

Economic systems

ECONOMIES & DISECONOMIES OF SCALE

Production and Cost in the Long Run

- The key difference between the short run and the long run is that there are **no** diminishing returns in the long run.
- Diminishing returns occur because workers share a **fixed** facility. In the long run the firm can **expand** its production facility as its workforce grows.

WHAT IS SCALE?

- By scale of an enterprise or size of a plant we mean the amount of investment in fixed factors of production
- Costs of production are lower in larger plants than in smaller ones
- This is due to economies of large-scale production
- The term 'economies' refers to cost advantages
- When these economies are over-exploited the result may be cost disadvantages, i.e. diseconomies.

ECONOMIES OF SCALE

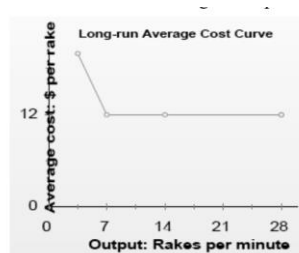
- **Economies of scale:** a situation in which an increase in the quantity produced **decreases** the long-run average cost of production.
- Economies of scale refer to cost **savings** associated with spreading the cost of indivisible inputs and input specialization.
- When economies of scale are present, the LAC curve will be **negatively** sloped.

Long-run Average Cost

- Long-run average cost (LAC) is total cost divided by the quantity of output when the firm can choose a production facility of any size.
- The LAC curve describes the behavior of average cost as the plant size expands. Initially, the curve is negatively sloped, and then beyond some point, it becomes horizontal.

Long-run Average Cost

- When long-run **total** cost is **proportionate** to the quantity produced, long-run **average** cost does **not** change as output increases.



Output: Rakes per Minute	Long-run Total Cost	Long-run Average Cost <i>LAC</i>
3.5	\$70	\$20.00
7	\$84	\$12.00
14	\$168	\$12.00
28	\$336	\$12.00

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The long-run average cost curve is horizontal for 7 or more rakes per hour.

Labor Specialization

- In a large operation, each worker **specializes** in fewer tasks thus is **more** productive than his or her counterpart in a small operation.
- **Higher** productivity (more output per worker) means **lower** labor costs per unit of output, thus lower production costs (ever-decreasing average cost).

Minimum Efficient Scale

- The **minimum efficient scale** describes the output at which economies of scale are **exhausted** and the long-run average cost curve becomes horizontal.
- Once the minimum efficient scale has been reached, an increase in output **no** longer decreases the long-run average cost.

DISECONOMIES OF SCALE

- A firm experiences **diseconomies of scale** when an increase in output leads to an **increase** in long-run average cost—the LAC curve becomes **positively** sloped.
- Diseconomies of scale may arise for two reasons:
 - **Coordination** problems
 - Increasing input **costs**
- After firm has reached its efficient scale, further increases in number of workers will lead to inefficiency.
- Co-ordination of different processes becomes difficult and decision-making process becomes slow
- Supervision of workers becomes difficult, management problems get out of hand with adverse effects on managerial efficiency.

TYPES OF ECONOMIES OF SCALE

External Economies

- Economies available to all firms in the industry.
- For eg. Construction of roads, railways in an area reduces costs for all firms in that area
- Discovery of a new technique, rise of industries using by-products, availability of skilled labour through the establishment of special technical schools
- External economies usually occur when an industry is heavily concentrated in a particular area.

Internal Economies of Scale

- Internal economies are available to a particular firm and give it an advantage over other firms engaged in the industry
- Arise from the expansion of the size of a particular firm
- From a managerial point of view internal economies are most important as they can be effected by managerial decisions of an individual firm to change its size/scale
- Internal economies arise due to a firm's own expansion while external economies arise due to expansion of some other industry or due to some external factor.

Labour Economies

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- Reduction in labour costs per unit due to increasing division/specialization of labour
- Arise due to increase in the skill of workers and saving of time involved in changing from one operation to another
- Many operations may be performed mechanically rather than manually
- Economies are maximum where products are complex and the manufacturing processes can be sub-divided.

Technical Economies

- Derived from the use of scientific processes and machines that a large production firm can afford.

Managerial Economies

- -With the increase in the size of a firm, the efficiency of management increases because of greater specialization in managerial staff
- -Experts in a large firm can be hired to look after various divisions like purchasing, sales, production, financing, personnel.

Marketing Economies

- A large firm can obtain economies in purchasing and sales as it has bulk requirements and can hence get better terms
- It gets the advantage of prompt deliveries, careful attention and special facilities from its suppliers
- A large firm can also spread its advertising cost over bigger output.

Economies of Vertical Integration

- Larger firm can integrate a number of stages of production
- Production is better planned and this leads to cost control
- Eg. Oil refining companies controlling distribution, i.e. owning petrol pumps-forward integration, or controlling oil reserves through oil exploration backward integration

Financial Economies

- Larger firms get credit more easily and also on better terms
- Better image, easier access to capital/stock markets.

Economies of Risk-spreading

- Larger size of business, greater scope for spreading of risks through diversification
- Diversification can be either of products or of markets.

COST ANALYSIS

The Object of Cost Analysis

- Managers seek to produce the highest quality products at the lowest possible cost.
- Firms that are satisfied with the *status quo* find that competitors arise that can produce at lower costs.

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- The advantages once assigned to being large firms (economies of scale and scope) have not provided the advantages of flexibility and agility found in some smaller companies.
- Cost analysis is helpful in the task of finding lower cost methods to produce goods and services.

Meaning of Cost

There are Many Economic Cost Concepts

- **Opportunity Cost** -- value of next best alternative use.
- **Explicit vs. Implicit Cost** -- actual prices paid vs. opportunity cost of owner supplied resources.

Depreciation Cost Measurement.

Accounting depreciation (*e.g.*, straight-line depreciation) tends

- to have little relationship to the actual loss of value
- » To an economist, the actual loss of value is the true cost of using machinery.

Inventory Valuation

Accounting valuation depends on its acquisition cost.

- » Economists view the cost of inventory as the cost of replacement.

Unutilized Facilities. Empty space may appear to have "no cost"

- » Economists view its alternative use (*e.g.*, rental value) as its opportunity cost.

Measures of Profitability.

Accountants and economists view *profit* differently.

- » Accounting profit, at its simplest, is revenues minus explicit costs.
- » Economists include other implicit costs (such as a normal profit on invested capital).

Economic Profit = Total Revenues - Explicit Costs - Implicit Costs

Sunk Costs -- already paid for, or there is already a contractual obligation to pay

- **Incremental Cost** - - extra cost of implementing a decision = ΔTC of a decision
- **Marginal Cost** -- cost of last unit produced = $\frac{\Delta TC}{\Delta Q}$

SHORT RUN COST FUNCTIONS

- $TC = FC + VC$ fixed & variable costs
- $ATC = AFC + AVC = FC/Q + VC/Q$

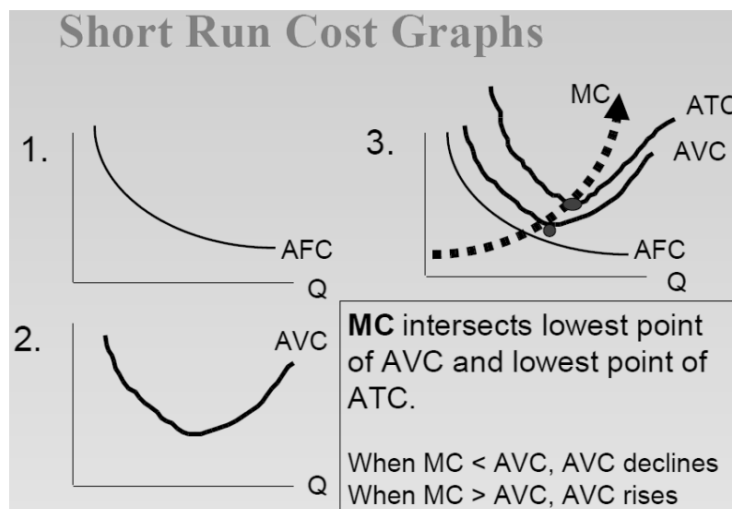
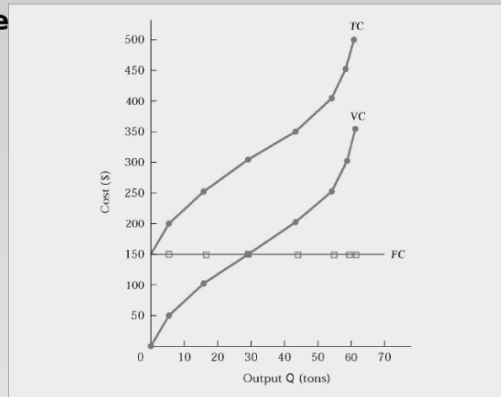
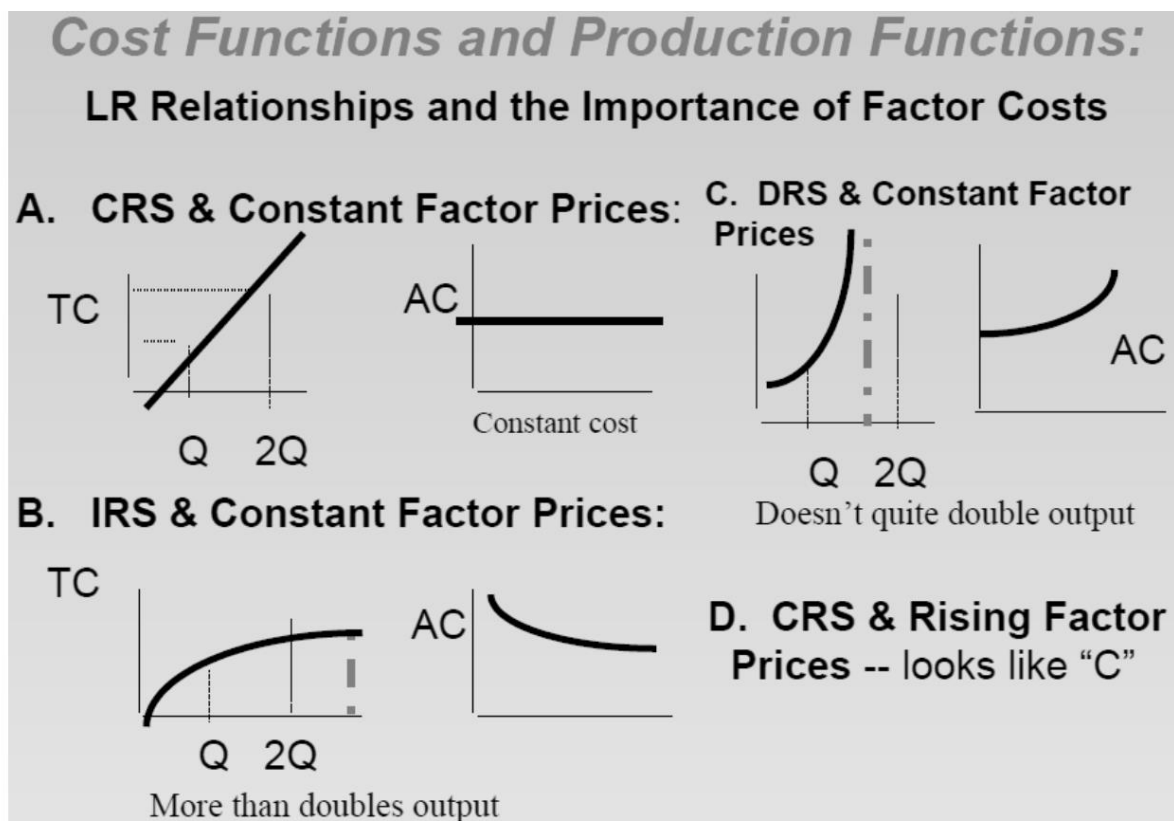


Figure 8.1 Short-Run Variable, Fixed, and Total Cost Functions—Deep Cree



- » **Product-specific economies** which include specialization and learning curve effects.
- » **Plant-specific economies**, such as economies in overhead, required reserves, investment, or interactions among products (*economies of scope*).
- » **Firm-specific economies** which are economies in distribution and transportation of a geographically dispersed firm, or economies in marketing, sales promotion, or R&D of multi-product firms.

- Flat section
 - » Constant returns to scale
- Upward rising section of LRAC is due to:
 - » *diseconomies of scale*. These include transportation costs, imperfections in the labor market, and problems of coordination and control by management.
 - » The **minimum efficient scale** (MES) is the smallest scale at which minimum per unit costs are attained.
 - » Modern business management offers techniques to avoid diseconomies of scale through profit centers, transfer pricing, and tying incentives to performance.



MARKET STRUCTURE

In economics, **market structure** (also known as **market form**) describes the state of a market with respect to competition.

Basic market structures

- Perfect competition, in which the market consists of a very large number of firms producing a homogeneous product.
- **Monopolistic** competition, also called competitive market, where there are a large number of independent firms which have a very small proportion of the market share.
- **Oligopoly**, in which a market is dominated by a small number of firms which own more than 40% of the market share.
- Oligopsony, a market dominated by many sellers and a few buyers.
- **Monopoly**, where there is only one provider of a product or service.
- **Natural monopoly**, a monopoly in which economies of scale cause efficiency to increase continuously with the size of the firm. A firm is a natural monopoly if it is able to serve the entire market demand at a lower cost than any combination of two or more smaller, more specialized firms.
- **Monopsony**, when there is only one buyer in a market.

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The imperfectly competitive structure is quite identical to the realistic market conditions where some monopolistic competitors, monopolists, oligopolists, and duopolists exist and dominate the market conditions. The elements of Market Structure include the number and size distribution of firms, entry conditions, and the extent of differentiation.

These somewhat abstract concerns tend to determine some but not all details of a specific concrete market system where buyers and sellers actually meet and commit to trade. Competition is useful because it reveals actual customer demand and induces the seller (operator) to provide service quality levels and price levels that buyers (customers) want, typically subject to the seller's financial need to cover its costs.

In other words, competition can align the seller's interests with the buyer's interests and can cause the seller to reveal his true costs and other private information. In the absence of perfect competition, three basic approaches can be adopted to deal with problems related to the control of market power and an asymmetry between the government and the operator with respect to objectives and information: (a) subjecting the operator to competitive pressures, (b) gathering information on the operator and the market, and (c) applying incentive regulation.

The correct sequence of the market structure from most to least competitive is perfect competition, imperfect competition, oligopoly, and pure monopoly.

The main criteria by which one can distinguish between different market structures are: the number and size of producers and consumers in the market, the type of goods and services being traded, and the degree to which information can flow freely.

Most markets fall between the two extremes of monopoly and perfect competition

- An imperfectly competitive firm
 - would like to sell more at the going price
 - faces a downward-sloping demand curve
 - recognises its output price depends on the quantity of goods produced and sold

IMPERFECT COMPETITION

- An oligopoly
 - an industry with a few producers
 - Each recognising that its own price depends both on its own actions *and* those of its rivals.

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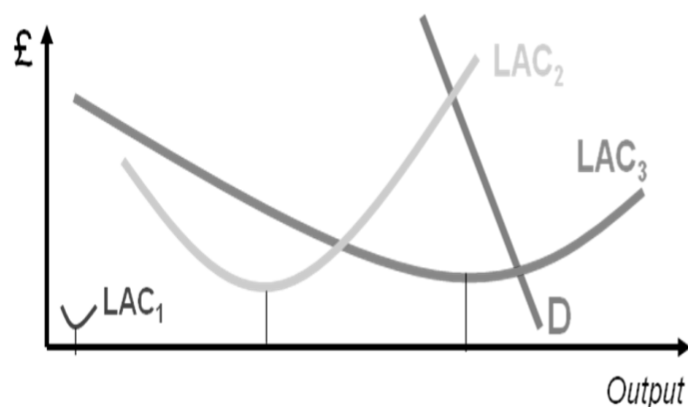
- In an industry with monopolistic competition
 - there are many sellers producing products that are close substitutes for one another
 - Each firm has only limited ability to influence its output price.

MARKET STRUCTURE

	Number of firms	Ability to affect price	Entry barriers	Example
Perfect competition	Many	Nil	None	Fruit stall
Imperfect competition:				
Monopolistic competition	Many	Small	None	Corner shop
Oligopoly	Few	Medium	Some	Cars
Monopoly	One	Large	Huge	Post Office

The minimum efficient scale and market demand

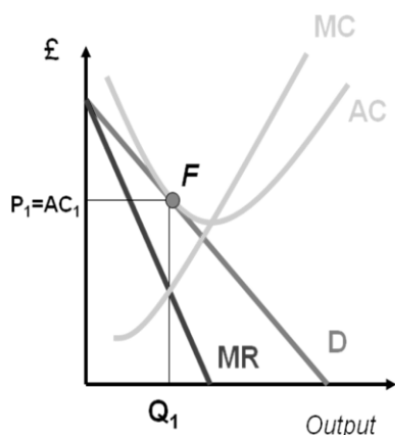
- The minimum efficient scale (mes) is the output at which a firm's long-run average cost curve stops falling.
- The size of the mes relative to market demand has a strong influence on market structure.



Monopolistic competition

- Characteristics:
 - many firms
 - no barriers to entry
 - product differentiation
 - so the firm faces a downward-sloping demand curve
 - The absence of entry barriers means that profits are competed away...

Monopolistic competition (2)



- Firms end up in TANGENCY EQUILIBRIUM, making normal profits.
- Firms do not operate at minimum LAC.
- Price exceeds marginal cost.
- Unlike perfect competition, the firm here is eager to sell more at the going market price.

Oligopoly

- A market with a few sellers.
- The essence of an oligopolistic industry is the need for each firm to consider how its own actions affect the decisions of its relatively few competitors.
- Oligopoly may be characterized by *collusion* or by *non-co-operation*.

Collusion and cartels

COLLUSION

- An explicit or implicit agreement between existing firms to avoid or limit competition with one another.

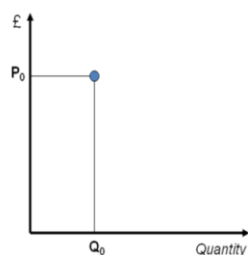
CARTEL

- Is a situation in which formal agreements between firms are legally permitted? e.g. OPEC

Collusion is difficult if

- There are many firms in the industry
- The product is not standardized
- Demand and cost conditions are changing rapidly
- There are no barriers to entry
- Firms have surplus capacity

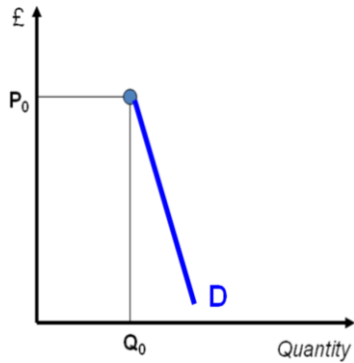
The kinked demand curve



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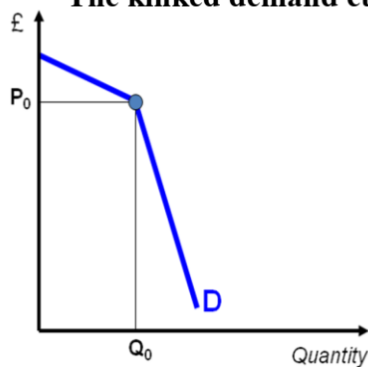
- Consider how a firm may perceive its demand curve under oligopoly.
- It can observe the current price and output, but must try to anticipate rival reactions to any price change.

The kinked demand curve (2)



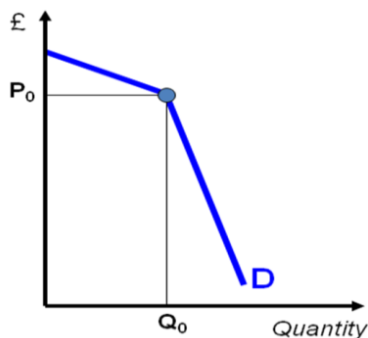
- The firm may expect rivals to respond if it reduces its price, as this will be seen as an aggressive move.
- So demand in response to a price reduction is likely to be relatively inelastic.
- The demand curve will be steep below P_0 .

The kinked demand curve (3)



- But for a price increase rivals are less likely to react, so demand may be relatively elastic above P_0 so the firm perceives that it faces a kinked demand curve.

The kinked demand curve (4)



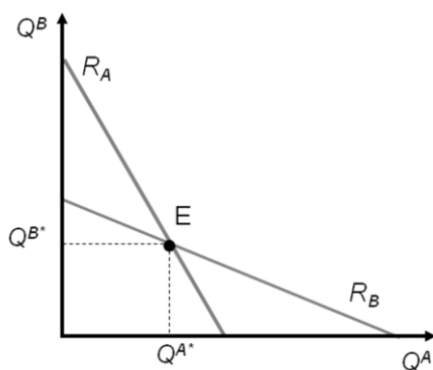
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- Given this perception, the firm sees that revenue will fall whether price is increased or decreased,
- So the best strategy is to keep price at P_0 .
- Price will tend to be stable, even in the face of an increase in marginal cost.

Game theory: some key terms

- Game
 - A situation in which intelligent decisions are necessarily interdependent.
- Strategy
 - A game plan describing how the player will act or move in every conceivable situation.
- Dominant strategy
 - Where a player's best strategy is independent of those chosen by others.

Nash-Cournot equilibrium



- R^A and R^B are the reaction functions for firms A and B respectively. Each shows the best each firm can do given its expectations about the other
- E is the Nash-Cournot equilibrium
- At E, each firm's guess about its rival is correct and neither will wish to change its behaviour

Contestable markets

- A contestable market is characterised by free entry and free exit
 - no sunk costs
 - allows *hit-and-run* entry
- Contestability may constrain incumbent firms from exploiting their market power.

Strategic entry deterrence

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- Some entry barriers are deliberately erected by incumbent firms:
 - threat of predatory pricing
 - spare capacity
 - advertising and R&D
 - product proliferation
- Actions that enforce sunk costs on potential entrants

IMPERFECT COMPETITION

Imperfect Competition and Market Power

- An *imperfectly competitive industry* is an industry in which single firms have some control over the price of their output.
- Some examples are Monopoly, Oligopoly and Monopolistic competition.
- *Market power* is the imperfectly competitive firm's ability to raise price without losing all demand for its product.

Price: The Fourth Decision Variable

- Firms with market power must decide:
 1. how much to produce,
 2. how to produce it,
 3. how much to demand in each input market, and
 4. *what price to charge for their output.*

Monopoly

A market structure in which only one producer or seller exists for a product that has no close substitutes

Characteristics of Monopoly

- ❖ The degree of control over price that is held by the monopolist
- ❖ The individual supply of the monopolist coincides with the market supply
- ❖ Market demand equals the demand for the monopolist's product or service
- ❖ The monopolist is a "price maker"

Sources of Monopoly

Economies of scale

- ❖ In capital intensive industries, the economies of large-scale production may lead to a small number of firms producing the product

Natural monopolies: Public utilities

- ❖ In cases where one or two firms can adequately supply all the service needed, it may be desirable to limit the number of firms within a given territory
- ❖ Government regulation of these monopoly franchises.

Control of raw materials

- ❖ An effective barrier to entry is ownership or control of essential raw materials
- ❖ Effective for years in the production of aluminum
- ❖ ALCOA and its control of bauxite

Patents

- ❖ The exclusive right to use, keep, or sell an invention for a period of 20 years
- ❖ Threat of infringement suits.

Competitive tactics

- ❖ Aggressive production and merchandising techniques
- ❖ Illegal predatory pricing policies
- ❖ Aggressive innovation techniques

Determining Monopoly Price

- ❖ The monopolist's demand curve slopes downward to the right because *it is the market demand curve of all consumers*
- ❖ The first question the monopolist asks is, "How many units of my good can I expect to sell at various prices?"

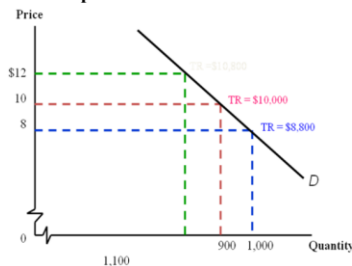
Price and Output Decisions in Pure Monopoly Markets

- With one firm in a monopoly market, there is no distinction between the firm and the industry. In a monopoly, the firm is the industry.
- The market demand curve is the demand curve facing the firm, and total quantity supplied in the market is what the firm decides to produce.

Price and Output Decisions in Pure Monopoly Markets

- The demand curve facing a perfectly competitive firm is perfectly elastic; in a monopoly, the market demand curve is the demand curve facing the firm.

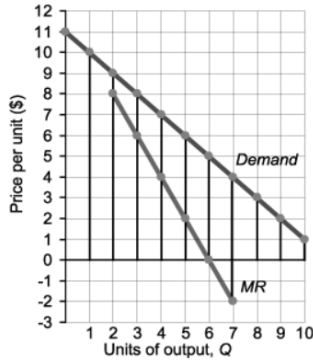
The Monopolist's Demand Curve



The Monopolist's Cost Curves

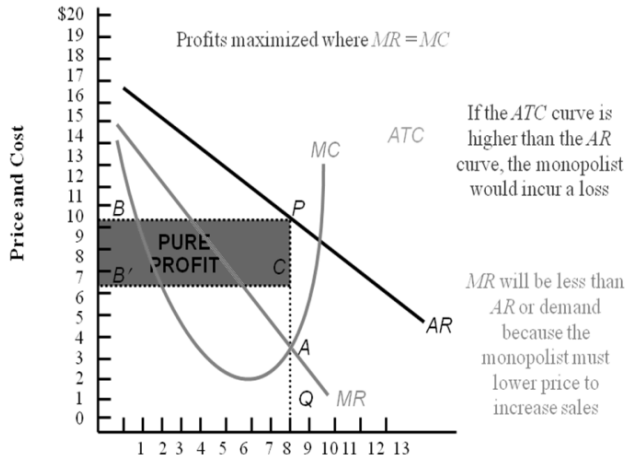
- ❖ The monopolist's cost curves reflect the law of diminishing marginal productivity
- ❖ Thus, the cost curves have the same general shape and characteristics as the cost curves in a competitive industry

Marginal Revenue Curve Facing a Monopolist



- For a monopolist, an increase in output involves not just producing more and selling it, but also reducing the price of its output to sell it.
- At every level of output except one unit, a monopolist's marginal revenue is below price.

Cost and Revenue Curves for a Monopoly

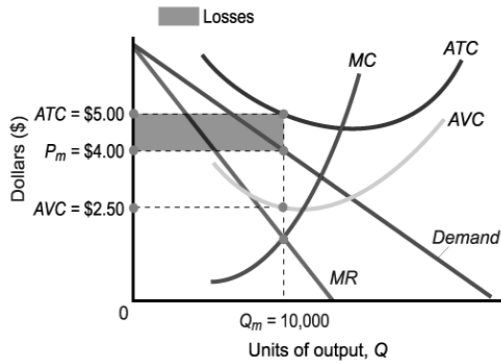


Facts about Monopoly

- ✓ A monopoly firm has no supply curve that is independent of the demand curve for its product.
- ✓ A monopolist sets both price and quantity, and the amount of output supplied depends on both its marginal cost curve and the demand curve that it faces.
- ✓ Since entry is blocked, the monopolist can earn economic profits in the long run.
- ✓ Monopolists can earn losses in the short run if demand is not sufficient or if costs are too high.

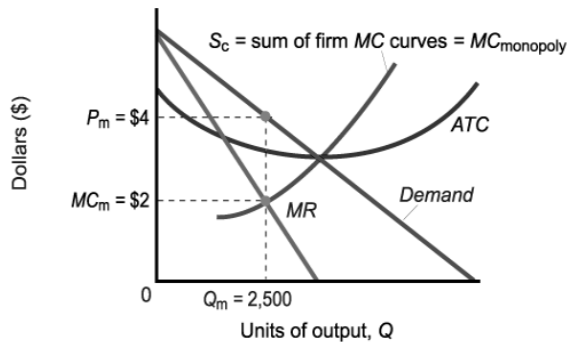
Price and Output Choices for Monopolist Suffering Losses in the Short-Run

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- It is possible for a profit-maximizing monopolist to suffer short-run losses.
- If the firm cannot generate enough revenue to cover total costs, it will go out of business in the long-run.

Perfect Competition and Monopoly Compared



- Relative to a competitively organized industry, a monopolist restricts output, charges higher prices, and earns positive profits.

Monopolistic Competition

- ✓ **Monopolistic competition** is a common form of industry (market) structure, characterized by a large number of firms, none of which can influence market price by virtue of size alone.
- ✓ Some degree of market power is achieved by firms producing **differentiated products**.
- ✓ New firms can enter and established firms can exit such an industry with ease.

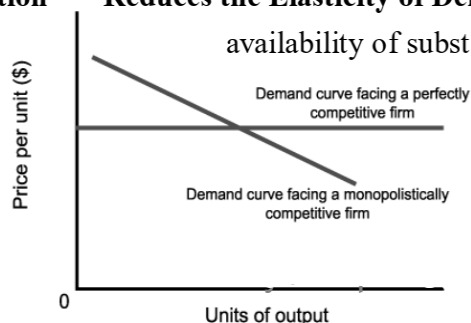
Product Differentiation

Establishment of real or imagined characteristics that identify a firm's product as unique.

Product Differentiation

- Based on the monopolistic

Reduces the Elasticity of Demand Facing a Firm



availability of substitutes, the demand curve faced by a competitor is likely to be

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less elastic than the demand curve faced by a perfectly competitive firm, and likely to be *more elastic* than the demand curve faced by a monopoly.

Substitution Effect

- ❖ A change in quantity demanded of a good due to a change in the price relative to substitute goods
- ❖ Increased sales at the expense of other firms

Monopolistic Competition in the Short Run

- ❖ In the short-run, a monopolistically competitive firm will produce up to the point where $MR = MC$.

Oligopoly

- ❖ A market structure in which relatively few firms produce identical or similar products
- ❖ Two basic characteristics:
 - ❖ Each firm has some ability to influence price
 - ❖ The interdependence among firms in setting their pricing policies
 - ❖ Entry barriers exist.

Competition in Oligopoly

- ❖ Firms in oligopolies tend to concentrate on nonprice competitive policies like advertising
- ❖ Frequently use **administered prices**
 - ❖ A predetermined price set by the seller rather than a price determined solely by demand and supply in the marketplace
- ❖ Use of nonprice competition eg rebates, promotional deals, etc..

Measurements of Concentration

- ❖ **Concentration ratio**
 - ❖ A measure of market power calculated by determining the percentage of industry output accounted for by the largest firms
- ❖ **Herfindahl Index**
 - ❖ A measure of market power calculated by summing the squares of the market shares of each firm in the industry
 - ❖ Gives much greater weight to firms with large market shares. A HI value of <1000 indicates a highly competitive industry.

Competition Among Consumers

- ❖ **Monopsony**
 - ❖ A market structure in which there is a single buyer (e.g., rural area granary)
- ❖ **Oligopsony**
 - ❖ A market structure in which there are only a few buyers (e.g., tobacco market)
- ❖ **Monopsonistic competition**
 - ❖ A market structure in which there are many buyers offering differentiated conditions to sellers (e.g., toy manufacturers)

THE THEORY OF FACTOR PRICING

- ✍ The Theory of Factor Pricing is concerned with the evaluation of the services of the factors of production.
- ✍ It deals with the determination of the share prices of four factors of production, e.g. land, labor, capital and organization.
- ✍ Pricing of factors of Production is Functional not Personal.
- ✍ The rewards of Factors of Production are Income from the factors of production point of view but Cost from firms point of view.

The Theory of Marginal Productivity

- ✍ This theory was discussed by many economists like J. B. Clark, Ricardo and Marshall.
- ✍ It states that in a competitive market, the price or reward of each factor of production tends to be equal to its Marginal Productivity.
- ✍ The payment made to the factor concerned is just equal to the value of the addition made to the total production on account of the employment of the additional unit of a factor.

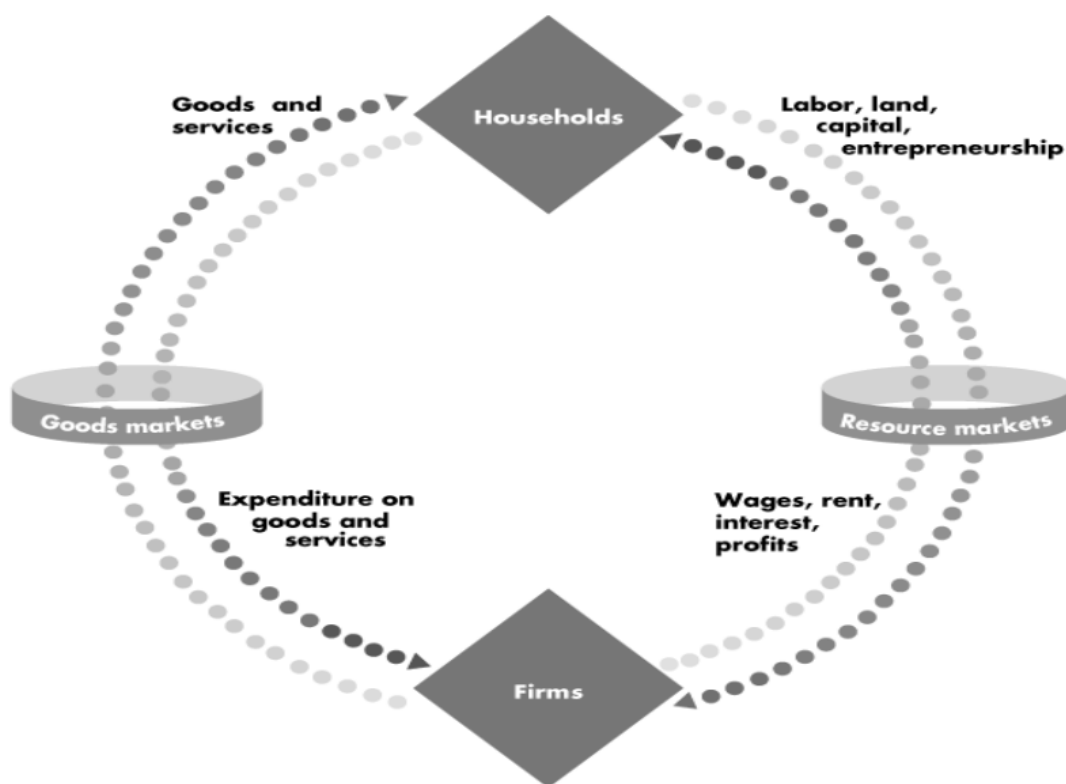
Terms used in the theory;

- ✓ Units of Resource
- ✓ Marginal Product
- ✓ Marginal Revenue Product (MRP) = Product Price X MP
- ✓ Marginal Resource Cost (MRC)
- ✍ When both MRP and its Marginal Cost are equal, the entrepreneur stops employing further factors of production.
- ✍ Least Cost Combination of Resources must be applied to maximize the profit which is arrived by equalizing the ratios between the marginal products and the prices of different factors of production.

- ✓ Assumptions of the Marginal Productivity Theory
- ✓ Identical Products
- ✓ Factors can be substituted
- ✓ Perfect Mobility of Factors
- ✓ Perfect Competition
- ✓ Law of Diminishing Returns Applies



FACTOR MARKETS



Prices and Incomes in Competitive Factor Markets Factors of production are the resources used to produce goods and services.

The factors of production are

- ✓ Labor
- ✓ Capital
- ✓ Land
- ✓ Entrepreneurship

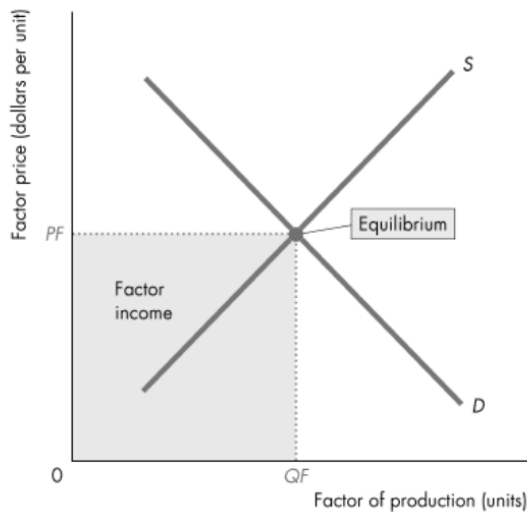
Factor prices determine incomes:

- ✓ Labor earns wages.
- ✓ Capital earns interest.

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- ✓ Land earns rent.
 - ✓ Entrepreneurship earns normal profit.
 - ✓ Economic profit (loss) is paid to (borne by) the owner of the firm.
-
- 👤 Factors of production are traded in markets where their prices and quantities are determined by the market forces of demand and supply.
 - 👤 This chapter focuses on competitive factor markets.
 - 👤 The laws of demand and supply apply to a competitive factor market: the demand curve slopes downward and the supply curve slopes upward.

The income earned by the owner of a factor of production equals the equilibrium price multiplied by the equilibrium quantity. Figure 14.1 shows a factor market at its equilibrium price and quantity.



Prices and Incomes in Competitive Factor Markets

- 👤 An increase in the demand for a factor of production raises its equilibrium price, increases its equilibrium quantity, and increases its income.
- 👤 An increase in the supply of a factor of production lowers its equilibrium price, increases its equilibrium quantity, and has an ambiguous effect on its income.
- 👤 The effect of an increase in the supply of a factor of production on its income depends on the elasticity of demand.

COMMUNITY ECONOMIC ANALYSIS

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