
- Expectations
- Other goods:
  - Substitutes
  - Complements
- Number of buyers

- If any of these factors change, demand behavior changes.
- A demand behavior change is shown by shifting the demand curve.
  - **Increase in demand:** shift the curve right.
  - **Decrease in demand:** shift the curve left.

Changing Demand (Shifting the Demand Curve)

- Demand increases (shifts right) when
  - Taste for the good increases.
  - Income increases.
  - Price of a substitute rises.
  - Price of a complement falls.
  - Future prices are expected to rise.
  - Number of buyers increases.
- Vice versa, and demand decreases (shifts left).

Movements vs. Shifts

- **Change in quantity demanded:** movement along a demand curve in response to a change in price.

- **Change in demand:** a shift of the demand curve due to a change in one or more of the determinants of demand, but **NOT** in response to a change in price.

Movements vs. Shifts II

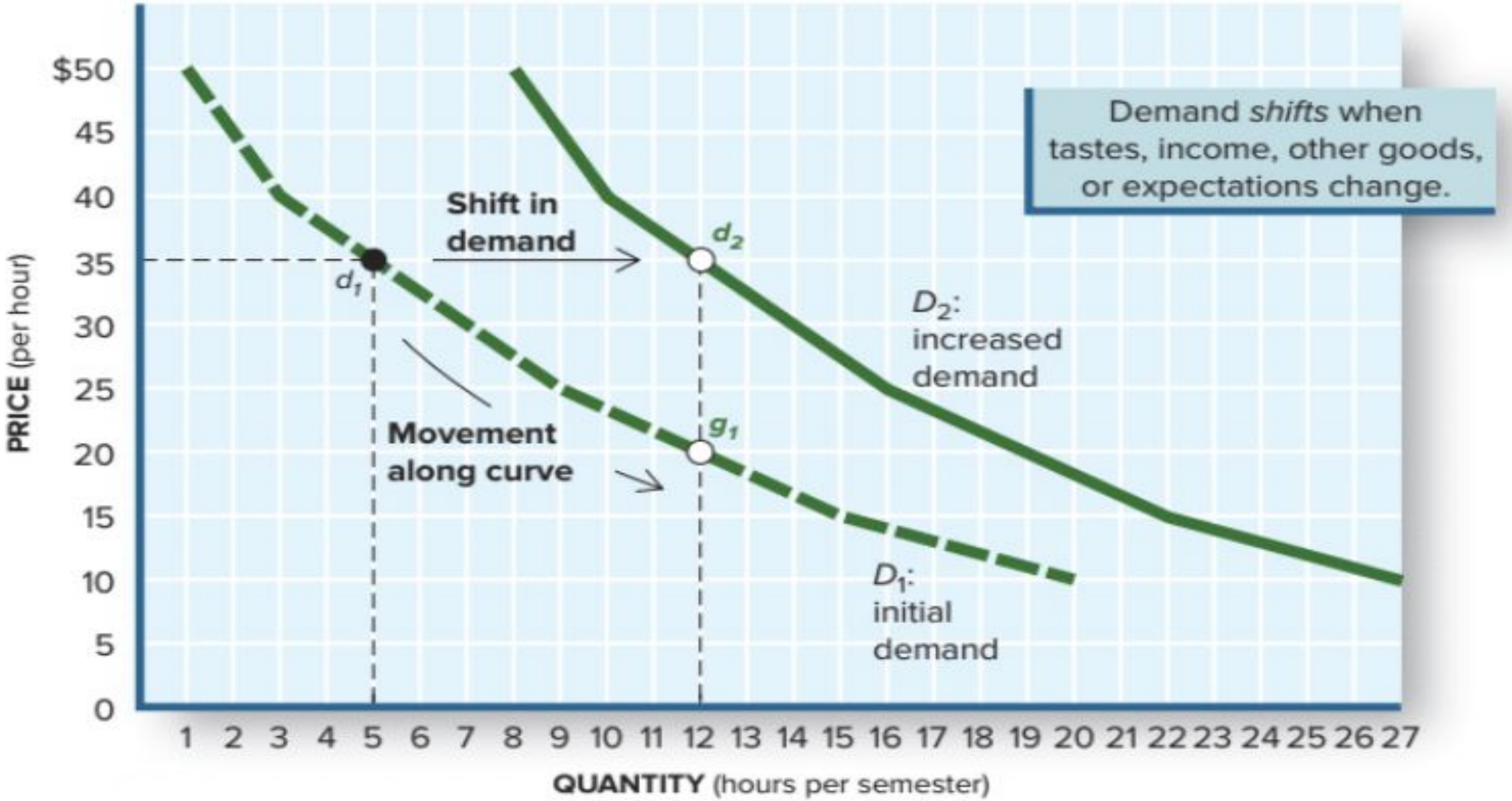


Fig 3.3

Movement along the curve: buyer's behavior <u>does not</u> change; buyers only react to a price change.
Shift the curve: buyers' behavior <u>does</u> change.

Law of Supply

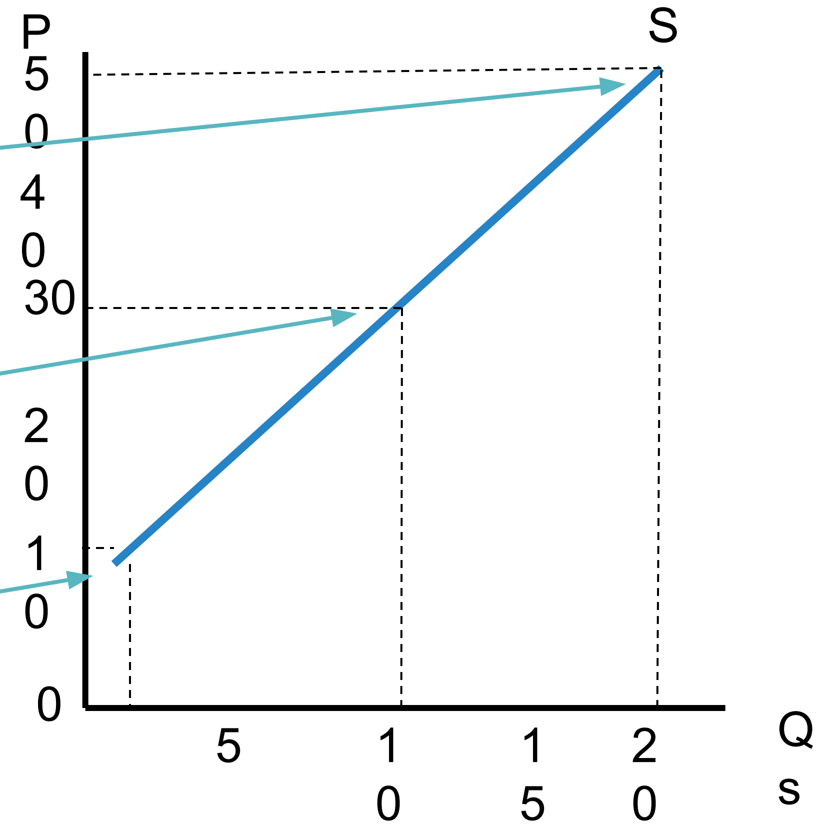
- **Law of supply:** the quantity of a good supplied in a given time period increases as its price increases, *ceteris paribus,* and vice versa.

- Direct relationship between price (P) and quantity supplied (Qs).

- It is an upward-sloping curve on a market diagram.

Supply Schedule and Curve

Price	Quantity Supplied (Q_s)
$50	20
40	15
30	10
20	5
10	1



Factors that Set Supply Behavior (Determinants of Supply)

- Technology
- Factor Costs
- Taxes and subsidies
- Expectations
- Other goods
- Number of sellers

- If any of these factors change, supply behavior changes.
- This type of change is shown by shifting the supply curve.
  - **Increase in supply:** shift the curve right.
  - **Decrease in supply:** shift the curve left.

Changing Supply (Shifting the Supply Curve)

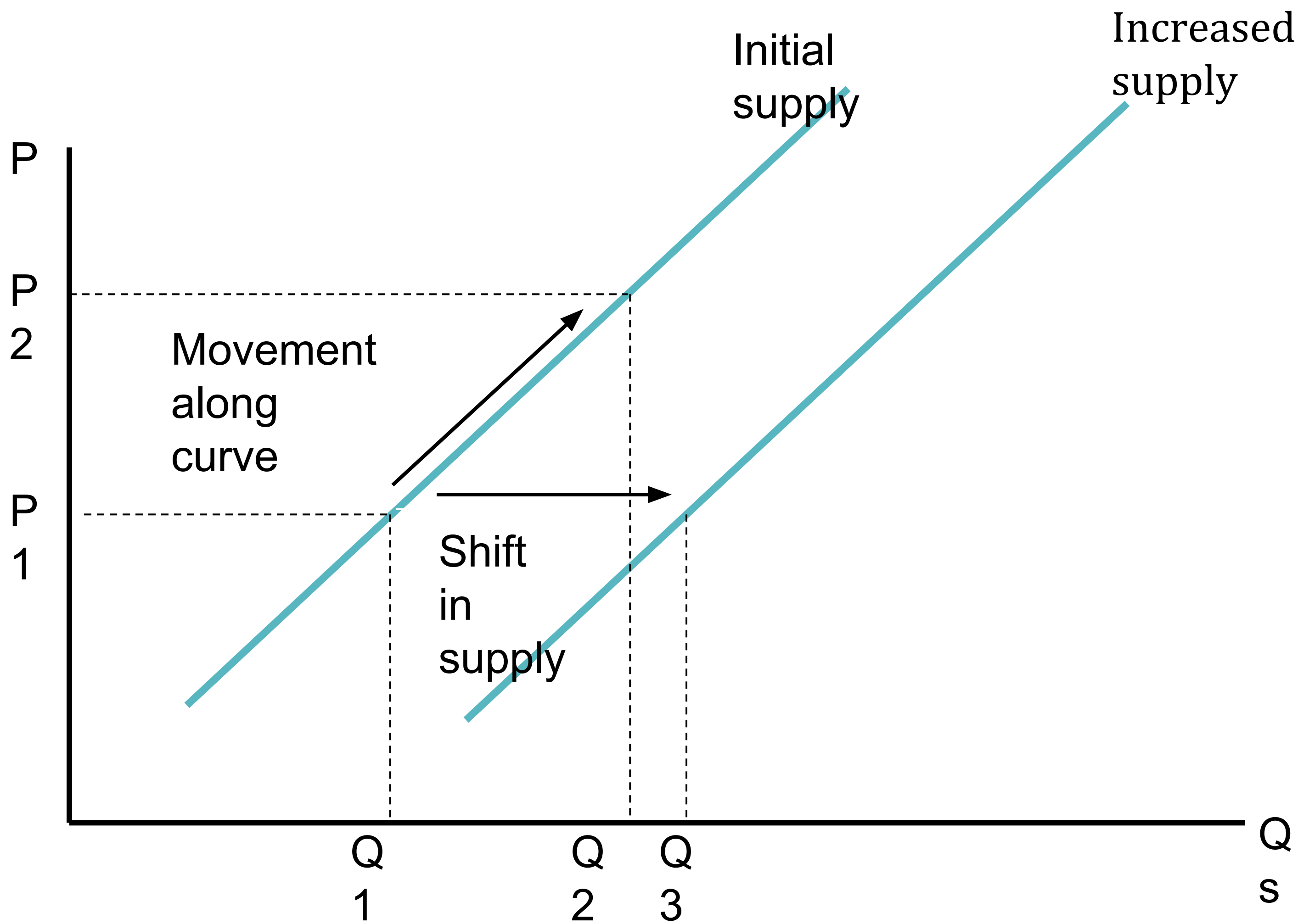
- Supply increases (shifts right) when;
  - New technology lowers operating costs.
  - Factor costs decrease.
  - Taxes decrease or subsidies increase.
  - Future prices are expected to rise.
  - Price of alternative goods fall.
  - Number of sellers increases.
- Vice versa, and supply decreases (shifts left).

Movements vs. Shifts III

- **Change in quantity supplied:** movement along the supply curve due to a *change in price*.

- **Change in supply:** a shift in the supply curve due to one or more changes in the determinants of supply, but *NOT in response to a change in price*.

Movements vs. Shifts IV



Individual Supply and Market Supply

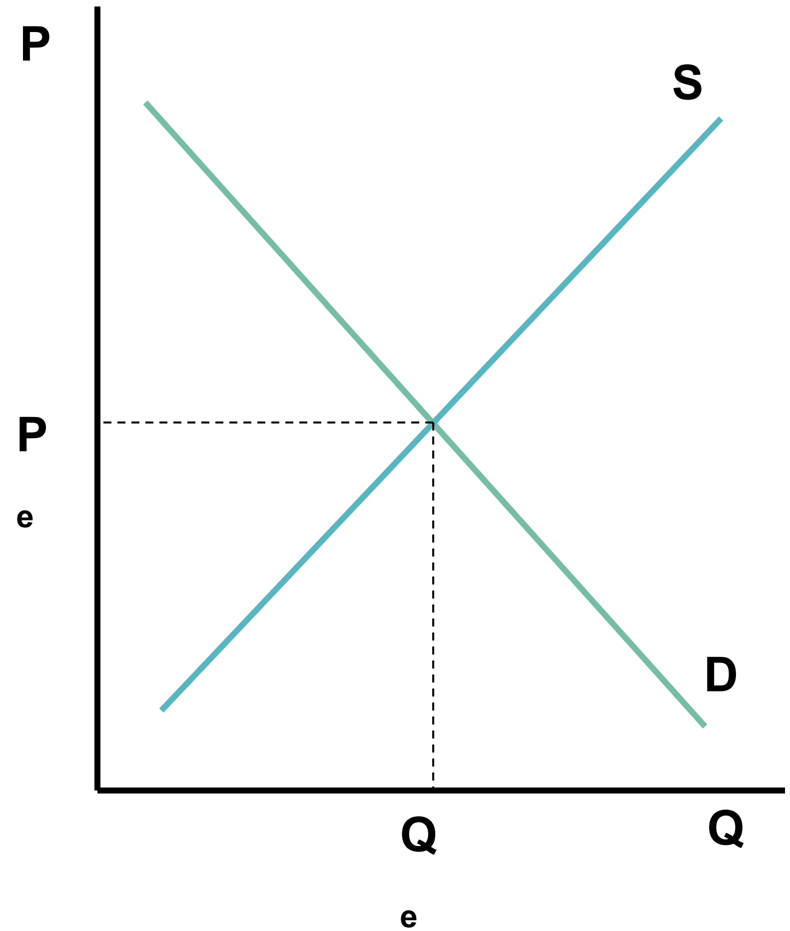
- Each producer is willing and able to produce a good or service if he or she can make a profit.

- The amount produced depends on its price.
  - If the price goes up, more will be produced.
  - If the price goes down, less will be produced.

- Market supply is the collective summation of all producers' individual supplies.

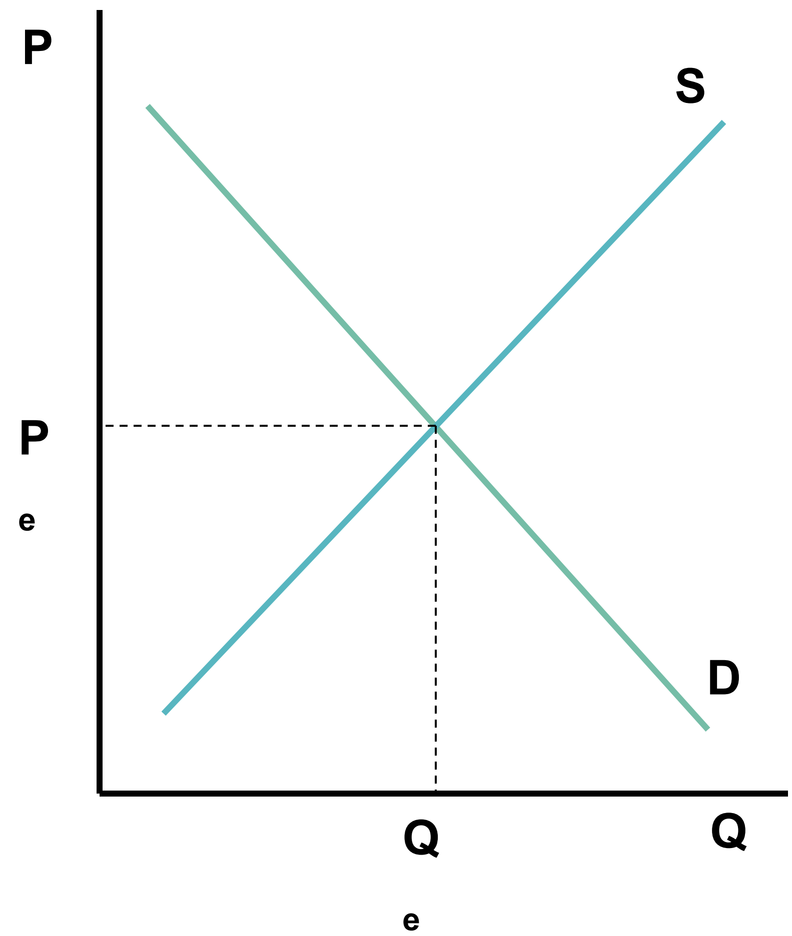
Putting a Market Together

- The interaction of buyers and sellers makes a market.
- **Equilibrium:** the one price and quantity combination that is compatible with the intentions of both buyers and sellers.
- Equilibrium is located where the demand curve and supply curve intersect.



Equilibrium

- No shortage exists.
- No surplus exists.
- Qd = Qs = Qe.
- The price will not change until there is a shift in demand or in supply.

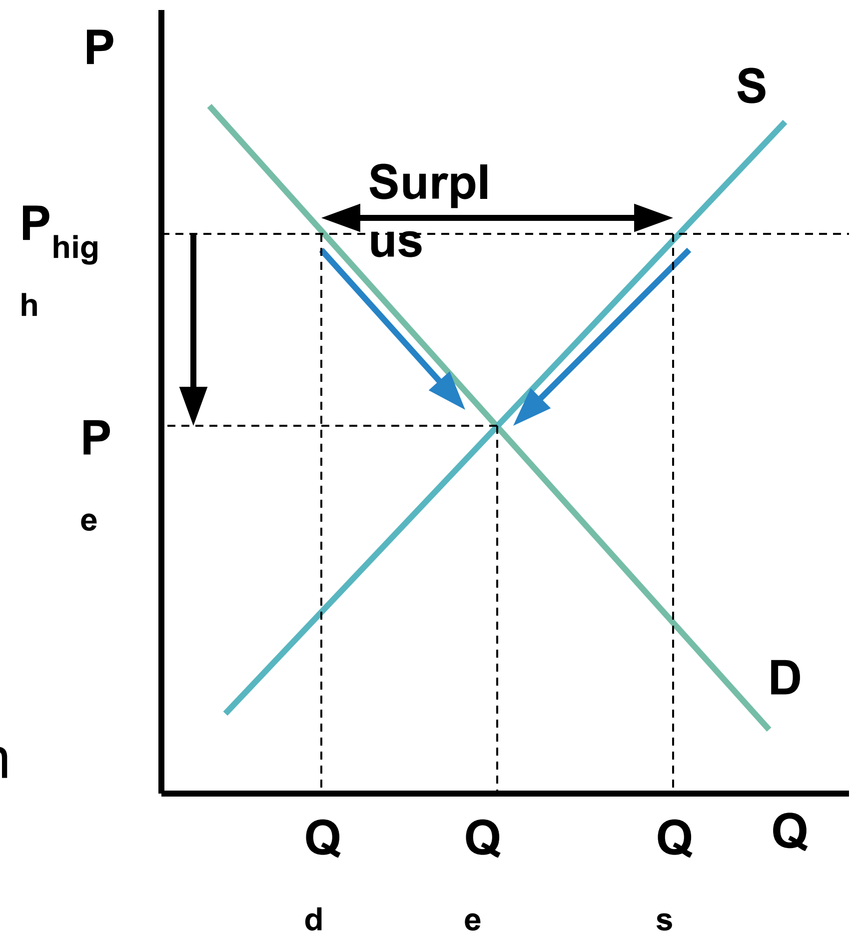


Equilibrium II

- Markets reach equilibrium because buyers act on their **demand behavior** (raise price, buy less, and vice versa) and sellers act on their **supply behavior** (raise price, supply more, and vice versa).
  - No one is in charge!
  - The **market mechanism** leads the market to equilibrium, and signals the desired outcome at P_e.
- Quantity demanded (Q_d) equals quantity supplied (Q_s) at the equilibrium price (P_e).

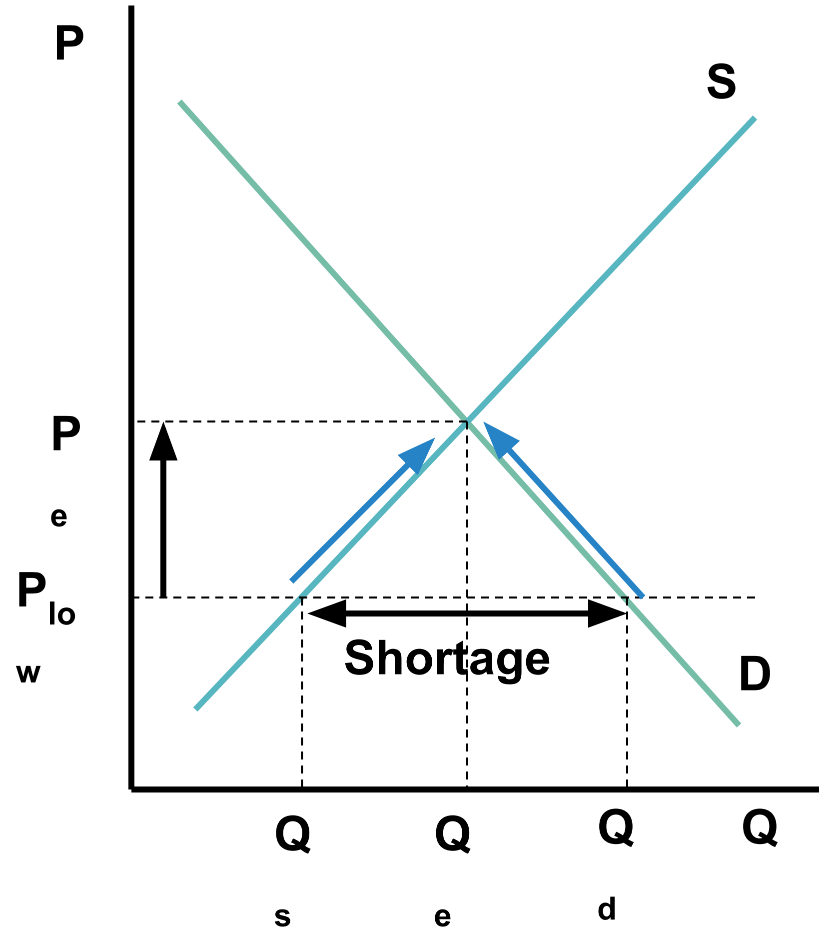
Resolving a Market Surplus

- **Market surplus:** the amount by which quantity supplied (Qs) exceeds quantity demanded (Qd) at a given price; excess supply.
- Price is <u>too high</u>.
- $Q_s > Q_d$, a surplus.
- Buyer and seller behaviors kick in.
- Price will fall to equilibrium price, P_e.



Resolving a Market Shortage

- **Market shortage:** The amount by which quantity demanded (Qd) exceeds quantity supplied (Qs) at a given price; excess demand.
- Price is <u>too low</u>.
- $Q_s < Q_d$, a shortage.
- Buyer and seller behaviors kick in.
- Price will rise to equilibrium price, P_e.



What Causes the Price to Change?

- Price changes when equilibrium is upset.
  - due to a **shift in demand** (a change in buyers' behavior),

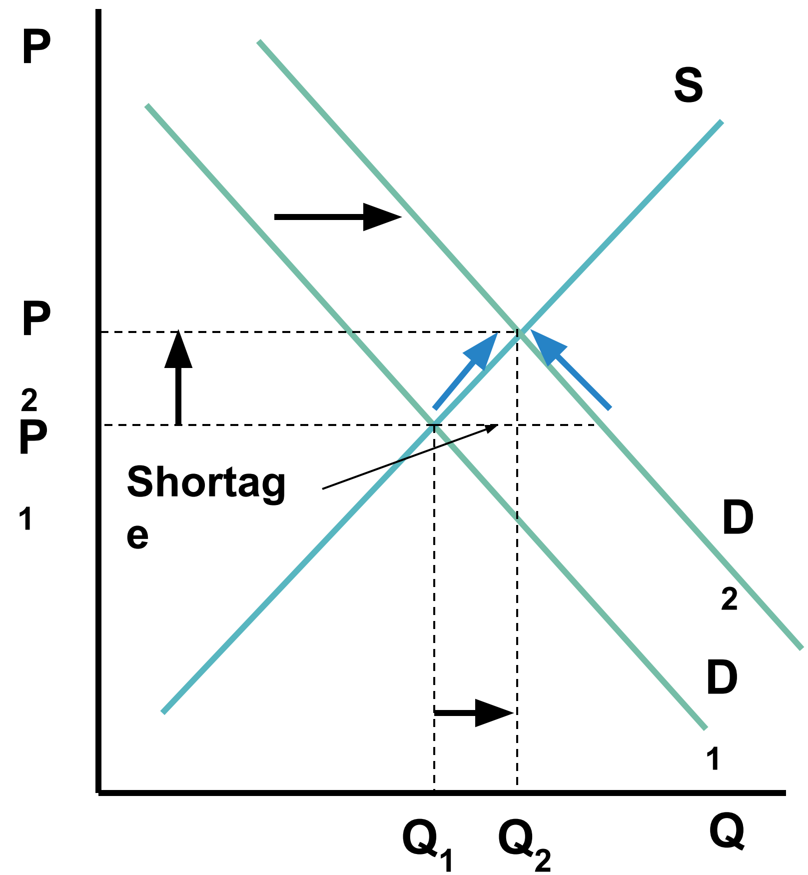
  or

  - due to a **shift in supply** (a change in sellers' behavior).
- After the shift, a surplus or a shortage is created, and the market mechanism begins to find the new equilibrium.

Demand Increases

- Buyers' behavior changes
  - Demand shifts right
- Old equilibrium is upset
- Creates a shortage
  - Price rises

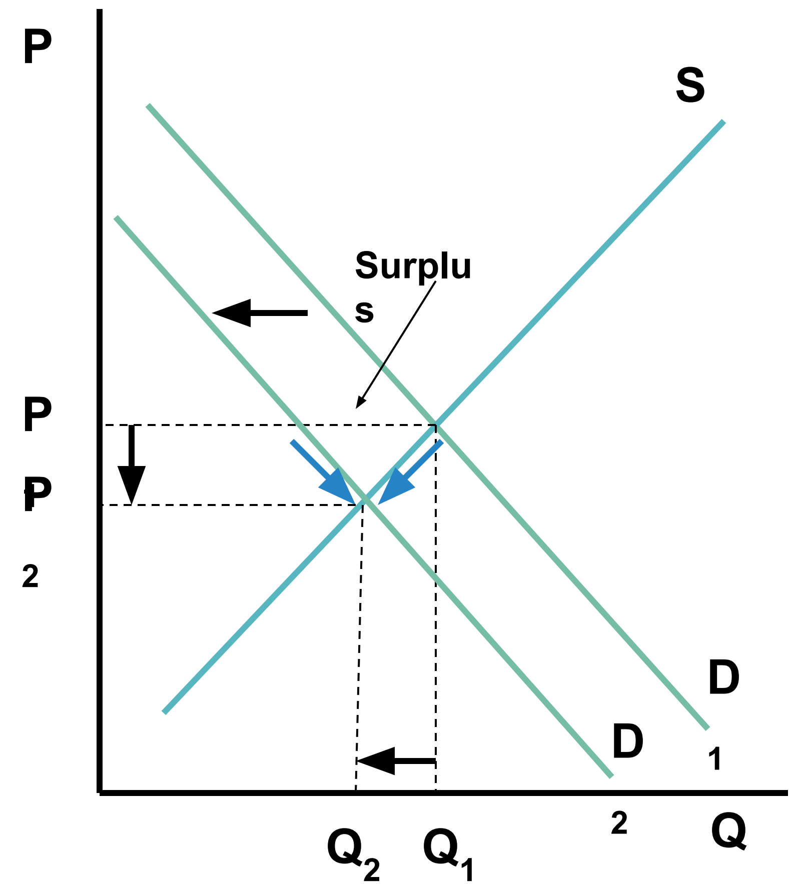
- A new equilibrium is established
- Price rises from P_1 to P_2
- Quantity rises from Q_1 to Q_2



Demand Decreases

- Buyers' behavior changes
  - Demand shifts <u>left</u>
- Old equilibrium is upset
- Creates a surplus
  - Price <u>falls</u>

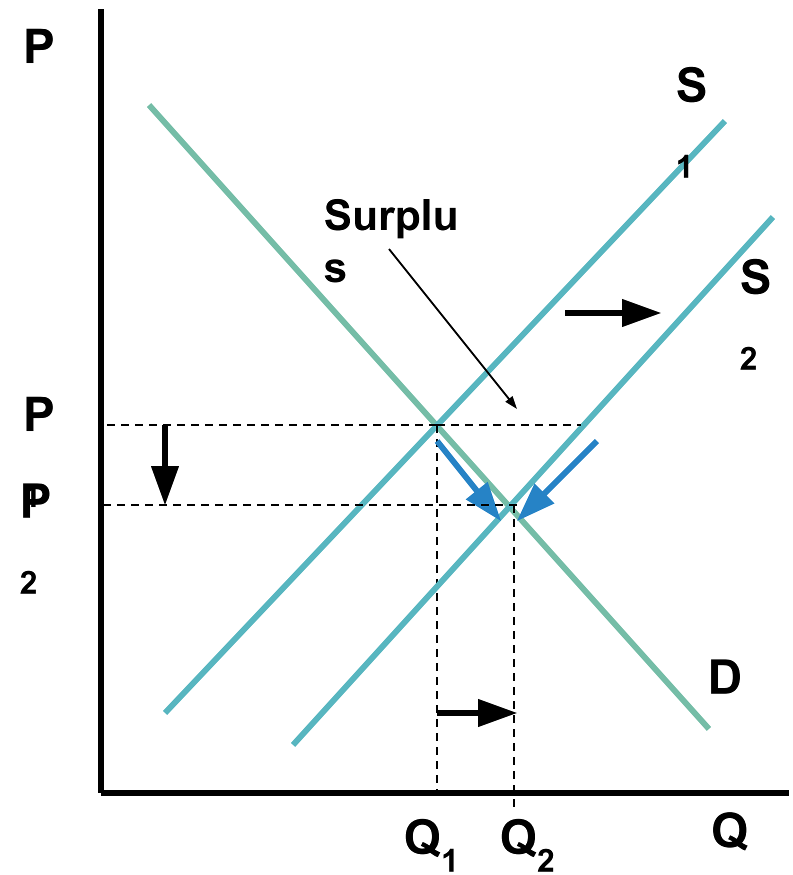
- A new equilibrium is established
- Price falls from P_1 to P_2
- Quantity falls from Q_1 to Q_2



Supply Increases

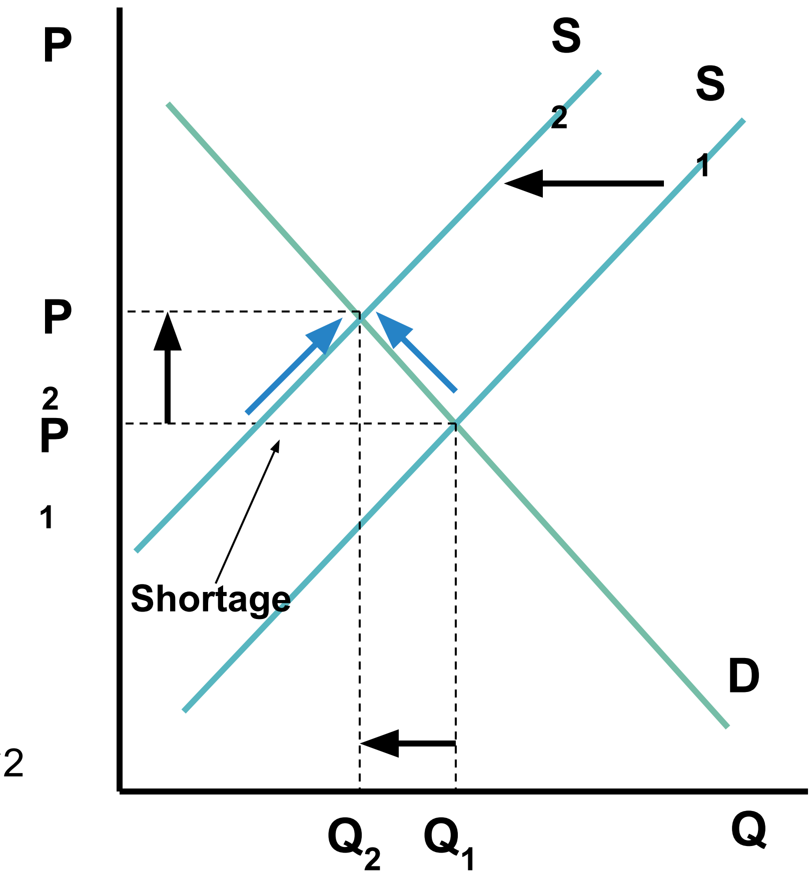
- Sellers' behavior changes
  - Supply shifts <u>right</u>
- Old equilibrium is upset
- Creates a surplus
  - Price <u>falls</u>

- A new equilibrium is established
- Price falls from P_1 to P_2
- Quantity rises from Q_1 to Q_2



Supply Decreases

- Sellers' behavior changes
  - Supply shifts <u>left</u>
- Old equilibrium is upset
- Creates a shortage
  - Price <u>rises</u>
- A new equilibrium is established
- Price rises from P_1 to P_2
- Quantity falls from Q_1 to Q_2



Summary: When Do Prices Change?

- Only when a market is in disequilibrium
  - Shortage? Price rises
  - Surplus? Price falls

- A shift in either demand or supply causes the price to change, BUT remember
- A price change does NOT cause
  - the demand curve to shift or
  - the supply curve to shift

Market Outcomes

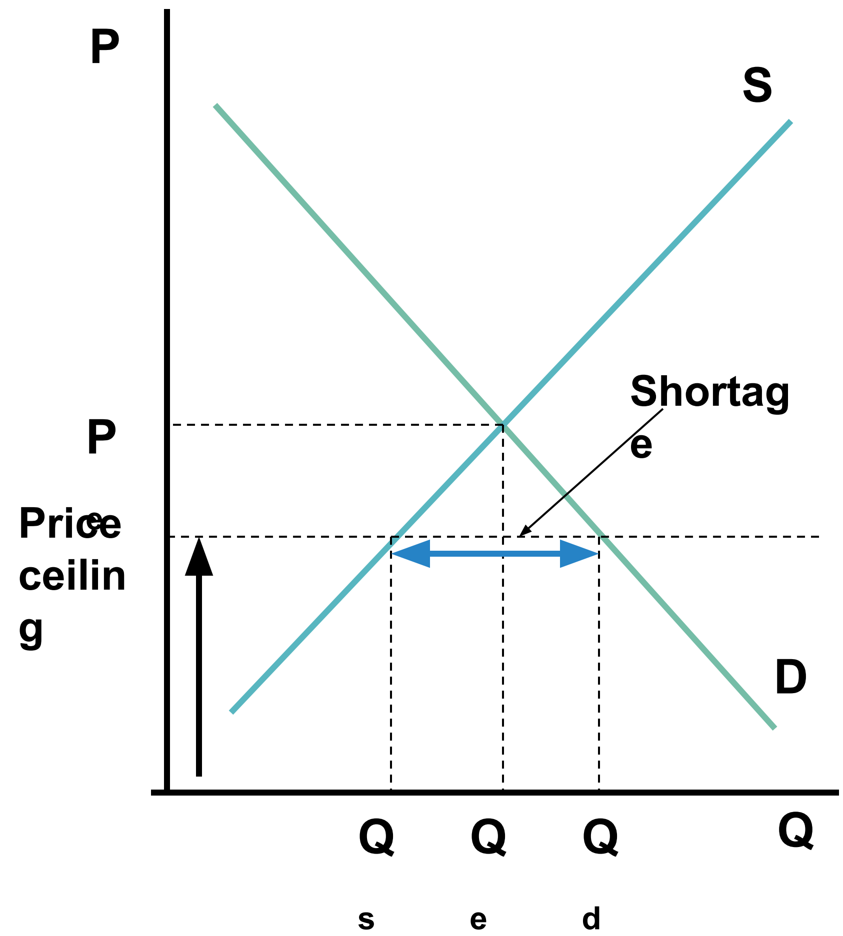
- The market mechanism affects WHAT, HOW, and FOR WHOM to produce.
  - **WHAT?** Markets determine which goods are desired and which are profitable.
  - **HOW?** Profit-seeking producers will strive to produce goods in the most efficient way.
  - **FOR WHOM?** To obtain a good, one must be both willing and able to purchase it.

Price Controls

- Governments may impose an arbitrary maximum price (price ceiling) or a minimum price (price floor) on a market.
  - The result is that the market cannot reach equilibrium.

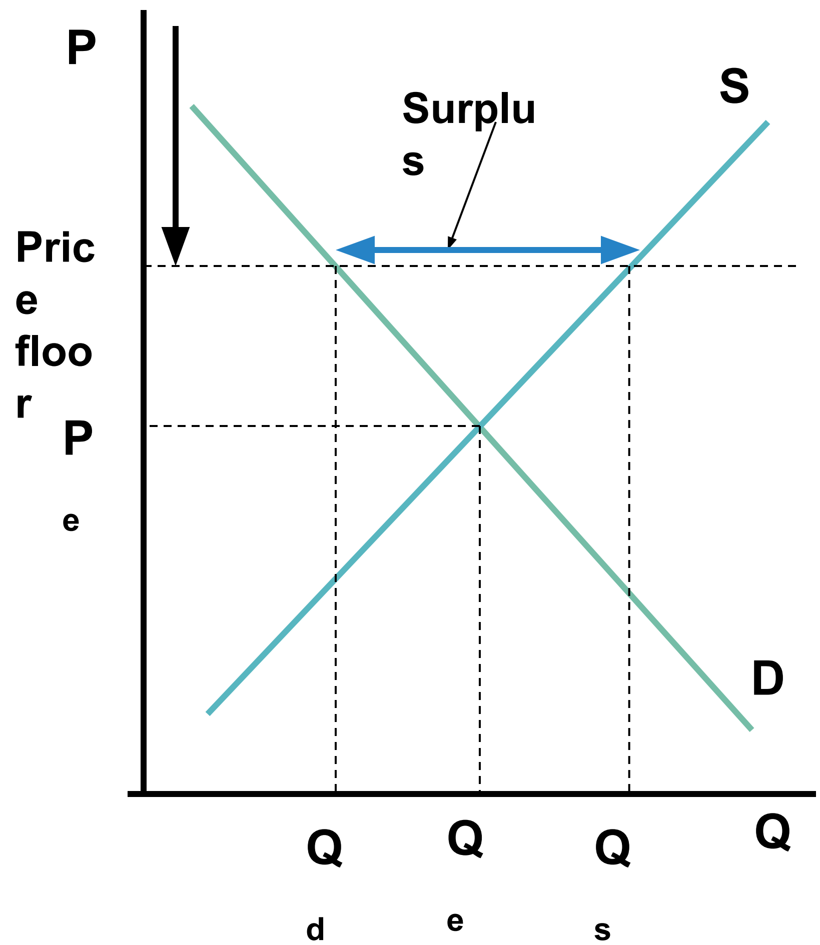
Price Ceiling

- Government imposes a maximum price less than P_e.
- This generates a shortage ($Q_d > Q_s$).
- The market mechanism cannot clear the market.
- A permanent shortage exists.



Price Floor

- Government imposes a minimum price greater than P_e.
- This generates a surplus ($Q_s > Q_d$).
- The market mechanism cannot clear the market.
- A permanent surplus exists.



Application: The Economy Tomorrow

- There is an organ transplant market.
  - The supply of organs is limited by the number of people willing to provide an organ to transplant.
- Market incentives could increase the number of organs available.
  - Congress bans the purchase or sale of organs.
  - Organs are supplied at a price ceiling of $0.
  - This generates a shortage of organs.
  - Increase the price, and the quantity supplied goes up, reducing the shortage.

Revisiting the Learning Objectives

- **LO3-1 Know the nature and determinants of market demand.**
  - A product has a market demand if people are willing and able to buy it at some price in the market.
  - Its determinants are taste, income, expectations, other goods, and number of buyers.

Revisiting the Learning Objectives II

- **LO3-2 Know the nature and determinants of market supply.**
  - A product has a market supply if businesses are willing and able to produce and sell it at some price in the market.
  - Its determinants are technology, factor costs, taxes and subsidies, expectations, other goods, and number of sellers.

Revisiting the Learning Objectives III

- **LO3-3 Know how market prices and quantities are established.**
  - Demand behavior and supply behavior interact in a market. At equilibrium, the quantity demanded by buyers equals the quantity supplied by sellers, and the market (equilibrium) price is established.

Revisiting the Learning Objectives IV

- **LO3-4 Know what causes market prices to change.**
  - A change in demand behavior or a change in supply behavior will upset equilibrium and cause the market mechanism to seek a new equilibrium at a different price.

Revisiting the Learning Objectives V

- **LO3-5 Know how government price controls affect market outcomes.**
  - A price ceiling imposed by government results in permanent shortages.
  - A price floor imposed by government results in permanent surpluses.

Looking Ahead: Chapter 4

The Role of Government

After learning about this chapter, you should know

- The nature and causes of market failure.
- How the public sector has grown.
- What taxes finance state, local, and federal governments.
- The meaning of government failure.