

# Introduction to Microeconomics

## Chapter 1: Ten Principles of Economics

- **Scarcity** refers to the limited nature of society's resources.
- **Economics** is the study of how society manages its scarce resources (that is, how a society makes trade-offs), including
  - how people decide how much to work, save, and spend, and what to buy
  - how firms decide how much to produce, how many workers to hire
  - how a government decides how to divide its tax revenue between national defense, social assistance, protecting the environment, and other needs

# Principle #1: People Face Trade-offs

- “There is no such thing as a free lunch!”



Making decisions requires trading off one goal against another.

## Examples of tradeoffs:

- Leisure time v. work
- Cottage v. university education for children
- Efficiency v. equity
  - Efficiency v. Equity
    - *Efficiency* means society gets the most that it can from its scarce resources (“Enlarging the Pie”).
    - *Equity* means the benefits of those resources are distributed fairly among the members of society (“Sharing the Pie”).
  - This is one of the most difficult trade-off in public policy.

## Principle #2: The Cost of Something Is What You Give Up to Get It

- Decisions require comparing costs and benefits of alternatives.
- The *opportunity cost* of an item is what you give up to obtain that item.
- *Example*: MKMR #3, p18

You were planning to spend Saturday working at your part time job, but a friend asks you to go skiing.

a) What is the true cost of going skiing?

b) Now, suppose that you had been planning to spend the day studying at the library. What is the cost of studying in this case?

## Principle #3: Rational People Think at the Margin

People make decisions by comparing costs and benefits at the margin.

- More specifically, the decision to choose one alternative over another occurs when that alternative's marginal benefits exceed its marginal costs!

## Principle #4: People Respond to Incentives

- Because people make decisions by comparing costs and benefits, their behaviour may change when the costs or benefits changes.
- **Example:** MKMR #8, p. 19

In 1997 the govt of Ontario reformed that province's welfare system. The reform allowed welfare recipients to keep a larger part of their welfare payments if they earn some income, but also reduced the amount of welfare payments to a person with no income.

  - a) How does this reform affect the incentive to work?
  - b) How might this reform represent a tradeoff between equity and efficiency?

## Principle #5: Trade Can Make Everyone Better Off (Chap. 3)

- Trade allows people to specialize in what they do best.
- Trade is not a “zero-sum” game—everyone is better-off with trade
- **Example:** MKMR, #9, p19

Your roommate is a better cook than you are, but you can clean more quickly than your roommate can.

  - a) If your roommate did all the cooking and you did all the cleaning, would your chores take you more or less time than if you divided each task evenly?
  - b) Give a similar example of how specialization and trade can make two countries better off.

## Principle #6: Markets Are Usually a Good Way to Organize Economic Activity (Chap. 7)

- A **market** is a group of buyers and sellers. (They need not be in a single location.)
- “Organize economic activity” means determining
  - what goods to produce
  - how to produce them
  - how much of each to produce
  - who gets them

## Principle #6: Markets Are Usually a Good Way to Organize Economic Activity (cont.)

- In a market economy, these decisions result from the interactions of many households and firms.
- Famous insight by Adam Smith in *The Wealth of Nations* (1776):

*Each of these households and firms acts as if “led by **an invisible hand**” to promote general economic well-being.*

## Principle #6: Markets Are Usually a Good Way to Organize Economic Activity (cont.)

- The **invisible hand** works through the price system:
  - The interaction of buyers and sellers determines prices of goods and services.
  - Each price reflects the good's value to buyers and the cost of producing the good.
  - Prices guide self-interested households and firms to make decisions that, in many cases, maximize society's economic well-being.

## Principle #7: Government Can Sometimes Improve Market Outcomes

- **Market failure** occurs when the market fails to allocate resources efficiently.
- **Reasons for market failures:**
  - Externalities: the impact of one person's action on a bystander (e.g., pollution) (will study in Chap. 10, 11)
  - Market power: ability of one person to unduly influence market prices (will study monopolies in Chap., 15)
- **When the market fails (breaks down) government can intervene to promote efficiency and equity.**

## Principle #8: A Country's Standard of Living Depend on Its Ability to Produce Goods and Services

- Huge variation in living standards across countries and over time:
  - Average income in rich countries is more than ten times average income in poor countries.
  - The U.S. standard of living today is about eight times larger than 100 years ago.
- The most important determinant of living standards: **productivity**, the amount of goods and services produced per unit of labor.
- Productivity depends on the equipment, skills, and technology available to workers.
- Important implications for public policy (will study in Introduction to Macroeconomics)

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## Principle #9: Prices Rise When the Government Prints Too Much Money

- Inflation is an increase in the overall level of prices in the economy.
- One cause of inflation is the growth in the quantity of money.
- Ideally, the Central Bank should increase the quantity of money at the same rate as national production of goods and services increases.
- If the Central Bank prints too much money  $\Rightarrow$  too much money chase too few goods  $\Rightarrow$  prices  $\uparrow$   
(will study in Introduction to Macroeconomics)

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## Principle #10: Society Faces a Short-Run Tradeoff between Inflation and Unemployment

- The Phillips Curve (will study in Introduction to Macroeconomics) illustrates the tradeoff between inflation and unemployment:

↓ Inflation  $\Leftrightarrow$  ↑ Unemployment

It's a short-run tradeoff

- Remains a controversial issue among economists

## Chapter 2: Thinking Like an Economist

### Graphing Curves in the Coordinate System (cont)

- Important observations:
  - When a variable that is not named on either axis changes  $\Leftrightarrow$  curve shifts
  - When two variables move in the same direction  $\delta$  variables are positively related or, equivalently, the curve is upward sloping
  - Conversely, when two variables move in opposite directions (such as Emma's demand curve)  $\Leftrightarrow$  variables are negatively related or, equivalently, the curve is downward sloping

## Second Model: Production Possibilities Frontier

- The *production possibilities frontier (PPF)* is a graph that shows the combinations of output that the economy can possibly produce given the available factors of production and the available production technology.

### PPF example

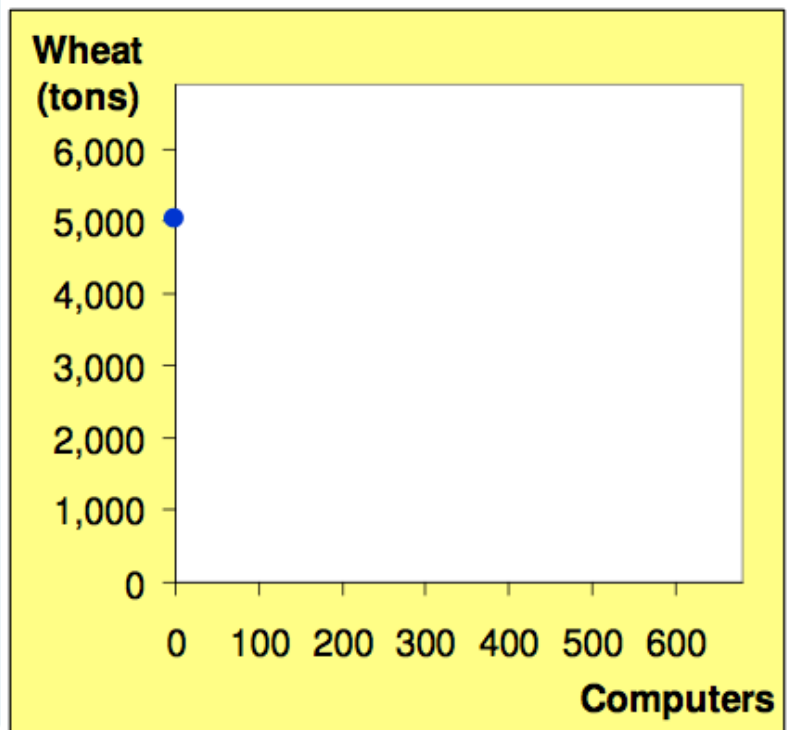
- Two goods: computers and wheat
- One resource: labour (measured in hours)
- Economy has 50,000 labour hours per month available for production.
- One computer requires 100 hours labour and one ton of wheat requires 10 hours labour.

#### Questions:

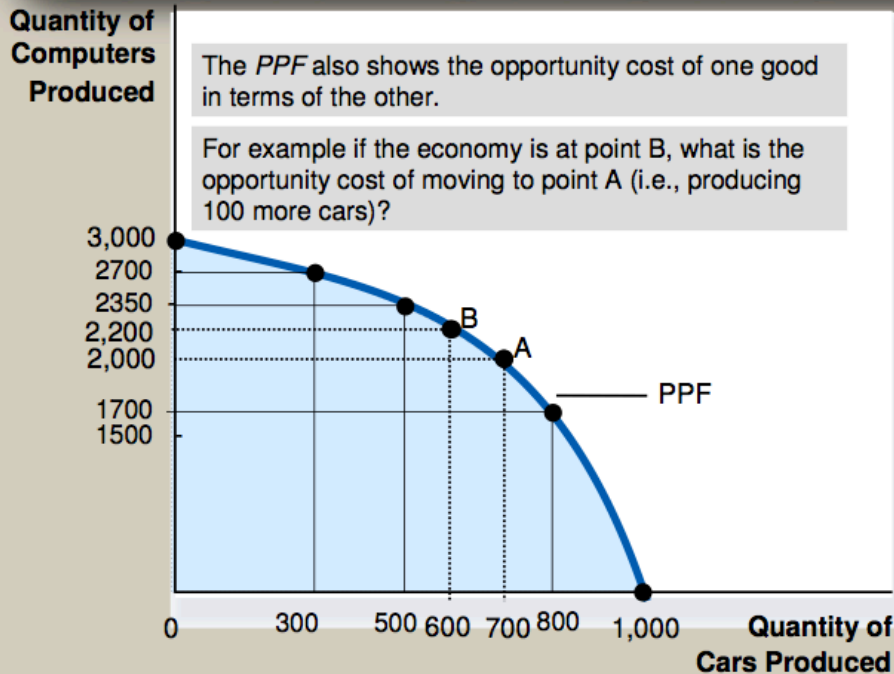
**A.** What is the PPF?

**B.** Find the point that represents (300 computers, 3500 tons of wheat), label it **A**. Could the economy produce this combination of the two goods?

**C.** Find the point that represents (100 computers, 3000 tons of wheat), label it **B**. Could the economy produce this combination of the two goods?



## The PPF (cont.)



## The PPF: A Summary

- The PPF shows all combinations of two goods that an economy can possibly produce, given its resources and technology.
- The PPF illustrates the concepts of tradeoff and opportunity cost, efficiency and inefficiency, unemployment, and economic growth.
- A bow-shaped PPF illustrates the concept of increasing opportunity cost.

## The Economist as Policy Adviser

- When economists are trying to explain the world, they are **scientists**.
  - Why, for example, is unemployment higher for teenagers than for older workers
- When economists are trying to change the world, they are **policy advisers**
  - What, for instance, should the government do to reduce unemployment among teenagers?

## Positive vs Normative Analysis

- **Positive statements** are statements that attempt to describe the world as it is.
  - Can, in principle, be confirmed or refuted by examining evidence.
- **Normative statements** are statements about how the world should be—they are prescriptive.
  - Normative statements may involve values as well as facts.

## Positive vs Normative Analysis (cont.)

- Positive or Normative Statements?
  - Minimum-wage laws cause unemployment among the least skilled      POSITIVE
  - The government should raise minimum wages because a decent society demands that people who work should earn enough to live on.      NORMATIVE

### Chapter 3: Interdependence and Gains From Trade

## Chapter 3 Interdependence and the Gains From Trade

- Remember, economics is the study of how societies produce and distribute goods in an attempt to satisfy the wants and needs of its members.
- How do we satisfy our wants and needs in a global economy?
  - We can be economically self-sufficient.
  - We can specialize and trade with others, leading to economic interdependence.

## Interdependence and the Gains From Trade

- Objectives of this chapter:
  - Show that in general, a nation benefits from trading.
  - Examine what determines the pattern of production (that is, what country produces what) and trade.
- *Key point:* Patterns of production and trade are based upon differences in *opportunity costs*.

### Some important definitions

- *Imports:* goods produced abroad and sold domestically
- *Exports:* goods produced domestically and sold abroad

#### *Absolute advantage vs Comparative advantage*

- The country that requires a *smaller quantity of inputs* to produce a good is said to have an *absolute advantage* in producing that good.
- The country that has the *lowest opportunity cost* of producing a good is said to have a *comparative advantage* in producing that good.

## Comparative Advantage and Trade

- Whenever potential trading parties have differences in opportunity costs, they can each benefit from trade

**Principle:** A country should specialize in what it does best. In other words, if it has a comparative advantage in a good, it should specialize in producing that good and trade.

### Our example

- Two countries: Canada and Japan
- Two goods: computers and wheat
- One resource: labour, measured in hours
- Canada has 50,000 hours available for production, per month.
  - Producing one computer requires 100 hours of labour; producing one ton of wheat requires 10 hours of labour.
- Japan has 30,000 hours available for production, per month.
  - Producing one computer requires 125 hours of labour; producing one ton of wheat requires 25 hours of labour.
- We will look at how much of both goods each country produces and consumes
  - if the country chooses to be self-sufficient
  - if it trades with the other country

## Example: Problem #4, page 64

	Hours Needed to Make	
	5 L of root Beer	1 pizza
Pat	4	2
Kris	6	4

- a. **Opportunity Cost of Making 1 pizza**

Pat	2.5 L of root beer
Kris	3.33 L of root beer

Absolute advantage in making pizza:

Comparative advantage in making pizza:

- b. Who will specialize in pizza?
- c. **Lowest price:** 2.5 L of root beer/pizza, otherwise Pat would not want to sell as he would get less than what it costs him to do the pizza.  
**Highest price:** 3.33 L of root beer/pizza, otherwise Kris would not want to buy as it would be cheaper for him to make the pizza (lower opportunity cost)

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## Gains from trade—Conclusion

- All countries benefit from trade; even those that are less competitive in every way.
  - This does not mean though that no one would lose his/her job if a country enters a free-trade agreement with another country (or that one country will not benefit more than another one from international trade).
  - Some workers can lose their jobs but they should be able to find jobs in other sectors. The issue that the society as a whole is better-off when there is international trade.
  - Economists generally agree that globally, international trade creates more jobs than it destroys.
- Trading with another country is conceptually equivalent to shifting the *PPF* to the right—it is equivalent to a technological advance.

## Chapter 4: The Market Forces of Supply and Demand

# Markets and Competition

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



- Buyers determine demand.
- Sellers determine supply

# Competitive Markets

## Characteristics of competitive markets:

1. The goods being offered for sale are all the same; and
2. The buyers and sellers are so numerous that no single buyer or seller can influence the market price (that is, they are “price takers”).

## Examples of other types of markets:

- Only one seller who sets the price: **monopoly** (e.g., cable T.V.) (Chap. 15)
- Few sellers that do not compete aggressively: **oligopoly** (e.g., airlines) (Chap. 16)
- Many sellers but slightly different products: **monopolistic competition** (e.g., magazine publishers) (Chap. 17)

# The Demand Curve

## Definitions:

- The **demand curve** expresses the relationship between **price** and **quantity demanded**
- The **quantity demanded** of any good is the amount of the goods that buyers are willing to purchase at a given price.

## Shifts in the Demand Curve

- A demand curve is derived holding all variables constant (except price and quantity).
- This means that changes in any variable other than price or quantity may shift the demand curve.
- More formally, any change that alters the quantity demanded at every price will shift the demand curve
- If change increases the quantity demanded for every price: increase in demand (curve shifts to the right)
- If change decreases the quantity demanded for every price: decrease in demand (curve shifts to the left)

## Change in Demand vs Change in Quantity Demanded

- **Change in demand**
  - Shift of the demand curve
  - Caused by a change in a variable other than price (e.g., income)
- **Change in Quantity Demanded**
  - Movement along the demand curve.
  - Caused by a change in the price of the product

## Demand Curve: Different types of goods

### Normal vs Inferior goods

- As income increases the demand for a normal good will increase.
- As income increases the demand for an inferior good will decrease.
- Example: bus rides is typically an inferior good

### Substitutes and Complements

- When a fall in the price of one good reduces the demand for another good, the two goods are called substitutes.
- When a fall in the price of one good increases the demand for another good, the two goods are called complements.

# The Supply Curve

## Definitions:

- The **supply curve** expresses the relationship between **price** and **quantity supplied**
- The **quantity supplied** of a good is the amount of the good that **sellers** are willing and able to sell at a given price

## Individual Supply vs Market Supply

- **Individual supply curve:** supply curve for one good by one seller
- **Market supply:** the sum of all individual supplies for all sellers of a particular good or service.
- Graphically, individual supply curves are summed to obtain the market supply curve

# Shifts in the Supply Curve

- A supply curve is derived holding all variables constant (except price and quantity).
- This means that any change that alters the quantity supplied at every price will shift the supply curve
- If change increases the quantity supplied for every price: increase in supply (curve shifts to the right)
- If change decreases the quantity supplied for every price: decrease in supply (curve shifts to the left)

## Change in Supply vs Change in Quantity Supplied

- **Change in supply**
  - Shift in the supply curve
  - Caused by a change in a variable other than price (e.g., change in input prices)
- **Change in Quantity Supplied**
  - Movement along the supply curve.
  - Caused by a change in the price of the product

## SUPPLY AND DEMAND TOGETHER

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

## Équilibre—*Law of supply and demand*

- The price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance.
  - If the price is too high, there will be a surplus and the price will decrease.
  - If the price is too low, there will be a shortage and the price will increase.

### Chapter 5: Elasticity and its Applications

## Elasticity

### Definition:

Elasticity is a measure of how much buyers and sellers respond to changes in market conditions

## The Midpoint Method: A Better Way of Computing Elasticity (cont.)

- This problem is solved if we use the midpoint method:

$$E_p = \left| \frac{(Q_2 - Q_1) / [(Q_1 + Q_2) / 2]}{(P_2 - P_1) / [(P_1 + P_2) / 2]} \right|$$

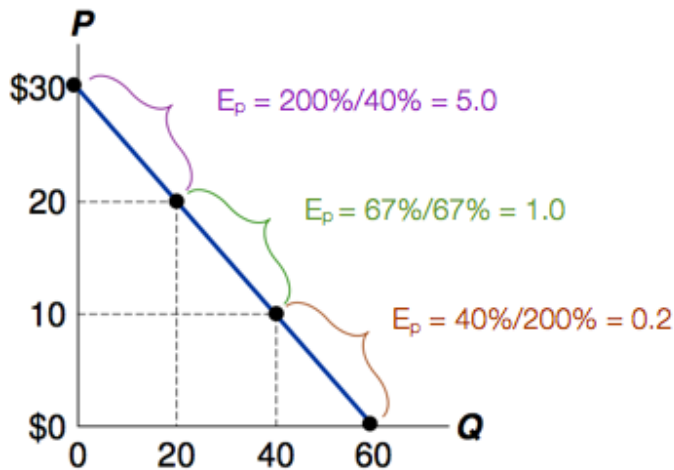
## Price Elasticity of Demand

### Definition:

The **price elasticity of demand** is a measure of how much the quantity demanded of a good responds to a change in the price of that good.

$$E_p = \left| \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}} \right|$$

## Elasticity of a Linear Demand Curve



The slope of a linear demand curve is constant but its elasticity is not

## Elastic vs. Inelastic Demand

### • Elastic Demand

- Quantity demanded responds strongly to changes in price
- Price elasticity of demand is greater than one

### • Inelastic Demand

- Quantity demanded does not respond strongly to price changes
- Price elasticity of demand is less than one

## What Determines Price Elasticity?

### • Example 1: Eggs vs. Butter

- Suppose the prices of both these goods rise by 20%. For which good would you expect the quantity demanded ( $Q^d$ ) to drop the most and why?
  - Butter has lots of close substitutes (e.g. margarine), so buyers can easily switch if the price rises
  - Eggs have no close substitutes, so consumers would probably not buy much fewer eggs if their price rises
  - So  $Q^d$  for butter would probably drop the most
  - Which means that price elasticity of butter would be higher
- Lesson: **Price elasticity is higher when close substitutes are available (quantity demanded responds strongly to changes in price)**

### • Example 2: Eggs vs. Blue Jeans vs Clothing

- Suppose the prices of both these goods rise by 20%. For which good would you expect the quantity demanded ( $Q^d$ ) to drop the most and why?
  - For a narrowly defined good such as blue jeans, there are many substitutes (khakis, corduroy pants)
  - There are fewer substitutes available for broadly defined goods (no substitute for clothing)
  - So  $Q^d$  for blue jeans would probably drop the most
  - Which means the price elasticity of blue jeans would be higher
- Lesson: **Price elasticity is higher for narrowly defined goods (blue jeans) than broadly defined ones (clothes)**

### • Example 3: Insulin vs. Caribbean Cruises

- Suppose the prices of both these goods rise by 20%. For which good would you expect the quantity demanded ( $Q^d$ ) to drop the most and why?
  - To millions of diabetics, insulin is a necessity. A rise in its price would cause little or no decrease in demand.
  - A cruise is a luxury. If the price rises, some people will forego it.
  - So  $Q^d$  for cruises would probably drop the most
  - Which means that price elasticity of cruises would be higher.
- Lesson: **Price elasticity is higher for luxuries than for necessities**

### • Example 4: Gasoline in the short run vs. Gasoline in the long run

- Suppose the prices of gasoline rises by 20%. Does the quantity demanded ( $Q^d$ ) drop more in the short run or the long run and why?
  - There's not much people can do in the short run, other than ride the bus or carpool
  - In the long run, people can buy smaller cars or live closer to where they work
  - So  $Q^d$  for gasoline would probably drop the most in the long run
  - Which means that the price elasticity of gasoline would be higher in the long run than in the short run
- Lesson: **Price elasticity is higher in the long run than the short run**

## What Determines Price Elasticity?

- Generally, demand tends to be more elastic **when it is easier for the consumer to adjust**, for example:
  - A large number of close substitutes (e.g. khakis for blue jeans, margarine for butter)
  - The market is narrowly defined (e.g. food market [broad] vs. ice cream market [narrow])
  - The good is a luxury
  - The longer the time period

Example: MKMR, pg. 116, Question 1

1. For each of the following pairs of goods, which good would you expect to have more elastic demand and why?
  - a) Required textbooks or **mystery novels (has many substitutes)**
  - b) **Beethoven recordings** or classical music recordings in general (**narrower market**)
  - c) Heating oil during the next six months or **heating oil during the next five years (longer time period to adjust - e.g. changing heater etc.)**
  - d) Root beer or **water (necessity)**

### **Rule of thumb:**

- **The flatter the curve, the bigger the elasticity.**
- **The steeper the curve, the smaller the elasticity.**

### Example: MKMR, pg. 117, Question 8

1. Consider public policy aimed at smoking.
  - a) Studies indicate that the price elasticity of demand for cigarettes is about 0.4. If a pack of cigarettes currently costs \$10 and the government wants to reduce smoking by 20%, by how much should it increase the price?
  - b) If the government permanently increases the price of cigarettes, will the policy have a greater effect on smoking one year from now or five years from now?
  - c) Studies also find that teenagers have a higher price elasticity than do adults. Why might this be true?

### Total Revenue and the Price Elasticity of Demand

- **Total revenue** is the amount paid by buyers and received by sellers of that good

- Computed as the price of the good multiplied by the quantity sold
  - **$TR = P \times Q$**
- Often interested in knowing how TR varies with changes in price
- The effects of the price on TR depends on the elasticity of demand. For example, if price increases
  - TR **increases** if demand is **inelastic**
  - TR **decreases** if demand is **elastic**

## Chapter 6: Supply, Demand, and Government Policies

- Use the supply-demand model to examine the effects of three government policies:
  - A ceiling on prices
  - A floor under prices
  - A tax on a good

### Price Ceiling vs. Price Floor

#### Price Ceiling:

- A legal **maximum** on the price at which a good can be sold (for example, a rent control law).

#### Price Floor:

- A legal **minimum** on the price at which a good can be sold (for example, minimum wages).

a) Since

$$E_p = \frac{\% \Delta \text{ in } Q \text{ demanded}}{\% \Delta \text{ in } P}$$

$$\% \Delta P = \frac{\% \Delta Q \text{ demanded}}{E_p}$$

and,

$$\% \Delta P = \frac{20\%}{0.4} = 50\%$$

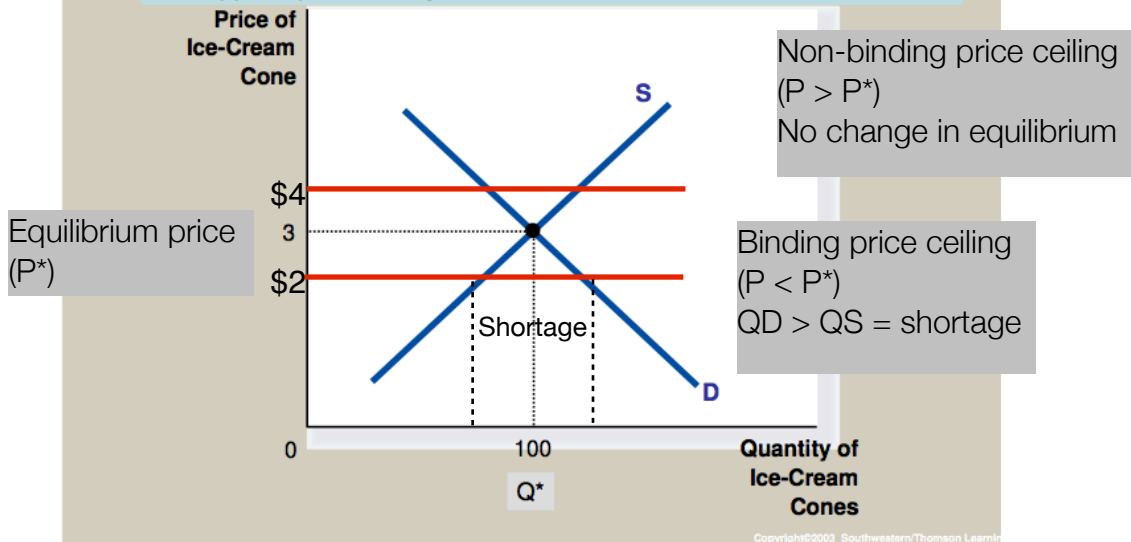
Therefore  $P$  should  $\uparrow$  by \$5 ( $0.50 \times \$10$ ).

- a) Greater effect five years from now (more time for people to adjust/quit smoking)
- b) Teenagers have a higher price elasticity as they have a lower income

## Impact of a Price Ceiling on Market Outcomes (Fig. 6.1, p. 121)

Depends on whether the price ceiling is “not binding” or “binding”

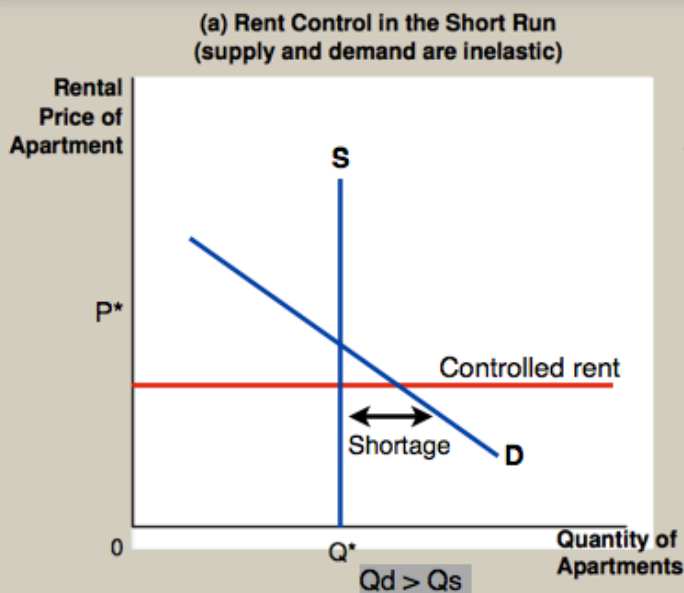
1. Suppose price ceiling is set at \$4
2. Suppose price ceiling is set at \$2



## Case Study: Rent Control in the Short Run and Long Run

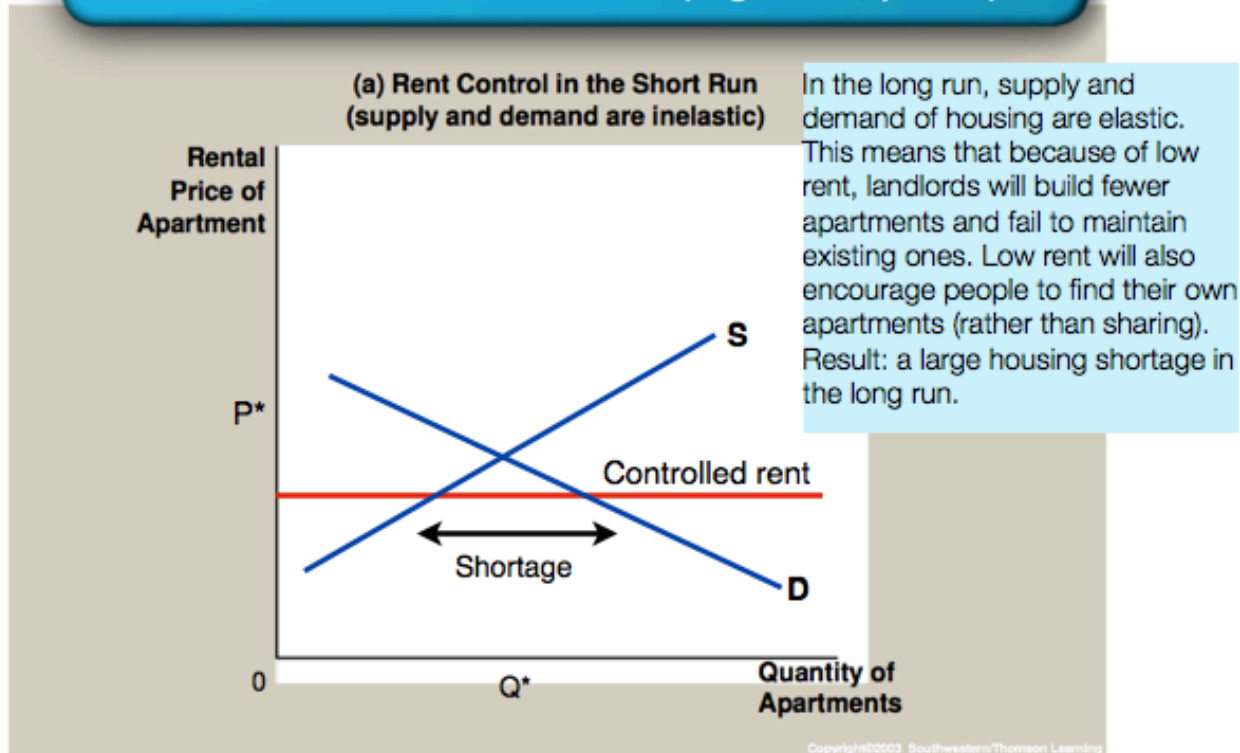
- Rent controls are ceilings placed on the rents that landlords may charge their tenants.
- The goal of rent control policy is to help the poor by making housing more affordable.

## Rent Control in the Short Run (Fig. 6.3a, p.124)



In the short run, supply and demand of housing are inelastic, which means that controlled rents result in only a small shortage

## Rent Control in the Short Run (Fig. 6.3a, p.124)



### Binding vs. Non-Binding

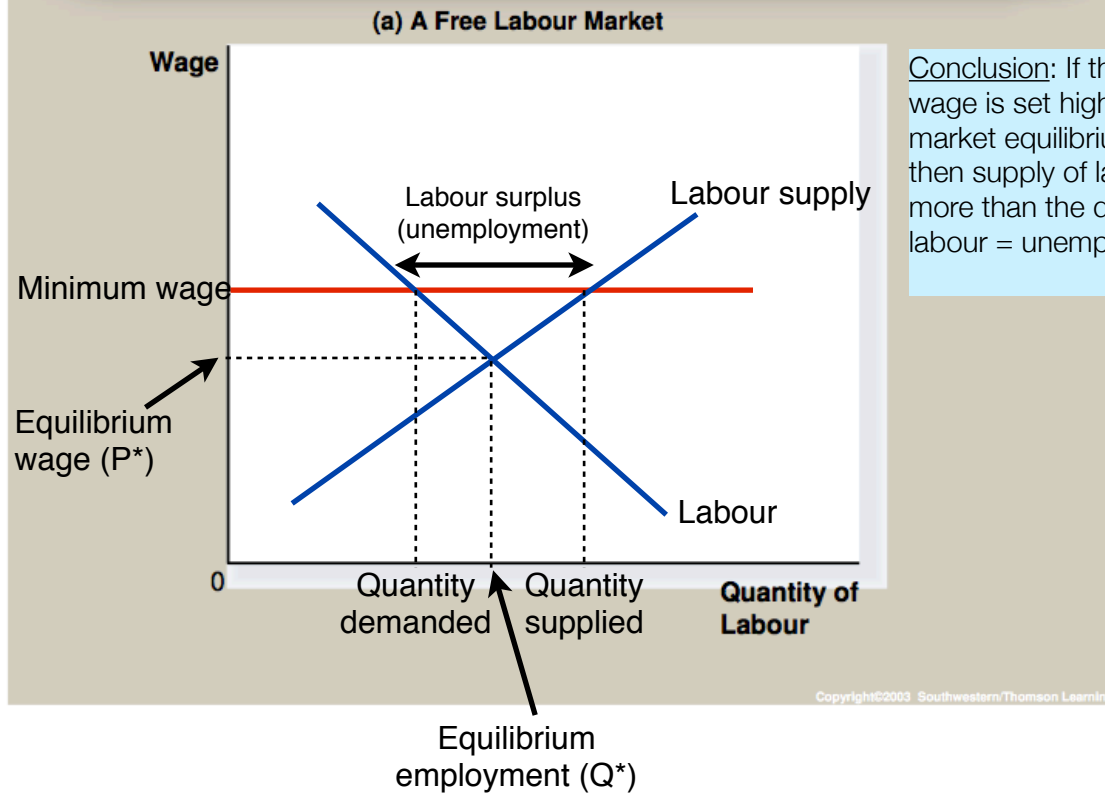
#### • Binding:

- When the price ceiling is below the equilibrium point meaning there will be a shortage
- *Ceiling* (less than the equilibrium price) = shortage
- *Floor* (more than equilibrium price) = surplus

#### • Non-binding

- When a price ceiling does not effect the equilibrium
- *Ceiling* (more than equilibrium price) = no change
- *Floor* (less than equilibrium price) = no change

## Example of a Price Floor: How the Minimum Wage Affects the Labour Market



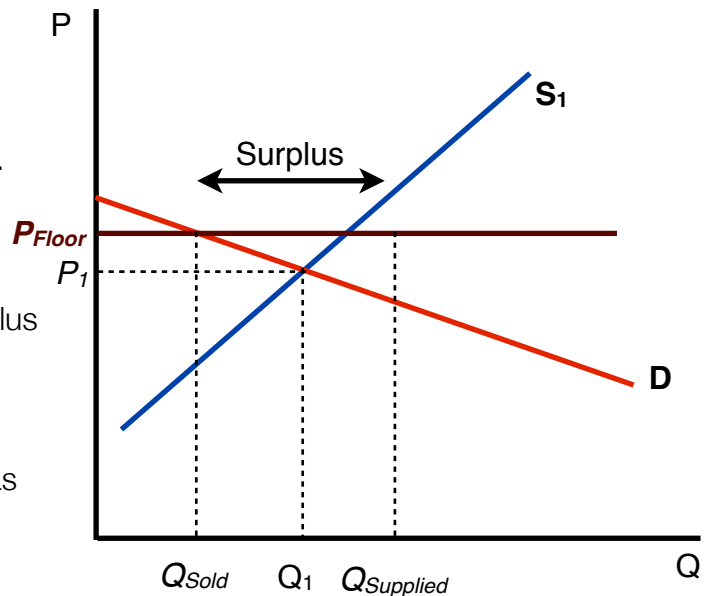
Example: MKMR, pg. 139 Q.2

- The government has decided that the free-market price of cheese is too low
  - suppose the government imposes a binding price floor in the cheese market. Use a supply-and-demand diagram to show the effect of this policy on the price of cheese and the quantity of cheese sold. Is there a shortage or surplus of cheese?

• **Price up, quantity down = surplus**

- Farmers complain that the price floor has reduced their total revenue. Is this possible? Explain

•  **$TR_{\text{After}} < TR_{\text{Before}}$  since  $P_{\text{Floor}} Q_{\text{Sold}} < P_1 Q_1$  (demand curve is elastic)**



c) In response to farmers' complaints, the government agrees to purchase all of the surplus cheese at the price floor. Compared to the price floor, who benefits from this new policy? Who loses?

- **Who benefits?** Farmers as TR goes up from  $P_1Q_1$  to  $P_{\text{Floor}} Q_{\text{Supplied}}$
- **Who loses?** Tax payers because taxes go up and consumers because prices go up

## Effects of a Tax Levied on Buyers

Suppose government imposes a tax on the market for buyers of \$30 per room. Find new Q, price that buyers pay (i.e.  $P_B$ ), price sellers receive (i.e.  $P_S$ ) and incident tax (i.e. how is the tax shared between buyers and sellers).

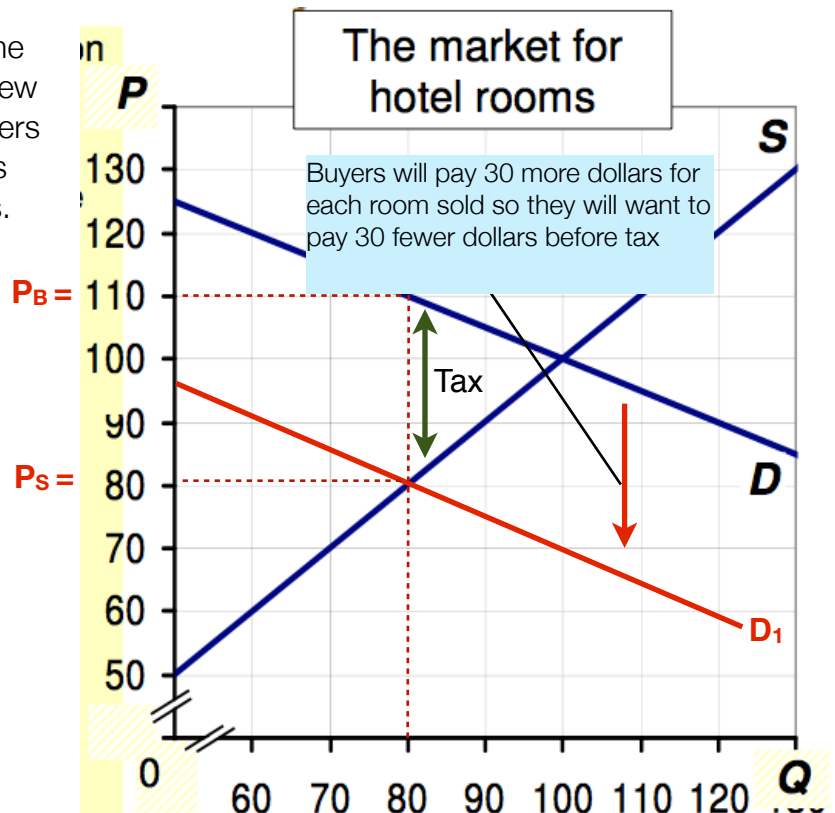
Old  $P = \$100$   
Old  $Q = 100$

What curve is affected? **Demand curve**  
In what direction? **Down**

New  $Q = 80$   
New  $P_S = \$80$   
New  $P_B = \text{New } P_S + \text{Tax}$   
 $= \$80 + \$30 = \mathbf{\$110}$

### Incidence:

Buyers =  $\$110 - \$100 = \$10$   
Sellers =  $\$100 - \$80 = \$20$



## Effects of a Tax Levied on Sellers

Suppose government imposes a tax on the market for buyers of \$30 per room. Find new  $Q$ , price that buyers pay (i.e.  $P_B$ ), price sellers receive (i.e.  $P_S$ ) and incident tax (i.e. how is the tax shared between buyers and sellers).

Old  $P = \$100$

Old  $Q = 100$

What curve is affected? **Supply curve**

In what direction? **Up**

New  $Q = 80$

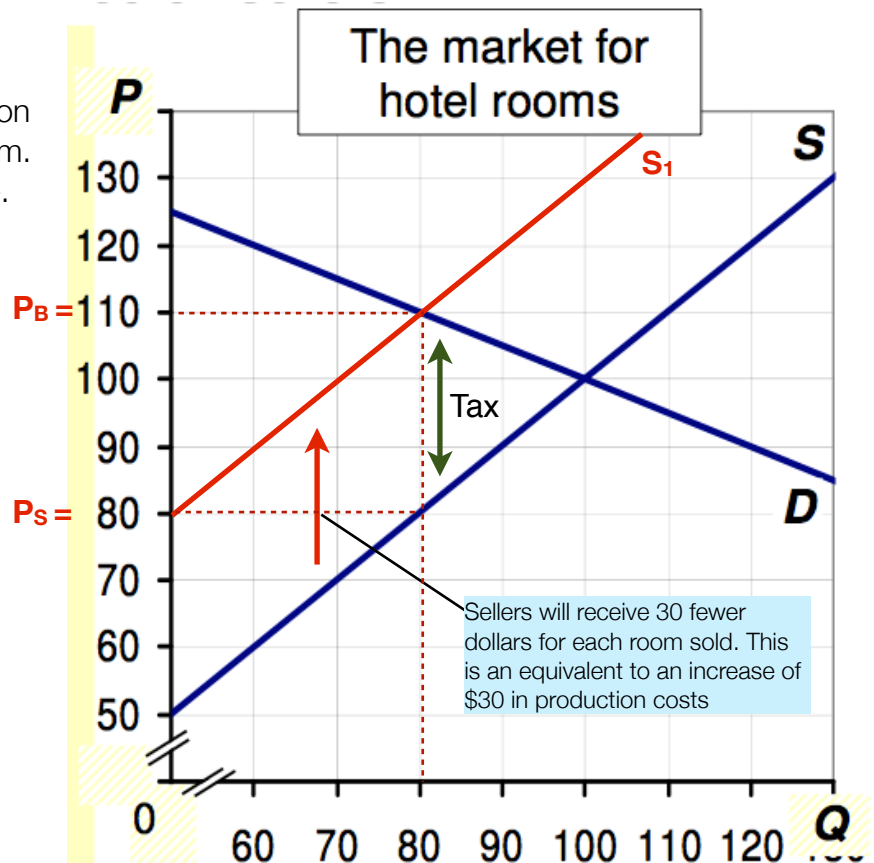
New  $P_S = \$110$

New  $P_B = \text{New } P_S - \text{Tax}$   
 $= \$110 - \$30 = \mathbf{\$80}$

### Incidence:

Buyers =  $\$110 - \$100 = \$10$

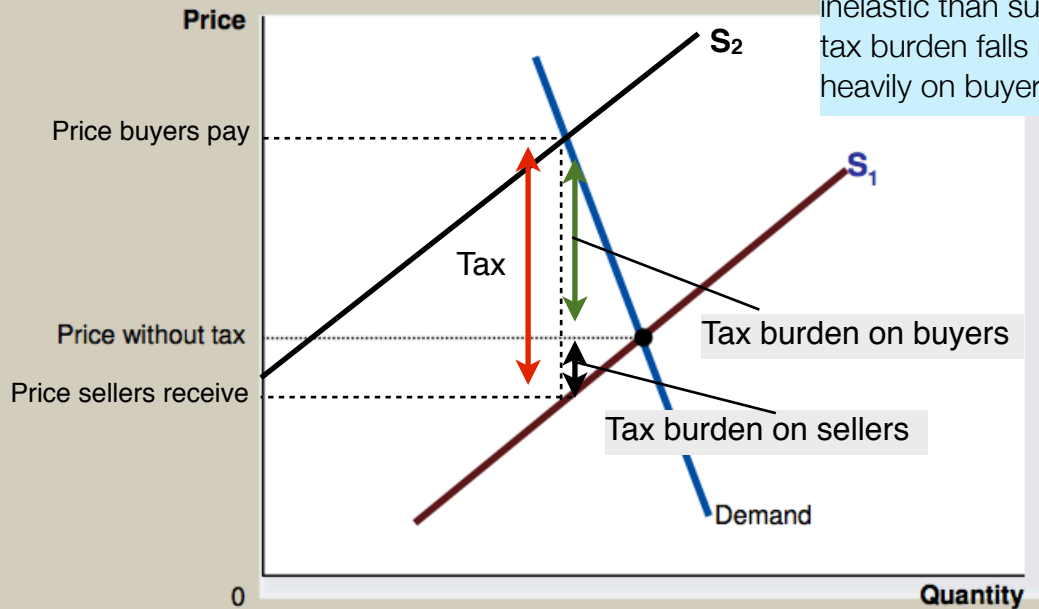
Sellers =  $\$100 - \$80 = \$20$



**Note:**  $P_S$ ,  $P_B$ , equilibrium  $Q$  and the incidence are the same whether the tax is levied on the buyer or the seller.

## How the Burden of a Tax Is Divided—Demand more inelastic than Supply (Fig. 6.8a, p.136)

Assume the tax is on sellers



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## Chapter 7: Consumers, Producers, and the Efficiency of Markets

### • Key Objectives:

- Learn how to define and measure consumer surplus
- Learn how to define and measure producer surplus
- See that the equilibrium of supply and demand maximizes total surplus in a market

### Welfare Economics

- **Definition: Welfare economics** is the study of how the allocation of resources affects economic well-being.
- Buyers and sellers receive benefits from participating in the market.
- **Consumer surplus (CS)** measures economic welfare/benefit from the buyer's side.
- **Producer surplus (PS)** measures economic welfare/benefit from the seller's side.

## Consumer Surplus

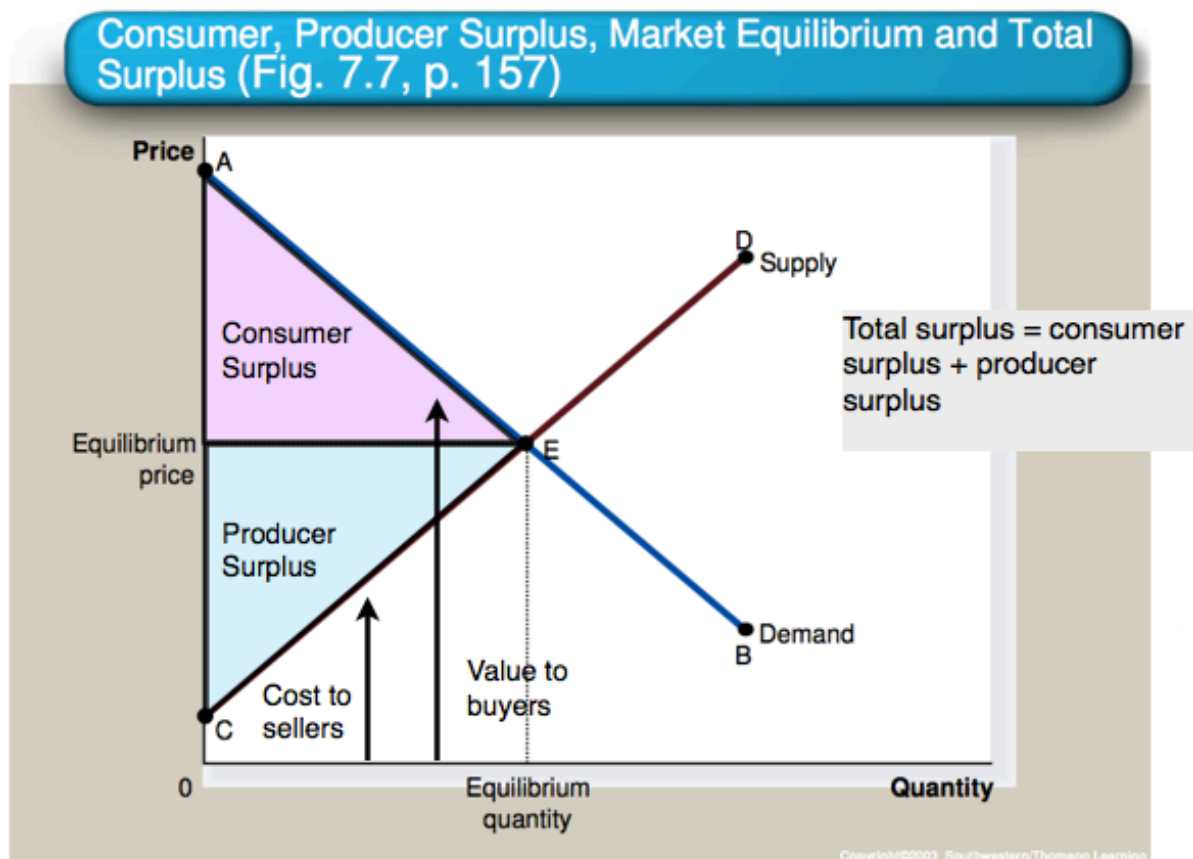
- **Definition: Consumer surplus (CS)** is the buyer's willingness to pay (**WTP**) for a good (that is, the value of a good to the buyer) minus the amount the buyer actually pays for it.
- As we will see, the **CS** at a given price is measured as the **area above the price and under the demand curve**.

## Producer Surplus

- **Producer surplus (PS)** is the amount a seller is paid for a good minus the seller's willingness to sell (that is his/her cost)
- The producer surplus at a given price is measured as the area below the price and above the supply curve.

## Cost and the Supply Curve

- **Cost** is the value of everything a seller must give up to produce a good (i.e., opportunity cost)
- Includes cost of all resources used to produce good, including value of the seller's time.
- A seller will only produce and sell the good if the price exceeds his or her cost.
- Hence, cost is a measure of willingness to sell.



## Efficiency of Markets

- In a market economy, the allocation of resources is decentralized, determined by the interactions of many self-interested buyers and sellers.
- Is the market's allocation of resources desirable? Or would a different allocation of resources make society better off?
- To answer this, we use total surplus as a measure of society's well-being:
  - Economists say that an allocation of resources is **efficient** if it maximizes total surplus.

## Market Efficiency: Summary

- Free markets are efficient
- Allocate the supply of goods to the buyers who value them most highly, as measured by their willingness to pay.
- Allocate the demand for goods to the sellers who can produce them at least cost.
- Produce the quantity of goods that maximizes the sum of consumer and producer surplus.
- This is how Adam Smith's *invisible hand* works its magic

## The Efficiency of the Equilibrium Quantity— A Word of Warning

- A number of assumptions were made to conclude that markets are efficient.
- Two of the most important are:
  - Perfectly competitive markets
  - No externalities (i.e., outcome in a market matters only to the buyers and sellers in that market)
- As we will see later in this course, when these assumptions are relaxed, the market equilibrium may be inefficient and public policy can potentially help to increase the efficiency of this equilibrium.

## Chapter 8: Application: The Cost of Taxation

### Determinants of the Deadweight Loss

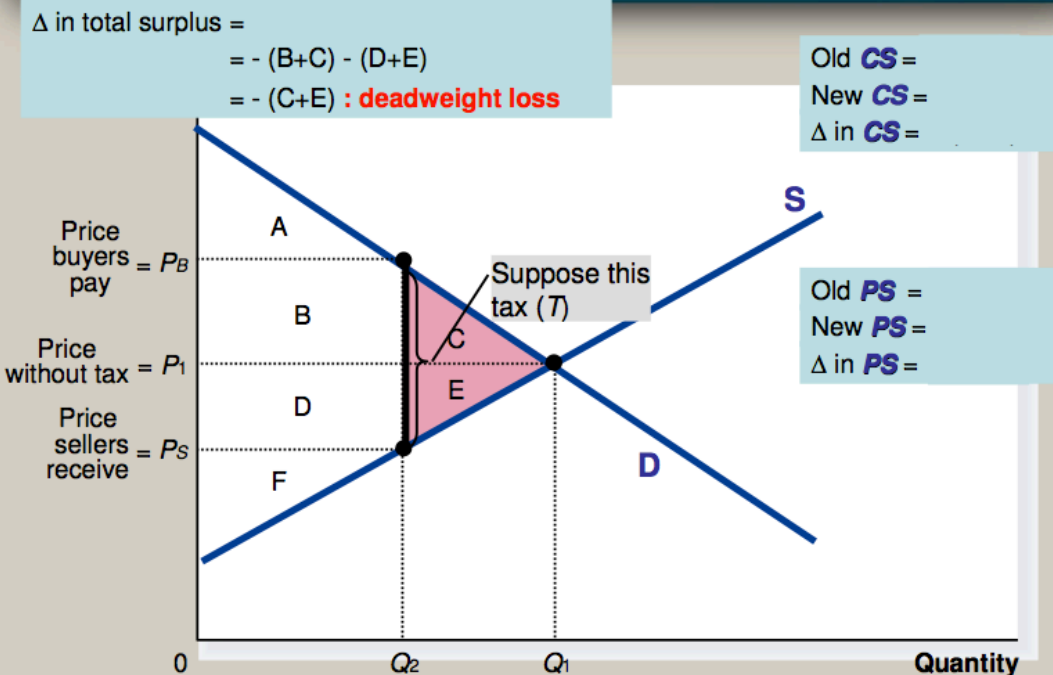
- **What determines the size of the deadweight loss from a tax?**
  - depends on how much the quantity sold changes in response to the tax,
  - which in turn, depends on the price elasticities of supply and demand.

# Efficiency of Markets

- In a market economy, the allocation of resources is decentralized, determined by the interactions of many self-interested buyers and sellers.
- Is the market's allocation of resources desirable? Or would a different allocation of resources make society better off?
- To answer this, we use total surplus as a measure of society's well-being:
  - Economists say that an allocation of resources is *efficient* if it maximizes total surplus.

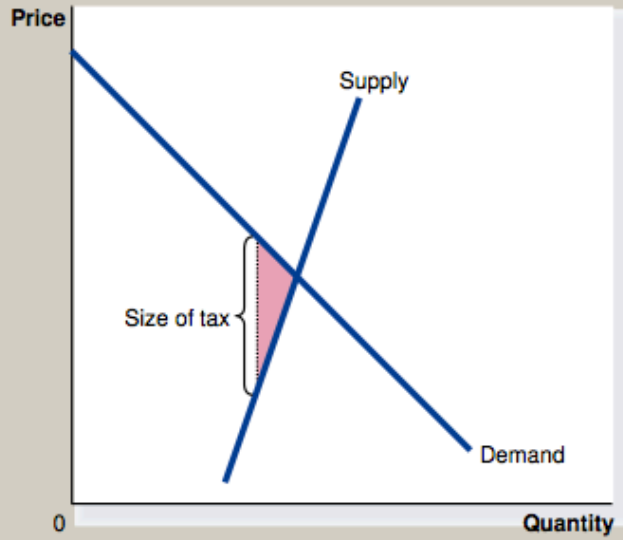
13

## Question: What Happens to Welfare when a Tax Is Introduced? (Fig. 8.3)



## Tax Distortions and Elasticities (Fig. 8.5)

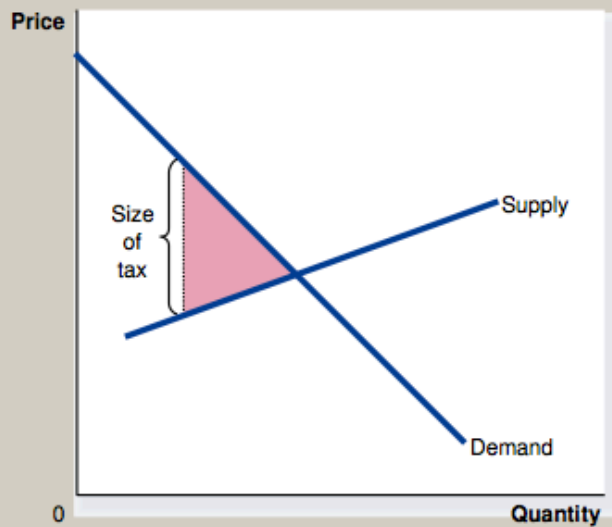
(a) Inelastic Supply



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## Tax Distortions and Elasticities (Fig. 8.5)

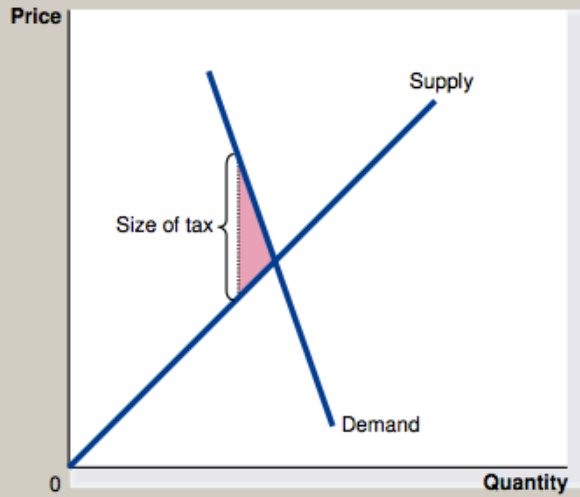
(b) Elastic Supply



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## Tax Distortions and Elasticities (Fig. 8.5)

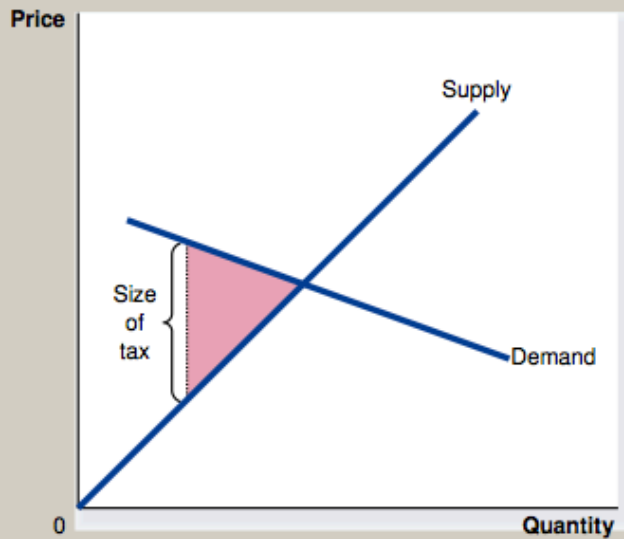
(c) Inelastic Demand



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## Tax Distortions and Elasticities (Fig. 8.5)

(d) Elastic Demand



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## Chapter 10: Externalities

# Chapter 10: Externalities

### Definition:

- **Externality** : the uncompensated impact of one person's actions on the well-being of a bystander.
- In other words, there are externalities when social benefits are different from private benefits and/or social costs are different from private costs.
- Two types of externalities:
  - Negative externalities
  - Positive externalities

## Negative Externalities

### Definition

- **Negative externality** : When the impact on the bystander is adverse (i.e., social costs are greater than private costs).
  - Automobile exhaust
  - Industrial pollution
  - Barking dogs (loud pets)
  - Loud stereos in an apartment building

# Positive Externalities

## Definition

- ***Positive externality:* When the impact on the bystander is beneficial (i.e., social benefit is greater than private benefit.**
  - Immunizations
  - Restored historic buildings
  - Research into new technologies

## Welfare Impact of a Negative Externality-- Summary

- When there are negative externalities, the market equilibrium quantity is greater than the socially optimal quantity, which means a welfare deadweight loss.

- **Negative externalities**

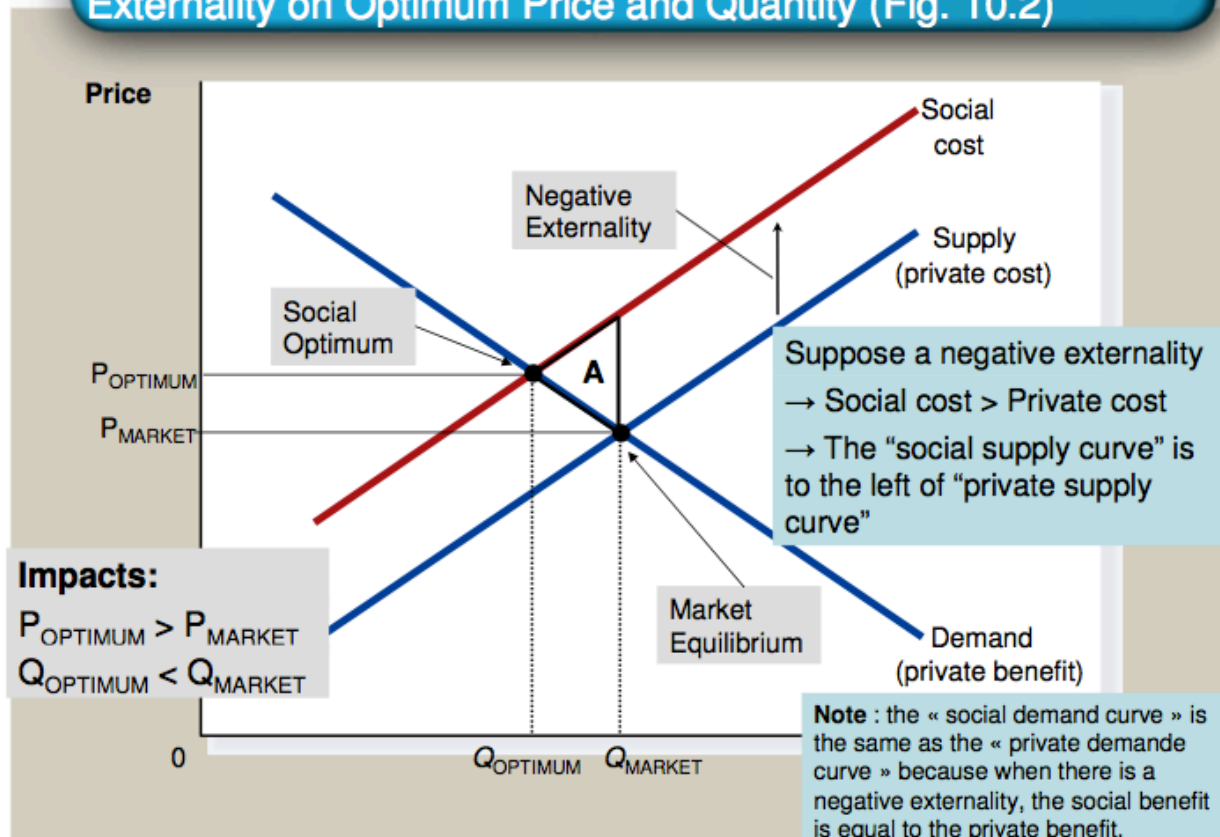
- When social costs of an action are greater than private costs (e.g., smoking)
- Market equilibrium quantity is greater than the socially optimal quantity, which means a welfare deadweight loss

- **Positive externalities**

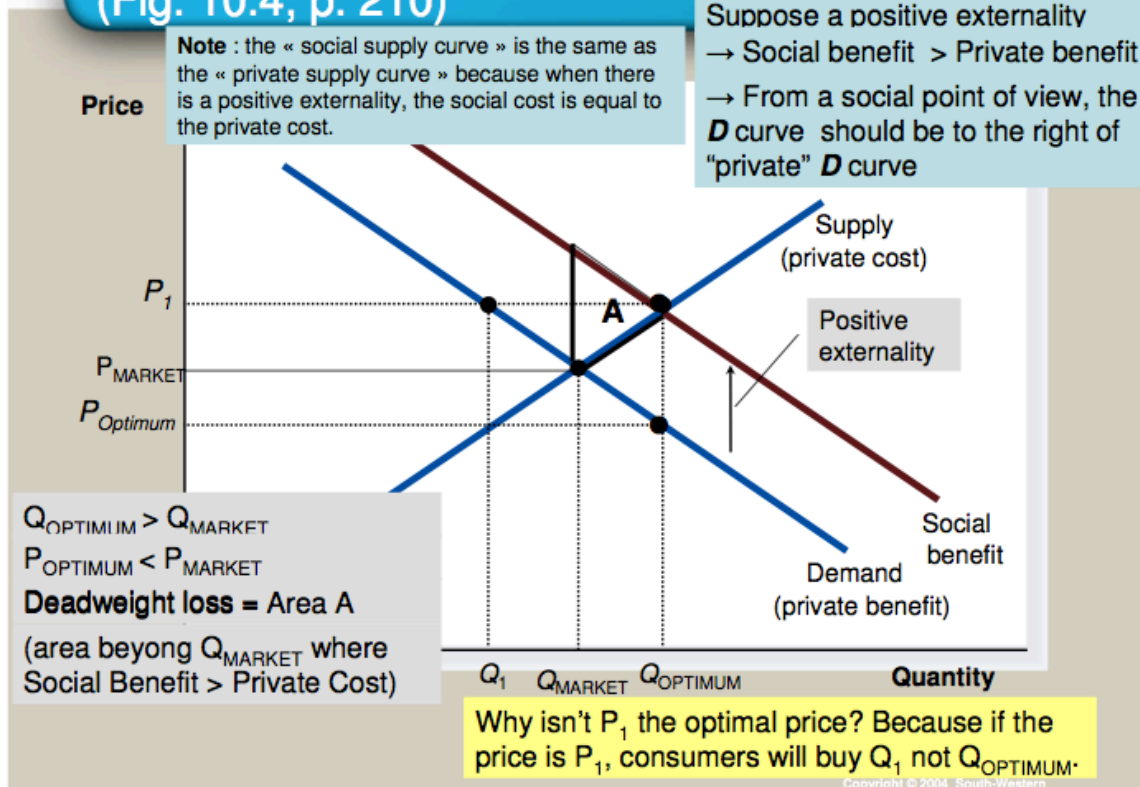
- When social benefits of an action are higher than private benefits (e.g., basic education)
- Market equilibrium quantity is lower than the socially optimal quantity, which means a welfare deadweight loss

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**Welfare Impact of a Negative Externality—Impact of a Negative Externality on Optimum Price and Quantity (Fig. 10.2)**



## Welfare Impact of a Positive Externality (Fig. 10.4, p. 210)



## Solving the Problem of Externalities— Private Solutions

- Government action is not always needed to solve the problem of externalities.
- Private solutions include :
  - Moral codes and social sanctions (“Do unto others as would have them do unto you.”)
  - Charitable organizations
  - Integrating different types of businesses
  - Contracting between parties

## Solving the Problem of Externalities— Private Solutions

- *Coase Theorem*
  - a proposition that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.
- Private solutions sometimes fail
  - because transaction costs can be so high that private agreement is not possible (ex., industrial pollution).
- *Transactions Costs*
  - costs that parties incur in the process of agreeing to and following through on a bargain.

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## Solving the Problem of Externalities—Public Policy Solutions

- When externalities are significant and private solutions are not found, government may attempt to solve the problem through . . .
  - command-and-control policies.
  - market-based policies.

## Solving the Problem of Externalities—Public Policy Solutions

- **Command-and-Control Policies**
  - Usually take the form of regulations:
    - Forbid certain behaviors.
    - Require certain behaviors.
  - Examples:
    - Requirements that all students be immunized.
    - Stipulations on pollution emission levels set by Environment Canada.

## Solving the Problem of Externalities—Public Policy Solutions

- **Market-Based Policies**
  - Government can use taxes and subsidies to align private incentives with social efficiency.
  - These measures “*internalize*” the externality as they give buyers and sellers the incentive to take into account the external effects of their actions..
  - For example, in the case of a negative externality, the government can impose a tax on the good equal to the externality, which decrease the production (and consumption of that good) and raise revenue. If the tax is set equal to the externality, then the equilibrium will equal the optimal equilibrium.
    - **Note:** *Pigovian taxes* are taxes enacted to correct the effects of a negative externality (Pigovian taxes actually increase total surplus).
  - Conversely, in the case of a positive externality, the government can provide a subsidy for the consumption (or production) of the good. This will increase the consumption (or production) of that good.

## **Chapter 11: Public Goods and Common Resources**

## Chapter 11: Public Goods and Common Resources

- Many free goods. Nature provides some of them (e.g., rivers, mountains). The government provides others (e.g., playgrounds, parades).
- Free goods provide a special challenge for economic analysis.
  - the market forces that normally allocate resources in our economy are absent.
  - private markets cannot ensure that the good is produced and consumed in the proper amounts.
  - In such cases, government policy can potentially remedy the market failure that results, and raise economic well-being.
- Key objective of this chapter is to show that government policy can increase economic well-being when goods are free.

### Characteristics of a Good

- New terminology:
  - A good is said to be *excludable* if a person can be excluded from its use
  - A good is said to be *rival* if one person's use diminish other people's use

		Rival?	
		Yes	No
Excludable?	Yes	<b>Private Goods</b> <ul style="list-style-type: none"> <li>• Ice-cream cones</li> <li>• Clothing</li> <li>•</li> </ul>	<b>Natural Monopolies</b> <ul style="list-style-type: none"> <li>• Fire protection</li> <li>• Cable TV</li> <li>•</li> </ul>
	No	<b>Common Resources</b> <ul style="list-style-type: none"> <li>• Fish in the ocean</li> <li>• The environment</li> <li>•</li> </ul>	<b>Public Goods</b> <ul style="list-style-type: none"> <li>• Tornado siren</li> <li>• National defense</li> <li>•</li> </ul>

## Public Goods

- Since people cannot be excluded from enjoying the benefits of a public good, individuals may withhold paying for the good hoping that others will pay for it.
- A *free-rider* is a person who receives the benefit of a good but avoids paying for it.
- The free-rider problem prevents private markets from supplying public goods.

### Solving the free-rider problem

- The government can decide to provide the public good if the total benefits exceed the costs (cost-benefit analysis).
- The government can make everyone better off by providing the public good and paying for it with tax revenue.

## ACTIVE LEARNING 1:

### Categorizing roads

- A road is which of the four kinds of goods?
- *Hint.* The answer depends on whether the road is congested or not, and whether it's a toll road or not.
- Rival in consumption? **Only if congested**
- Excludable? **Only if a toll road**
- Four possibilities
  - uncongested non-toll road: **public good**
  - uncongested toll road: **natural monopoly**
  - congested non-toll road: **common resource**
  - congested toll road: **private good**

6  
6

## Public Goods

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### Solving the free-rider problem

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## Similarities between Public Goods and Goods with Positive Externalities

	Goods with Positive Externalities	Public Goods
Price (market)	Higher than socially optimal price	Zero
Quantity (market)	Lower than socially optimal quantity	Zero - lower than socially optimal quantity
Possible Solution	government subsidy	Tax breaks or fiscal spending (tax revenue)

## The Difficult Job of Cost Benefit Analysis

- **Definition:** *Cost benefit analysis* refers to a study that compares the costs and benefits to society of providing a public good.
- In order to decide whether to provide a public good or not, the total benefits of all those who use the good must be compared to the costs of providing and maintaining the public good.
- A cost-benefit analysis would be used to estimate the total costs and benefits of the project to society as a whole.
  - The value of life, the consumer's time, and aesthetics are difficult to assess.
  - It is difficult to do because of the absence of prices needed to estimate social benefits and resource costs

# What Is Profit?

## Definitions

- ***Total Revenue***

- The amount a firm receives for the sale of its output.

- ***Total Cost***

- The market value of the inputs a firm uses in production.

Profit = total revenue - total cost

## Cost of Production--Definition

- A firm's ***cost of production*** includes all the opportunity costs of making its output of goods and services, including explicit and implicit costs.
  - ***Explicit*** costs are input costs that require a direct outlay of money by the firm.
  - ***Implicit*** costs are input costs that do not require an outlay of money by the firm.

## Economic Profit vs Accounting Profit

- *Economic profit*: total revenue minus total cost, including both explicit and implicit costs.
- *Accounting profit*: total revenue minus explicit costs.
- Economic profit < Accounting profit

Example: MKMR,  
p. 287 #2

2. Your aunt is thinking about opening a hardware store. She estimates that it would cost \$500 000 per year to rent the location and buy the stock. In addition, she would have to quit her \$50 000 per year job as an accountant.
  - a. Define *opportunity cost*.
  - b. What is your aunt's opportunity cost of running a hardware store for a year? If your aunt thought she could sell \$510 000 worth of merchandise in a year, should she open the store? Explain.

Answer:

- The opportunity cost of opening the hardware store is what she must forgo to achieve that

- i) Opportunity cost = rent and buy stock + loss in salary  
= \$500 000 + \$50 000  
= \$550 000

- ii) She should not open the store because her sales do not cover her costs

Note: in this case, Economic profit = \$510 000 - \$550 000 = -\$40 000

Accounting profit = \$510 000 - \$500 000 = \$10 000

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Example:

3. Suppose that your school charges you separately for tuition and for room and board.
  - a. What is a cost of attending school that is not an opportunity cost?
  - b. What is an explicit opportunity cost of attending school?
  - c. What is an implicit opportunity cost of attending school?

- a. Room and board (whether you go to school or not, you will have to eat and sleep somewhere)
- b. Tuition, books
- c. The salary you would earn if you were not in school (e.g. salary at McDonald's)

## Production and Costs

### Definitions:

- The *Production Function* establishes the relationship between quantity of inputs used to make a good and the quantity of output of that good.
- The *Marginal Product* of any input in the production process is the increase in output that arises from an additional unit of that input.

## The Various Measures of Cost

### Definitions:

- **Fixed costs:** costs that do not vary with the quantity of output produced.
- **Variable costs:** costs that do vary with the quantity of output produced.

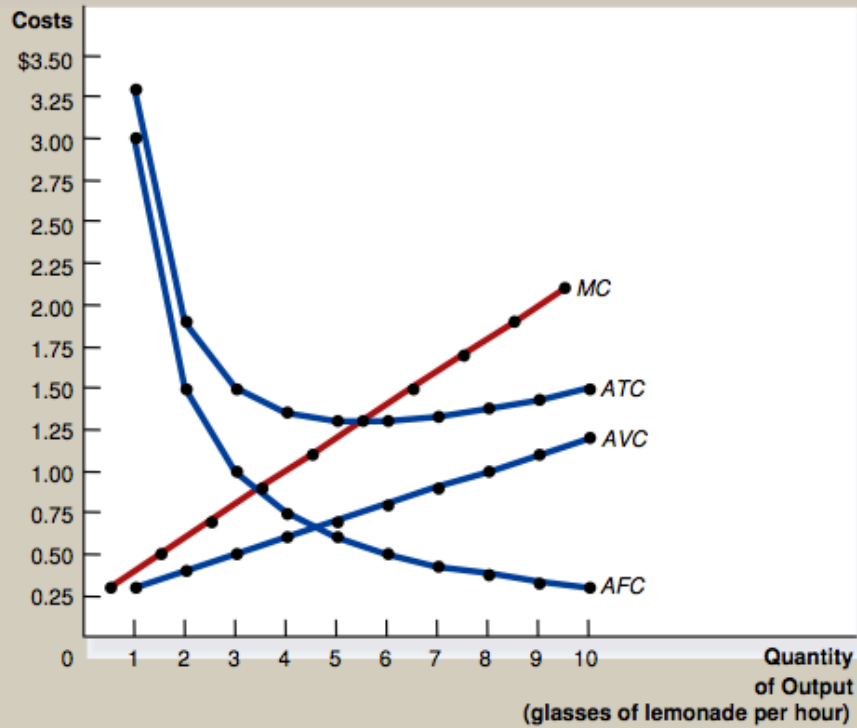
## The Various Measures of Cost (cont.)

- **Average Costs:** can be determined by dividing the firm's costs by the quantity of output it produces.

## The Various Measures of Cost (cont.)

- **Marginal Cost (MC):** measures the increase in total cost that arises from an extra unit of production.
  - helps answer the following question:
    - How much does it cost to produce an additional unit of output?

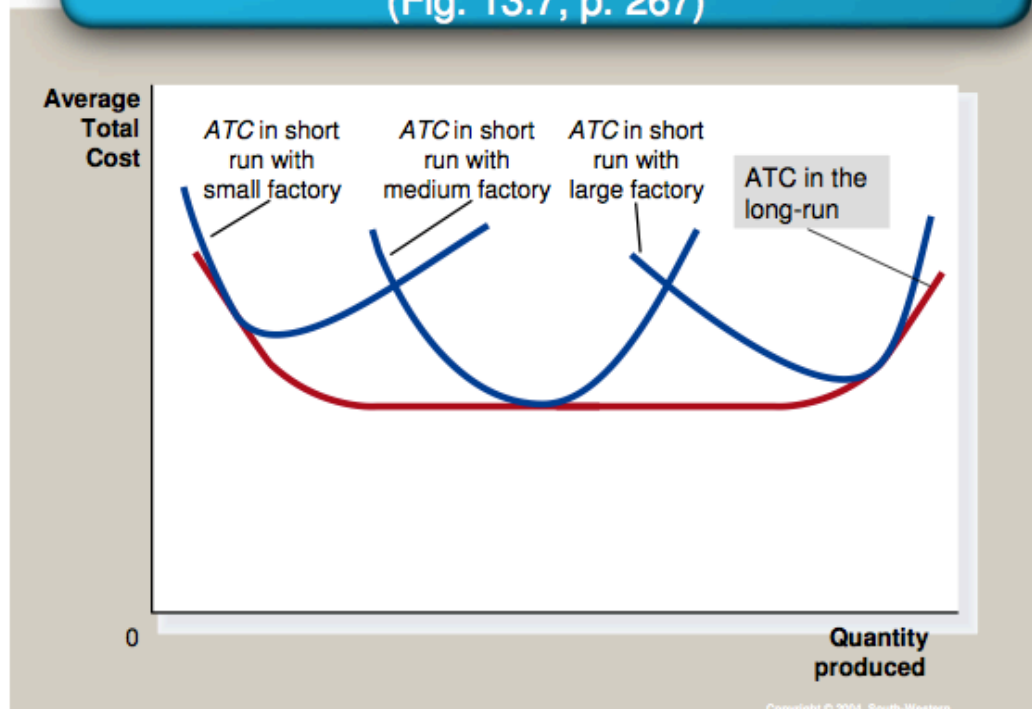
## Typical Shapes of Cost Curves-- Thirsty Thelma's Lemonade Stand (Fig. 13.5, p.283)



## Costs in the Short-Run and in the Long-Run

- For many firms, the division of total costs between fixed and variable costs depends on the time horizon being considered.
  - In the short run, some costs are fixed.
  - In the long run, fixed costs become variable costs.
- Because of that, a firm's long-run cost curves may differ from its short-run cost curves.
- In fact, because the firm minimizes costs, in the long run, the costs will be at most the same as in the short run and will generally be lower.

Average Total Cost in the Short and Long Runs—  
(Fig. 13.7, p. 267)



## Economies and Diseconomies of Scale

- *Economies of scale* refer to the property whereby long-run average total cost falls as the quantity of output increases.
- *Diseconomies of scale* refer to the property whereby long-run average total cost rises as the quantity of output increases.
- *Constant returns to scale* refers to the property whereby long-run average total cost stays the same as the quantity of output increases

## Chapter 14: Firms in a Competitive Market

- Characteristics of a *competitive market*:
  - Many buyers and sellers in the market (buyers and sellers are « price takers »);
  - The goods offered are largely the same. – Firms can freely enter or exit the market.
- As a result , the actions of any single buyer or seller in the market have a negligible impact on the market price.
  - In particular, each buyer and seller takes the market price as given-- each buyer and seller is a price taker. *a price taker*
- **Key objective of chapter:** See how a firm's behaviour determines a competitive market's short-run and long-run supply curves

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### Total, Average and Marginal Revenue for a Competitive Firm

- For firms in a competitive market:
  - Total Revenue (TR)* = Selling Price (P) x Quantity Sold (Q)
  - Average Revenue* =  $TR / Q = P$
  - Marginal Revenue* =  $\Delta TR / \Delta Q = P$

**Example:** When a competitive firm doubles the amount it sells, what happens to the price of its output and its total revenue?

# Profit Maximization

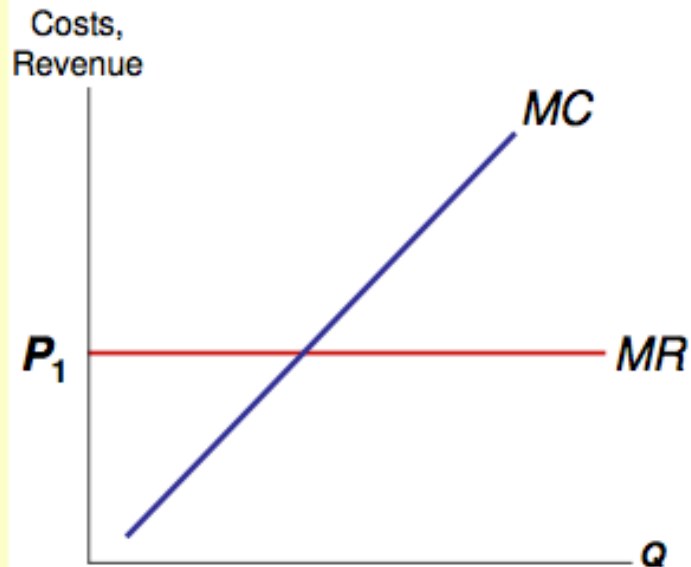
**Question:** What  $Q$  maximizes the firm's profit?

**To find the answer:**

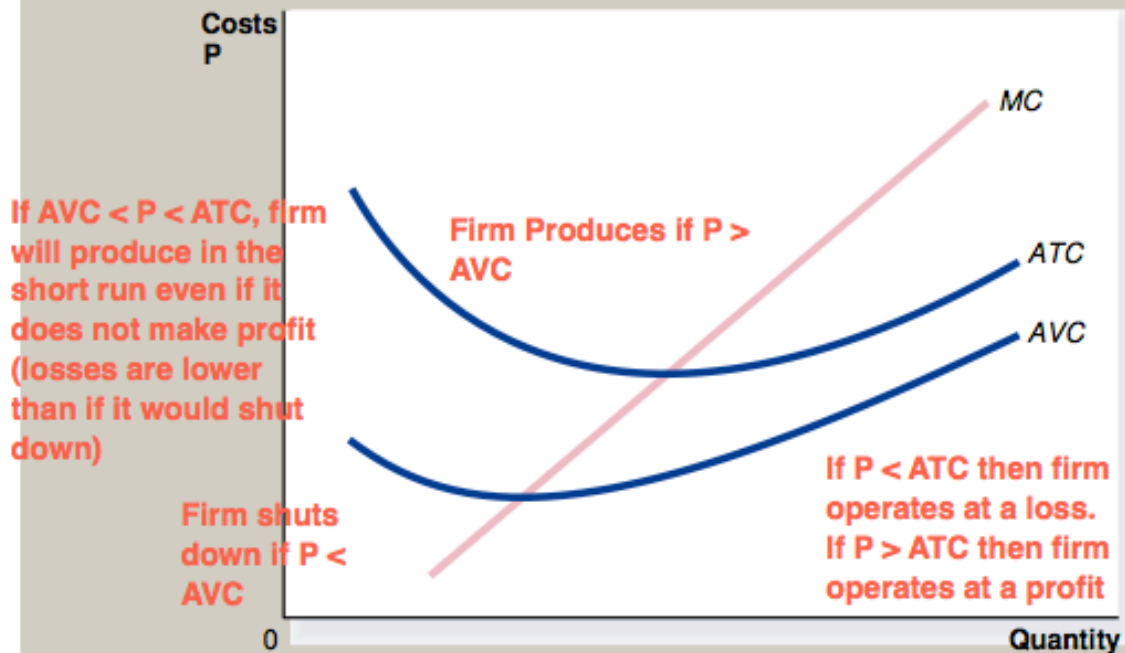
• **“Think at the margin.”**

- If increase  $Q$  by one unit, then revenue rises by  $MR$  and cost rises by  $MC$ .
- If  $MR > MC$ , then increase  $Q$  to raise profit.
- If  $MR < MC$ , then reduce  $Q$  to raise profit.
- So profit is maximized when  $Q$  is such that

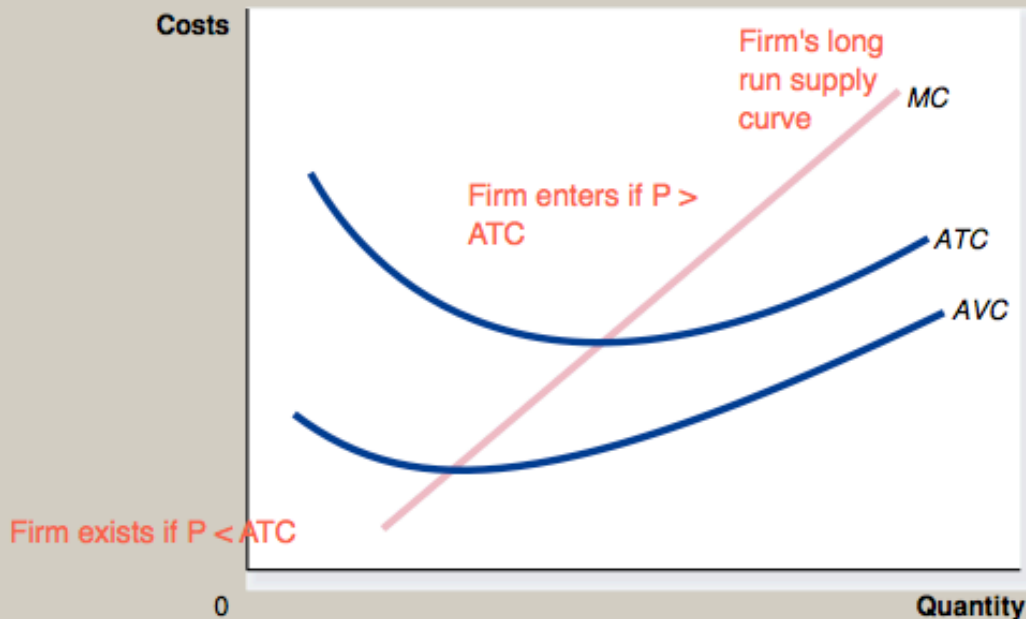
$$MR = MC$$



## The Competitive Firm's Short-Run Decision to Shut Down (Fig. 14.3, p. 299)



## The Competitive Firm's Long-Run Decision to Exit or Enter a Market (Fig. 14.4, p. 302)



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## The Firm's Supply Curve in a Competitive Market--Summary

- Short-Run Supply Curve

- The portion of the MC curve that lies above the minimum point of its AVC curve.

- Long-Run Supply Curve

- The portion of the MC curve above the minimum point of its ATC curve.

## Last lecture...

- Chap. 14—Firms in a Competitive Market
- Each firm is a *price taker*.
  - Marginal Revenue (MR) = P
- For profit maximization, firms produce until

MR = MC that is until MC = P

- The MC curve is the firm's supply curve.

- The short-run and long-run firm's supply curve
  - In the short run, a profit-maximizing firm may operate even if it does not make profit (as long as  $P > AVC$ )

## Why Do Competitive Firms Stay in Business if They Make Zero Profit?

- **Note** : here we are talking about economic profit, not accounting profit—in competitive markets, economic profits should be zero in the long run, but accounting profits will generally be greater than zero.
- (Economic) profit equals total revenue minus total (economic) cost.
- Total cost includes all the opportunity costs of the firm.
- In the zero-profit equilibrium, the firm's revenue compensates the owners for the time and money they expend to keep the business going.

## CONCLUSION: The Efficiency of a Competitive Market

- Profit-maximization:  $MC = MR$
- Perfect competition:  $P = MR$
- So, in the competitive equilibrium:  $P = MC$ 
  - Recall, MC is cost of producing the marginal unit. P is value to buyers of the marginal unit.
  - So, in the absence of externalities, the competitive equilibrium is efficient—it maximizes total surplus.
  - In the next chapter, monopoly: pricing & production decisions, deadweight loss, regulation.

# Chapter 15: Monopoly

- A firm is considered a *monopoly* if . . .
  - it is the sole seller of its product.
  - its product does not have close substitutes

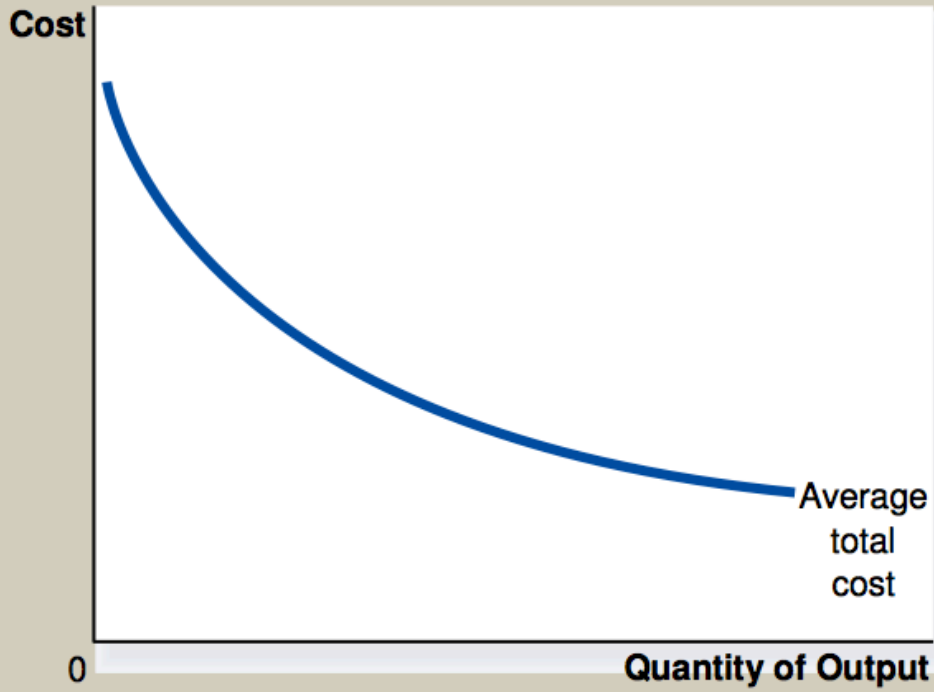
## Why Monopoly Arise

- Fundamental cause of monopoly is *barriers to entry*.
- Three sources of these barriers:
  - Ownership of a key resource (for ex., DeBeers who controls 80% of the world's production of diamond).
  - The govt gives a single firm the exclusive right to produce some good—Through patent and copyright laws for example.
  - Costs of production make a single producer more efficient than a large number of producers (*natural monopolies*)—Example: cable television.

## Natural Monopolies

- An industry is a *natural monopoly* when a single firm can supply a good or service to an entire market at a smaller cost than could two or more firms.
- A *natural monopoly* arises when there are economies of scale over the relevant range of output—declining average total cost.

## Economies of Scale as a Cause of Monopoly— Natural Monopoly (Fig. 15.1, p. 316)



## How Monopolies Make Production and Pricing Decisions—A Monopoly's Demand Curve

- Key difference between a competitive firm and a monopoly: the monopoly is a *price maker*.
  - Because it is the sole producer in its market, a monopoly can alter the price of its goods by adjusting the quantity it supplies to the market.
- This means that while the demand curve faced by a competitive firm is horizontal, the demand curve faced by a monopoly is downward sloping.
- As we will see later, it means that unlike a competitive firm, a monopoly can adjust its price to maximize its profit.

## How Monopolies Make Production and Pricing Decisions--A Monopoly's Marginal Revenue (MR)

- Recall that for a competitive firm,

$$MR = P$$

(when a competitive firm increases production by 1 unit, it receives the market price for that unit).

- However, a monopoly's *MR* is always *less than* the price of its good.
  - To increase sales by 1 unit, it must reduce the price it charges for all other units it sells.
  - For example, suppose a monopoly currently sells 10 units at a price of \$5. To sell 11 units it will have to reduce its price—to \$4.90 say.
  - Question: What is the MR of the 11th unit sold? Answer:  
(\$4.90 x 11) - \$50 = \$3.90 (< Price = \$4.50)

# Introduction

## Last lecture:

- Chap. 15: Monopoly
- Monopoly is a *price maker*. This means that
  - while the demand curve faced by a competitive firm is horizontal, *the demand curve faced by a monopoly is downward sloping.*
  - *Marginal Revenue (MR) < P*
  - Profit maximization decision for a monopoly:
    - Set Q where  $MR = MC$  and use the Demand curve to find the price that will induce consumers to buy this quantity.

## Today's lecture:

- Finish Chap. 15
  - Welfare cost of a monopoly
  - Public policy toward monopolies
- Finish Chap. 15
  - Welfare cost of a monopoly

## The Welfare Cost of Monopoly

- We saw that for a monopoly, equilibrium prices and quantities are different than those of a competitive firm.
  - Unlike for the competitive firm where  $MR=P$ , a monopoly's  $MR$  is lower *than* the price of its good.
  - The monopoly must use its demand curve to find the price that will induce consumers to buy the quantity that makes  $MR=MC$ .
  - As a result,
    - $Monopoly P > Competitive P$
    - $Monopoly Q < Competitive Q$
- Recall also from Chapter 7 that competitive markets maximized welfare.
- This suggests that there is a welfare cost (i.e., deadweight loss) to monopolies.
- The issue is the magnitude of this deadweight loss.

## Public Policy Toward Monopolies

- Government responds to the problem of monopoly in one of four ways.
  - Making monopolized industries more competitive.
  - Regulating the behaviour of monopolies.
  - Turning some private monopolies into public enterprises.
  - Doing nothing at all.

### Making monopolized industries more competitive—Competition Laws

- **Competition laws:** Legislation designed to encourage competition and discourage the use of monopoly practices
- If competition laws are to raise social welfare, the government must be able to determine which mergers are desirable and which are not (this is the job of the Competition Bureau—Industry Canada)

# Public Ownership

- Rather than regulating a *natural monopoly* that is run by a private firm, the government can run the monopoly itself.
- In Canada, government-owned firms are known as Crown corporations.
  - Examples are Canada Post, the Canadian Broadcasting Corporation, and Atomic Energy of Canada Limited

## Doing Nothing

- Government may want to do nothing at all if the market failure is deemed small compared to the imperfections of public policies.

## Chapter 18: The Markets for the Factors of Production

- *Factors of production* are the inputs used to produce goods and services.
- Examples of factor of production:
  - Labour
  - Capital (e.g., machinery and equipment, structures)
  - Land
- *Key objective of this chapter:* to see how firms decide how much of a factor of production to use and how these decisions affect the returns to these factors of production (emphasis will be on labour)

## Recall from Chap. 13

### Definitions:

- *Production Function*: relationship between quantity of inputs used to make a good and the quantity of output of that good.
- *Marginal Product* of an input: the increase in output that arises from an additional unit of that input.

Typically, the marginal product of an input decreases as the use of that input increases.

## Modeling the Markets for Factor of Production--Observations

- Factor of production markets, like other markets in the economy, are governed by the forces of *supply and demand*.
- The demand for a *factor of production* is a derived demand -- A firm's demand for a factor of production is *derived* from its decision to supply a good in another market.

### Definition:

- The *value of the marginal product* of a factor:  
$$VMP = P \times MP$$

## Labour Market—The Demand for Labour

- **Question:** what is the wage that a firm is willing to pay for an additional unit of labour?
- In Chapter 13 we saw that the profit-maximizing firm will produce until

$$MR = MC$$

- In the same manner, a profit-maximizing firm will hire workers until the marginal revenue of workers is equal to their marginal cost, or in labour market parlance until:

$$\begin{aligned} \text{VMP of Labour (VMPL)} &= \text{Wages (W)} \times \text{MPL} \\ &= W \end{aligned}$$

- This means that the labour demand curve for a profit-maximizing firm is the  $VMPL$  curve—it is the wage that the firm is willing to pay for that additional unit of labour.

## What Causes the Labour Demand Curve to Shift?

- Anything that will shift the  $VMP_L$  curve
- So, since  $VMP_L = P \times MP_L$ , the following factors will shift the labour demand curve:
  - Change in output price
  - Technological changes (for example, if Labour becomes more productive because of a technological innovation, then the Labour demand curve will shift right)
  - Changes in the use of other factor of production (which can affect the  $MP_L$ )

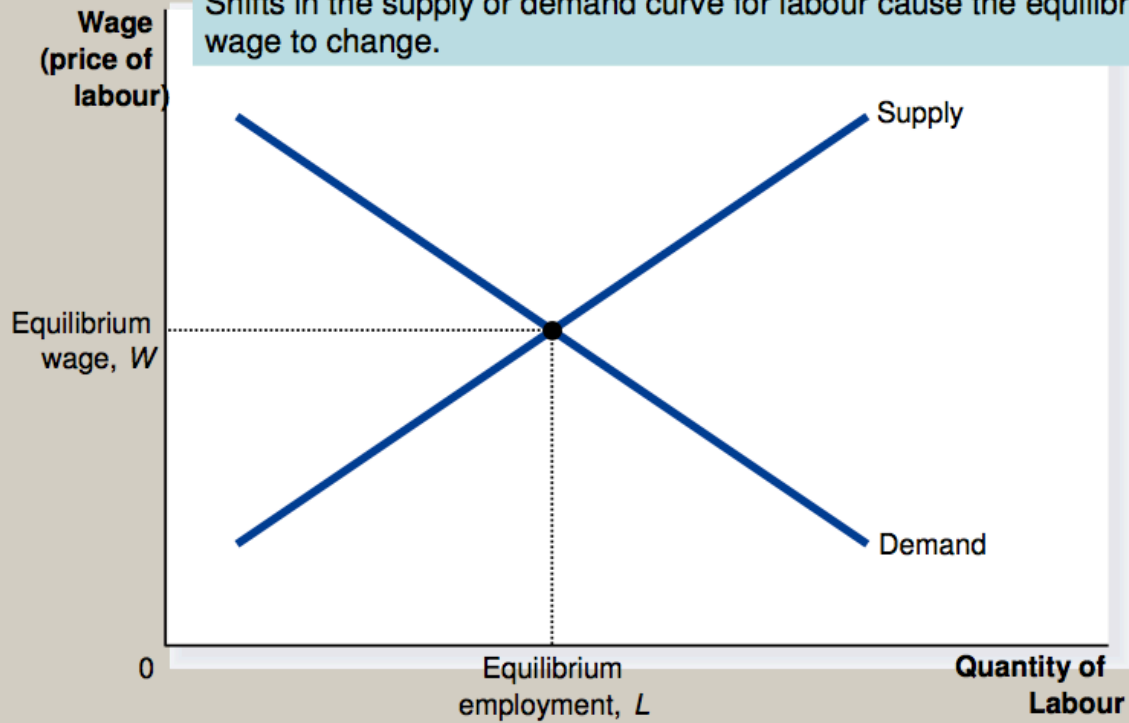
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## The Supply of Labour

- The Labour supply curve reflects how workers' decisions about the labour-leisure tradeoff respond to changes in opportunity cost.
- An upward-sloping labour supply curve means that an increase in the wages induces workers to increase the quantity of labour they supply--leisure becomes more "expensive."
- What will cause the supply of labour curve to shift?

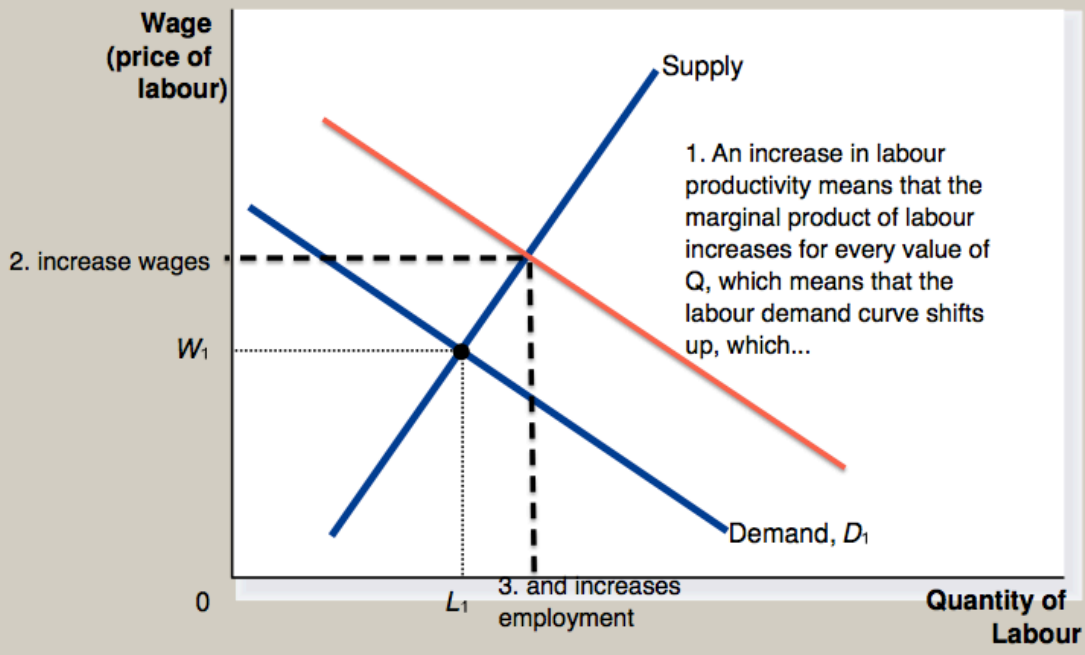
## Equilibrium in a Labour Market (Fig. 18.4)

Labour supply and labour demand determine the equilibrium wage.  
Shifts in the supply or demand curve for labour cause the equilibrium wage to change.



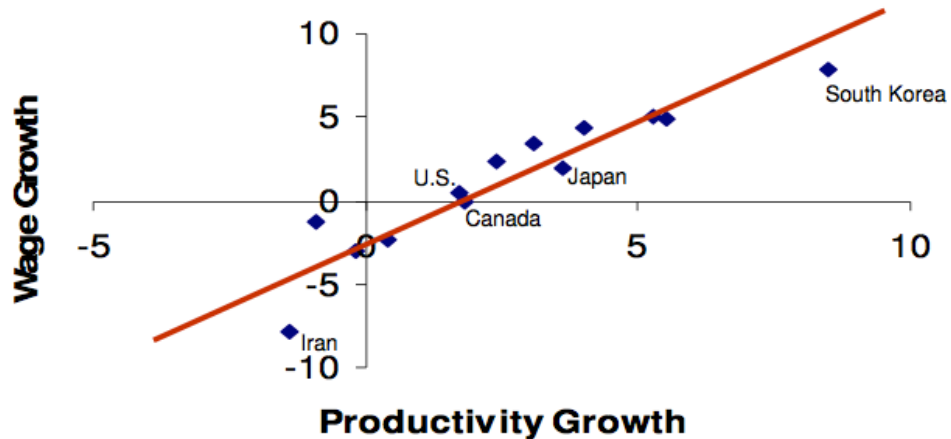
# Example: What is the impact of an increase in labour productivity on wages and employment?

Start with a market equilibrium situation



## Case Study: Our Standard of Living Depends on our Ability to Produce Goods and Service

**The Fruits of Productivity  
(1980-1992)**



## Key Determinants of Productivity

- **Physical capital:**

When workers work with a larger quantity of equipment and structures, they produce more

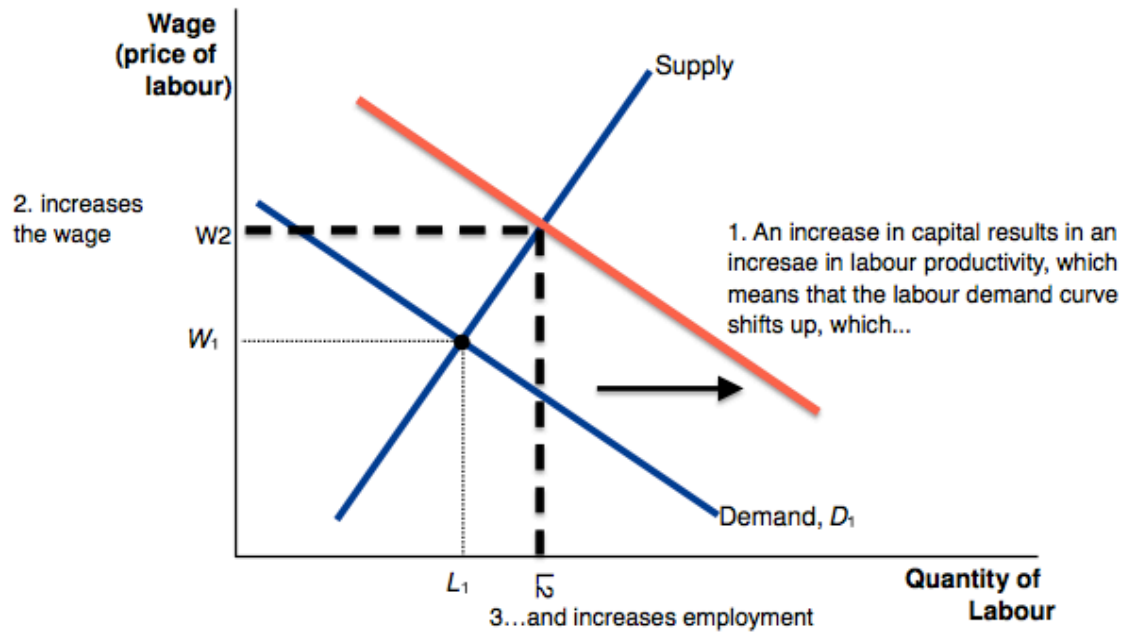
- **Human capital:**

When workers are more educated, they produce more

- **Technological knowledge:**

When workers have access to more sophisticated technologies, they produce more

**Example:** During the 1980s and 1990s, Canada experienced a significant inflow of capital from other countries. Using a diagram of the Canadian labour market, show the effect of the capital inflow on the average wage paid to Canadian workers.



## Distribution of Income (cont.)

**Distribution of Market Income in Canada  
(2007)**

<b>Group</b>	<b>Average Annual Family Income in Group</b>	<b>% of Total Canadian Market Income</b>
Bottom fifth	\$ 7 100	2%
Second fifth	23 500	8
Middle fifth	44 700	15
Fourth fifth	73 400	24
Top fifth	156 300	51

If income were equally distributed across all families, each one-fifth of families would receive one-fifth (20%) of total income.

Note: the top fifth earns on average about 22 times that of the bottom fifth

# What drives the gap between the rich and the poor?

THE OTTAWA CITIZEN      BREAKING NEWS AT OTTAWACITIZEN.COM      WEDNESDAY, DECEMBER 1, 2010      D3

## BUSINESS & TECHNOLOGY

# Rich taking bigger piece of pie: study

### Gap grows between the wealthy and the rest of us

BY SHANNON PROUDFOOT

The richest Canadians take home a larger slice of the economic pie now than at any other time on record, according to a new report from the Canadian Centre for Policy Alternatives.

The wealthiest one per cent — 246,000 individuals who made at least \$169,000 in 2007 — accounted for 32 per cent of the growth in incomes during the booming years between 1997 and 2007, quadruple the eight-per-cent share of income growth they took home in the hot economy of the 1980s and '90s. The richest group also took home about one-third of the growth during the recession-plagued decade between 1987 and 1997.

"There is no generation of Canadians in the top one per cent that took that much of a share of the growth," says Armine Yalnizyan, senior economist for CCPA. "Good times and bad, they account for way more of the gains in growth than any other generation."

Examining trends from 1920 to 2007, CCPA found that greater equality between the beginning of the Second World War and the late 1970s gave way to a "stunning reversal" and a growing gap between the rich and the rest in recent decades.

"We're right back to the 1920s — it's like this whole period of greater equalization never happened," says Yalnizyan. "This social experiment we've done on trickle-down theory — 'Give more money to the people who are rich and they'll create more prosperity for everybody' — it hasn't delivered on its own terms."

Through the war years and the three decades that followed, droves of women entered the labour force and many people found better-paying jobs amid economic growth, she says. As a result, the income share of the richest Canadians was cut nearly in half, tumbling to 7.7 per cent from 14, but by 2007, the richest one per cent were earning 13.8 per cent of the total income in Canada.

And the higher up the income ladder, the faster the climb, CCPA found. The richest one per cent have seen their income share double since the 1970s, while the richest 0.1 per cent have seen it almost triple and the richest 0.01 per cent saw it more than quintuple.

Almost 2.5 million Canadians can count themselves among the richest 10 per cent, earning at least \$63,350 in 2007, and that group accounted for 41 per cent of the country's \$970 billion in pre-tax income.

But the report also finds that like most Canadians, the very richest are increasingly reliant on their jobs for their income. In the postwar years, less than half the income of the richest one per cent came from their paycheques (45.4 per cent), but that proportion is now more than two-thirds (67.6 per cent), with the rest comprising investments, interest and shareholder dividends.

"What's driving the trends is how the work of those at the top is valued. It's not capital gains, it's not how many assets you've got, it's really a question of earnings and how the work of the bosses, the celebrities, the artists, the athletes are rewarded now," says Yalnizyan.

POSTMEDIA NEWS

Wage income seems to be driving the gap between the rich and the poor.

## Income Redistribution in Canada

Group	Average Family Market Income <sup>†</sup>	Average Transfers Received	Average Income Taxes Paid	Average Income after Transfers and Taxes
Bottom fifth	\$ 7 100 (2%)	\$ 7 700 (20%)	\$ 900 (1%)	\$ 13 900 (5%)
Second fifth	23 500 (8)	10 000 (26)	2 800 (5)	30 700 (11)
Middle fifth	44 700 (15)	8 800 (22)	6 500 (12)	47 000 (16)
Fourth fifth	73 400 (24)	7 700 (19)	12 400 (22)	68 700 (24)
Top fifth	156 300 (51)	5 200 (13)	34 800 (60)	126 700 (44)
Average all groups	\$ 61 000	\$ 7 900	\$11 500	\$ 57 400

<sup>†</sup>2007 figures

Canada's income tax and transfer system reduces inequality

While the top fifth's market income earns about 22x more on average than that of the bottom fifth, the top fifth's income after tax and transfers is about 9x that of the bottom fifth

## Income Inequality around the World

Country	Lowest 20 Percent	Highest 20 Percent	Ratio: Gap between Rich and Poor
Japan	10.6%	35.7%	3.4
Germany	8.5	36.9	4.3
India	8.9	41.6	4.7
Canada	7.0	40.4	5.8
United Kingdom	6.1	44.0	7.2
United States	5.4	45.8	8.5
Russia	4.9	51.3	10.5
China	4.7	50.0	10.6
Nigeria	4.4	55.7	12.7
Mexico	3.1	59.1	19.1
Brazil	2.0	64.4	32.2
South Africa	2.0	66.5	33.2

Source: *World Development Report, 2005*

- Canada is among those with the most equal distribution of income
- Inequality is substantially higher in developing countries

## Relatively Few Canadians Pay (Net) Personal Income Taxes (PIT)

- More than 50% of tax filers do not pay any PIT
- However, 6% of tax filers pay almost 50% of net PIT

**Shares of Net PIT Paid (2005)**

	<b>Proportion of Tax Filers</b>	<b>Share of Net PIT Paid</b>
	(per cent)	
<b>Under \$30,000</b>	52	-6
<b>\$30,000 – \$60,000</b>	28	27
<b>\$60,000 – \$100,000</b>	14	33
<b>Over \$100,000</b>	6	48

Source: *Department of Finance* (2005).

**Note:** Net PIT paid include tax benefits such as Canada's Child Tax Benefits.

## Challenges in Measuring Poverty: How to Define Poverty?

- **Absolute vs Relative Poverty**
  - Absolute poverty means being too poor to meet some basic needs (e.g., food, shelter, etc)
  - Relative poverty is whether or not one can enjoy the same goods and services as others in the same community.
  - Relative poverty and absolute poverty are quite different concepts.
    - A society can have a great deal of income inequality but very few people living in absolute poverty (e.g., Kuwait).
    - Conversely, a society can have a great deal of absolute poverty but very little income inequality (e.g., Cuba).
- **How to compare “poverty” over time**
  - Being poor nowadays is very different from being poor 50 years ago.

## Definitions

- **Poverty rate:** percentage of the population whose family income falls below an absolute level called the **poverty line**.
- **Poverty line:** level of family income below which a family is considered poor.
  - Canada does not have an official measure of the poverty line, but Statistics Canada does produce the **low income cutoff (LICO)**, which is widely used as a measure of the poverty line in Canada.
  - Other economists have developed alternative measures of poverty in Canada. Sarlo uses the absolute poverty line, which measures the cost of basic necessities.

## Remarks on the *LICO*

- The *LICO* is calculated as the level of income at which a household of a given size in a community spends 20 percent more than average on food, shelter and clothing.
  - Canadian families spend on average about 43 percent of their income on food shelter and clothing. Thus, families that spend more than 63 percent their income on such things fall under the *LICO*.
- In 2007, 9.2 percent of Canadian families fell under the (after-tax) *LICO*.
  - Statistics Canada estimate before and after-tax *LICO*.
  - Evidently, the use of before-tax *LICO* will show greater incidence of low incomes as before-tax *LICO* ignore the redistributive impact of taxes and transfers.

## Remarks on the LICO (cont.)

- The *LICO* is widely used as the “official” measure of poverty line in Canada even if Statistics Canada clearly states that the *LICO* is only a measure of “relative” poverty.
- Also, *LICO* is a poor indicator of progress in reducing poverty, because as the economy grows and people make more money on average, the *LICO* moves up with it.

## Problems in Measuring Poverty/Inequality

- Data on income distribution and the poverty rate give an incomplete picture of inequality in living standards because of the following:
  - In-kind transfers (free bus passes, dental care, etc.)
  - Economic Life cycle
  - Transitory versus permanent income (**read in book**)
  - Economic mobility

## Problems in Measuring Poverty/Inequality (cont.)

- **In-Kind Transfers**
  - Transfers to the poor given in the form of goods and services rather than cash are called *in-kind transfers*.
  - Measurements of the distribution of income and the poverty rate (e.g., *LICO*) ignore in-kind transfers, which greatly overstates the measured poverty rate.
- **The Economic Life Cycle**
  - The regular pattern of income variation over a person's life is called the *life cycle*.
    - A young worker has a low income at the beginning of his or her career.
    - Income rises and peaks in middle-age.
    - Income falls sharply at retirement.
  - Because the young can borrow and save when they are older, their living standards may not be as low as their income would suggest

## Problems in Measuring Poverty/Inequality (cont.)

### **Economic Mobility**

- *Definition*: Economic mobility refers to the movement of people between income classes
- There is substantial economic mobility in Canada. For example, research shows that only about half of the individuals who fall under the *LICO* remain there from year to year.
- Poverty statistics ignore this fact.