AP Microeconomics
Chapter One p. 3-13

Economics: social science concerned with the efficient use of limited or scarce resources to achieve maximum satisfaction of human material wants.

• **Economic perspective**: a unique way of thinking about economic issues
√ Scarcity and Choice √ Rational Behavior √ Marginal Thinking: Costs and Benefits

• **Why Study Economics?**
"The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist." John Maynard Keynes (1883-1946)

√ **Economics for Citizenship**
Well-informed citizens will vote intelligently
Well-informed politicians will choose wisely among alternatives

√ **Professional and Personal Application**
Businessmen need an understanding of economy
Problems are examined from social rather than personal viewpoint

Economic Methodology

POLICIES
Policy economics is concerned with controlling or influencing economic behavior or its consequences.

↑

THEORETICAL ECONOMICS
Theoretical economics involves generalizing about economic behavior.

THEORIES
Developing hypotheses which are then tested against facts
Deductive Method

FACTS
Gathering facts and testing hypotheses against the facts to validate theories
Induction Method

Descriptive Economics
√ Based on facts—observable and verifiable behavior of certain data or subject matter
√ Economists examine behavior of individuals and institutions engaged in the production, exchange, and consumption of goods and services.

Economic Principles (laws, models)
√ Task of analysis is to systematically arrange, interpret, and generalize upon facts
√ Principles and theories bring order and meaning to facts by tying them to together, putting them in correct relationship to one another and generalizing.
√ Principles are expressed as the tendencies of typical or average consumers, workers, or business firms
√ Generalizations
• "Other things equal" assumption—controlling all variables except one
• Abstractions—do not mirror the complexity of real world
• Graphic Expressions—models used to show theory

Policy Economics

√ Applied Economics that recognizes the principles and data which can be used to formulate policies.

√ Determining a course of action to resolve a problem or to further a nation's economic goals

Steps in Policy Economics		
State the goal	A clear, specific statement	• Every able-bodied individual should have opportunity to work
Determine the policy options	List specific policies to achieve goal with an assessment of possible effects	• Fund vocational training programs in high schools and junior colleges • Create job training and subsidy to business firms willing to take on new workers
Implement and Evaluate the policy which was selected	Monitor steps in implementing the policy initiatives taken	• Survey statistics on employment • Do follow-up on job placements and training programs

Principles Are Derived At Two Levels:

Macroeconomics: economy as a whole and its basic subdivisions such as government, business and households. Macro looks at totals or aggregates to examine the "big picture".

Microeconomics: looks at specific units or segments of the economy, a particular firm or household. Micro looks at the "trees not the forest".

ECONOMIC GOALS

• **POSITIVE** economics collects and presents facts. It avoids value judgments—"just the facts, madam"! Positive economics concerns **WHAT IS**—what the economy is really like.

• **NORMATIVE** economics involves value judgments about what the economy should be like or which policies are best. Normative economics embodies subjective feelings about **WHAT OUGHT TO BE**—examining the desirability of certain conditions or aspects of the economy.

• **GOALS** are general objectives that we try to achieve. The nation's policy makers use these goals so that they can make better use of scarce resources. Goals make it easier to determine the tradeoffs involved in each choice.

√ Economic Growth—increase in the production capacity of the economy to increase the standard of living

√ Full Employment—provide suitable jobs for all citizens willing and able to work

√ Economic Efficiency—maximum satisfaction of wants with the available but scarce resources

√ Price-level Stability—stable price level avoiding inflation and deflation

√ Economic Security—providing for those unable to earn an income

√ Economic Freedom—guarantee that consumers, workers and business owners have freedom in economic activity

√ Equitable Distribution of Income—ensure that no citizen faces stark poverty while others enjoy extreme luxury

√ Balance of trade—seek a reasonable balance of trade with the world

• **Complementary goals** when one goal is achieved, some other goal or goals will also be realized. For example, the achieving of Full Employment means elimination of low incomes and economic insecurity.

• **Conflicting goals** some goals are mutually exclusive. Economic Growth may be in conflict with Economic Equity; some argue that efforts to achieve greater equal distribution of income may weaken incentives to work, invest, innovate and take business risks, all of which promote rapid Economic Growth. Establishment of Job Security may lessen strive for high productivity.

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Foundation of Economics:

- Social Science concerned with how resources are used to satisfy wants—the economizing problem.
- Study of how people and countries use their resources to produce, distribute and consume goods and services.
- An examination of behavior related to how goods and services are acquired.
- A study of how people decide who will get the goods and services.

Scarcity:

- Society's material wants are unlimited and unsatiable; economic resources are limited or scarce.
  - √ Demand for goods and services exceeds the supply
- Material wants means that consumers want to obtain products that provide utility.
  - √ Necessity vs. wants
  - √ Wants multiply over time with new products and incomes
  - √ Human wants tend to be unlimited, but human, natural, and capital resources are limited
- Resources are materials from which goods and services are produced. Four types of resources are:

√ **Land** —All Natural Resources
- Fields
- Forests
- Sea
- Mineral deposits
- Gifts of nature

√ **Labor**— Human Resources
- Manual
- Clerical
- Technical
- Professional
- Managerial

√ **Capital**—Means of production
- factories
- office buildings
- machinery
- tools and equipment
- use of technology
- use of available information

√ **Entrepreneurship**— a particular type of human resource
- business innovator
- sees opportunity to make profit
- uses unexploited raw materials
- takes risk with new product or process
- brings together land, labor, capital

- **Resource Payments—**note the special terms used
  Land-Rent **Labor**-wages and salaries **Capital**-Interest **Entrepreneurship**-Profit

Economic Efficiency—Using limited resources to derive the maximum satisfaction and usefulness
- Full employment and full production must be realized to achieve this goal

Full Employment
- √ All available resources used
- √ Employment for all willing and able
- √ No idle capital
- √ No idle arable land

Full Production
- √ Resources used to maximize satisfaction
- √ Allocative Efficiency–resources used to produce society's most wanted goods & services.
- √ Productive Efficiency–goods & services are produced in least costly ways.

Think About This!

1. Evaluate: "If resources were unlimited and freely available, there would be no subject called Economics".

2. Analyze: "Wants are not insatiable. I can prove it. I get all the coffee I want to drink every morning at breakfast".

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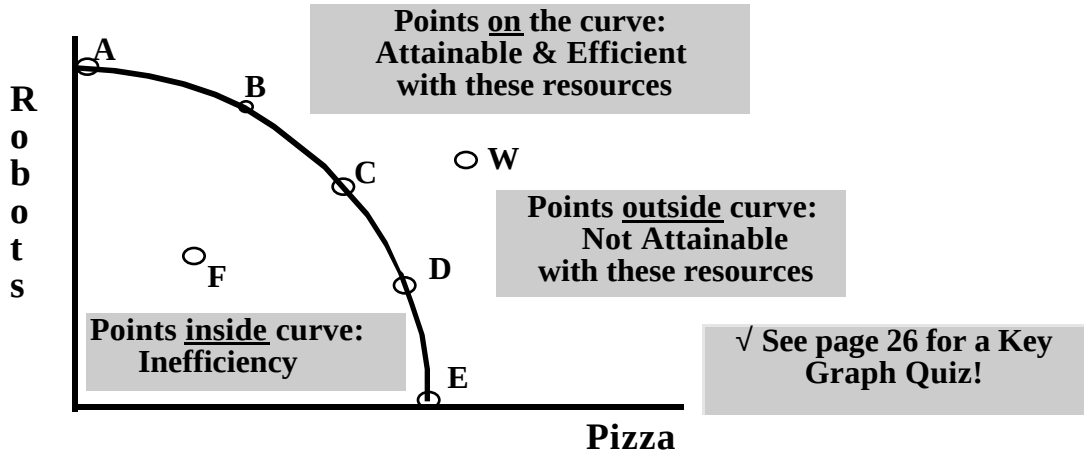
Production Possibility Tables and Curves

• **PPC is an economic model to demonstrate opportunity costs and tradeoffs**. The curve diagrams the various combinations of goods/services an economy can produce when all productive resources are employed. • There are 4 assumptions regarding the model:

√ Efficiency: full employment and productive efficiency
√ Fixed Resources: no more available, but they are shiftable
√ Fixed Technology: state of technology does not change in the period
√ Two Products: producing just two products (hypothetical, of course)

• Necessity of Choice is created. Limited Resources means a Limited Output.

TABLE:	A	B	C	D	E
PIZZA (000,000)	0	1	2	3	4
ROBOTS (000)	10	9	7	4	0

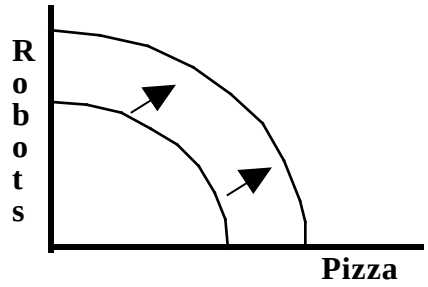


• **Each point on the curve represents some maximum output of any two products**. Limited resources (or supplies of the specific resource to produce the goods shown) will make any combination lying outside of the curve unattainable.

• **Choice** is reflected in the need for society to **select among the various attainable combinations** lying on the curve.

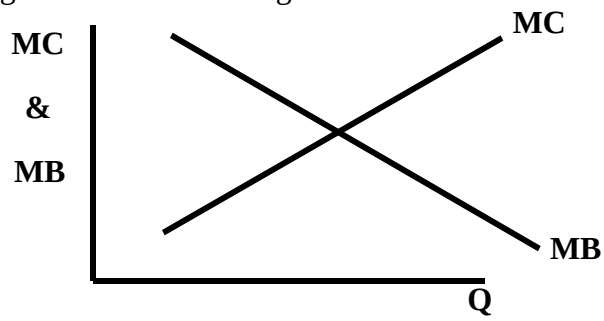
• **The concave shape of the curve implies the notion of opportunity costs, defined, as** some amount of one good must be sacrificed to obtain more of the other. The amount of robots, which must be foregone or given up to get another unit of pizza, is the opportunity cost of that unit. The slope of the PPC curves becomes steeper as we move from A to E. The reason lies in the fact that economic resources are not completely adaptable. This curved line shows the adaptability and increasing opportunity cost. A **straight line** would mean **constant opportunity cost**.

• Points **inside the curve** may signal unemployment or underemployment of labor and other resources.
• Points **outside the curve** are unattainable with the available resources. More resources or higher productivity is needed to the curve to include those points outside the curve.



• **Economic growth (and a movement outward of the curve**) occurs because of expanding resource supplies, improved resource quality, and technological advances. These stimuli might include new discoveries of raw materials (diamonds in Australia, or oil on the North Slope of Alaska), improving the educational level or training of labor (Job Corps or company-sponsored job training), and new technology (robots in factories or the microchip).

• **Allocative Efficiency** (or determining the best or optimal output-mix) will relate to the concept of Marginal Cost versus Marginal Benefit.



The point where MC=MB is allocative efficiency since neither underallocation or overallocation of resources occurs.

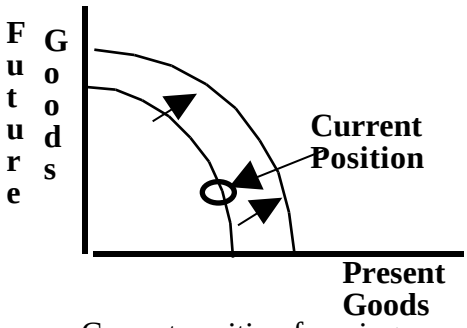
• **Consumer Goods vs. Capital Goods:**

Consumer goods directly satisfy our wants, while capital goods satisfy indirectly since they permit more efficient production of consumer goods.

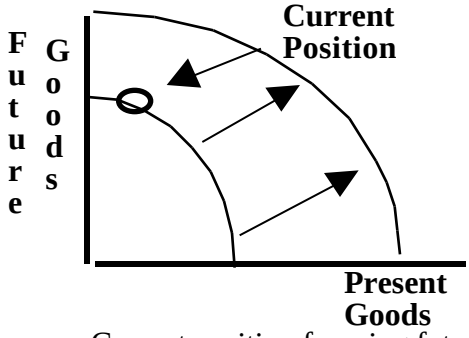
√ Think about what a nation must sacrifice in terms of its consumer good consumption (opportunity costs) in order to be able to add to its capacity (by currently producing capital goods) in the future.

• A current choice **favoring more consumer goods** will result in only a **modest** movement to the right in the future.

• A current choice **to produce a greater portion of capital goods** with the available resources can result in a **greater rightward** movement in the future.



Current position favoring present goods results in only moderate growth



Current position favoring future goods results in accelerated growth

Think About This!

1. Examine the eight applications on pages 33-34 and think about the movements of the PPC.
2. Explain the effects on the PPC from these situations:
   a. standardized test scores of high school students decline greatly
   b. unemployment falls from 9 to 6 % of the labor force
   c. Defense spending is reduced to allow government to spend more on health care
   d. Society decides it wants compact discs rather than new tools for factories
   e. A new technique improves the efficiency of extracting copper from ore
   f. A maturing of mini baby boom generation (born 1976-1982) increases the size of the nation's workforce

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Economic Systems

TRADITIONAL

…decisions based on the past

• tied to methods of trial and error
• same products and production methods used as in the past
• jobs passed down through generations
• questions answered by custom, habit, religion or law
• change comes slowly, often with opposition
• war, climate, or outside force can cause change
• choices are limited; people do things "the way they were done in the past"
• people find it hard to believe other methods exist
• family is important social structure

Examples: (though slowly changing) North American Eskimos, Navajo Indians

COMMAND

… central planners answer the basic questions

• planners have power to make decisions for society as a whole
• decisions are answered by planners' needs and wishes
• planners decide how many workers, who gets what job, and production goals
• wages and distribution system are determined by planners
• poor planning can cause shortages and surpluses; choice is often limited
• punishment and reward are the incentives to workers
• change can be quick without little opposition
• poor worker morale though fear is a motivator
• right to make decisions is based on political power

Examples: North Korea and Cuba

MARKET

… basic questions answered by the exchanges of buyers and sellers

• interaction of demand and supply determines the what? how ? for whom?
• no real overall central planning
• self-interest is guiding principle
• no single person or group determines what is best for society
• "an invisible hand" directs that the best interests of society are met when people compete to achieve individual self-interest
• profit motive determines producer behavior
• capitalism is a type of market system in which private individuals and firms own the resources
• components are: private property, freedom of exchange, competition and profit motive.

Example: USA (though it really is a mixed market system)

MIXED SYSTEMS

… elements of market, command and traditional are used in various economic activities

• government acts as stabilizer of economic activity and provider of goods and services
• large unions and large corporations can manipulate the market
• authoritarian capitalism mixed high government control and private property in Nazi Germany
• Market socialism of China mixes extensive government ownership of resources and capital but reliance on free markets for distribution
• Sweden's mixed market allows for government redistribution of income through high tax rates.
• Japanese economy relies on cooperation and coordination between government and businesses.

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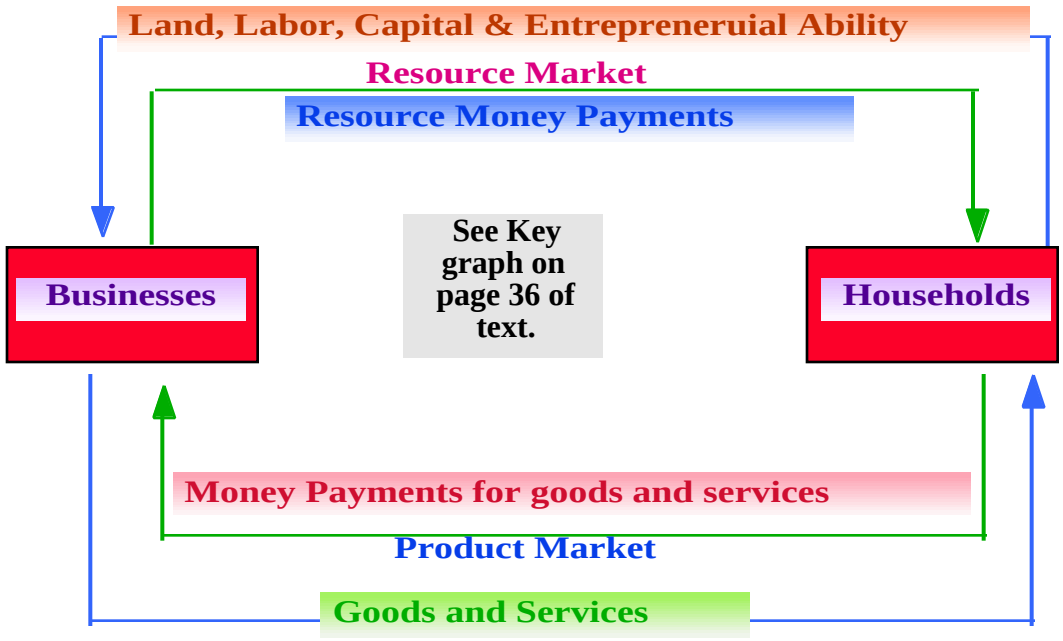
The Circular Flow Model

• **Economists use the circular flow diagram to show the high degree of economic interdependence in our economy.** Money flows in one direction while goods, services, and the factors of production flow in the opposite direction.

• This simple circular flow model shows **two groups of decision-makers—households (or individuals) and businesses**. (Later government will be added). The coordinating mechanism which brings together these decisions is the market system.

• **Resource (or factor) markets** operate as the points of exchange when individuals sell their resources (land, labor, capital, and entrepreneurial ability) to businesses in exchange for money incomes. Businesses will demand these resources to produce goods and services. Prices paid for the use of resources are determined in this market, and will create the flow of rent, wages, interest and profit income to the households. Examples are hiring of workers by a business firm, savings and investments in stocks and bonds. Here the money incomes would be interest and dividends.

• **Product markets** operate as the points of exchange between consumers who use money incomes to buy these goods and services produced by businesses. Money income itself does not have value, since money must be used in exchange for the goods and services that satisfy our wants.



• **Households create the demand** for goods and services, while **businesses can fill the demand with the supply** that they produce with the resources sold. The **interaction** of demand for goods and services with the supply of available products **determines the price for the products**. The flow of consumer expenditures represents the sales revenues or receipts of the businesses. Examples are the retail stores and other outlets for products.

• **Individuals or households function as both providers of resources and as consumers of finished products.** Businesses function as buyers of resources and sellers of finished products. Each group of economic units both buys and sells.

• **Scarcity plays a role in this model** because households will only possess limited amounts of resources to supply to businesses, and hence, their money incomes will be limited. This limits their demand for goods and services. Because resources are scarce, the output of finished goods and services is also necessarily limited.

• **Limitations to this model include:**

√ Intrahousehold and Intrabusiness transactions are ignored. √ Government and the financial markets are ignored. √ The model implies constant flow of output and income; the fact is that these flows are unstable over time. √ Production expends resources and human energy and can cause environmental pollution.

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Capitalism

• There really is no generally acceptable definition of "capitalism". **A market system is sometimes described as being based on capitalism, a system in which private citizens own the factors of production.** A market economy is based on free enterprise, because businesses are allowed to compete for profit with a minimum of governmental interference.

• Both terms—**capitalism and free enterprise** —describe the US Economy. Our economy is often defined as **MIXED MARKET** due to the role that government plays. In the US, individuals are free to exchange their goods and services, use their resources as they wish, seek jobs of their own choosing, and own and operate businesses. A Free Enterprise system is on in which business can be conducted freely with only limited government interference.

• **The list of characteristics of Capitalism:**

Private property	Freedom of Enterprise and Choice
Role of Self-Interest	Competition
Markets and Prices	Limited Government

• **Consider:**

√ What incentives does private property give people?
√ What about rights of inheritance?
√ Is self-interest really selfishness?
√ Are there social advantages in freedom to choose?
√ What is government's limited role? Legal framework? Regulation of business? Protection of consumer? Subsidizing production? Protection from foreign trade or unfair competition?

• **The other characteristics include:**

Extensive use of Capital	Specialization and Efficiency
Division of Labor	Use of Money

• **Consider:**

√ What if the labor force in unskilled?
√ What if there are no real regional, occupational, or resource specializations?
√ Why does money place an important role in a large economy?

• The market economy is very popular because of a concept called **Voluntary Exchange**. Who benefits when you buy something—you or seller? As long as the transaction involves dual benefit, the exchange will take place.

• **The <u>market system</u> is a means of communicating and implementing decisions concerning allocation of the economy's resources.**

Think About This!

1. **Evaluate these statements**
   a. The capitalistic system is a profit and loss economy.
   b. Competition is the indispensable disciplinarian of the market system.

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Competitive Market System

The theory of Capitalism must have some guidance if society desires to get what it wants in terms of goods and services. **The Competitive Market System** functions mostly efficiently because it relies on its answers to the **Five Fundamental Questions**—ideas driven by the economizing problem of scarcity:

1**. How much of a society's resources should be used?**

√ How much is a macro question!

2. What is to be produced?

√ Driven by costs—all costs including non-monetary opportunity costs
√ Driven by profits—normal and economic profits
√ Profits are signals to new firms to enter an industry to "catch the profits"
√ Losses are signals to firms to exit an industry to "cut their losses"
√ Consumer Sovereignty means that consumer demand drives the market because ultimately they pay and use their dollar votes to alert the sellers what is demand.

3. How is that output to be produced?

√ Organizing production covers three areas:
* How should resources be allocated among industries?
* What specific firms should do the producing?
* What combinations of resources—what technology should each firm employ?

√ Most efficient production will mean use of available technology (combinations of resources) and the prices of the needed resources.
√ Most efficient production is the **least cost method**.

4. Who is to receive the output?

√ Prices perform a rationing function in the distribution of goods and services.
√ Distribution to those willing and able to purchase depends on the income of buyers.
√ Size of Income depends on supply and prices in the resource market and the quantity of resources the buyer possess.

5. Can the system adapt to change?

√ Markets are dynamic because demand and supply are constantly changing. Consumer demand shifts with tastes, incomes, and prices of other goods. Supply changes as the quantity of resources changes
√ Price perform a guiding function as it directs firms to see the changes that occur in both demand and supply.
√ Market system provides incentive for technological progress which lowers consumer prices and make more efficient use of resources. Entrepreneurs use their "dollar votes" for capital goods to spur these gains from technology.

In summary:

- Adam Smith's idea of the **"invisible hand"** in The Wealth of Nations means that there is a unity between private and social interests.
- **Businesses** use the most efficient means of production by choosing the least-cost combination of resources in their pursuit of profit.
- **Consumers** allocate their limited income to best satisfy their own self-interest expressed as utility.
- **Efficiency, incentives and freedom** are the essential virtues of the market system.

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Specialization and Comparative Advantage

Specialization and trade increases the productivity of a nation's resources and allows for larger total output.

Why do people trade?

√ Both parties gain. Just as individual specialize so do nations and the result is greater output and income.

√ Why does a school hire a teacher who has a degree in teaching? To gain the greatest benefit for the students in their educational pursuit. The teacher teaches to satisfy a need for income and to gain a good feeling about the employment.

√ Why does the U.S. import bananas? U.S. farmers could grow bananas but it would be very expensive. They gain more by growing wheat and trading for bananas. Our resources are better suited to growing wheat so we specialize.

What is comparative advantage?

√ **Comparative Advantage is the ability to produce an item at a lower opportunity cost.** Resources are scarce, so that one can only produce more of one product by taking the resources away from another.

√ Example with data:

Chipland and Entertainia are the two nations that currently produce their own Computer Chips and CD Players.

Production without Trade

Product	Chipland	Entertainia
1 Computer Chip	5 hours	24 hours
1 CD Player	10 hours	12 hours
Total	**15 hours**	**36 hours**

Note that **Chipland uses less time** (15 hours) to produce both and **Entertainia uses more time** (36 hours) to produce both. **Chipland enjoys an Absolute Advantage**, an ability to produce an item with fewer resources.

Why would Chipland care about trade?

Opportunity Cost of production

	Chipland	Entertainia
1 Computer Chip	1/2 CD Player	2 CD Players
1 CD Player	2 Computer Chips	1/2 Computer Chip

The table shows that Chipland has a comparative advantage in Computer Chip production while Entertainia has the comparative advantage in the production of CD Players.

These nations can benefit from trade.

Production With Trade

Chipland		Entertainia	
1 Computer Chip for Chipland	5 hours	1 CD Player for Entertainia	12 hours
1 Computer Chip for Entertainia	5 hours	1 CD Player for Chipland	12 hours
Total	**10 hours**		**24 hours**

In summary:

Specialization based on comparative advantage improves global resource allocation. The same total inputs of world resources and technology result in a larger global output.

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Markets and Prices

Product Markets:

√ A product market is the different transactions through which finished goods and services are exchanged for consumption expenditures.

√ In the circular flow diagram, the flow of products from businesses to consumers constitutes the product market.

√ Businesses are the suppliers of the products and households are the demanders for the products. Sellers of consumer goods and services meet those who want to buy finished goods and services.

Factor Markets:

√ A factor market involves businesses and the resources they need to purchase to produce goods and services.

√ In the consumer flow diagram, the resources owned by households are exchanged with businesses for income.

√ Businesses are the demanders of the resources and households are the suppliers of the resources. The sellers of land, labor, capital and entrepreneurship meet the people who need their resources.

In both markets, buyers and sellers determine certain price and certain quantity that are mutually acceptable.

DEMAND

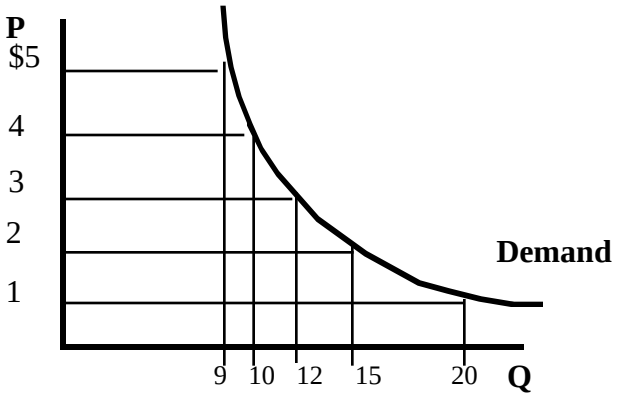
√ **Demand is one side of a product or factor market.**

√ The buyers (business in factor, households in product) exhibit both willingness and ability to purchase goods and services. Their willingness and ability to purchase vary in response to price.

√ **Demand is a record of how people's buying habits change in response to price. It is a whole series of quantities that consumers will buy at the different prices level at which they will make these purchases.**

√ Hence, a demand schedule:

PRICE	QUANTITY
$ 5	9
4	10
3	12
2	15
1	20



Next, **a demand curve can be derived.** The axes of the graph are price (vertical) and quantity (horizontal). Each price and quantity pair becomes a pair of coordinates for a demand curve.

Foundation of the Law of Demand

√ For most goods and services, demand tendencies are predictable**. As the price goes down, quantity goes up.** This inverse relationship is called the **law of downward -sloping demand**.

√ Three arguments to apply for the reasoning behind this law are:

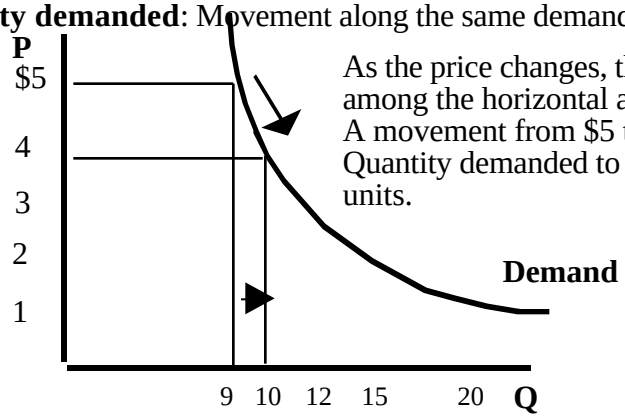
• Price is an obstacle to most and it makes sense to buy less at higher prices. The fact of "sales" is the key.

• In any time period, consumer will derive less satisfaction (utility) from each successive unit of a good consumed. This is Diminishing Marginal Utility. Marginally, that is, each successive unit brings less utility and consumer will only buy more at lower prices.

• At higher prices, consumers are more willing and able to look for substitutes. The substitution effect suggests that at a lower price, consumers have the incentive to substitute the cheaper good for the more expensive.

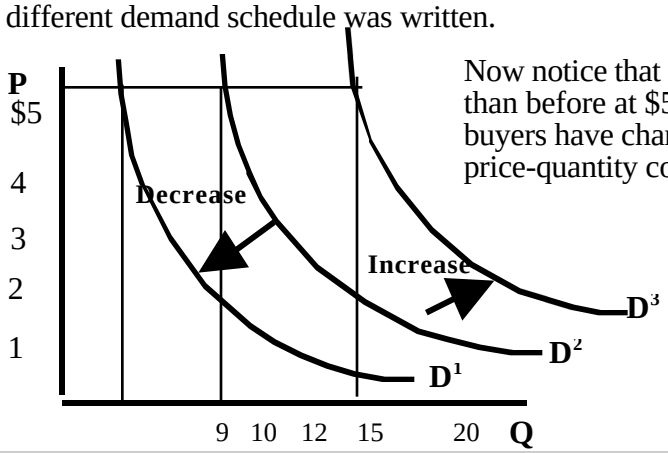
• A decline in the price of a good will give more purchasing power to the consumer and he can buy more now with the same amount of income. This is the income effect.

Changes in Quantity demanded: Movement along the same demand curve caused by a change in Price!



As the price changes, the quantity demanded among the horizontal axis changes. A movement from $5 to $4 causes the Quantity demanded to move from 9 to 10 units.

Change in Demand: The introduction of new price-quantity pairs on a demand schedule caused by a change in one or several demand determinants. The entire demand curve moves (left or right) to a new position because a different demand schedule was written.



Now notice that a larger quantity is available than before at $5—15 units. This means that buyers have changed their thinking about price-quantity combinations.

What causes these changes?

Non-price determinants of demand are:

1) Income--having more or less to spend affects individual demand schedules. For normal goods, an increase in income leads to a rightward shift in the demand curve. For inferior goods, an increase in income leads to a leftward shift since these are usually low-quality items that people will avoid when they have more to spend.

2) Utility (taste)--the use that a good or service provides can easily change and affect demand. What was once perceived as useful or useless, stylish or ugly, healthy or dangerous now can become its opposite.

3) Complementary goods--the linkage of products' demand because they "work" with each other can affect demand for each

4) Substitutes--when the prices of or preference for a substitute changes, demand for both products will change.

5) Number of buyers --demand depends on the size of the market.

6) Price **Expectations of Buyers—**purchases may be postponed or rushed dependent on the expectations of future price changes

SUPPLY

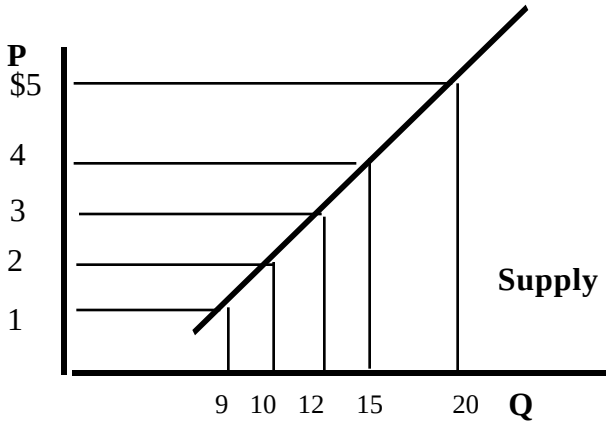
√ **Supply is also one side of a product or factor market.**

√ The sellers (business in product, households in factor) are selling finished goods or resources.

√ **Supply is the amount of goods and services that businesses are willing and able to produce at different prices during a certain period of time. Supply is a record of how business's production habits change in response to price. It is a whole series of quantities that businesses will offer at the different price levels.**

√ **Hence, a supply schedule:**

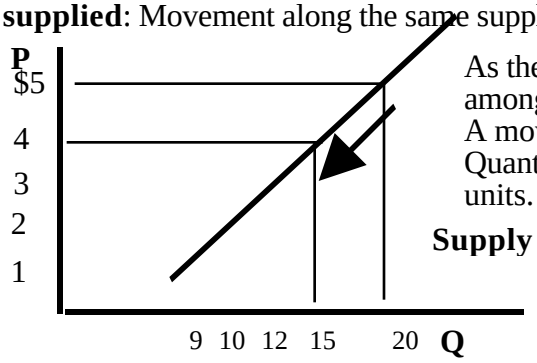
PRICE	QUANTITY
$ 5	20
4	15
3	12
2	10
1	9



Next, **a supply curve can be derived**. The axes of the graph are price (vertical) and quantity (horizontal). Each price and quantity pair becomes a pair of coordinates for a supply curve.

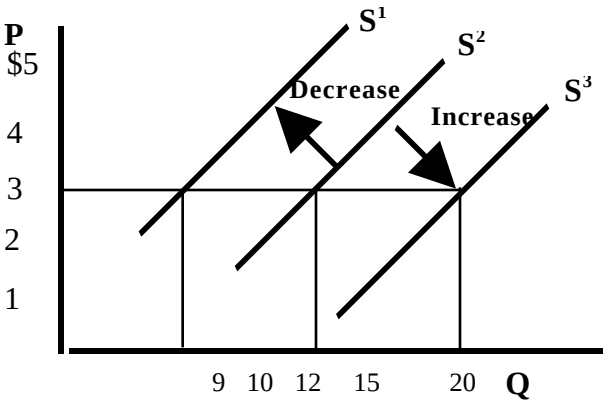
√ For most goods and services, supply tendencies are predictable**. As the price goes down, quantity offered decreases.** From a business perspective, profit-seeking activities by businesses are logical. Hence, sellers will pull back from a market where prices are low. **This direct relationship is called the law of upward-sloping supply.**

Changes in Quantity supplied: Movement along the same supply curve caused by a change in Price!



As the price changes, the quantity supplied among the horizontal axis changes. A movement from $5 to $4 causes the Quantity supplied to move from 20 to 15 units.

Change in Supply: The introduction of new price-quantity pairs on a supply schedule caused by a change in one or several supply determinants. The entire supply curve moves (left or right) to a new position because a different supply schedule was written.



Now notice that a larger quantity is available than before at $3—20 units. This means that sellers have changed their thinking about price-quantity combinations.

What causes these changes?

The non-price determinants of supply are:

1) Production Costs--most important and most typical reason for change. The price of ingredients and other capital goods, rent or labor could rise of all. New technology could make productions more or less expensive. The law could relate to minimum wage or taxes.

2) Prices of Goods that use same Resources—a demand for a specific resource is increased when other producers bid up the price in response to increased demand for their product

3) Change in Technology—new innovations in capital resources can change the average cost of production.

4) Taxes and Subsidies—taxes increase costs; subsidies lower costs.

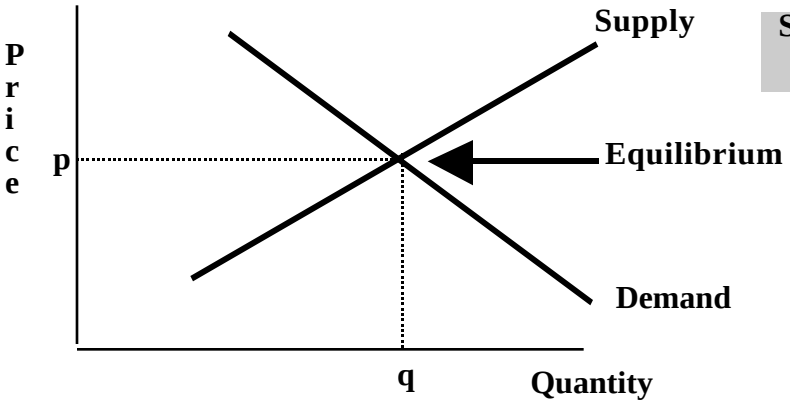
5) Future Price Expectations--producers' confidence in the future, difficult to quantify or justify

6) Numbers of Sellers--businesses enter and exit a market regularly based on a variety of reasons. More or less producers will affect the supply of the product.

7) Time needed for Production—in market period, no additional product can be produced quickly; in short run, only variable costs can be changed to produce more; in long run all costs are variable and any amount of new resources can be added.

ACHIEVING EQUILIBRIUM

The prices at which both demand and supply curves intersect is the **equilibrium price**.



See Key Graph p. 54 in text.

√ **Equilibrium** is the price toward which market activity moves.

√ If the market price is below equilibrium, the individual decisions of buyers and sellers will eventually push it upward. If the market price is above equilibrium, the opposite will tend to happen.

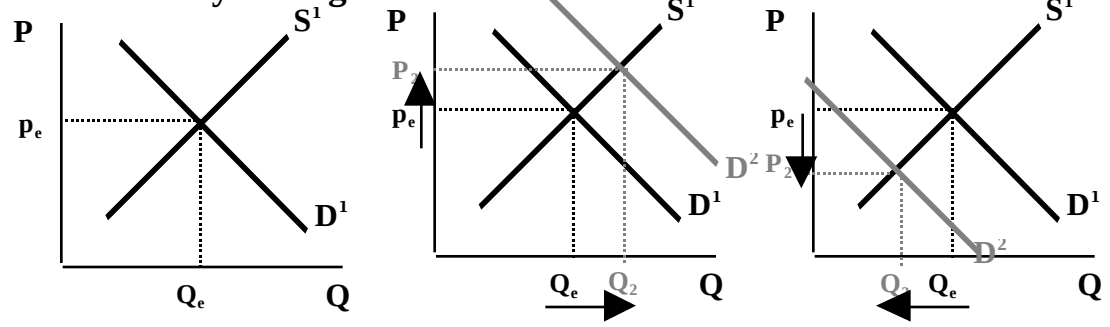
√ Depending on market conditions, immediately or in the future, price and quantity will move toward equilibrium as **buyers and sellers intuitively and logically carry out the laws of demand and supply.**

• The ability of the competitive forces of demand and supply to establish a price at which selling and buying decisions are consistent is called the <u>Rationing Function of Prices.</u>

AP Microeconomics
Chapter 3 p. 53-58

Changes in Supply, Demand and Equilibrium

Demand Only Changes

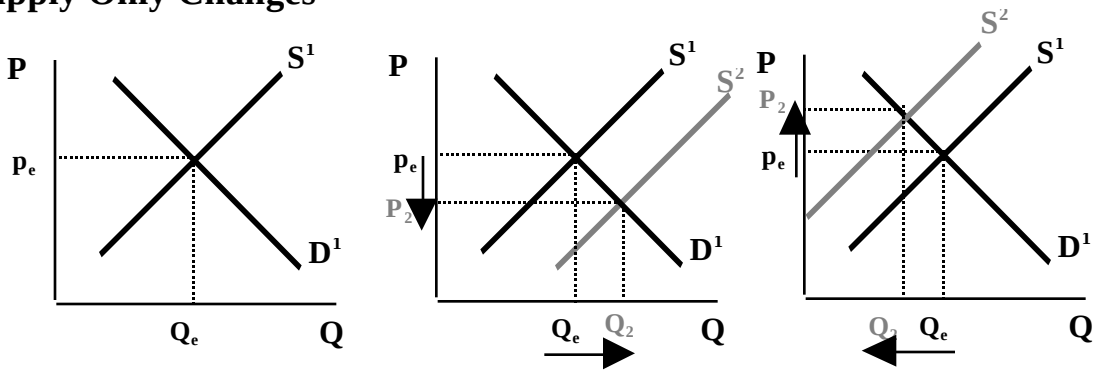


Equilibrium
$P = P_e$
$Q = Q_e$

Demand Increases
Supply Constant
√ P increases
√ Q increases

Demand Decreases
Supply Constant
√ P decreases
√ Q decreases

Supply Only Changes

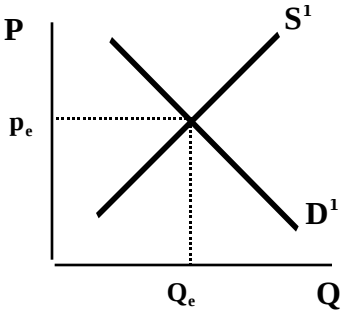


Equilibrium
$P = P_e$
$Q = Q_e$

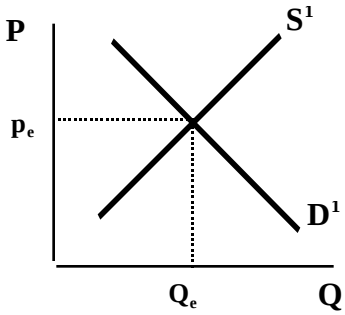
Supply Increases
Demand Constant
√ P decreases
√ Q increases

Supply Decreases
Demand Constant
√ P increases
√ Q decreases

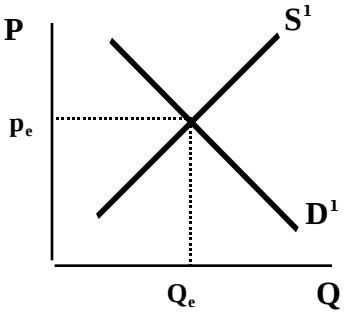
Complex Cases— you draw the scenarios given and show the effect on P and Q! Be careful to change D and S by the same distance—remember this is the theory! Be aware of Prices or Quantity Change as Indeterminate!



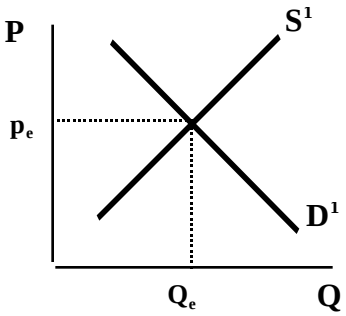
Equilibrium
$P = P_e$
$Q = Q_e$



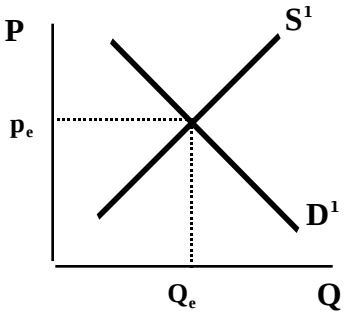
Demand Increases
Supply Increases
P _____
Q _____



Demand Decreases
Supply Decreases
P _____
Q _____



Demand Decreases
Supply Increases
P _____
Q _____



Demand Increases
Supply Decreases
P _____
Q _____

This chart will summarize the effects on P_e and Q_e

Change in Supply	Change in Demand	Effect on P_e	Effect on Q_e
Increase	Increase		
Decrease	Decrease		
Increase	Decrease		
Decrease	Increase		

AP Microeconomics
Chapter 20 p. 404-413

Elasticity

√ is a measure of how much buyers and sellers **respond to changes** in market conditions.

√ allows us to analyze supply and demand with greater precision.

Price elasticity of demand

√ is the **responsiveness of consumers to a change in the price of a product**

√ The price elasticity of demand is **computed** as:

$$E_d = \frac{\text{percentage change in the quantity demanded}}{\text{the percentage change in price.}}$$

$$E_d = \frac{\Delta \text{ in } Q}{Q} \div \frac{\Delta \text{ in } P}{P}$$

Q and P are the original amounts

√ Be sure to use absolute values and ignore the — sign; useful for comparing different products.

√ **Interpretation of E_d:**

- Inelastic Demand —‰ Quantity demanded does not respond strongly to price changes. E_d is less than one.
- Elastic Demand—‰ Quantity demanded responds strongly to changes in price. E_d is more than one.
- Perfectly Inelastic—‰ Quantity demanded does not respond to price changes at all.
- Perfectly Elastic—‰ Quantity demanded changes infinitely with any change in price.
- Unit Elastic—‰ Quantity demanded changes by the same percentage as the price. E_d is equal to one.

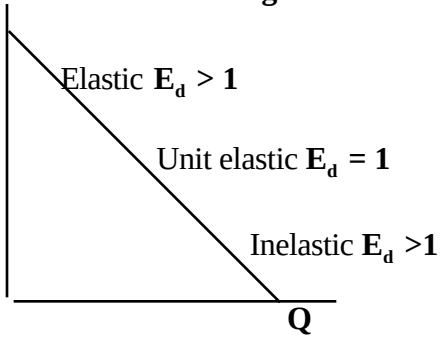
√ **Demand tends to be more elastic . . .**

- if the good is a luxury.
- the longer the time period.
- the larger the number of close substitutes.
- the more narrowly defined the market.

√ **Demand tends to be more inelastic . . .**

- if the good is a necessity.
- the shorter the time period.
- the fewer the number of close substitutes.
- the more broadly defined the market.

√ **Elasticity Varies with Price Range**—more elastic toward top left; less elastic at lower right



Slope does not measure Elasticity—slope measures absolute changes; elasticity measures relative changes.

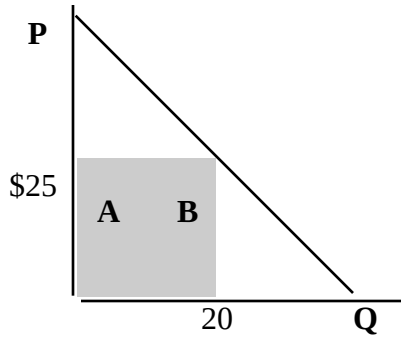
Total Revenue Test for Elasticity

√ Total Revenue is the amount the seller receives from the buyer from the sale of a product; **P x Q = TR**

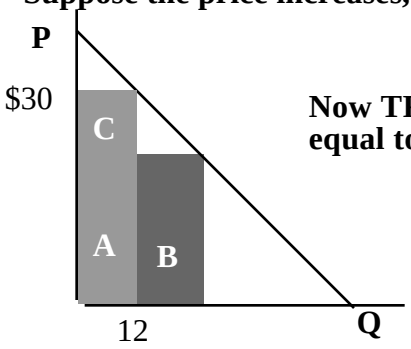
√ Elasticity and total revenue are related; observe the effect on total revenue when product price changes

• In 1992 people purchased about 20 million videos of Walt Disney's <u>Beauty and the Beast</u> at a price of about $25.

Total Revenue (A & B) was $500 million.



• Suppose the price increases, causing Q to drop.

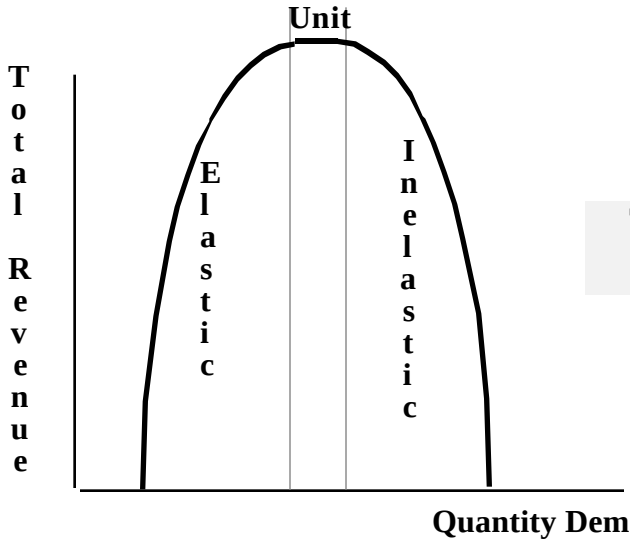


Now TR is A & C and is equal to $360 million.

√ If demand is **elastic**, then a decrease in price will increase total revenue; an increase in price will decrease total revenue.

√ If demand is i**nelastic**, then a decrease in price will reduce total revenue; an increase in price will increase total revenue.

√ If demand is **unit elastic**, any change in price will leave total revenue unchanged.



Total Revenue Curve

AP Microeconomics
Chapter 20 p. 415-416

Cross Elasticity

√ measures how sensitive consumer purchases of one product (such as X) are to a change in the price of some other product (say Y)

√ The Cross Elasticity Coefficient E_{xy} is calculated:

$$E_{xy} = \frac{\%\ \Delta \text{ in } Q_d \text{ of X}}{\%\ \Delta \text{ in P of Y}}$$

√ If E_{xy} is **positive**, then X and Y are substitute goods.

√ If E_{xy} is **negative**, then X and Y are complementary goods.

√ If E_{xy} is **zero,** then X and Y are independent goods

√ **Examples:**

- Business firms worry about the effect of their demand when other firms change their price.
- Governments consider in mergers that the products may be substitutes for each other and hence competition may be decreased by the merger agreement.

Income Elasticity

√ How responsive consumer purchases are to income changes is measured by Income Elasticity of Demand.

√ Income Elasticity Coefficient

$$Y_d = \frac{\%\ \Delta \text{ in } Q_d}{\%\ \Delta \text{ in Y (income)}}$$

√ For most goods, changes in income and changes in quantity purchased on directly related such that the coefficient has a value greater than zero. We call these goods **"normal goods."**

√ In other instances, people purchase less of some goods as their incomes increase. These are called **"inferior goods"** and they have a negative coefficient.

√ **Examples:**

- This measurement helps to explain expansion and contraction of industries in US; growth in the economy aids industries with high-income elasticity, like autos, housing, and restaurant meals. Those industries not sensitive to income changes (agriculture) will be slower in their expansion.

Think About This!

- Does Bus Transportation have a positive or negative Income Elasticity?

- Economists have observed that spending on restaurant meals declines more during economic downturns than does spending on food to be eaten at home. How might this concept explain this phenomenon?

- Is food in general positive or negative Income Elasticity? Are there exceptions?

AP Microeconomics
Chapter 20 p. 417-421

Government-controlled prices:

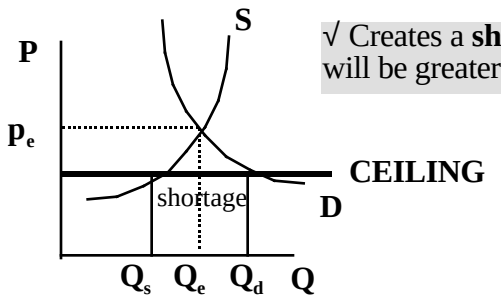
√ Not all markets are allowed to function freely. **Government may set a price and it may differ from the equilibrium price that the market sets**.

√ This action will **interfere with the "clearing function"** which equilibrium conditions create. A shortage (as in the case of a price that is below equilibrium) or a surplus (as in the case of a price that is above equilibrium) is the result of these government price setting actions.

• Economic behavior does not change when price floors and ceilings are set**. People will continue to make their best choices as they respond to the changes that alter the costs and benefits of the decision**. Since people make decisions usually in predictable ways, we can predict consequences of the price-setting laws.

Price Ceilings

√ A **maximum legal price below the equilibrium price**



√ Creates a **shortage** since amount demanded will be greater than the amount supplied

√ **Examples:** essential goods, rent controls, interest rates, price controls

√ Read examples p. 417-419

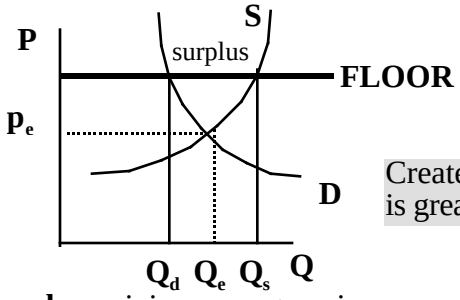
√ **Solutions to alleviate shortage?**

- First-come/first-served
- favoritism
- Rationing
- black markets

Price Floors

√ **A minimum legal price above equilibrium price**

√ Supported by authority like government



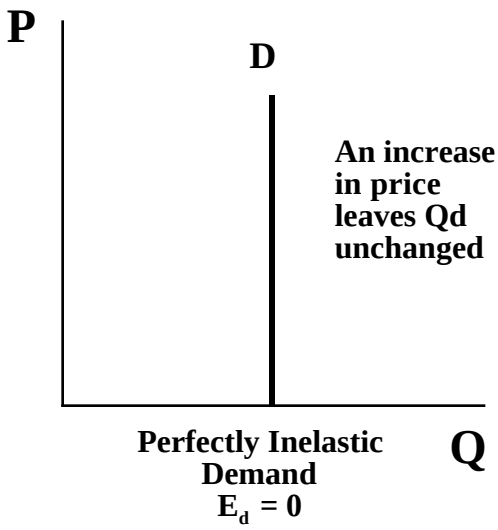
Creates **surplus** since the amount supplied is greater than the amount demanded

√ **Examples**: minimum wage, price supports on agricultural products

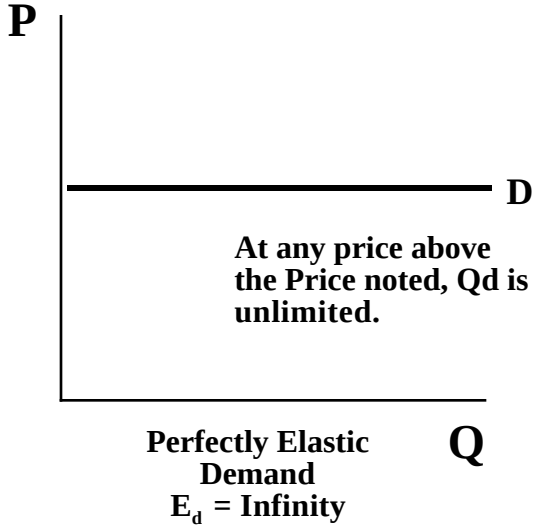
√ **Solutions to alleviate surplus?**

- Government give-away programs
- Incentive not to plant crops

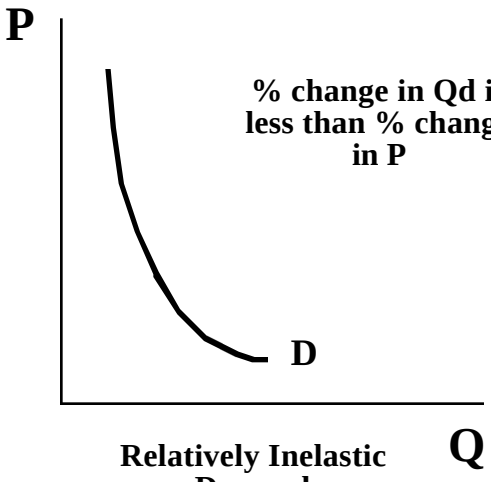
A Variety of Demand Curves showing different elasticities



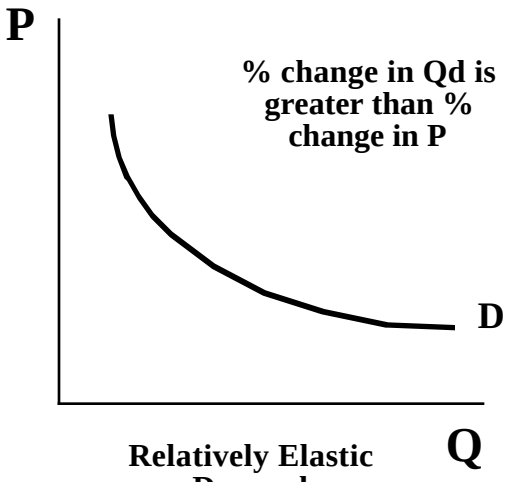
Perfectly Inelastic Demand
$E_d = 0$



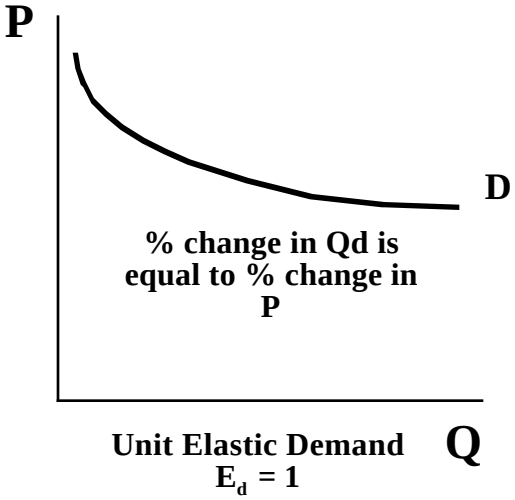
Perfectly Elastic Demand
E_d = Infinity



Relatively Inelastic Demand
$E_d < 1$

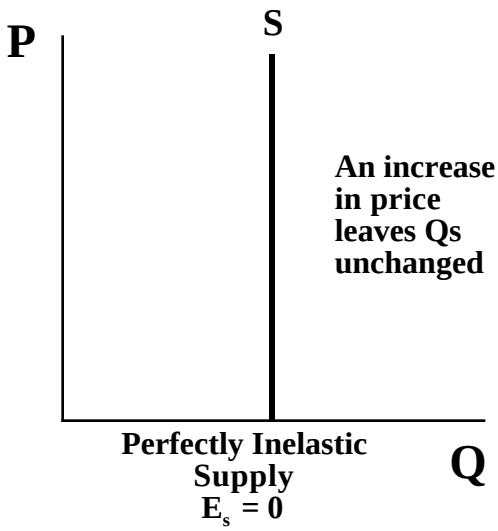


Relatively Elastic Demand
$E_d > 1$

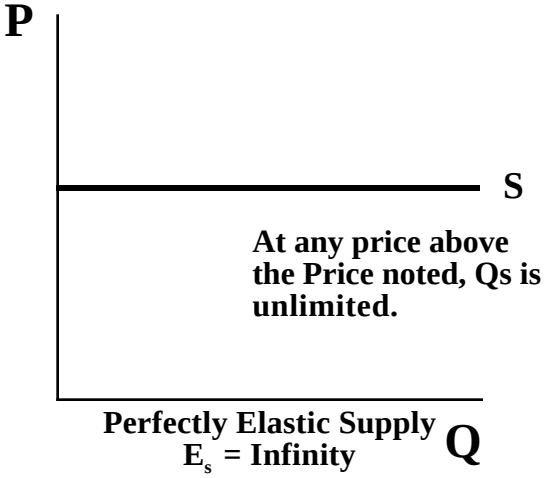


Unit Elastic Demand
$E_d = 1$

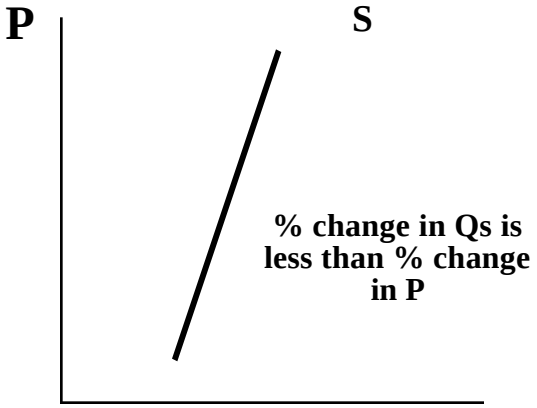
A Variety of Supply Curves showing different elasticities



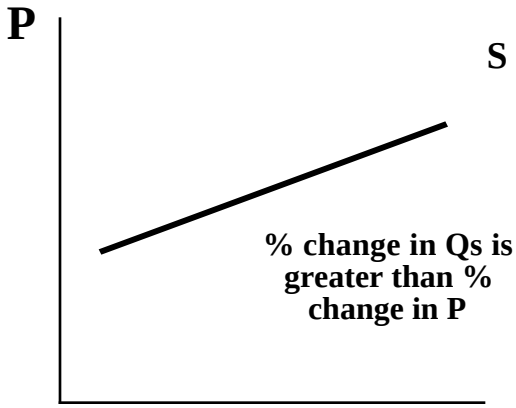
Perfectly Inelastic Supply
$E_s = 0$



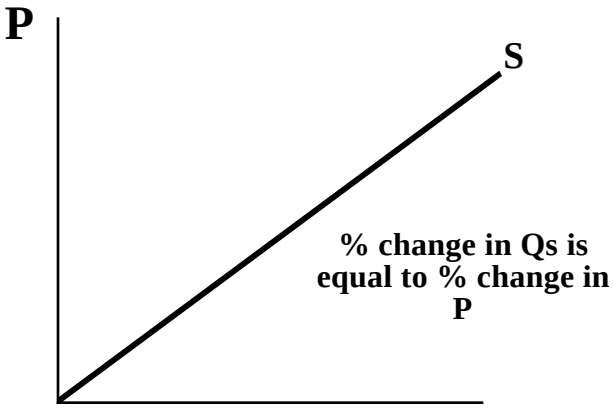
Perfectly Elastic Supply
E_s = Infinity



Relatively Inelastic Supply
$E_s < 1$



Relatively Elastic Supply
$E_s > 1$



Unit Elastic Supply
$E_s = 1$

AP Microeconomics
Chapter 21 p. 424-425

Explanations of the Law of Demand

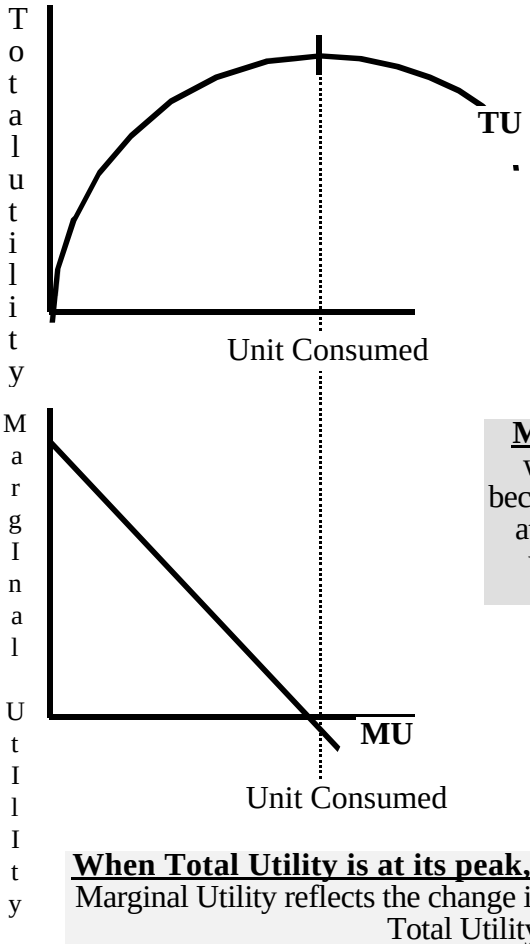
1. **The Income and Substitution Effect** combine to make a consumer able and willing to buy more of a specific good at a low price than at a high price.

• Income effect is the Impact of a change in the price of a product has on a consumer's real income and consequently the quantity of the produce demanded.

• Substitution effect is the Impact of a change in the product's price has on its relative expansiveness, and consequently on the quantity demanded.

2. **Law of Diminishing Marginal Utility** can be stated as the more a specific product consumer obtain, the less they will want more units of the same product.

• Utility is want-satisfying power— it is the satisfaction or pleasure one gets from consuming a good or service. This is subjective notion. How?
• Total Utility is the total amount of satisfaction or pleasure a person derives from consuming some quantity
• Marginal Utility is the EXTRA satisfaction a consumer realizes from an additional unit of that product.



Total Utility increases at a diminishing rate, reaches a maximum and then declines.

Marginal Utility diminishes with increased consumption, becomes zero where total utility is at a maximum, and is negative when Total Utility declines.

See Key Graph p. 427 in Text.

When Total Utility is at its peak, Marginal Utility is below zero.
Marginal Utility reflects the change in total utility so it is negative when Total Utility declines.

AP Microeconomics
Chapter 21 p. 428-431

Theory of Consumer Behavior

Consumer Choice and Budget Restraints

- Rational Behavior—derive the greatest satisfaction
- Preferences—based on marginal utility
- Budget Restraints—money income is limited
- Prices—signal scarcity, consumer must compromise

Utility-Maximizing Rule—Consumer Equilibrium

- The consumer's money income should be allocated so that the last dollar spent on each product purchased yields the same amount of marginal utility.
- The rational consumer must compare the extra utility with its added cost.

Utility-Maximizing with Income of $10

Units	Product A $1		Product B $2	
	MU or utils	MU/$	MU or utils	MU/$
First	10	10	24	12
Second	8	**8**	20	10
Third	7	7	18	9
Fourth	6	6	16	**8**
Fifth	5	5	12	6
Sixth	4	4	6	3
Seventh	3	3	4	2

Allocation Rule: consumer will maximize satisfaction when he allocates money income so that the last dollar spent on A, on B, etc. will yield equal amounts of marginal utility.

$$\frac{\text{MU of Product A}}{\text{Price of A}} = \frac{\text{MU of Product B}}{\text{Price of B}}$$

How many of A and how many of B? What is the combinations of A and B that can be had with $10?

Answer: 2 units of A and 4 units of B

$$\frac{\text{MU of Product A}}{\text{Price of A}} = \frac{\text{MU of Product B}}{\text{Price of B}}$$

$$\frac{8}{\$1} = \frac{16}{\$2}$$

Think About this!

√ Reading the applications and extensions on page 432-435 including the Last Word, think in terms of marginal utility and consumer choice.

√ In the last decade or so there has been a dramatic expansion of small retail convenience stores (7-Eleven, Qt's, Casey's for example), although their prices are generally higher than those at large supermarkets. Can you explain their success?

AP Microeconomics
Chapter 22 p. 444-446

Costs of Production

√ All firms incur costs and those costs help determine how much a firm will produce as well as how high the price of the good or service will be. The area of economics which deals with production and pricing decisions firms make as well as other conditions in markets is called *Industrial Organization.*

What are Costs?

The goal of a firm is to maximize its Profits. Profits are Total Revenue minus Total Costs. Total Revenue is Price times Quantity.

• **ECONOMIC COSTS**—payments a firm must make, or income it must pay to resource suppliers to attract those resources from alternative uses. This would mean all the opportunity costs.
• **EXPLICIT** payments to outsiders for labor, materials, services, fuel, transportation services, power, etc. Usually means an outlay of money.
• **IMPLICIT** costs of self-owned, self-employed resources

ACCOUNTING PROFIT	**ECONOMIC PROFIT**
Revenues — Explicit Costs	Revenue—Explicit and Implicit Costs

Economic Profit is often called "the pure profit". It keeps the entrepreneur in place and is the real reward for the risk-taking aspect of Entrepreneurship.

Short Run—FIXED PLANT

√ Period of time too brief for firm to alter its plant capacity

√ Output can be varied by adding larger or smaller amounts of labor, materials, and other resources.

√ Existing plant capacity can be used more or less intensively

Long Run—VARIABLE PLANT

√ Period of time extensive enough to change the quantities of ALL resources employed, including plant capacity.

√ Enough time for existing firms to dissolve and exit the industry OR for new firms to form and enter the industry.

AP Microeconomics
Chapter 22 p. 447-450

Short Run Relationships

Terms

√ **Total Product**
- total quantity or total output of a good produced

√ **Marginal Product**
- extra output or added product associated with adding a unit of a variable resource
- $\frac{\text{change in total product}}{\text{change in labor input}}$ OR $\frac{\Delta \text{ in TP}}{\Delta \text{ in labor input}}$

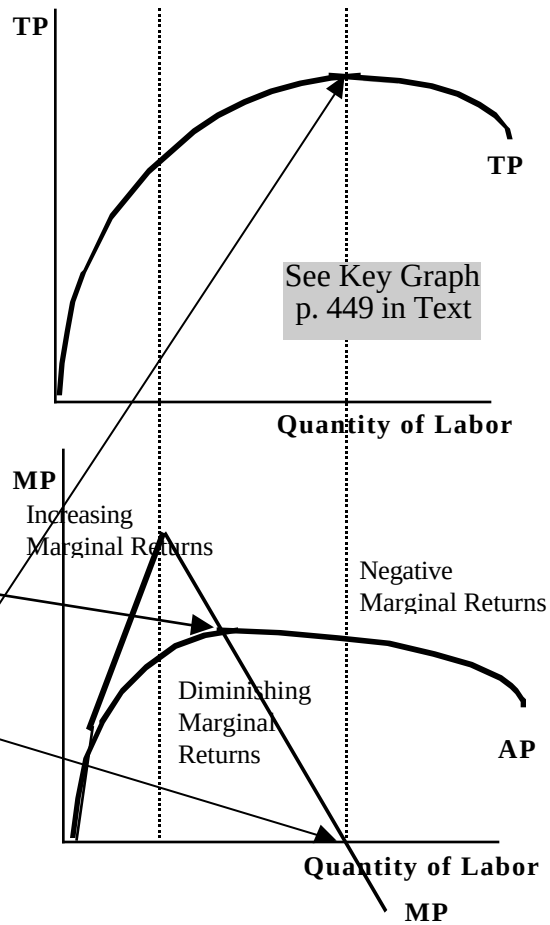
√ **Average Product**
- the output per unit of input , also called labor productivity
- equals $\frac{\text{total product}}{\text{units of labor}}$

Law of Diminishing Returns

√ as successive units of a variable resource are added to a fixed resource beyond some point the extra or the marginal product will decline

√ if more workers are added to a constant amount of capital equipment, output will eventually rise by smaller and smaller amount.

(1) Units of a variable resource (labor)	(2) Total Product	(3) Marginal Product Δ in 2 / Δ in 1	(4) Average Product 2 / 1
0	0		-----
1	10	10 Increasing	10
2	25	15 Marginal Returns	12.5
3	45	20 Diminishing	15
4	60	15 Marginal	15
5	70	10 Returns	14
6	75	5 Negative	12.5
7	75	0 Marginal	10.71
8	70	-5 Returns	8.75



Note that the marginal product intersects the average product at its maximum average product.

When the TP has reached it maximum, the MP is at zero.
As TP declines, MP is negative.

AP Microeconomics
Chapter 22 p. 450-455

Short Run Costs

√ **FIXED COSTS** costs which in total do not vary with changes in the output; costs which must be paid regardless of output; constant over the output

examples—interest, rent, depreciation, insurance, management salary

√ **VARIABLE COSTS** costs which change with the level of output; increases in variable costs are not consistent with unit increase in output; law of diminishing returns will mean more output from additional inputs at first, then more and more additional inputs are needed to add to output; easier to control these types of costs

examples—material, fuel, power, transport services, most labor

√ **TOTAL COSTS** are the sum of fixed and variable. Most opportunity costs will be fixed costs.

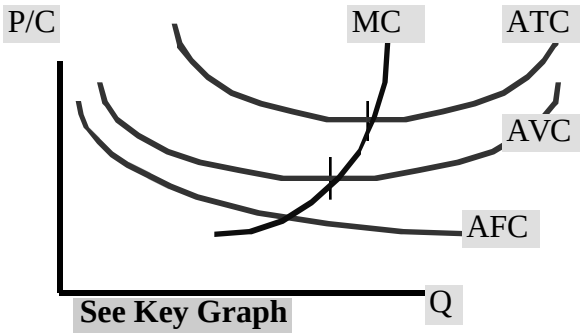
√ **PER UNIT OR AVERAGE COSTS** can be used to compare to product price

AFC = TFC/ Q AVC = TVC/Q ATC = TC/Q (or AFC + AVC)

√ **MARGINAL COSTS** the extra or additional cost of producing one more unit of output; these are the costs in which the firm exercises the most control

MC = Change in TC / Change in Q

• **AFC** declines as output increases



See Key Graph p. 454

• **AVC** declines initially, then reaches a minimum, then increases (a U-shaped curve)

• **ATC** will be U-shaped as well

• **MC** declines sharply, reaches a minimum and then rises sharply.

• **MC intersects with AVC and ATC at minimum points**

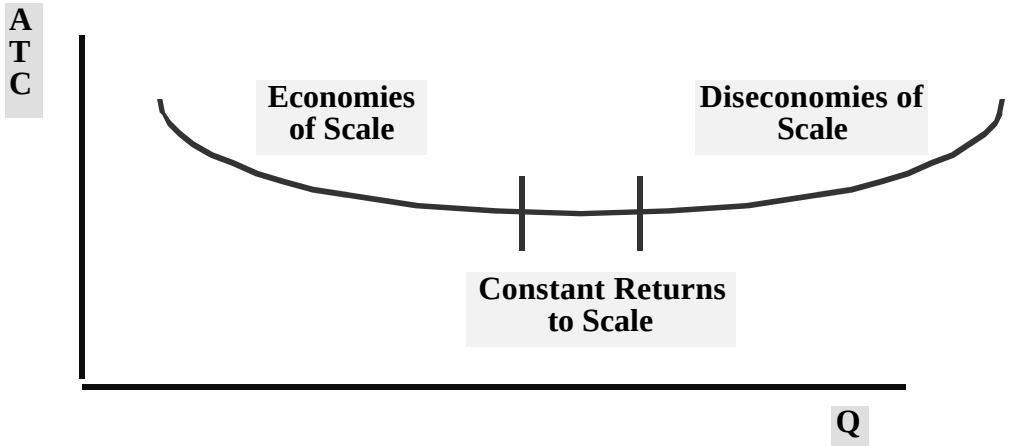
√ When MC < ATC, ATC is falling

√ When MC > ATC, ATC is rising

There is no relationship between MC and AFC

SHORT AND LONG RUN COSTS

√ **COSTS are related to types of adjustments a firm can make—"time" is a factor.**



√ **Economies of scale (downsloping portion)—**as plant size increases a number of factors will lead, for a time, to average costs declining. Labor specialization, managerial specialization, efficient capital and certain other kinds of cost like "start-up" and advertising.

√ **Constant Returns to Scale—**long run-costs due not change

√ **Diseconomies of Scale (upsloping portion)—**caused generally by the difficulty of efficiently controlling a firm's operations as it becomes a large-scale producer.

AP MicroEconomics
Chapter 23 p. 467-468

Characteristics of Markets

	Purely Competitive	Monopolistic Competitive	Oligopoly	Pure Monopoly
Number of firms	Very large number of businesses	Large number of businesses	A few large businesses	A single producer
Type of Product	Standardized	Differentiated	Standardized or Differentiated	Unique; no substitutions
Ability to Set Price	None. Market determines price and the seller is the Price Taker.	Some. The degree of differentiation will affect the ability of the seller to set price.	More. Sellers can act as monopoly setting price or sellers can act independently and ability to set price is determined by differentiation.	Most. Seller is only source of product and can act like Price Maker.
Product Differentiation	None. Products are identical.	Varies depending on the industry. Differences may be subtle.	Varies. Some industries may be identical; others may be differentiated.	None. Product is unique.
Ease of Entry	Relatively easy to start a new business.	Relatively easy to start a new business	Difficult. High start-up costs.	Very difficult. Significant barriers to entry.

AP Microeconomics
Chapter 23 p. 468-477

A <u>Competitive Market</u> is one with <u>many</u> sellers trading identical (standardized) products so that each buyer and seller is a <u>price taker.</u> There are <u>no barriers</u> so firms can freely enter and exit the industry and there is <u>not non-price competition</u>.

Demand as seen by a Purely Competitive Firm

√ PC firms are price takers; they are one firm among thousands and they have no effect on the price—they are price-takers. These firms must accept the price predetermined by the market.

√ Technically, the **demand curve of the individual firm is perfectly elastic**—the firm cannot obtain a higher price by restricting its output; it does not have to lower its price to increase sales.

1	2	3	4
Quantity	Price	Total Revenue	Marginal Revenue
Q	P	Q x P	Δ TR / Δ Q
0	$131	0	$131
1	$131	$ 131	$131
2	$131	262	$131
3	$131	393	$131
4	$131	524	$131
5	$131	655	$131
6	$131	786	$131
7	$131	917	$131
8	$131	1048	$131
9	$131	1179	$131
10	$131	1310	$131

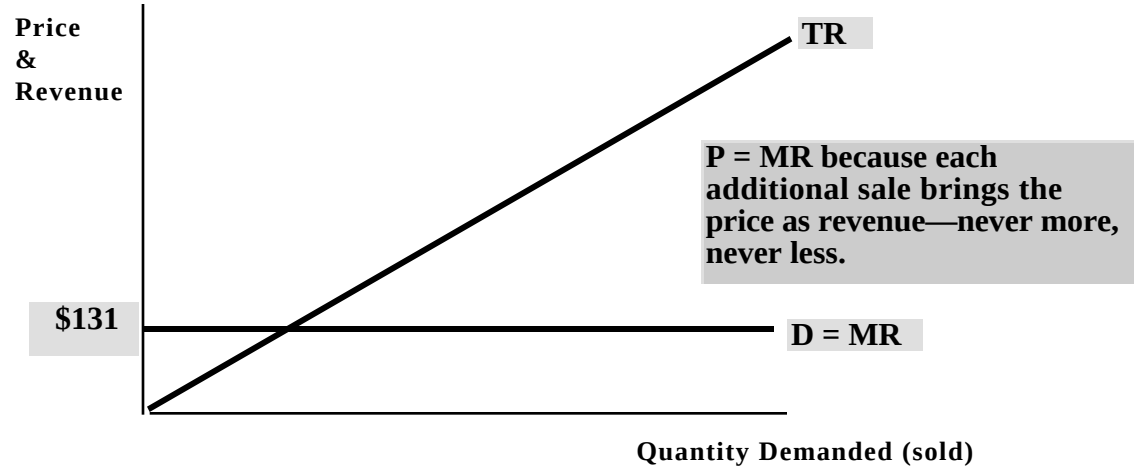
The Revenue of a Competitive Firm

√ **These firms want to maximize profits by finding the output that gives the most profit (TR—TC).**

√ The firm is a price taker and hence will only be able to sell its product at the given price. They can sell any or none of the product for the given price.

√ This table shows that in columns 1 and 2. The Total Revenue derived is shown in Column 3.

√ Marginal Revenue is the change in total revenue from an additional unit sold in Column 4.



Profit Maximization in the Short Run

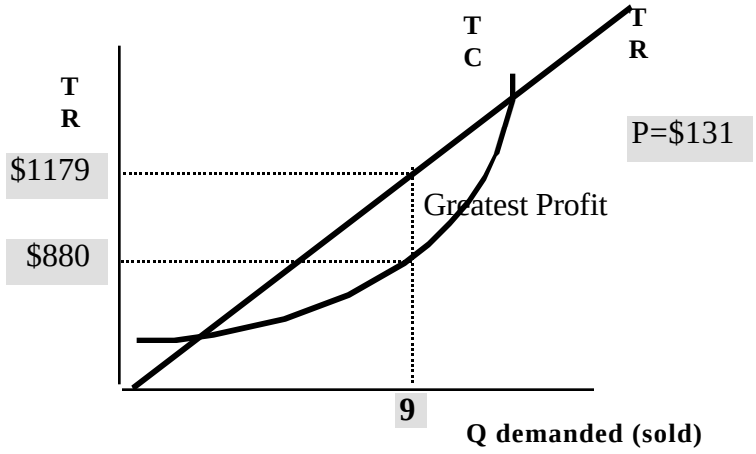
Total Revenue, Total Cost Approach

√ A PC firm can maximize its profits only by adjusting its output. In the short run, only variable costs can be changed, not fixed costs.

√ Profit is the difference between TC and TR. See the data in this table.

1	2	3	4	5	6
Quantity	**Total Fixed Costs**	**Total Variable Costs**	**Total Costs**	**Total Revenue**	**Profit or Loss**
Q	**Q x P**	**TC**	**FC+VC**	**TR**	**TR—TC**
0	$100	$0	$100	$0	$—100
1	$100	90	190	131	—59
2	$100	170	270	262	— 8
3	$100	240	340	393	53
4	$100	300	400	524	124
5	$100	370	470	655	185
6	$100	450	550	786	236
7	$100	540	640	917	277
8	$100	650	750	1048	298
9	**$100**	**780**	**880**	**1179**	**299**
10	$100	930	1030	1310	280

Profit is maximized at 9 units of output where $299 is earned. Total Costs are $880; Total Revenue is $1179.



Think About This!

√ Why does the purely competitive firm not sell above the market price?

√ Why does the purely competitive firm not sell below the market price?

Profit Maximization in the Short Run

Marginal Revenue, Marginal Cost Approach

√ Marginal Analysis as noted in Chapter 1 is a better, more precise approach to discovery of the profit maximizing output.

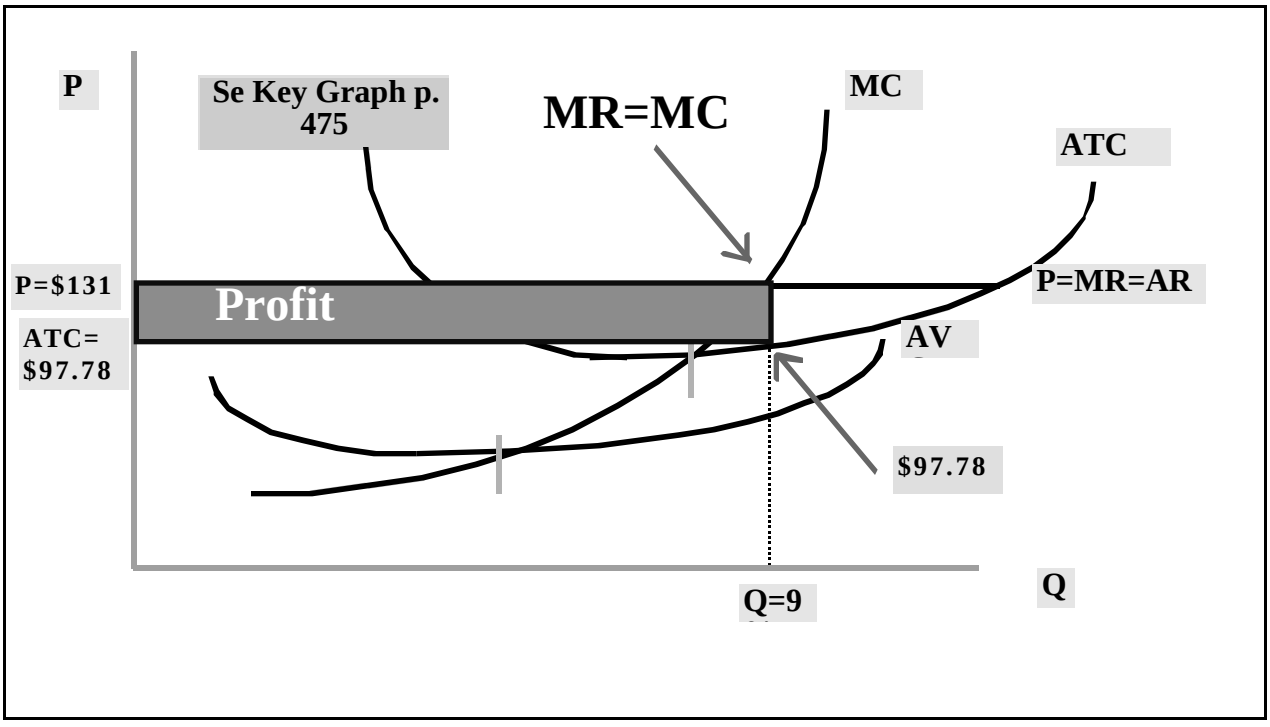
√ The MR=MC rule will determine the profit maximizing output. Observe the data in the table:

1	2	3	4	5	6	7
Quantity	**Average Fixed Costs**	**Average Variable Costs**	**Average Total Costs**	**Marginal cost**	**Price= Marginal Revenue**	**Profit or Loss**
Q	**AFC**	**AVC**	**ATC**	**MC**	**P=MR**	**TR—TC**
0						$—100
1	$100	$90	$190	$90	$131	—59
2	50	85	135	80	$131	— 8
3	33.33	80	113.33	70	$131	53
4	25	75	100	60	$131	124
5	20	74	94	70	$131	185
6	16.67	75	91.67	80	$131	236
7	14.29	77.14	91.43	90	$131	277
8	12.50	81.25	93.75	110	$131	298
9	**11.11**	**86.67**	**97.78**	**130**	**$131**	**299**
10	10	93	103	150	$131	280

√ Note here that the **firm can maximize its profits where MR = MC**. This is the point of intersection.

√ This determines the output of **9 units**. This position also determines the Price of $131 and the cost per unit of $97.78. This is per unit profit of $33.22. That makes the total profit $299.

√ This is the short run since there is an AVC curve shown.

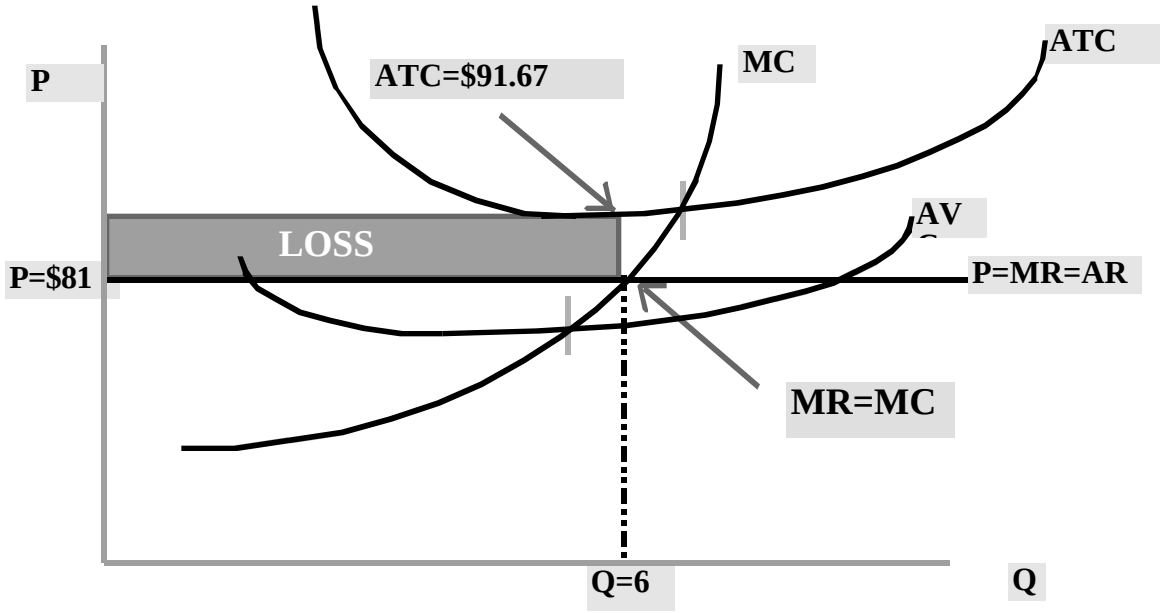


Loss Minimizing for the Competitive Firm

√ Is there a situation that a firm will choose to produce at a loss?
√ The firm will produce at any output for which it covers all of its variable costs even if it does not cover its fixed costs. Think about the reason why?

• Suppose the price dropped to $81, but the costs were the same. MR now is $81 and MC is the same for each quantity of output. The firm will choose to produce 6 units and lose $64, because it would lose $100 if it chose to produce none. Six units will result in the minimum loss under these price conditions.

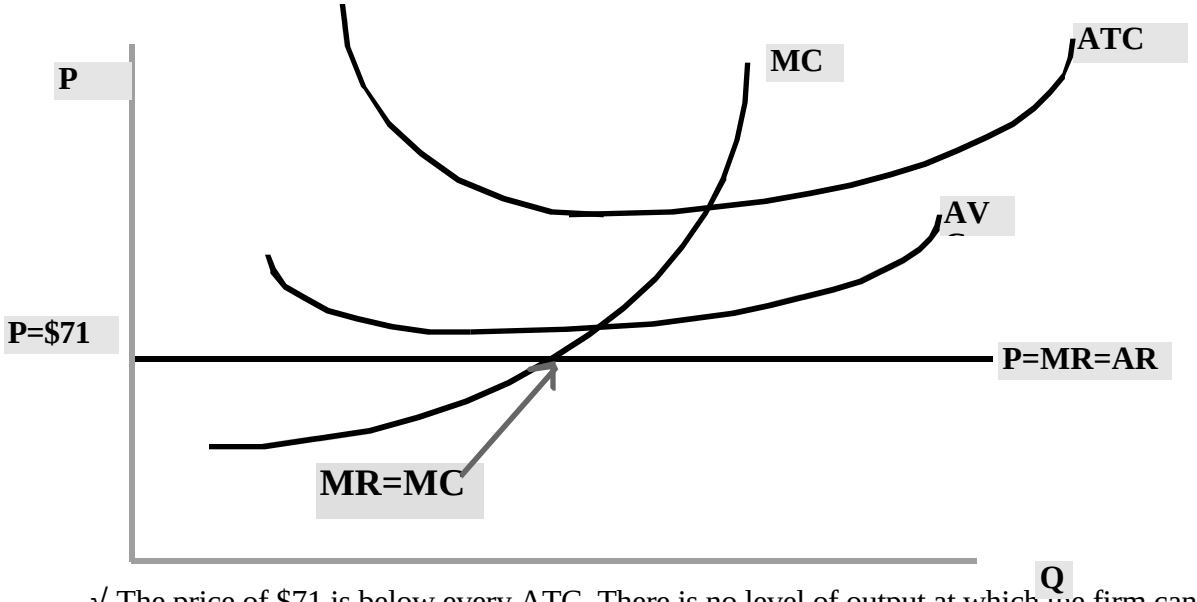
1	2	3	4	5	6	7
Quantity	**Average Fixed Costs**	**Average Variable Costs**	**Average Total Costs**	**Marginal cost**	**Price= Marginal Revenue**	**Profit or Loss**
Q	**AFC**	**AVC**	**ATC**	**MC**	**P=MR**	**TR—TC**
0						$—100
1	$100	$90	$190	$90	$81	—109
2	50	85	135	80	$81	—108
3	33.33	80	113.33	70	$81	—97
4	25	75	100	60	$81	—76
5	20	74	94	70	$81	—65
6	**16.67**	**75**	**91.67**	**80**	**$81**	**—64**
7	14.29	77.14	91.43	90	$81	—73
8	12.50	81.25	93.75	110	$81	—102
9	11.11	86.67	97.78	130	$81	—151
10	10	93	103	150	$81	—220



How long will the firm choose to produce at a loss? As long as it covers its variable costs and at least some of its fixed costs!

Shut Down Case

√ Drop the **price to $71** and find that no quantity can bring enough revenue to cover cost



√ The price of $71 is below every ATC. There is no level of output at which the firm can produce and realize a loss smaller than its total fixed costs of $100**.**

1	2	3	4	5	6	7
Quantity	**Average Fixed Costs**	**Average Variable Costs**	**Average Total Costs**	**Marginal cost**	**Price= Marginal Revenue**	**Profit or Loss**
Q	**AFC**	**AVC**	**ATC**	**MC**	**P=MR**	**TR—TC**
0						**$—100**
1	$100	$90	$190	$90	$71	—119
2	50	85	135	80	$71	—128
3	33.33	80	113.33	70	$71	—127
4	25	75	100	60	$71	—116
5	20	74	94	70	$71	—115
6	16.67	75	91.67	80	$71	—124
7	14.29	77.14	91.43	90	$71	—143
8	12.50	81.25	93.75	110	$71	—182
9	11.11	86.67	97.78	130	$71	—241
10	10	93	103	150	$71	—320

Think About This

√ Why is the equality of marginal revenue and marginal cost essential for profit maximization in all market structures?

√ Explain why price can be substituted in the MR=MC rule when an industry is purely competitive.

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Chapter 23 p. 478-480

Marginal Cost and SR Supply Curve—Purely competitive firm

√ Any price below the minimum AVC as in the Shutdown case (below $74.00) will force the firm to shutdown. (such as point a)

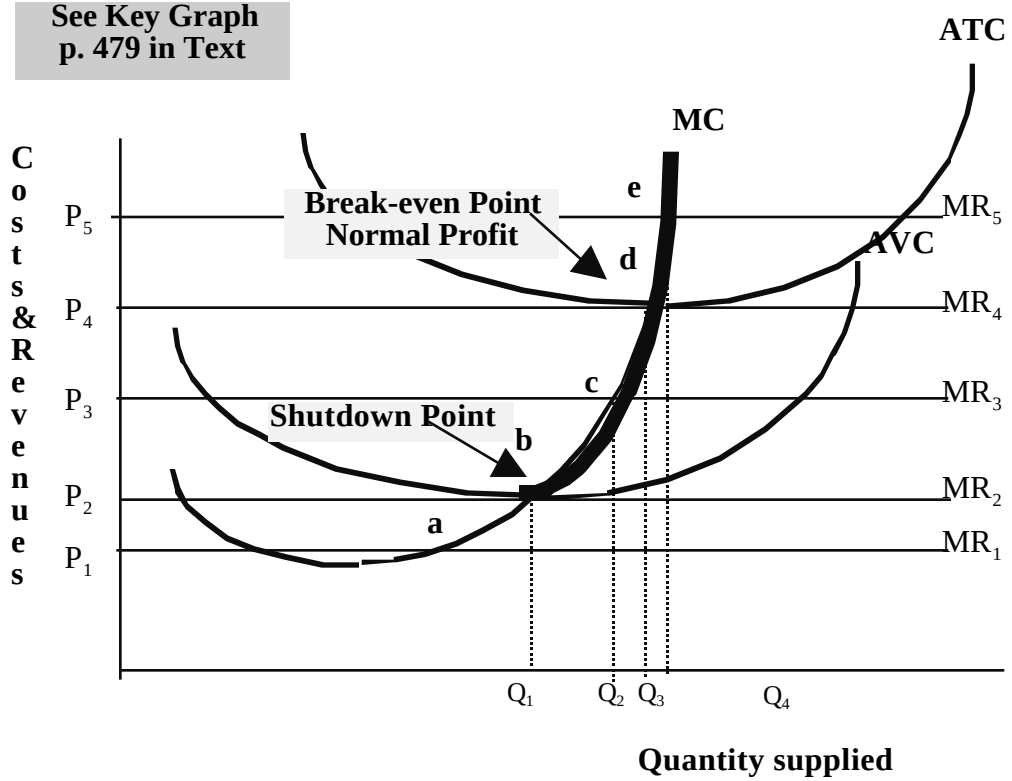
√ At a price of $74.00 a firm will just cover the AVC, yet still lose the Fixed Cost. Here the firm would be indifferent as to operating or not. (point b)

√ A price where the MC crosses the ATC (about 91.00) shows the break-even point for the firm (point d). Here the total revenue covers the total costs (including normal profit).

√ At any MC point above the ATC, profits will be generated. (such as point e).

√ Each of the various MR=P=D intersection points indicates a possible production price and corresponding quantity. These points locate the supply curve of the competitive firm.

See Key Graph p. 479 in Text



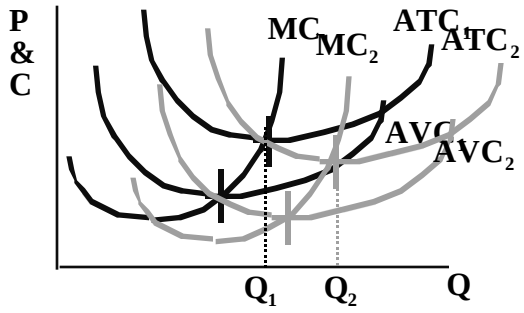
√ Because nothing will be produced at any price below the minimum AVC, we conclude that the **portion of the firm's MC curve which lies above its AVC curve is the SHORT-RUN SUPPLY CURVE.**

√ Because of the law of diminishing returns, marginal costs eventually rise as more units are produced. **So…a PC firm must get higher and higher prices to entice it to produce additional units of output.**

√ Higher product prices and marginal revenue encourage a PC firm to expand output. As it expands, its MC rises as a result of the law of diminishing returns. **At some now greater output, this higher MC now equals this higher P=MR and profit is again maximized but at a greater output.**

Supply Curve Shifts

√ Supply shifts for the reasons stated in Chapter 3, among them changes in costs and technology. Since the MC above the AVC is the Supply curve, it can shift when costs change.



Supply shifts to right to show a decrease in costs.

In this case of a decrease in AVC and hence ATC, the MC moves to MC_2 and shows that the Quantity increases to Q_2

Summary of Approaches to Determining the Profit Maximizing Output

	Total Revenue-Total Cost	**Marginal Revenue-Marginal Cost**
Should the Firm produce?	YES, if TR exceeds TC or if TC exceeds TR by some amount less than fixed cost.	YES, if price is equal to, or greater than minimum than AVC.
What quantity should be produced to maximize profit?	TR over TC is a maximum or where the excess of TC over TR is a minimum (and less than total fixed costs).	Produce where MR or price equals MC.
Will production result in economic profit?	YES, if TR exceeds TC. NO, if TC exceeds TR.	YES, if price exceeds ATC NO, if ATC exceeds price.

Think about This!

√ Why would a firm ever want to produce an output on which it takes a loss?

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Chapter 23 p. 481-484

Firm and Industry

√ **Market price is determined by the demand and supply** for a particular product. In the discussion above, the firm was the price taker—taking it from the market.

√ To determine the market equilibrium price, and output, the total supply data must be used with the total demand data. This is the industry data.

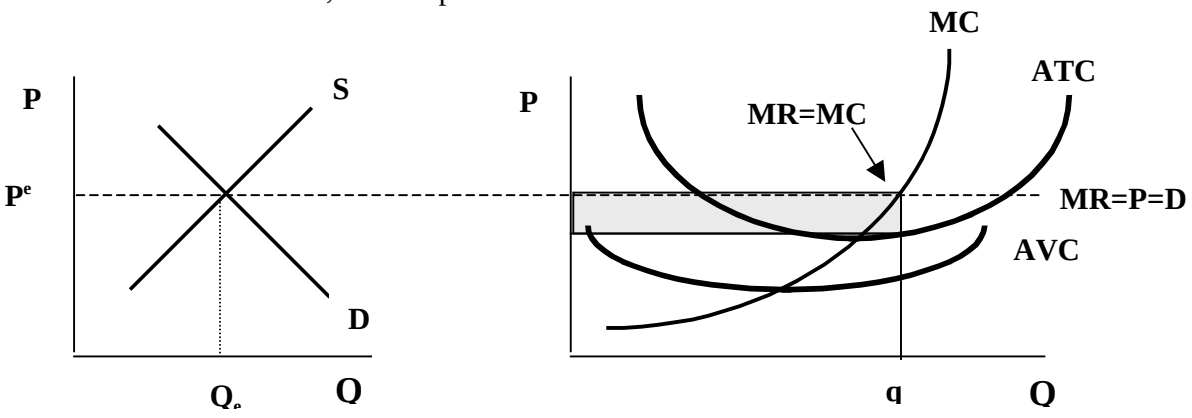
1 Q_S single firm	2 total Q_S 1000 firms	3 Product Price	4 Total Q_D
10	10000	$ 151	4000
9	9000	131	6000
8	8000	111	8000
7	7000	91	9000
6	6000	81	11000
0	0	71	13000
0	0	61	16000

Profit Maximization in the Long Run

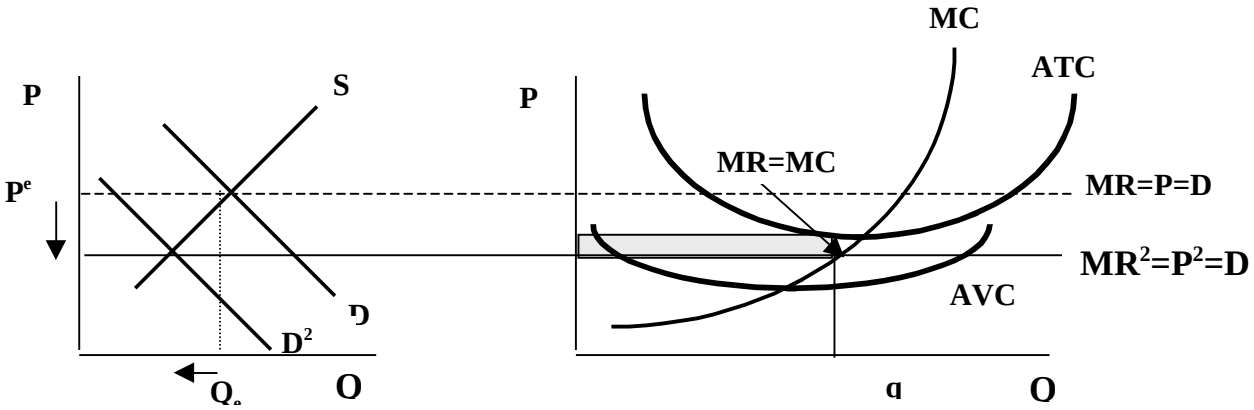
• **Assume**:√ Only adjustment in this analysis is the entry and exit of new firms
√ All firms have identical cost curves
√ Industry is cost-constant (entry and exit will not affect resources prices)

• **Conclusion:**
√ When long-run equilibrium is achieved, **product price will be exactly equal to minimum ATC and production will occur at that level of output.**
√ Why? • Firms want profits • When prices rise, profit appear—new firms enter
• Increased supply will drive price back down to minimum ATC.
• When prices fall, losses result and firms will exit
• Decreased supply will result in price moving back to min. ATC

➢ In the **short run, <u>firms can earn economic profits if the price from the market is above the average total cost</u>**. The gray shaded area on the firm graph is the profit. The output is found where MR=MC, and the price come from the market.

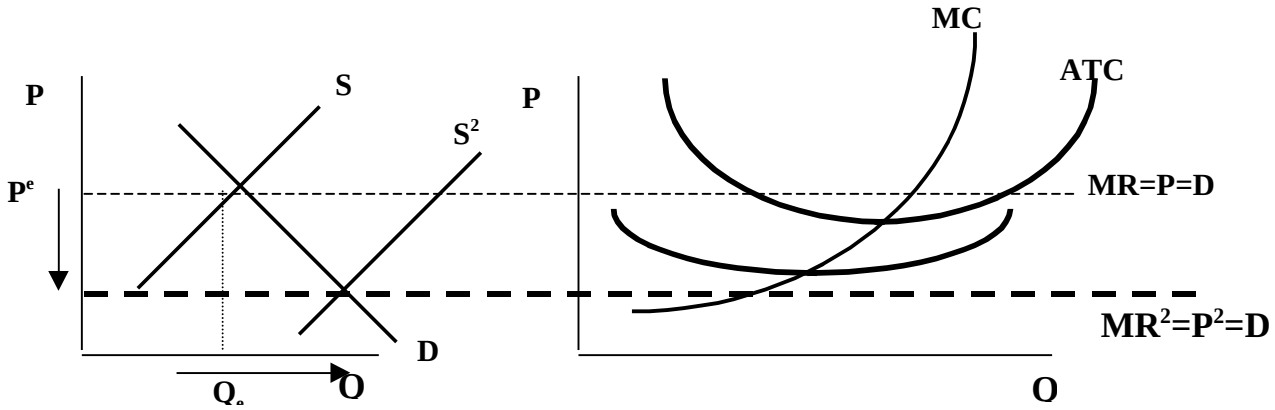


➢ In **the short run, firms can earn suffer losses if the price is below the total average cost**. Perhaps the price in the market falls (as in this example, demand falls) or costs for the firm rise. They will continue to operate if the <u>price is greater than the average variable costs</u>. In the short run, variable costs can be changed to affect changes in this loss situation.



Market Firm

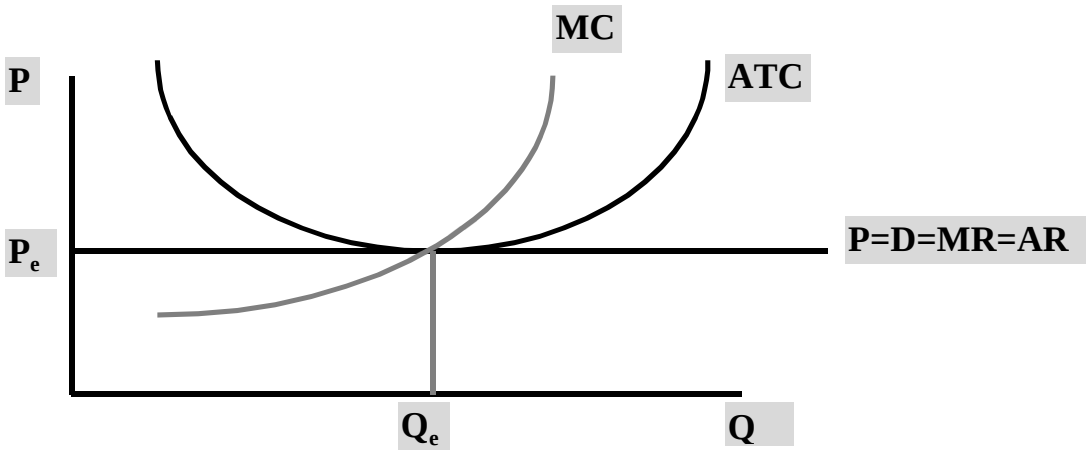
➢ If the **price falls below the average variable costs at all levels of output**, the **<u>firm must shut down</u>** since it cannot even cover its fixed costs. Price has fallen in the market or the firm's costs have risen. In this example, new firms enter and force the firm to shut down.



Market Firm

- In the **long run**, after all the changes in the market (more demand for the product, firms entering in search of profit, and then firms exiting because economic profits are gone), long run equilibrium is established. In the long run, a purely competitive firm earns only normal profit since:

MR=P=D+MC at the lowest ATC
Both Allocative and Productive efficiency!



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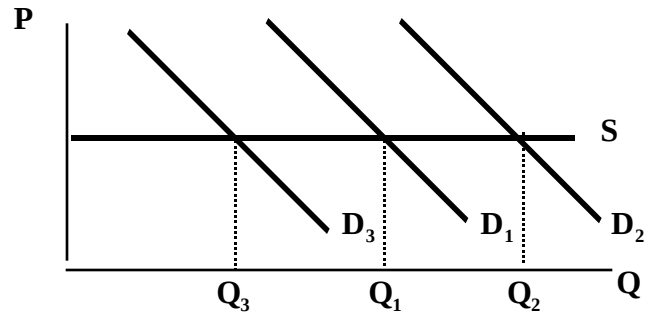
Short run supply curves are derived from the MC portion above the AVC. In the long run, the supply curve has industry characteristics based on the influence that changes in the number of firms in the industry have on the costs of the individual firms.

Long-Run Supply for Constant -Cost Industry

√ Entry of new firms does not affect resource prices. Graphically, the position of the long-run average cost curves of individuals firms does not change.

√ Why? When the industry's demand for resources is small in relation to the total demand for those resources. This is most likely in industries that employ unspecialized resources which are being demanded by many other industries.

√ The **long-run supply curve of a constant-cost industry is perfectly elastic**.



Long-Run Supply for Increasing-Cost Industry

• Average cost curves shift upward as the industry expands and downward when the industry contracts. Entry of new firms will bid up resource prices and raise unit cost.

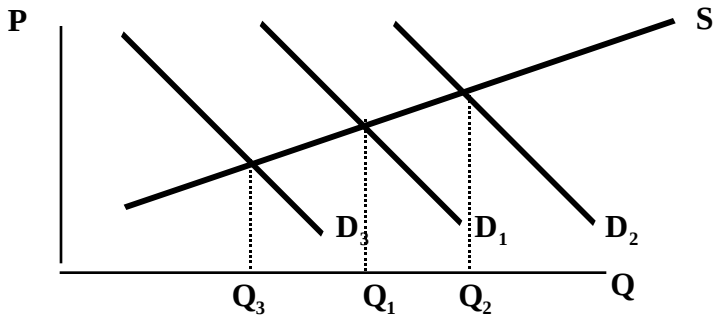
• This happens in industries using specialized resources whose initial supply is not readily augmented. They are using a significant portion of some resource whose total supply is not readily increased.

• Result: Two- way squeeze on profits

√ New entry will increase supply, lowering price

√ average cost curve will shift upward

• **Long -run industry supply curve is upsloping.**

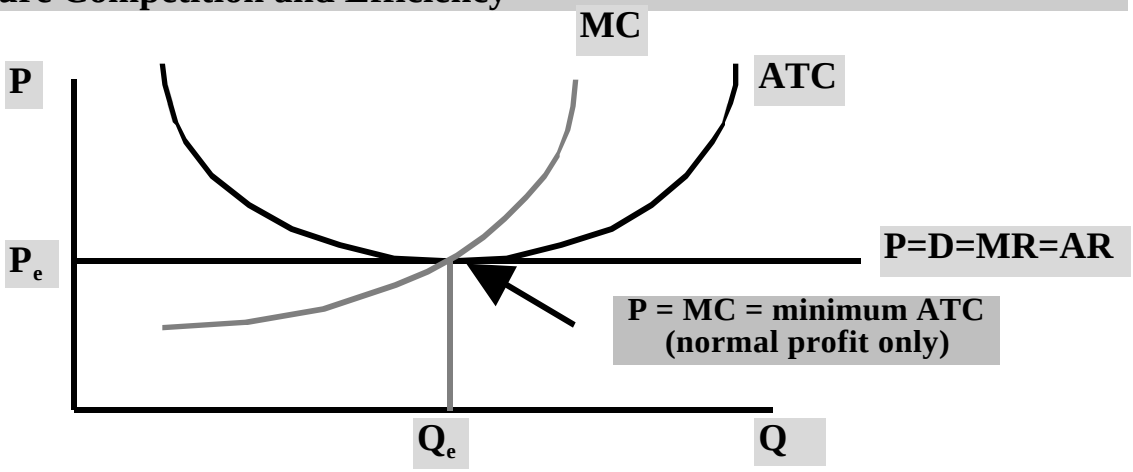


Think About This!

√ Is there the possibility of a long run supply curve for a decreasing cost industry?

√ What would be its characteristics?

Pure Competition and Efficiency



This triple equality shows that a purely competitive firm cannot earn economic profit in the long run; it can earn normal profit.

In terms of efficiency, two types emerge from this diagram.

Allocative Efficiency

√ Resources are allocated among firms and industries to obtain the particular mix of products most wanted by consumers

√ The money price of any product is society's measure or index of the relative worth of that product at the margin. Hence, the MC of producing a product is the value, or relative worth of the other goods the resources used could otherwise have produced.

√ **P = MC is efficient**

√ The money price of any product is really the measure of its Marginal Benefit (MB); the purely competitive firm P equals the MC. But, at times…

• **P>MC underallocation of resources to this product:** society values additional units of this product more highly than alternative ones that the resources could produce. **MB<MC**

• **P < MC overallocation of resources to this product:** society is sacrificing products it would value higher than the ones being produced with the available resources: **MB>MC**

Productive Efficiency

√ Each good must be produced in the least costly way

√ When firms produce most efficiently, they will do so at the least cost point.

√ For consumers, this is desirable; firms must use the best available (least cost) technology or they will not survive.

√ **P = minimum AC**

Dynamic Adjustment

√ A change in demand or supply will disrupt the allocative efficiency and change the alignment of resource use. This is will have an effect on price, output and profit. Expansion and contraction of the industry will eventually move to a new output and cost structure so that P=MC and allocation efficiency is restored.

"Invisible Hand"

√ It organizes the **private interests** of producers in a way that is in accord with **society's interest** in using scarce resource efficiently.

Qualification for the Purely Competitive Firms

√ **Market Failures: Spillovers and Public Goods**

• Firms in seeking profits will only produce at the efficient level if they can generate said profit. A big "IF"!

• Some goods will never be produced by private interest, hence the need for public goods. These cannot be priced or shared consumption of one the characteristics.

√ **Economies of Scale**

• We assumed that PC firms operated at their optimal size.

• Not all firms are large enough to be efficient; their optimum size is larger then their operation.

√ **Technological Advance**

• Some economists argue that PC firms do not have incentive for research and development since they earn no economic profit in the long run.

√ **Range of Consumer Choice**

• Pure competition means standardized products; imperfect competition offers diversification of product lines, varying quality and styles—more choice.

Think About This!

√ Why is the equality of marginal revenue and marginal cost essential for profit maximization in all market structures?

√ Why can price be substituted for marginal revenue in the MR=MC rule when an industry is purely competitive?

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Chapter 24 p. 493-98

Monopoly characteristics and Barriers to Entry

Monopoly exists when a **SINGLE** firm is the sole producer of a product for which there are no close substitutes.

√ **single seller**—industry and firm synonymous
√ **no close substitutes—**unique product; no reasonable alternative
√ **price maker**—firm exercises considerable control over price
√ **some degree of nonprice competition**, generally advertising
√ **blocked entry**—barriers to entry created by monopolist or government

Examples:

I. **Government-owned monopolies**—TVA power, municipal water
II. **Regulated monopolies**—gas, electric, water, cable, phone
III. **Private Unregulated monopolies**—De Beers Diamond Syndicate, Professional Sports Leagues
IV. **Local monopolies**—airline, bank, movie, bookstore

Importance of Monopoly

√ **5 to 6 % of** domestic output
√ study will lead to **better understanding** of other types of imperfect competition

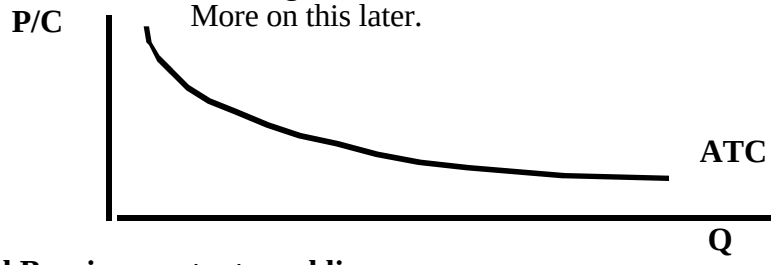
Barriers to entry:

1**. Economies of Scale: Costs**

√ **Large Scale** Production is **efficient**

2. **Public Utilities: natural monopolies**

√ Competition is impractical, inconvenient, or unworkable
√ **Natural Monopoly** is the extreme example in which market demand curve intersects the long run ATC where the ATC is still declining. More on this later.



3. **Legal Barriers: patents and licenses**

√ patents awarded by government to encourage research; historically, patents were for 17 years, 1995 GATT agreement made it standard 20 years worldwide.
√ Licenses given to guarantee safety or limit competition so that economic profit can be earned in order for the product to be provided by the private sector.

4**. Ownership of Raw material**

√ Using the concept of private property rights, ownership of necessary material can block others

5. **Pricing and Other Strategic Barriers**

√ lowering price or aggressive advertising
√ Aggressive Cutthroat tactics:
- product disparagement
- pressure on resource supplier
- aggressive price cutting
- dumping

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Chapter 24 p. 498-501

Unregulated Monopoly

Assumptions:

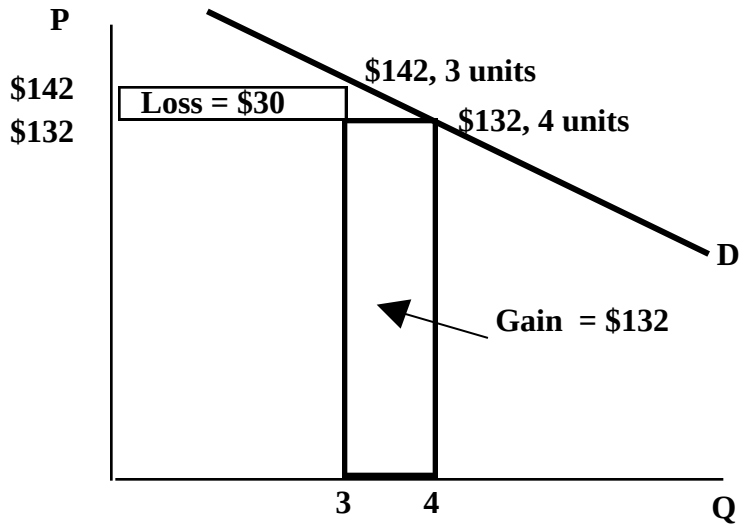
√ Monopoly status secured by patents, economies of scale or resource ownership
√ Firm is not regulated
√ The firm is a single-price monopolist charging the same for all units of output.

Demand Curve:

√ Firm is the industry so it can dictate price, but demand is not perfectly elastics, so the demand curve is downsloping.

1	2	3	4	5	6	7	8
Quantity	**Price**	**Total Revenue**	**Marginal Revenue**	**Average Total Costs**	**Total Cost**	**Marginal Cost**	**Profit or Loss**
Q	**P=AR**	**PxQ=TR**	**MR**	**FC+VC**	**TC**	**MC**	**TR—TC**
0	$172	$0		$100	$100		$—100
1	162	162	162	190	190	90	—28
2	152	304	142	135	270	80	34
3	142	426	122	113.33	340	70	86
4	132	528	102	100	400	60	128
5	**122**	**610**	**82**	**94**	**470**	**70**	**140**
6	112	672	62	91.67	550	80	122
7	102	714	42	91.43	640	90	74
8	92	736	22	93.75	750	110	—14
9	82	738	2	97.79	880	130	—142
10	72	720	-18	103	1030	150	—310

√ **Why does unregulated monopoly face a downward sloping Demand Curve?** To sell more of his goods, the monopolist knows that he must lower his price. This puts a constraint of his ability to profit from his market power. This is why a monopolist does <u>not</u> charge the highest price he wants! Instead he charges the highest price he can!



√ **If Demand is downsloping, so is Marginal Revenue.** Observe the data and see that the marginal revenue is below the price.
√ When selling 4 units at $132, he gains $132 in marginal revenue though he must subtract the $30 he lost by lowering the price.
√ So…the marginal revenue of the 4th unit is $102.

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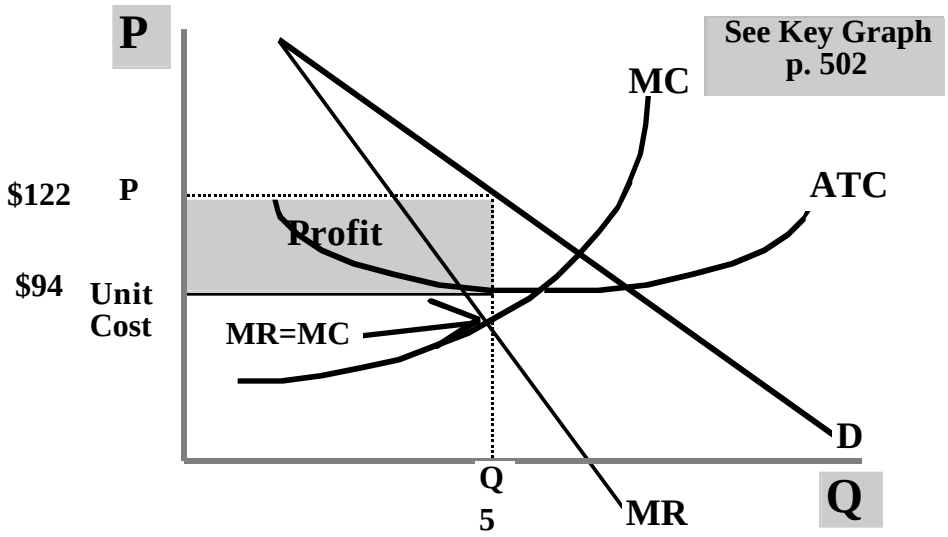
Output and Price Determination for Unregulated Monopoly

√ Using the revenue and cost data given in the last pages, we can construct a **graph for an unregulated monopoly.**



√ Note that the **MR=MC rule** is used to determine the output quantity of 5 units.
√ The MR=MC quantity line is drawn upward to where **it intersects with the demand curve** to find the price.
√ Total economic profit is: Per unit profit ($122—94) times Quantity (5) —$140
√ **There is no supply curve for the pure monopoly firm**; there is no unique relationship between price and quantity supplied. The monopolist does not equate price with marginal cost so it is possible for different demand conditions to bring different prices for the same output.

Steps for Graphically determining profit-maximizing output, price and economic profit for pure monopoly

Step 1	Use the MR=MC rule to determine output.
Step 2	Extend the vertical line upward from the quantity to the demand curve to determine the price.
Step 3	Use one of two methods to determine the economic profit
	√ Per unit profit times quantity = Economic profit
	√ Total cost of output = ATC times Q Total revenue of output = P times Q TR—TC = Economic profit

Misconceptions

√ **Not Highest price**—selling at prices higher than MR=MC output will yield smaller than maximum total profit.
√ **Total not Unit Profit**—seeking the most profit not the most per unit profit.

Monopoly Losses?

√ **Not immune** from changes in demand, or higher resource costs.
√ **Look at data** to show that the example given losses money at 8 units and greater.

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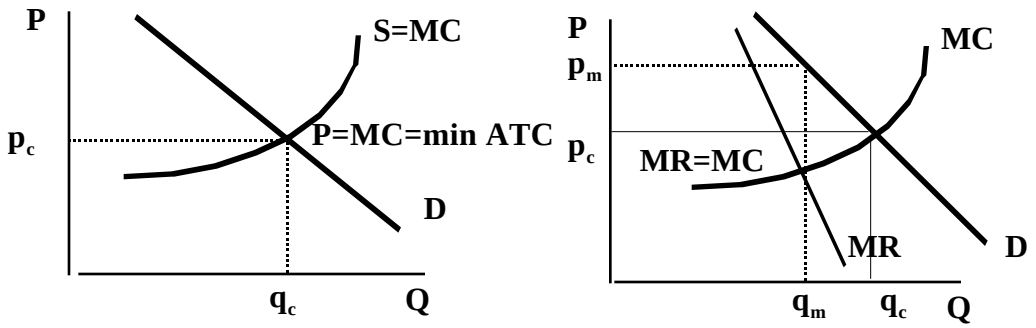
Economic Effects of Pure Monopoly

• Price and Output Efficiency



Purely competitive Industry **Pure Monopoly**

√ See here that a **pure monopolist will charge a higher price and a lower quantity is sold. Note that costs are identical since the MC curve is in the same position.**

√ **In Pure Monopoly, P > MC <u>and</u> P > minimum ATC.**

• Income Distribution

√ Contributes to **inequality in income distribution** by "levying a private tax" on consumers to obtain economic profit.

√ These profits are **not widely distributed** because corporate stock ownership is largely concentrated in the hands of upper-income groups. Thus these firms and their owners tend to be enriched at the expense of the consumer.

• Cost Complications

√ In the diagram, **costs are identical, yet the costs of a monopolist may vary**:

• Economies of scale—reduced output may result in inefficiencies that would cause the firm to have a higher ATC than its minimum.

• X-inefficiency—occurs when a firm's actual cost of producing an output is greater than its lowest possible cost of producing it. Monopolistic firms tend more to X-inefficiency; no rivals are pushing them to lower cost, and entry barriers are usually greater than in pure competition.

• Rent-Seeking Expenditures—rent-seeking involves cost associated with maintaining the monopoly so as to earn the greatest economic profits. This is part of the higher costs.

• Technological Advance—most economists feel that pure monopolist are not technology progressive because of absence of competitors and their tendency to be slow to change.

• Policy Options

What should society do about monopoly?

√ Anti-trust litigation can thwart monopoly firms if they are grossly inefficient

√ Regulation of natural monopoly

√ Technology advance may solve the problem without government action.

AP Microeconomics

Consumer Surplus

Welfare Economics… the study of how the allocation of resources affects economic well being. The equilibrium of demand and supply in a market maximizes total benefits received by buyer and seller.

Consumer Surplus…a buyer's willingness to pay minus the amount the buyer actually pays.

• If four people, John, Paul, George and Ringo show up at an Elvis auction, each has a limit that they are willing to pay for the Elvis album to be sold.

Buyer	Willingness to pay
John	$100
Paul	80
George	70
Ringo	50

As bidding reaches $80, three of the buyers are not willing to pay more than this amount. John pays $80 and gets the album.
John gains a consumer surplus of $20 ($100 - 80)

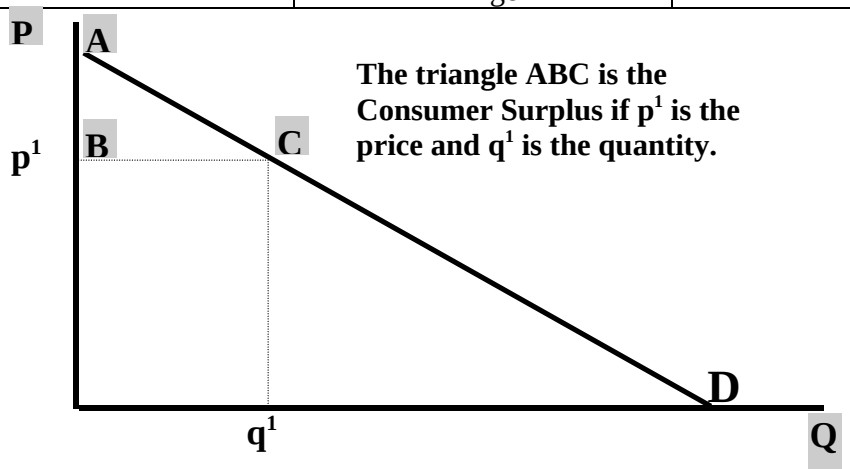
Consumer Surplus measures the benefit to buyer by participating in a market.
• Now, let's assume that two identical Elvis albums are available for sale, and no one buyer wants more than one, and the two will sell for the same price.

Where does the bidding stop? $70

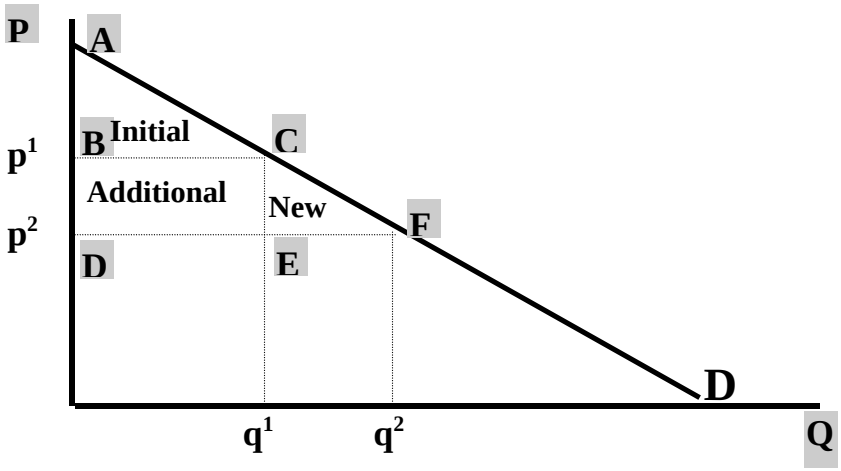
What is the consumer surplus of the two bidders? $30 for John and $10 for Paul—a total of $40.

Using Demand Curve to Measure Consumer Surplus

Price	Buyers	Quantity Demanded
More than $100	None	0
$80 to $90	John	1
$70 to $80	John and Paul	2
$50 to $70	John, Paul and George	3
$50 or less	John, Paul, George and Ringo	4



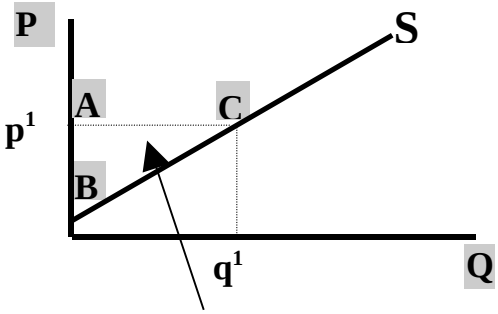
The triangle ABC is the Consumer Surplus if p^1 is the price and q^1 is the quantity.



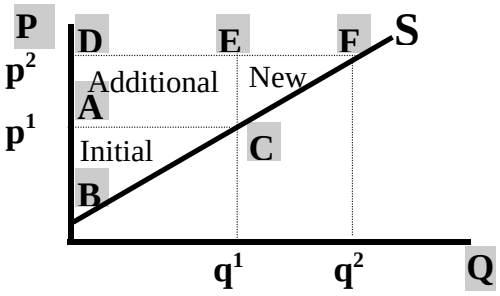
• **Triangle ABC** is the initial consumer surplus
• **Rectangle BCDE** is the additional consumer surplus for the initial customer.
• **Triangle CEF** is the consumer surplus for the new consumer

Using Supply Curve to Measure Producer Surplus

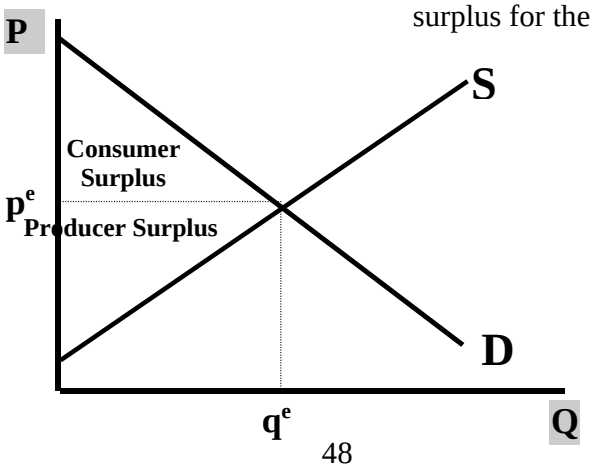
Producer surplus…the amount a seller is paid for a good minus the seller's cost. We can use a similar analysis as demand and consumer surplus to see the producer surplus.



The triangle ABC is the Producer Surplus if p^1 is the price and q^1 is the quantity.



• **Triangle ABC** is the initial producer surplus
• **Rectangle ADEC** is the additional producer surplus for the initial producer
• **Triangle CEF** is the producer surplus for the new producer



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Price Discrimination

√ **Selling a given product for more than one price and these price differences are not justified by cost differences.**

√ **Three conditions are realized:**

• Seller must be a monopolist or at least have some degree of monopoly power (ability to control output and price)

• Seller must be able to segment the market so that each has a different willingness and ability to pay for the product (based on different elasticities of demand)

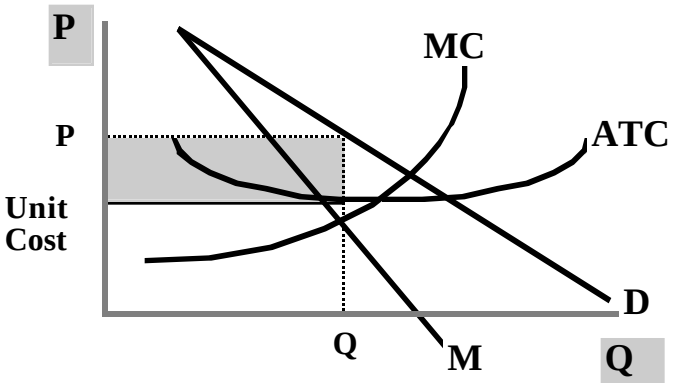
• Original purchaser cannot resell the product or service. This suggests that service industries are especially susceptible to price discrimination

√ **Examples**: think of elastic vs. inelastic demand

• Telephone service reduced rates in evening and weekend
• Electric utilities raise rates during peak use
• Movie Theater Rush hour rates
• Golf courses green fees
• Bulk discounts for shipping on RR
• Airline tickets bought in advance or family rates vs. business rate
• Hotel and restaurant discounts to seniors
• In international trade, the practice is called "dumping".

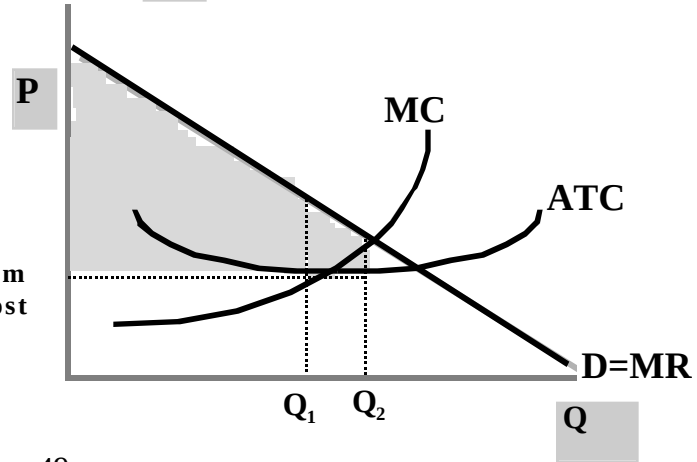
√ **Consequences**:

• Higher profits for discriminating monopolists (some buyers will be willing and able to buy at the MR=MC price)
• Larger output by discriminating monopolists (marginal revenue and price are now equal since the reduced price applies to only the additional units sold not the prior, and the monopolist will now find it profitable to produce more)

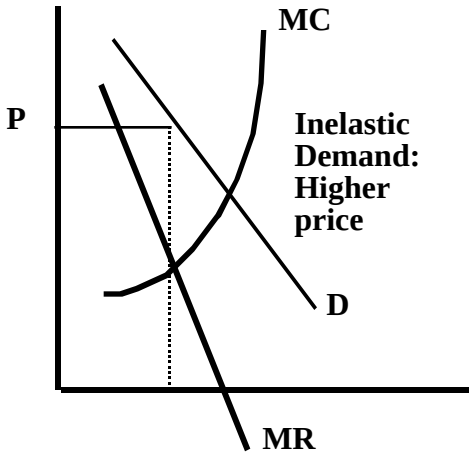


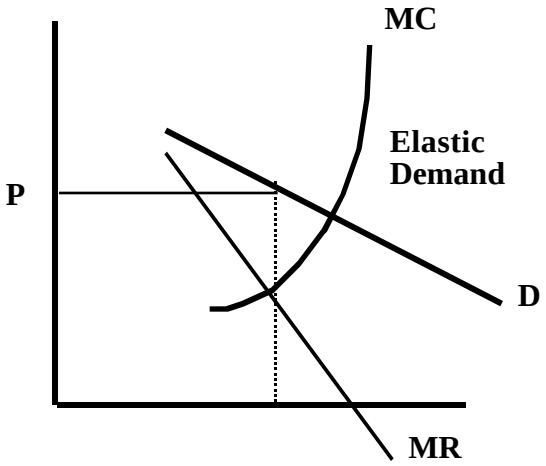
Single price Monopolist ……produces output where MR=MC at Q and sells that Q at P. Profit is shown in the shaded rectangle.

Perfectly Discriminating Monopolist ……D=MR because it does not cut price on preceding units to sell more output. The profitable output is Q_2 which is greater than the single monopolist. The profit is the shaded area.



√ **Elasticity of Demand** …is the reason some buyers will pay more. The more inelastic the demand, the higher price that can be charged by the seller. Think about the elasticity of demand and the cause of it in each of the examples above.





Think About This!

√ Is there any fairness to this idea of price discrimination?

√ Comment on the desirability of price discrimination from the viewpoint of the seller.

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REGULATED MONOPOLIES

• **Most natural monopolies are regulated.**

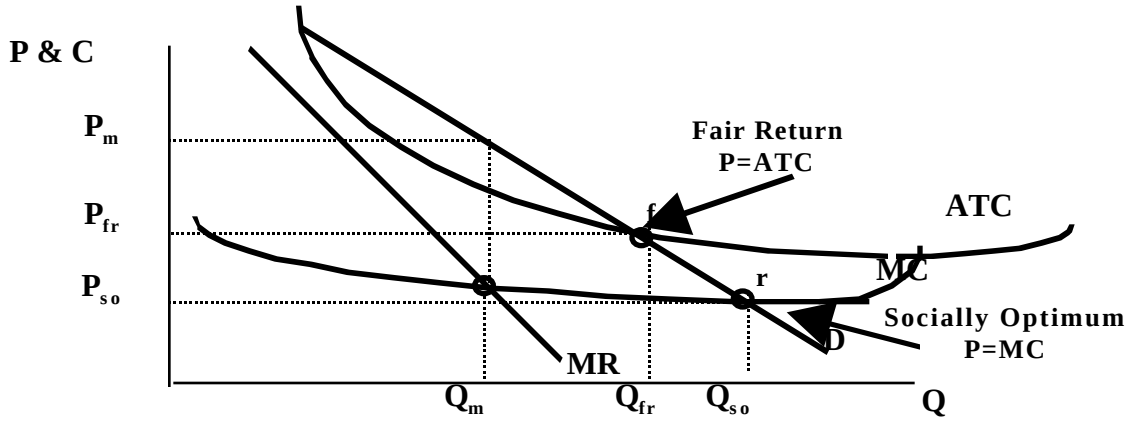
√ In certain lines of production, existing technology may be such that a firm must be a large-scale producer in order to realize the lowest unit costs of production.

√ This suggests that, given demand, a small number of producers who are efficient and large-scale will be needed. Existing mass-production economies would be lost with more producers.

√ Because of heavy fixed costs, the demand curve will cut the average cost curve at a point where the average cost is still falling.

√ The relationship between market demand and costs is such that low unit costs presume usually one producer.

√ The application of MR=MC for the unregulated monopolist would allow for a substantial economic profit. Further, price exceeds marginal costs which indicates misallocation of resources.



√ An **unregulated monopoly** would charge P**m** and produce output Q**m.**

√ Socially optimal price: P=MC

• To achieve allocative efficiency, the legal ceiling price for monopoly should be where P=MC. This is point **r** as noted on diagram.

• At this point **r** the monopolist must produce $\mathbf{Q_{so}}$ since MR(P_{so}**)** =MC since the demand curve has become perfectly elastic since the monopolist can not charge above P_r

• Allocative efficiency is attained when production takes place where P_r =MC. This may result in losses, and shown in this case.

√ Fair Return Price: P=AC

• Since public utilities must be ready for the peak uses and hence incur heavy fixed equipment costs. The market demand curve cuts the marginal cost at a point to the left of the marginal-cost-average-total-costs intersection so that the socially optimal price is below AC. Losses would result in the long run.

• To solve the dilemma, most regulatory agencies establish a "fair-return" price. This is noted by point **f** were price equals the AC and will allow the monopolist to break even, though some misallocation of resources is tolerated.

AP Microeconomics
Chapter 25 p. 516-522

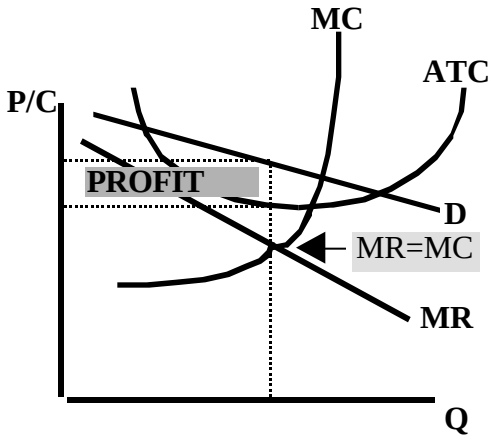
Monopolistic Competition

Market situation in which a relatively large number of small producers are offering similar but not identical products.

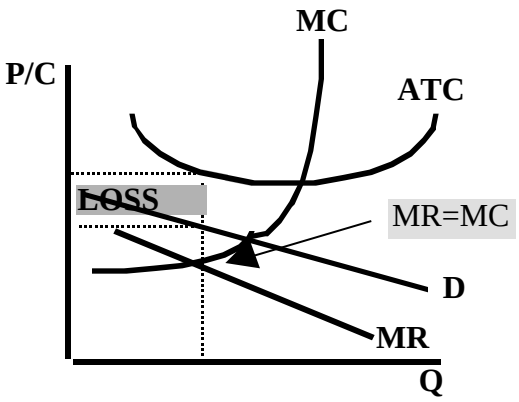
√ Each firm has small percentage of total market
√ Collusion (concerted action by firms to rig price and production output) is not likely
√ No feeling of mutual interdependence (each firm makes its own decisions without consideration of reaction by rival firms
√ Product Differentiation causing buyers to pay higher price to satisfy those preferences:
• Product Quality and Attributes • Services offered
• Location • Brand Names & Packaging
• Some control over price
√ Easy entry and exit—economies of scale small and low capital requirements
√ Non Price Competition
• Trademarks • Advertising • Brand Names
√ Examples: Retail, light manufacturing (table on p. 518)

Price and Output Determination

√ The **demand curve** faced by MC seller is **highly but not perfectly elastic**. There are many substitutes, but there are not perfect since product differentiation is high. The amount of price elasticity will depend on the number of rivals and the degree of product differentiation.
√ **Short run profits and losses**—using MR=MC rule if the firm's price is above the ATC, then profit; if firm's price is below the ATC, then loss. Firms will enter to gain profits and firms will exit to avoid losses.



SHORT RUN PROFITS
Firms enter to seek the economic profit; eventually each firm holds a smaller share of the demand, but those firms that can keep costs low can be profitable.

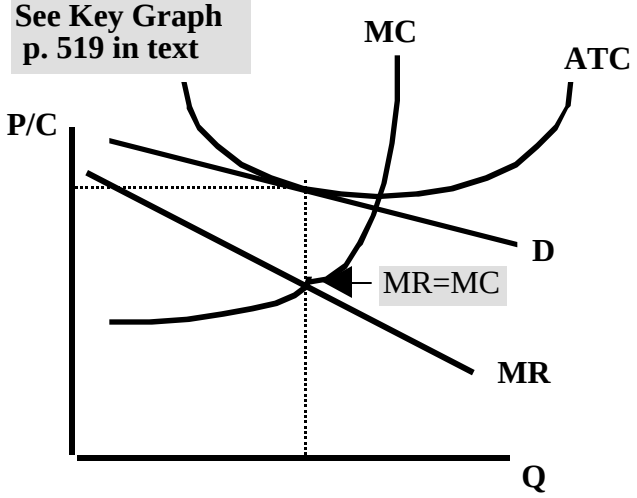


SHORT RUN LOSSES
With less favorable demand or higher costs, firms minimize losses and some exit helping the market to find equilibrium.

√ Long Run Equilibrium

…after profits and losses, the equilibrium will be established where there will be no economic profits, just the normal profits. The ATC is tangent to the Demand curve at the point where MR=MC. Price exceeds the minimum ATC and exceeds MC. There is underallocation of resources to the production; consumers do not get the product at the lowest possible price.

See Key Graph p. 519 in text

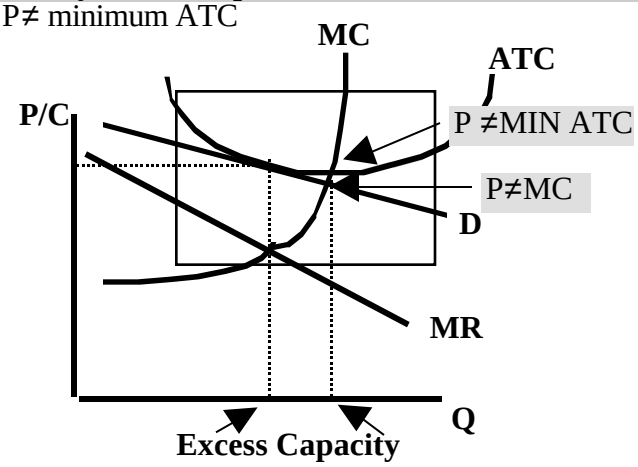


Complications:

- Some firms can achieve product differentiation that others cannot—location, patents are examples
- There may be high financial barriers because of product differentiation.

√ Economic Efficiency—neither productive or allocative efficient

since P ≠MC or P≠ minimum ATC



Advertising:

GOAL: √ To increase market share √ To create customer loyalty

Case for Advertising	Case Against Advertising
• Provides information	• Persuades rather than inform
• Supports communication industry	• Diverts human and property resources from other areas
• Stimulant to product development	• Significant external costs
• Promotes competition	• Tends to be self-canceling
• Promotes full employment by inducing high levels of consumer spending	• Promotes the growth of monopoly
• Successful advertising can expand production and increase economies of scale	• Is advertising an important determinant of the levels of output and employment?

AP Microeconomics
Chapter 25 p. 522-538

Oligopoly

A relatively small number of firms producing either homogeneous (standardized) or differentiated products dominate the market

Characteristics

√ **Few large producers**—vague term generally meaning 2-4 firms that dominate an industry
√ **Homogeneous** (industrial products like steel, zinc, copper, etc) or **differentiated** products (consumer products like autos, tires, household appliances, etc.). Differentiated oligopolies will engage in more nonprice competition.
√ **Control over price with mutual interdependence**—some monopoly pricing power but each oligopoly must consider how its rival will react to any change in its price, output, product characteristics or advertising.
√ **Entry barriers**
- Economies of scale are substantial and attained if large production capacity and output.
- The level of demand will dictate how many firms are needed. The desire to lower cost will force firms to grow larger and will come at the expense of the other competitors.
- Ownership of patents will be a barrier
- Large advertising budgets to move demand upward are costly.
- Ownership or control of raw materials will give monopoly power
- Urge to merge for greater profit will aid firms in internal growth.

Measures of Industry Concentration

√ **Concentration ratio**–percentage of total industry sales accounted for by the four largest firms in the industry (Table 25-2, p. 524)
- **When four firms control 40 or more of the market, the industry is considered oligopolistic**—one-half of all US manufacturing industries are oligopolisitic.
- **Shortcomings**— pertains to entire nation, some markets are localized; does not show interindustry competition or import competition; does not show actual market performance in terms of degree of competition and technological progress

√ **Herfindahl Index** helps to show dominance of major firm
- sum of the squared percentage market share of all firms in the industry
- greater weight is given to larger firms
- larger the index number, the greater the market power within an industry (See Table 25-2, p. 524)

Oligopoly Behavior

Pricing behavior has the characteristics of a game of strategy—game theory.

√ **Mutual Interdependence**–situation in which the actions of one firm can and will affect the fortunes of another
- expectation of reaction—match a price decrease but ignore a price increase
- collusive tendencies—cooperation among rivals can result in profits and/or smaller losses; "price wars" are good for consumer but not for seller.
- unpredictability of reaction—incentive to cheat

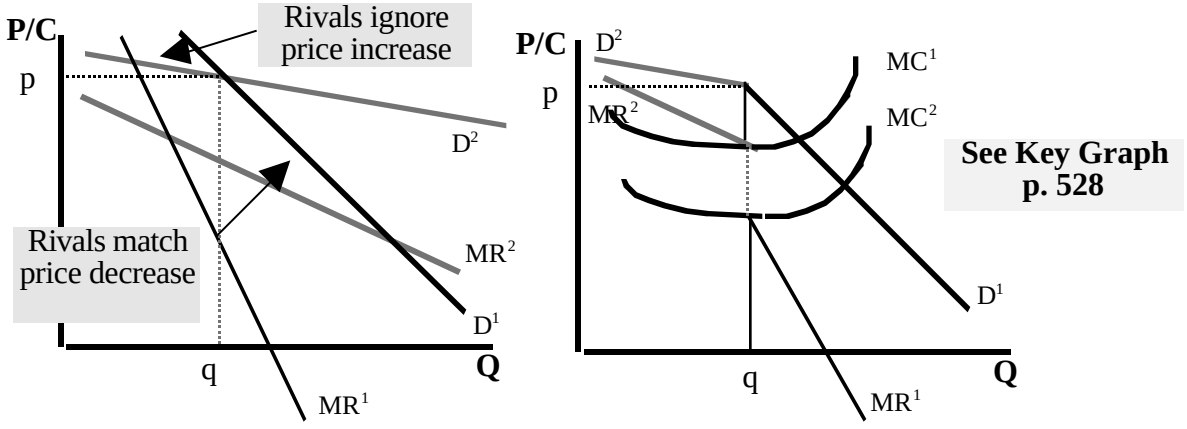
√ **Profit Payoff for two-firm oligopoly (a duopoly)**
• Two firms: RareAir and Uptown • Two pricing strategies: High and Low
• Profit earned will depend on the strategy it chooses and the strategy its rival chooses.
• Each lettered cell of this four-cell payoff matrix represents one combination of a RareAir strategy and an Uptown strategy and shows the profit that combination would earn for each firm.

	Cell A	**Cell B**	**Cell C**	**Cell D**
	High(U) High(R)	**High(U) Low(R)**	**Low(U) High(R)**	**Low(U) Low(R)**
Uptown	$ 12	$ 6	$ 15	$ 8
RareAir	12	15	6	8

• **Oligopoly firms can increase profits and affect rival's profit by changing their pricing strategy**. This **is mutual interdependence**.
√ If **Uptown chooses High**, it earns $ 12M only if **RareAir chooses High**.
√ If **Uptown chooses High** and **RareAir chooses Low**, RareAir will capture more of the market and earn $ 15 M while Uptown only gets $ 6M.
• If either firm chooses the **low price strategy**—Cell C for Uptown and Cell B for RareAir, each could increase profits.
√ Uptown to $ 15M (Cell C) or RareAir to $ 15M (Cell B).
√ But…note in Cell C, RareAir reduces its profits to $ 6M and in Cell B, Uptown would reduce its profits to $ 6M.
√ The **high priced firm would be better off it adopted the low-price strategy**. (Cell D). Both firms would reap profits of $ 8M.
√ So…movement from Cell A ($12M for both) to Cell D ($8M for both) is the effect!
• **Oligopoly firms can benefit from collusion— cooperation among rivals.** The two firms could decide together to establish the high pricing strategy and each earn **$12M**. There is temptation to cheat since the extra profit possible if you trick your rival is present by with low price strategy.

√ **Three models**—needed for diversity of oligopolies and complications of interdependence

• **Kinked Demand: Noncollusive Oligopoly**



See Key Graph p. 528

The **slope of the noncollusive oligopolist's demand curve and marginal revenue curve** will depend on whether rivals will match or ignore price changes. Parts of the two demand curves and MR curves are used to "kink" the curves to show the differences in pricing strategies. Don't worry about these curves. They seem to be currently out of favor, but are offered to show that demand and supply and the relationships of MC and MR are important in oligopoly.

• **Collusive Oligopoly**

√ **Cartels**— agree on production limits and set a common price to maximize profits as if each were **acting like a unit of a single monopoly**.

- Overt Collusion: OPEC example p. 531
- Covert Collusion: Electrical Equipment Conspiracy p. 531
- Tacit Collusion: Gentlemen's agreements

• **Price Leadership**

√ type of implicit understanding to coordinate prices without outright collusion.

√ one firm is dominant and initiates price changes which others follow

• ECONOMIC EFFICIENCY:

√ **Traditional View**–acts like monopoly (higher price, lower output); no productive or allocative efficiency; some view it worse than monopoly because government tends to discourage monopoly development

√ **Qualifications:**

- Increased foreign competition—breaking down price leadership and bringing more competitive pricing
- Limit pricing—low prices are an entry barrier and benefits consumers
- Technological advance—large economic profit is used for R&D and barriers give some assurance that money for R&D is well spent.

AP Microeconomics
Chapter 27 p. 564-569

• Why Study Resource pricing?

√ Money Income: resources are major source
√ Resource Allocation: prices allocate scarce resources
√ Cost Minimization: best combination of resources will be most efficient
√ Policy Issues: the unequal distribution of income, etc.

• Marginal Productivity Theory of Resource Demand

√ Derived Demand—demand for resources is derived from the products which those resources help produce.

√ Marginal Revenue Product (MRP)—Demand for resource depends on

- productivity of resource
- market value or price of good produced

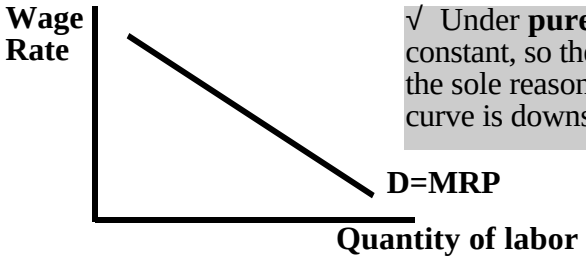
The demand or labor: pure competition in the sale of the product

Units of Resource	Total Product (Output)	Marginal Product	Product Price	Total Revenue	Marginal Revenue Product
		MP	P	TR	MRP
0	0		$ 2	$ 0	
1	7	7	$ 2	14	$ 14
2	13	6	$ 2	26	12
3	18	5	$ 2	36	10
4	22	4	$ 2	44	8
5	25	3	$ 2	50	6
6	27	2	$ 2	54	4
7	28	1	$ 2	56	2

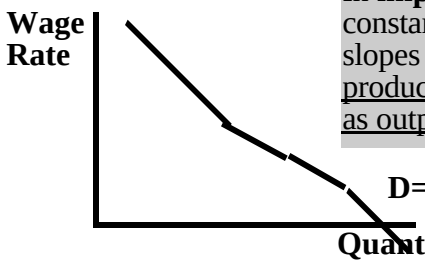
√ MRP is the increase in total revenue resulting from the use of each additional variable input (like labor)

• The MRP curve is the resource demand curve. Location of curve depends on the productivity and the price of the product.

- MRP is demand schedule



√ Under **pure competition**, the price is constant, so the diminishing productivity is the sole reason why the resource demand curve is downsloping.



In **imperfect competition**, price is not constant, so the resource demand curve slopes downward because marginal product diminishes and product price falls as output increases

The demand for labor: Imperfect Competition in the sale of the product

Units of Resource	Total Product (Output)	Marginal Product	Product Price	Total Revenue	Marginal Revenue Product
		MP	P	TR	MRP
0	0		$ 2.80	$ 0	
1	7	7	$ 2.60	18.20	$ 18.20
2	13	6	$ 2.40	31.20	13.00
3	18	5	$ 2.20	39.60	8.40
4	22	4	$ 2.00	44.00	4.40
5	25	3	$ 1.85	46.25	2.25
6	27	2	$ 1.75	47.25	1.00
7	28	1	$ 1.65	46.20	-1.05

• Marginal Resource Cost (MRC)

√ MRC is the increase in total cost resulting from the employment of each additional unit of a resource; so for labor, the MRC is the wage rate.

• MRP=MRC is the rule.

√ It will be profitable for a firm to hire additional units of a resource up to the point at which that resource's MRP is equal to its MRC. (Compare this to the MR=MC rule in terms of the market models of the previous chapters. Recall that it was profitable to produce the output that added revenue until the added cost was greater.)

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Chapter 27 p. 569-574

Determinants of Resource Demand (location of demand curve MRP)

√ **Changes in Product Demand**

• Recall Derived Demand—changes in Demand for the product produced by the resource will cause change in the resource demand in the same direction

√ **Changes in Productivity**

• Quantities of other resources used—adding capital to labor raises productivity more than if labor is added to labor

• Technological Progress—the better the quality of the capital, the greater the productivity of the labor used with it

• Quality of the variable resource— improvements in the quality of the resource will raise its marginal productivity and hence raise demand

√ **Changes in Prices of Other Resources**

Relationship of inputs (1)	**Increase in the price of capital (2)**		
	Substitution Effect (a)	**Output Effect (b)**	**Combined Effect (3)**
Substitutes in production	Labor substituted for capital	Production costs up, output goes down, and less of both capital and labor used	D_L increases if the substitution effect exceeds the output effect; D_L decreases if the output effect exceeds the substitution effect
Complements in production	No substitution of labor for capital	Production costs up, output goes down, and less of both capital and labor used	D_L decreases

Real World Applications: p. 572

√ Restaurant Workers
√ Computer-related workers
√ Defense Personnel
√ Contingent Workers

Examples of Determinants of Labor Demand	
Determinant	**Examples**
Change in product demand	• Gambling increases in popularity, increasing the demand for workers at casinos • Consumers decrease their demand for leather coats, decreasing the demand for tanners
Change in productivity	• An increase in the skill level of glassblowers increases the demand for their services. • Computer-assisted graphic design increases the productivity of and the demand for graphic artists
Changes in the price of another resource	• An increase in the price of electricity increases the cost of producing aluminum and reduces the demand for its workers. • The price of security equipment used by businesses to protect against illegal entry falls, decreasing the demand for nigh guards • The price of telephone switching equipment decreases, greatly reducing the cost of telephone service, which in turn increases the demand for telemarketers.

Elasticity of Resource Demand

The sensitivity of producers to changes in resource price is measured by the elasticity of resource demand.

$$E_{rd} = \frac{\%\text{ change in resource quantity}}{\%\text{ change in resource price}}$$

E_{rd} > 1 elastic **E_{rd} = 1 unit-elastic** **E_{rd} < 1 inelastic**

Factors that determine the sensitivity of producers to changes in resource prices: Elasticity of Resource Demand

• Rate of MP decline:

√ if MP of labor declines slowly as it is added to a fixed amount of capital, the MRP, (demand curve for labor) will decline slowly and tend to be highly elastic; a small decline in the price of a resource will yield a relatively large increase in the amount of labor demanded.

√ if MP of labor declines sharply, the MRP (labor demand curve) will decline rapidly and hence tend to be inelastic; a relatively large decline in the wage rate will be accompanied by a very modest increase in the amount of labor hired.

• Ease of Resource Substitutability

√ the larger the number of good substitute resources available, the greater the elasticity of demand for a particular resource

√ wood substitutes and aluminum

√ use airline pilots, railroad crews and truck drivers as example of time element

• Elasticity of Product Demand

√ the greater the elasticity of product demand, the greater the elasticity of resource demand; derived demand is reason

√ recall the elasticity of demand curves for resources by perfect and imperfect competitors

• Labor Cost-Total Cost Ratio

√ the larger the proportion of total production cost accounted for by a resource, the greater will be the elasticity of demand for that resource.

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Chapter 27 p. 574-578

Optimum combination of Resources

Consider two interrelated questions: What is the least combination of resources and what is the combination of resources that will maximize a firm's profit?

√ Least—Cost Rule

• The cost of any output is minimized when the marginal product (MP) per $'s worth of each resource is the same.

$$\frac{\text{MP of labor}}{\text{Price of labor}} = \frac{\text{MP of capital}}{\text{Price of capital}}$$

Labor Price=$8					Capital Price=$12				
Q	**TP**	**MP**	**TR**	**MRP**	**Q**	**TP**	**MP**	**TR**	**MRP**
0	0		$0	$0	0	0		$0	$0
1	12	12	24	24	1	13	13	26	26
2	22	10	44	20	2	22	9	44	18
3	28	6	56	12	3	28	6	56	12
4	33	5	66	10	4	32	4	64	8
5	37	4	74	8	5	35	3	70	6
6	40	3	80	6	6	37	2	74	4
7	42	2	84	4	7	38	1	76	2

Example: For 50 **units of output** # of units is given since cost is the issue!

$$\frac{MP_L}{P_L} = \frac{MP_C}{P_C}$$

3 labor 6/8
2 capital 9/12

√ Profit Maximization Rule

• When hiring two resources in competitive markets, a firm realizes the profit-maximizing combination of resources when each input is employed up to the point at which its price equal its MRP.

$$\frac{MRP}{P_L} = \frac{MRP_C}{P_C} = 1$$

# of units is not given since profit is the issue.

Example:

$$\frac{MRP_L}{P_L} = \frac{MRP_C}{P_C}$$

5 labor 8/8
3 capital 12/12

√ Can a firm be least cost and profit maximizing?

	Least cost	**Profit maximizing**
5 labor	4/8	8/8
3 capital	6/12	12/12

How many units?
5 labor produce 37 3 capital produce 28 = 65 units of output

AP Microeconomics
Chapter 28 p. 581-589

Labor, Wages and Earnings

√ **Labor** means 1) blue and white-collar workers, 2) professional workers, 3) owners of small businesses who provide their labor in operating.

√ **Wages and wage rates** are the price paid for labor. Wage is said to mean some wage rate per unit of time. Weekly or monthly salaries, bonuses, royalties, commissions are also forms of wages.

√ **Nominal wage** is the amount of money received per hour, per day or whatever the time frame. Sometimes called gross earnings. (wage rate x time worked)

√ **Real wage** is the quantity of goods and service a person can obtain with nominal wages; purchasing power of nominal wages often measured in take-home pay.

General Level of Wages

√ **Wages differ** among nations, regions, occupations and individuals. The general level of wages is a composite concept that includes average wages of all workers**.**

Wages in the US are relatively high compared to international wages. This demand for labor in advanced economies is quite large relative to the supply of labor.

√ Demand for labor depends on **Productivity:**

- **Plentiful capital**—total capital available per worker in US is about $90,000
- **Access to abundant natural resources**—domestic or imported, the US has arable land, minerals, and sources of energy. The growth of agriculture is a good example of abundant land and capital.
- **Advanced Technology**—use of technologically superior equipment and scientific study and research.
- **Labor quality**—high living standards in health and education give us an edge over others
- **Intangible factors**—efficiency and flexibility of management, business, social and political environment, vast size of market.

Purely Competitive Labor Market

In a purely competitive market:

√ large number of firms hiring a specific type of labor

√ numerous qualified, independent workers with identical skills

√ Wage taker behavior—no ability to control wage on either side

Market Demand: sum of labor demand curves of the individual firms—their MRP curves

Market Supply: assume no union, slopes upward because as a group, the firms must pay higher wage rates to obtain more workers; workers have some alternatives.

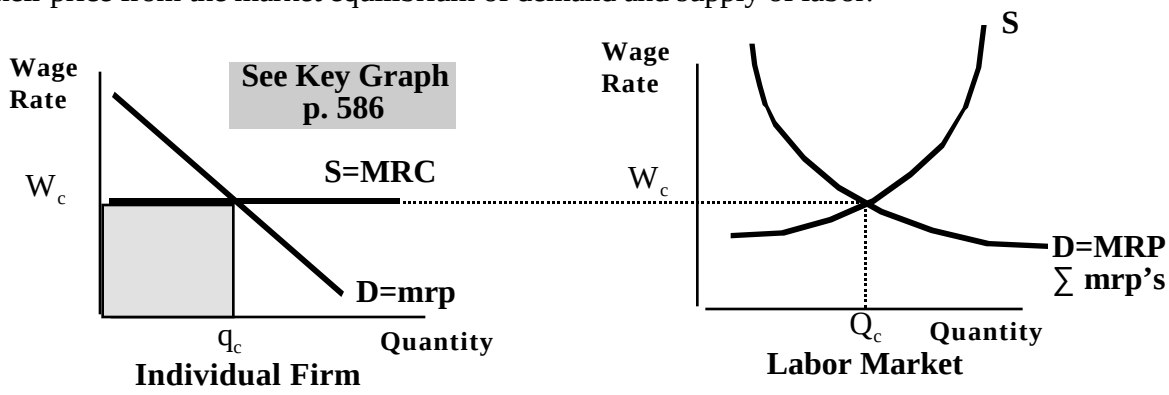
The supply of labor:

Pure competition in the hire of labor

Unit of Labor	Wage Rate	Total Labor Cost	Marginal Resource Cost —MRC
0	$6	$0	
1	$6	6	$6
2	$6	12	$6
3	$6	18	$6
4	$6	24	$6
5	$6	30	$6
6	$6	36	$6

When the resource price is given to the firm, <u>their MRC is constant</u> and is <u>equal to the wage rate</u>. Each new worker adds his wage rate to the total wage cost.

For the firm, MRC (S) is perfectly elastic and MRP is downsloping. Each firm will find it **profitable to hire labor up to the point at which MRP=MRC**. The firm's get their price from the market equilibrium of demand and supply of labor.



For the firm, the **shaded area** is total wage cost; the **triangle** above the shaded area is the nonlabor cost, or payments to the suppliers of other resources.

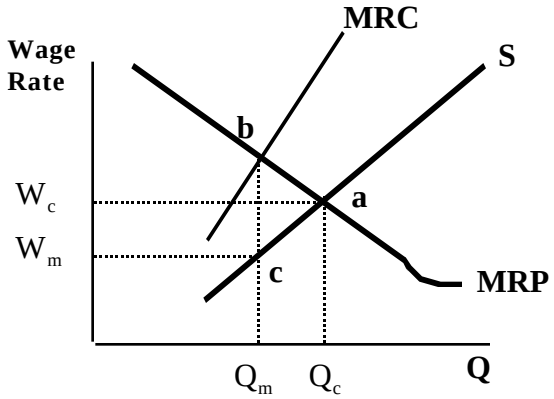
Monopsony Model

This is a market in which an employer of resources has monopolistic buying (hiring) power. One major employer or several acting like a single monopsonist in a labor market. **In this market**:

√ single buyer of a specific type of labor
√ labor is relatively immobile—geography or skill-wise
√ firm is "wage maker" —wage rate it must pay varies directly with the # of workers its hires

Unit of Labor	Wage Rate	Total Labor Cost	Marginal Resource Cost —MRC
0	$5	$0	
1	$6	6	$6
2	$7	14	$8
3	$8	24	$10
4	$9	36	$12
5	$10	50	$14
6	$11	66	$16

Decision to employ more or fewer workers will affect the wage rate**; the firm will have to pay a higher wage to obtain more labor. This makes the supply curve upsloping.** Each point indicates the wage rate (cost) per worker which must be paid to attract that corresponding # of workers.



The employer's MRC curve lies above the labor S curve since it must pay all workers the higher wage when it hires the next worker the high rate to obtain his services. **Equating MRC with MRP** at point b, the monosponist will hire Q_m workers and pay wage rate W_m. **Note that the q and w are below the Q_c and W_c amounts.**

Why not pay a wage rate noted by point b?
This firm does not have to do so since the labor supply is willing to accept less as indicated by the S curve.

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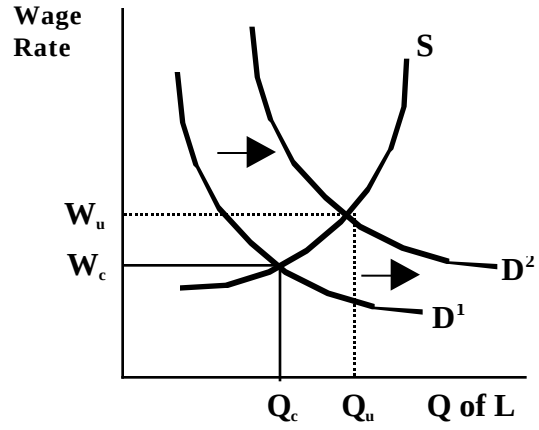
Three Union Models

The most important goal of union activity is to <u>raise wages.</u>

√ <u>Demand-Enhancement Model</u>—raising the demand for labor causing wages to rise and quantity of labor to increase.



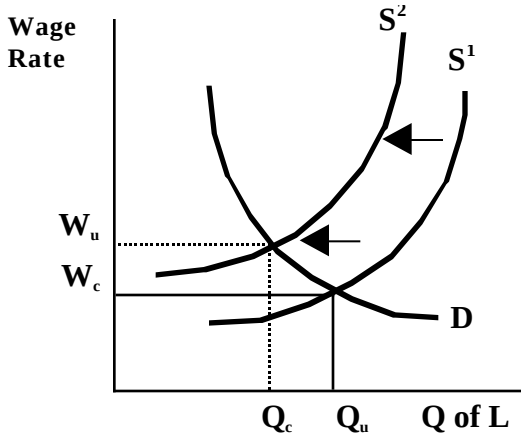
• A union can increase labor demand by changing one or more of the determinants of labor demand:

1) increase product demand—advertising the product, political action to increase production, "featherbedding"

2) increase productivity—joint labor-management committees

3) change prices of other inputs—support of minimum wage legislation, prevent declines in labor decline through actions to raise the price of other inputs.

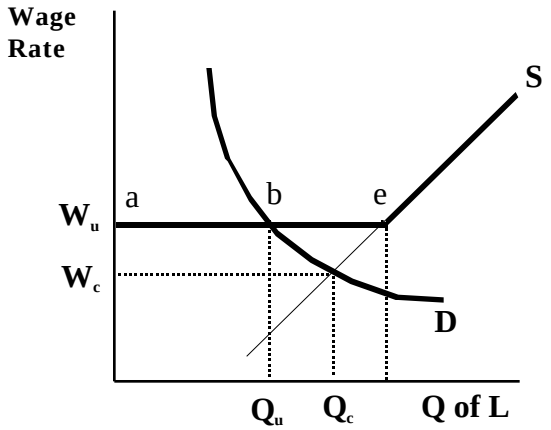
√ <u>Exclusive or Craft Union Model</u>—reducing the supply of labor through the use of restrictive membership policies causing higher wages but lower quantity of labor.



• Craft unions (exclusive unionism) include workers sharing a specific skill who act together to force employers to hire them. They employ restrictive membership—long apprenticeship, high fees, limits on new members—and hence, cause the supply of labor to decrease.

• Occupational licensing is also used to protect consumers but has the same effect by restricting the supply of labor. Some 600 occupations are now licensed in the US.

√ **Inclusive or Industrial Union Model—imposing a wage rate above the competitive rate causing the supply curve to be perfectly elastic in part of its range.** This means that employers are forced to accept the wage or no labor is made available—workers strike. By agreeing to the union's wage demand, individual employers are wage takers. When they equate MRC = MRP, they are in the perfectly elastic range. **Employers here are in a competitive market for labor.**



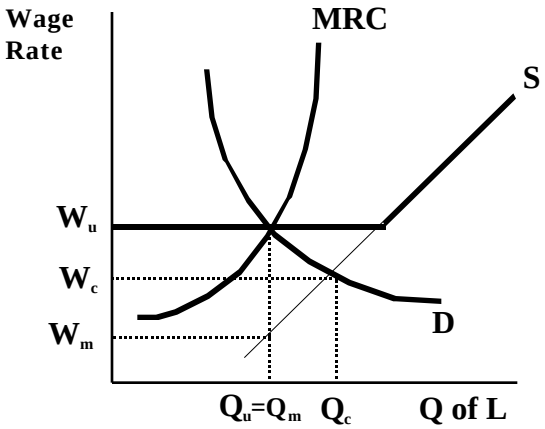
• In Inclusive Industrial unions, **Wages are above the competitive wage rate** and the quantity of labor is less than would have been with competitive model.
• Point e show a quantity of workers greater than competitive model. This causes a surplus of workers, which should lower wages. But, union workers will refuse to work for lower wages acting collectively and employers contractually cannot pay less.

Wage Increases and Unemployment

√ Union members earn on average 10 to 15% more than nonunion members do
√ Both types of unions do reduce quantity of labor
√ Growth of economy and Elasticity of demand for labor are two ways to raise employment caused by union action.

Bilateral Monopoly Model

A monopsonistic employer seeks a lower wage rate that is demanded by an inclusive union. This is "monopsony in labor vs. monopoly in business" or "big labor vs. big business"!



• A **monosponist** seeks to hire Q_m (where MRC =MRP) and pay wage rate W_m corresponding to Q_w on the labor supply curve S.

• The **inclusive union** it faces seeks the above equilibrium wage rate W_u. The actual outcome cannot be predicted by economic theory. Collective bargaining will be the vehicle used to reach consensus.

Wage Differentials

• **Table 28-3 p. 595** shows **wage differences** based on work abilities, educational level, non-monetary differences in jobs & market imperfections.

• **Figure 28-9** shows how **education levels** affect individual annual earnings.

• Non-Monetary aspects of work can lead to a compensating difference in wages. "Dirty" jobs or those that have hazardous elements may not attract all possible workers so compensating differences illicit higher wages.

• Market imperfections include lack of job information, geographic immobility, effect of unions and government policies and discrimination. These differences result in a difference in wage payments.

Pay for Performance: Principal Agent Problem

√ Problem arises when workers (as agents) shirk their responsibilities and provide less than expected work effort. Firms want to motivate workers in some way to raise productivity.

√ Piece rates, commissions, royalties, bonuses, profit sharing, and efficiency wages are designed to improve productivity by overcoming the principal agent problem.

√ There are negative side effects of these measures: poor quality, predatory sales practices, interference in team oriented work, free-riders, and lack of new ideas.

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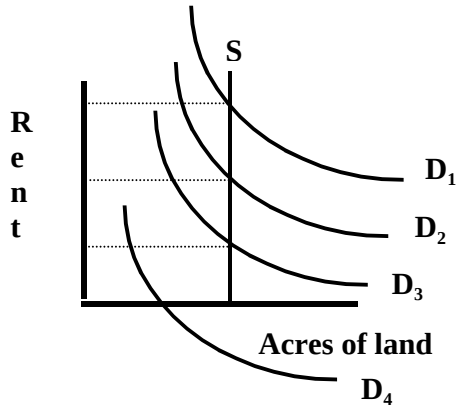
Chapter 29 p. 603-606

Economic Rent…price paid for the use of land and other natural resources, which are completely fixed in supply.

• **Perfectly inelastic supply** since land has no production costs; it is a "free and nonproductive gift of nature." Its quantity does not change with price (a few exceptions)

• **Changes in demand will determine the amount of rent.**
• Several factors influence this demand:
√ price of the product grown on the land
√ the productivity of the land
√ the prices of other resources combined with the land



• Land is **viewed as surplus** since there is no incentive function to provide more supply,
• Some argue it should be **taxed away**, since it is unearned. Some argue that it should be nationalized or **owned by the government**.
• **Differences in land productivity** result from differences in the land itself. These account for the varying amount of rent to allocate land to its most productive use.
• Economic rent is a surplus payment above that needed for society to gain the use of the resource, but **individual firms do need to pay rent to attract land resources away from alternative uses, and so <u>rent is a cost for firms</u>.**

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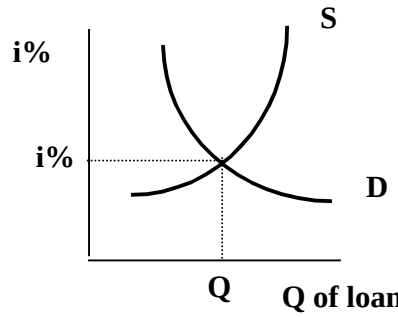
Chapter 29 p. 606-611

Interest…price paid for the use of money, usually viewed as the money that must be paid for the use of one dollar for one year.

• **Interest is stated as a percentage** as required by the Truth in Lending Act of 1968.

• **Money itself is not a resource.** It is used to acquire capital goods, so by borrowing money or using money, businesses are **buying the use of real capital goods**.



• **Interest rate is determined in Money Market.**
• **Demand** consists of Transaction and Asset demands; it is downsloping because at lower interest rates, businesses are willing to borrow more.
• **Supply** is upsloping because at higher interest rates, consumers will be induced to save more and spend less.

• **Investment decisions are related to rates of interest and rates of return**. Businesses will be willing to invest in capital goods when their expected return exceeds the cost of borrowing.

• **Nominal interest rates** are stated in current dollar values; **real interest rates** are expressed in constant or inflation-adjusted dollars. Businesses are worried about real interest rates.

• **Range of interest rates:**
- √ Varying degrees of risk (riskier loans carry higher rates)
- √ Differing maturity dates (longer-term loans carry higher rates)
- √ Size of loan (larger amount of loan have lower rates)
- √ Taxability (some interest earned is tax-free, so interest paid would be lower)
- √ Market imperfections (monopoly power in market may raise rate)

• **Pure Rate of Interest**: best defined in terms of the long-term virtually risk-free securities such as the US government 30-year Treasury Bond. The rate in August 2001 was 5.5%.

• Role of Interest is important since it **affects both levels and the types of investment undertaken**. Level of investment is inversely related to the rate of interest.

• **Interest rates ration money capital** to those who are willing to pay for it, so…capital is allocated to its more productive and profitable uses.

AP Microeconomics
Chapter 29 p. 612-615

Economic Profits…what remains of a firm's total revenue after the explicit and implicit costs are subtracted.

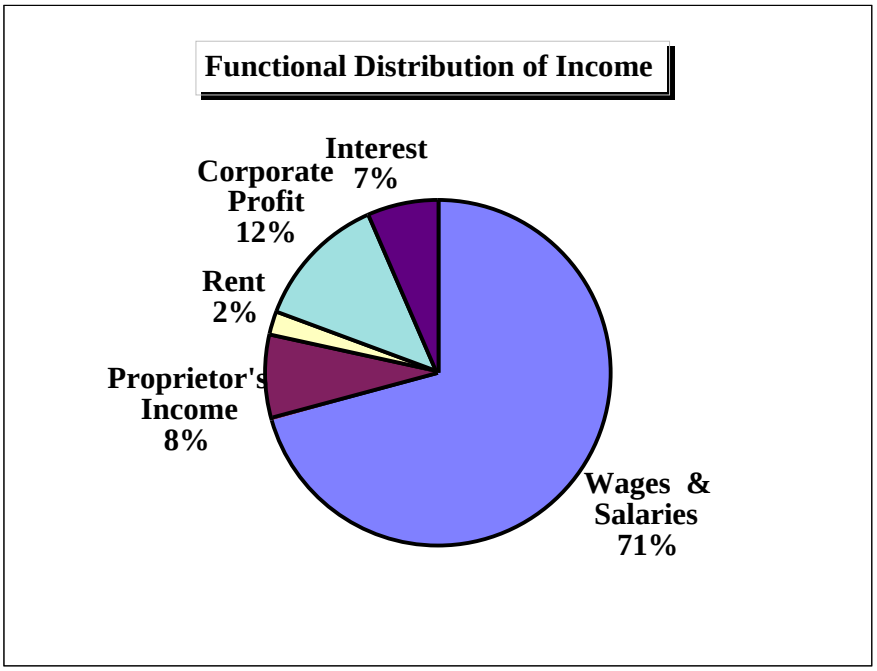
• **Profit are the reward for the entrepreneur**-for risk-taking, for innovation, for creative ways of combining resources.

√ Normal profit is the minimum required to retain the entrepreneur.
√ Economic profits are above the normal and act as the incentive to take risks.

• **Economic profits occur in a dynamic, ever-changing economy** as the reward to the entrepreneur, but they also accrue to those **with monopoly power** in the market.

• **Expectation of profit** encourages firms to invest and expand output and production. They **allocate resources** to those ventures that are profitable—a signal that society's needs and wants for being met.

Income Shares



• **Wages are dominant type**, and if proprietor's income is added, the percentage rises even higher.
• **Historically**, corporate profit has grown as a share over time as that form of business organization grows. Industry has changed from land-capital intensive to labor-capital intensive to labor-service intensive.

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Chapter 5 p. 84-97

Economic Functions of Government

√ **Legal and Social Framework**—provides legal framework and services needed for a market economy to function efficiently.

- sets "rules of the game" governing business relationships such as contract enforcement
- services like police powers, weights and measures, and system of money
- agencies that protect consumer and regulate businesses

√ **Maintaining Competition**—actions that encourage competition in order to promote efficiency to provide low prices and an adequate quantity of goods for consumers

- Regulation and ownership controls
- Anti-monopoly laws

√ **Redistribution of Income**—providing for those unable to do so themselves

- transfer payments such as welfare, SS payments, food stamps; unemployment compensation
- market intervention such as price controls or price supports
- sharing the wealth of the nation through income based taxation

√ **Reallocation of Resources**—measures to correct over- and under-allocation of resources

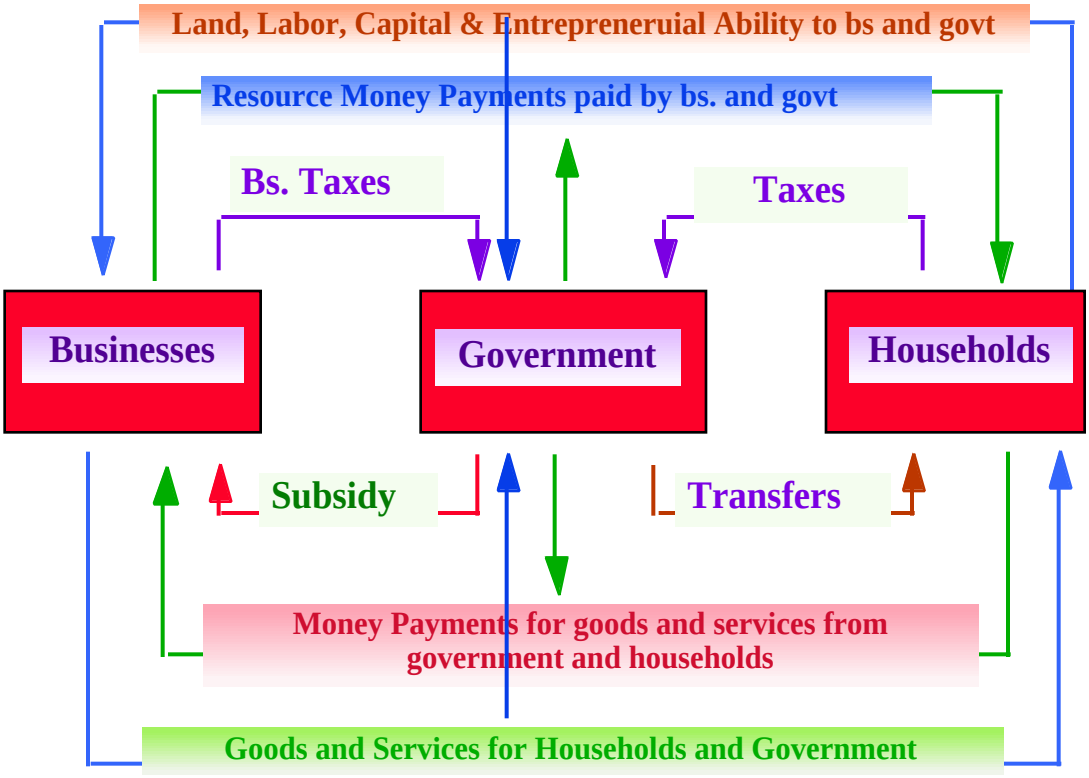
- **Spillovers** occur when some of the costs or the benefits of the good or service are passed on to parties other than the immediate buyer or seller.
- **spillover costs**
  - √ production or consumption costs inflicted on a third party without compensation
  - √ pollution of air, water are examples
  - √ Supply moves to right producing a larger output that is socially desirable—overallocation of resources
  - √ Legislation to stop/limit pollution and specific taxes (fines) are ways to correct
- **spillover benefits**
  - √ production or consumption costs conferred on a third party or community at large without their compensating the producer
  - √ education, vaccinations are examples
  - √ Market Demand, reflecting only private benefits moves to left producing a smaller output that society would like—underallocation of resources
  - √ Legislation to subsidize consumers and/or suppliers and direct production by government are ways to correct

√ **Provider of Public Goods and Services**—providing goods and services to society that the private sector is not willing or able to provide

- private goods are subject to exclusion principle—those unable or unwilling to pay do not get the product.
- public goods are indivisible—cannot be sold to individual buyers
- exclusion principle does not apply to public goods—there is no effective way to exclude individuals
- classic example is a lighthouse—free-rider problem emerges. Who pays? Who benefits?
- Quasipublic Goods—goods and services produced and delivered in such a way that the exclusion principle applied even though the private sector could offer
  - √ Often, government will provide these g/s since private sector may tend to underallocate resources for their production
  - √ Medical care and public housing are examples.
- Allocation of resources to public and quasipublic goods—government spending, taxing policies, and manipulating interest rates are the ways government can shift resource use.

√ **Stabilization—**helping the private economy achieve full employment of resources and stable prices.

Circular Flow adding government to the picture.



• **All the government flow suggest ways that the government can stabilize the economy:**

√ To stimulate the economy, increase government spending and/or reduce taxes; increase transfers and subsidies.

√ To fight inflation, raise taxes and/or reduce spending; decrease transfers and subsidies.

Government Finance

• Government Purchases are exhaustive since they use resources directly and are part of the domestic output.

• Transfer payments are nonexhaustive since they do not use resource and hence, do not produce any output.

• Government purchases have been about 20% of domestic production for past 35 years and transfer payments now equal about 33% of domestic production having increased as a % over the past 35 years.

• **Federal Finance**:

√ Expenditures: figure 5-7 on p. 93—38% goes to pensions and income security

√ Revenues: figure 5-7 p. 93—80% of revenue comes from personal income tax and payroll tax.

• **Personal Income Tax** is a progressive tax (those with higher incomes pay a larger percentage of their income. Higher rates are applied in bracket to higher incomes. The marginal tax rate is the rate at which the tax is paid on each additional unit of taxable income. Average tax rates give a better picture of the tax burden; it is the total tax paid divided by the total taxable income.

Federal Personal Income Rates, 1997
for married couple filing a joint return

(1)Total Taxable Income	(2)Marginal tax %	(3)Total Tax paid on highest income bracket	(4)Average Tax % 3÷1
$1 to $41,200	15.0	$6,180	15.0
$41,201 to $99,600	28	$22,532	22.6
$99,601 to $151,750	31	$38,699	25.5
$151,751 to $271,050	36	$81,647	30.1
Over $271,050	39.6		

• **Payroll tax** is the social security contribution based on wages and salaries. Two compulsory Federal programs are financed: social security and Medicare. The payroll tax is assessed on both workers and employer equally. In 1998, the rate was 7.65% on first $68,400 or earnings and 1.45% on all additional earnings.

• **Corporate Income Tax** is levied on a corporation's profit. The rate is 35% for most corporations.

• **Sales and excise taxes** on commodities or on purchases such as alcoholic beverages, tobacco, and gasoline. The Federal government does not levy a general sales tax.

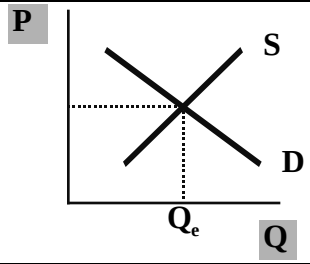
AP Microeconomics
Chapter 30 p. 625-631

Market Failures

• Failure of the market to bring about the allocation of resources that best satisfies the wants of society

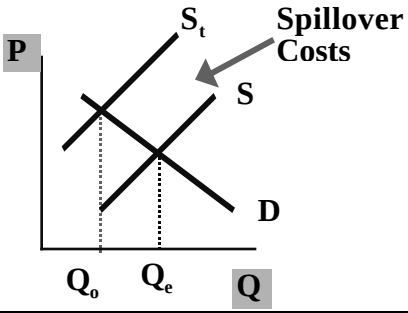
• Results in either over- or underallocation of resources dedicated to the production of a particular good or service

• Caused by either externalities (spillover) or information problems

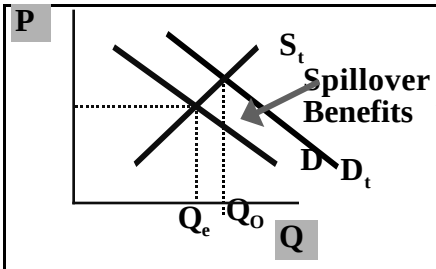


No externalities involved:
No benefits or costs beyond those to consumer
Q_e is efficient allocation equilibrium

• Externalities failures: (cost or benefit accruing to an individual or group—third party—which is external to the market transaction)



Overallocation of resources when external costs are present and suppliers are shifting some of their costs onto the community, making their marginal costs lower. The supply does not capture all the costs with the S_t curve understating total production costs. By shifting costs to the consumer, the firm enjoys S curve and $Q_{e.,}$ (optimum output). This means resources are overallocated to the production of this product.



Underallocation of resources when external benefits are present and the market demand curve reflects only the private benefits understating the total benefits. Market demand curve and market supply curve yield Q_e. This output will be less than Q_o shown by the intersection of D_t and S_t with resources being underallocated to this use.

Correcting for Spillovers or Externalities:

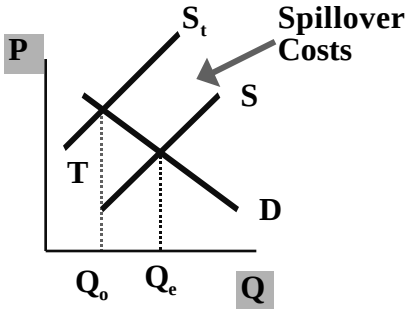
√ **Individual bargaining**: Coase Theorem — government role is to encourage bargaining; property rights must be defined; a compelling incentive emerges for the parties to find ways to solve failure since both have opportunity costs.

√ **Liability rules and lawsuits**: government role is to establish framework of laws which define property rights and protect them from damage done by other parties; private lawsuits are judged from that framework

√ **Direct controls**: legislation that sets limits on activity (clean air acts, etc.); raises the private marginal costs of producing

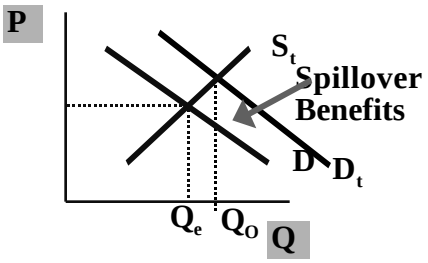
√ **Specific taxes**: producers must decide to pay tax or expend funds to develop substitutes

√ **Subsidies and Government Provision**: payments to buyers, to producers, or the government provides the product



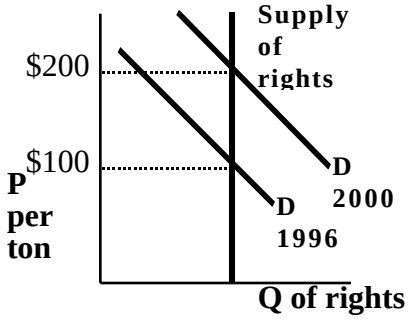
Correcting for the Spillover Costs

Difference between Q_o and Q_e is the overallocation. This can be corrected by direct controls or by imposing a specific tax T that raises the firm's marginal costs and shifts its supply curve from S to S_t.



Correcting for the Spillover Benefits

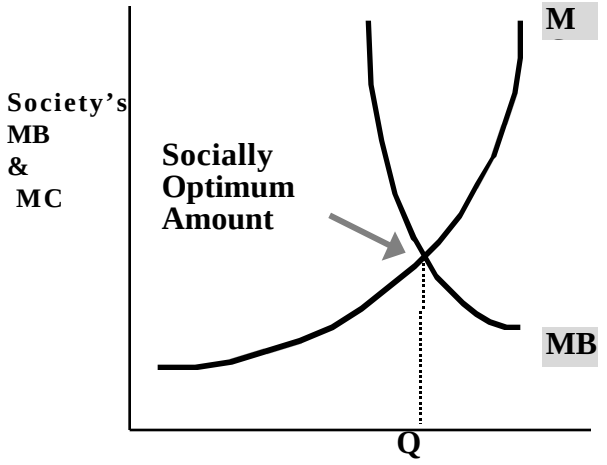
Difference between Q_o and Q_e is the underallocation of resources. This can be corrected by a subsidy to consumers (demand side to push back to D_t) or a subsidy to producers (supply side to S' to the right of S_t). These shifts will move to Q_o.



Market for Externality Rights:

- Determine "rights" (supply is fixed)
- Demand is downsloping; demand will increase over time as human and business populations increase
- Equilibrium price for "rights" will be intersection of demand and supply
- Firms are either encouraged to reduce or eliminate it based on their costs and the price of the right .
- Rights can be bought and sold; conservation groups can "buy" up rights to control spillover costs

Society's Optimal Amount of Externality Reduction



The optimal amount of externality reduction occurs at Q where society's marginal cost and marginal benefit of reducing the negative externality are equal. Reduction of the negative externality beyond Q will reduce economic efficiency by overallocating resources to control.

Problem	Resource allocation	Ways to Correct
Spillover Costs **Negative Externalities**	Overallocation of Resources	Individual Bargaining Liability rules and lawsuits Tax on Producers Direct Controls Market for Externality rights
Spillover Benefits **Positive Externalities**	Underallocation of Resources	Individual Bargaining Subsidy to consumer Subsidy to producer Government Provision

Think About This!

√ Read "A Closer Look at Pollution" (pages 631-635). Relate the law of conservation of matter and energy to the air pollution problem and the solid waste disposal problem. What is the "tragedy of the commons" as it relates to pollution?

AP Microeconomics
Chapter 30 p. 636-640

Information failures: unequal knowledge possessed by the parties to a market transaction

Sellers' side: √ Gasoline market — legal system of weights and measures
√ Licensing of doctors — qualifying tests and licensing

Buyers' Side: √ Moral Hazard Problem — tendency of one party to alter behavior in which are costly to the other party.
Divorce Insurance example
Car Insurance and your "cautious" behavior?
Medical Malpractice insurance and doctor behavior?
Guaranteed contracts for professional athletes?
Unemployment Compensation and employee behavior?
FDIC insurance and risky loans?

√ Adverse Selection Problem — information know by the first party is not known by the second and as a result, the second party incurs major costs.
Those in poorest health want the best medical insurance
A person hiring an arsonist wants to buy fire insurance

√ Workplace Safety — lack of knowledge on job safety
Workplace Safety has a cost
Unsafe workplaces will need to pay high wages to attract workers

Government can intervene by:
…Providing workers with safety information
…Mandate that employers give workers good information
…Establish standards and force firms to abide

AP Microeconomics
Chapter 31 p. 650-652

Apportioning the Tax Burden

• **The benefits-received principle** holds that government should assess taxes on individuals according to the amount of benefits they received, regardless of their income. Gasoline tax is the best example since the tax collected goes directly into the fund to finance highway construction and repair. Two problems arise—how to determine who really benefits and this principle cannot be applied to income redistribution programs.

• **The ability-to-pay principle** holds that people should be taxed according to their income or wealth regardless of the benefits received from government. Those with higher income has a diminishing marginal utility for the goods they buy since their incomes allow them to buy more things to satisfy their wants. A low-income buyer places a higher utility on each good he purchases since he has less to spend. Problems—what is fair?—a larger tax total or a higher rate on higher income levels?

• **Taxes are classified as progressive, proportional or regressive** depending on the relationship between tax rates and taxpayer incomes.

Type	Definition	Applications
Progressive	• Average rate increases as income increases • Claims a larger absolute amounts AND a larger percentage of income as income rises • Bears down most heavily on the rich	**Personal Federal Income Tax** √ Marginal Tax rates between 15 and 39.6 % √ Tax deductions like home mortgage and bond interest exemption erode progessiveness of the tax
Proportional	• Average rate remains the same regardless of the size of income	**Corporate Income Tax** √ flat rate of 35% √ some argue that this tax is passed to consumer
Regressive	• Average rate declines as income increases • Takes smaller and smaller proportion of income as income increases • May or may not take a larger absolute amount of income as income expands	**Sales Taxes** √ Larger portion of poor person's income exposed to tax; rich can avoid by saving some income **Payroll Taxes** √ Apply to only a fixed absolute amount of income √ SS tax—7.65% of $72000 √ Excludes non-wage income **Real Property Tax** √ Poor spend a larger portion of their income for housing √ Owners of rental property "pass" tax onto tenants

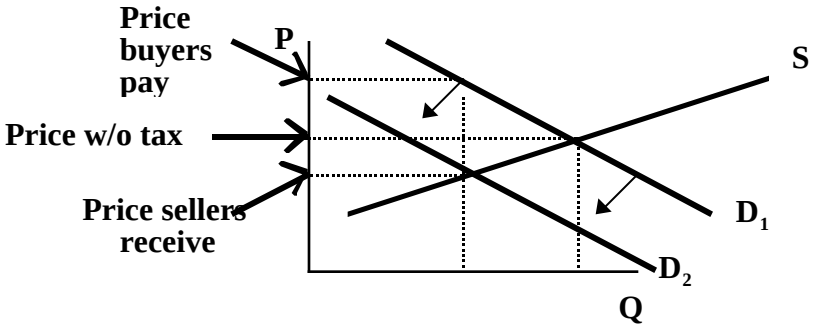
AP Microeconomics
Chapter 31 p. 652-57

Taxes

When government imposes a tax on a good, who pays the tax? The way the burden of a tax is distributed is the **incidence** of the tax. The true tax incidence seldom falls entirely on the party on whom the government levies the tax. In many instances, someone else collects the tax and sends the proceeds to the government.

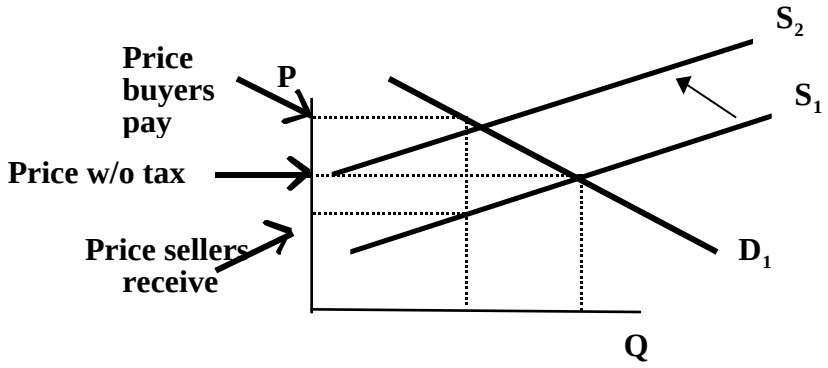
How taxes on buyers affect market outcomes?

What if a tax is imposed on the buyer ice cream cones? Demand Curve shifts down and equilibrium quantity falls. The price sellers receive is reduced. The price buyers pay (including the tax) rises to an amount greater than the equilibrium price. **Even though the tax is levied on buyers, buyers and sellers share the burden.**



How taxes on Sellers Affect market Outcomes

What if a tax is imposed on the seller of ice cream cones? Supply Curve shifts up and equilibrium price increases while equilibrium quantity falls. The price sellers receive after paying the tax is reduced. The price buyers pay rises to an amount greater than the equilibrium price. **Even though the tax is levied on sellers, buyers and sellers share the burden.**

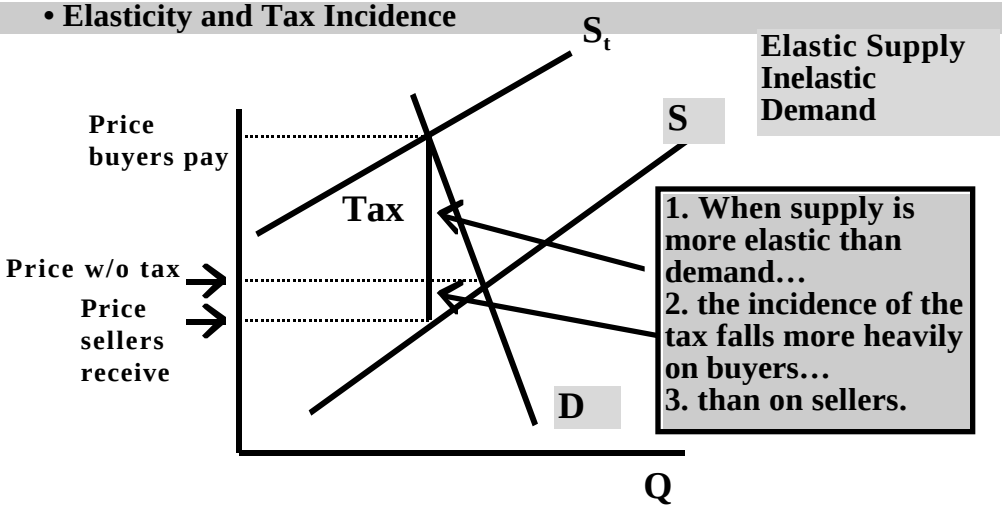


Two lessons:

• Taxes discourage market activity. When a good is taxed, the quantity of the good sold is smaller in the new equilibrium.

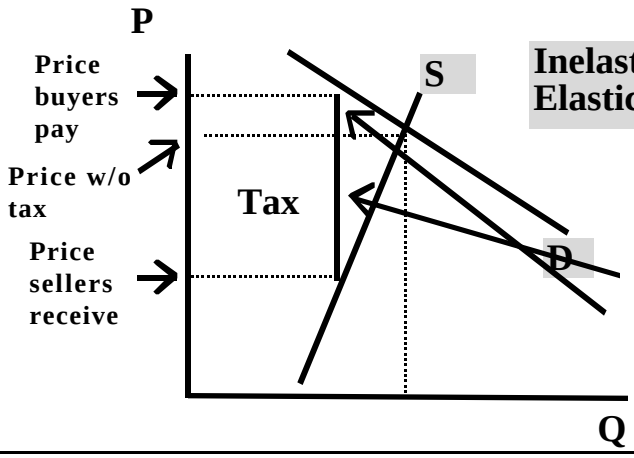
• Buyers and sellers share the burden of taxes. In the new equilibrium, buyers pay more for the good, and sellers receive less.

• Elasticity and Tax Incidence



Elastic Supply Inelastic Demand

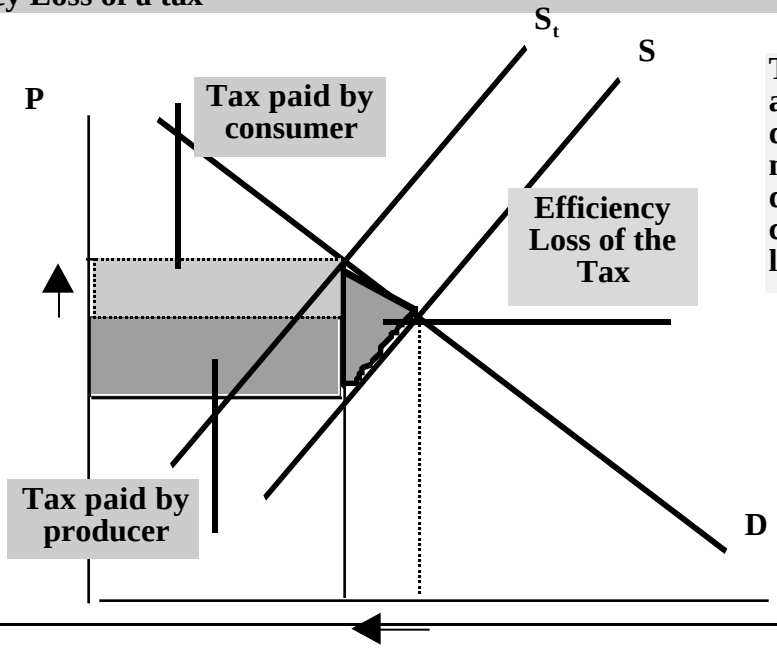
1. When supply is more elastic than demand…
2. the incidence of the tax falls more heavily on buyers…
3. than on sellers.



Inelastic Supply Elastic Demand

1. When demand is more elastic than supply…
2. the incidence of the tax falls more heavily on sellers…
3. than on buyers.

Efficiency Loss of a tax



The efficiency loss arises from the decline in output as noted by the quantity decrease as the S_t curve shifts to the left.

The probable incidence of taxes

Type of Tax	Probable Incidence
Personal Income Tax	The **household or individual** on which it is levied
Corporate Income Tax	Some argument: **firm** on which it is levied tax is shifted in whole or part to the **consumer**
Sales Tax	**Consumer** who buy taxed products
Specific Excise Tax	**Consumers & producers** each share depending on their elasticities
Property Tax	**Owners** in the case of land and owner-occupied residences; **Tenants** in the case of rental property **Consumers** in the case of business property

American Tax Structure

• **Federal tax structure:** income tax is progressive though the payroll tax is regressive.

• **State and Local structure:** property tax and sales tax is largely regressive; state income tax less progressive than Federal

Combined Tax System: the American Tax Structure is deemed to be **slightly progressive**, only slightly redistributing income from the wealthy to the poor.

Think About This!

√ Read about Tax Reform on pages 657-58 and think about the feasibility of using a VAT or Flat Tax to replace our current tax on income.

AP Microeconomics
Chapter 34 p. 701-707

Distribution of Personal Income

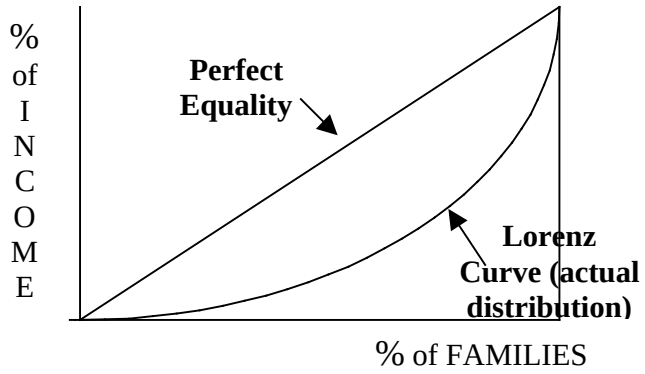
• Average family income in 1996 was $56,674.

Personal Income Class	% of all families in this class
Under $10,000	7.6
$10,000 to $14,999	6.1
$15,000 to $24,999	13.5
$25,000 to $34.999	13.5
$35,000 to $49,999	17.1
$50,000 to $74,999	21.3
$75,000 to $99,999	10.0
$100,000 and over	10.3
	100.0

This table shows that there is considerable income inequality.

• Causes of growing inequality:
Greater demand for highly skilled workers
Demographic changes
International trade, immigration and a decline in union membership

The Lorenz curve—another way to depict inequality



If income were distributed <u>perfectly equally</u>, the Lorenz curve would be the <u>straight-line diagonal shown</u>. The extent to which the actual income distribution varies from the line of perfect equality is the measure of inequality.

The **greater the distance of the curve from the line of equality, the more unequal the distribution**. The <u>extreme</u> would be a line following the horizontal axis to the right until it meets the right vertical axis and then turns upward along that axis. **The Lorenz curve can be used to compare changes in the curve over time or to compare income distributions across countries.**

• Government significantly redistributes income from higher to lower income households through taxes and transfers.

• The distribution of personal income is significantly more equal after taxes and transfers. **Because the American tax system is only modestly progressive, transfer payments are the most important method of redistribution**. They account for <u>more than 75% of the income of the lowest quintile</u>. **The Lorenz curve will move inward toward equality with these influences.**