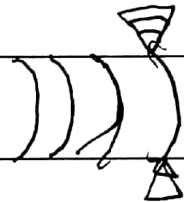


A2 – ECONOMICS (9708)



MICRO



CHAPTER 3

Market Structures

Topics

Topic 1: Perfect Competition

Topic 2: Monopolistic Competition

Topic 3: Oligopoly

Topic 4: Monopoly

Topic 5: Contestable Markets

Topic 6: Objectives of Firms

- ① Assumptions/features
- ② Revenue curves
- ③ Short run / Long run profit
- ④ Efficiency

TOPIC 1: PERFECT COMPETITION

Lecture 1

Definition | Market Structure: A market structure describes the characteristics of market organization that influence the behavior of firms within an industry.

1. PERFECT COMPETITION

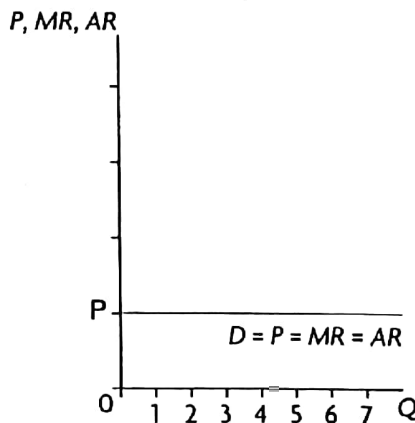
Definition: This is a type of market place where there is intense competition. Example: Agricultural commodities, other commodities (silver and gold) and foreign exchange. It is a theoretical model. It acts as a benchmark for real world competition. Features of perfect competition include:

Features/Assumption	Description
1. Many buyers and sellers / Price Takers	No firm has significant power over the market which means they cannot control the prices, hence they are said to be price takers. The price is fixed through the forces of demand and supply.
2. No barriers to entry or exit	There is free entry and exit from the market. If firms make profits more firms will enter. If firms make a loss firms will exist. There is no restriction.
3. Homogeneous, Product <i>Identical</i>	Products are identical. The consumer cannot differentiate between the products and cannot identify from where the goods come from. Example Fruits
4. Perfect Knowledge	Both consumers and producers know about the prevailing prices, methods of production and resources in all the markets. (i) Hence no firm can produce at a lower cost than its competitor. (ii) Consumers will not pay a price higher than the market price.
5. Perfect Resource Mobility	Resources bought by the firms for production are completely mobile. This means that they can easily and without any cost be transferred from one firm to another, or from one industry to another.

Profit maximization is the primary motive

Note: Perfect Competition is only a theoretical model and is mostly used for comparisons. The closest real life example can be a fruit vendor market where nearly every seller has the same quality and the price is the same for every fruit. If it is to operate in the real world there would be maximum consumer welfare and effect production with no possibility of exploitation.

1. Demand and Revenue Curves — Perfect Competition



2. PROFIT MAXIMIZATION | SHORT-RUN

There are **FIVE** situations available to the firm in the short-run:

1. Abnormal or Supernormal Profits
2. Normal Profits
3. Loss – the firm continues to produce
4. Loss – with shut-down ~~price~~, indifferent about producing
5. Loss – where the firm will shut-down

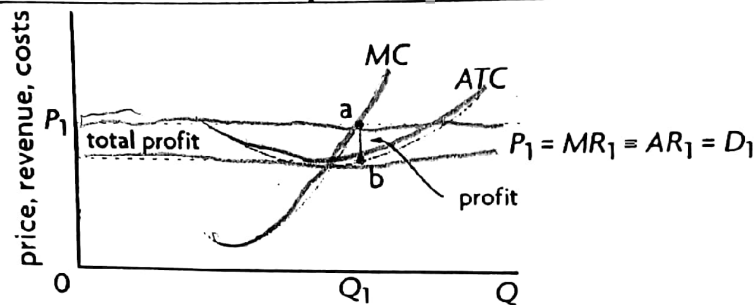
The analysis consists of **THREE** steps:

STEP 1: Identify ($MC = MR$) to calculate the profit maximizing output level

STEP 2: Identify (AC and AR) to calculate the profit per unit

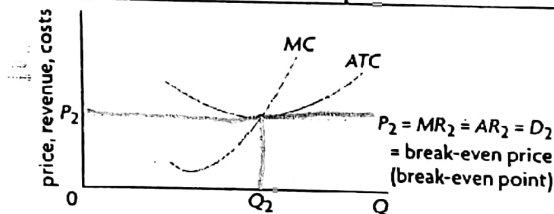
STEP 3: Multiple with number of units to calculate the total profit

Abnormal or Supernormal Profits | $P > AC$



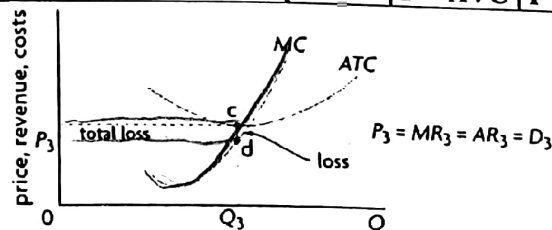
When $P > ATC$ at the level of output where $MC = MR$, the firm earns positive economic profit (supernormal profit).

Normal Profits | $P = AC$



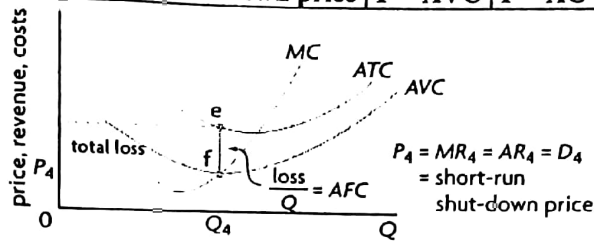
The price $P =$ minimum ATC is the firm's break-even price. At this price the firm is breaking even: it is making zero economic profit, but is earning normal profit.

Loss – the firm continues to produce | $P > AVC$ | $P < AC$



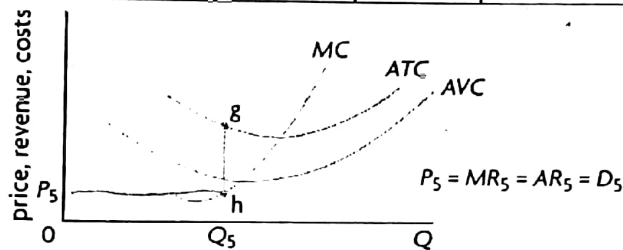
When $ATC > P$ at the level of output where $MC = MR$, the firm is making a loss but should **continue producing** because its loss is smaller than its fixed cost. This is because if it shuts down the loss would be equal to its fixed cost. This way the firm is minimizing its losses since the revenue will be covering part of the fixed cost.

Loss – with shut-down price | $P = AVC$ | $P < AC$



The price $P = \text{minimum AVC}$ is the firm's shut-down price in the short run. At this price, the firm's total loss is equal to its total fixed cost. At the shut-down price, the firm is indifferent between producing, and not producing at all, because either way it will have a loss equal to fixed costs.

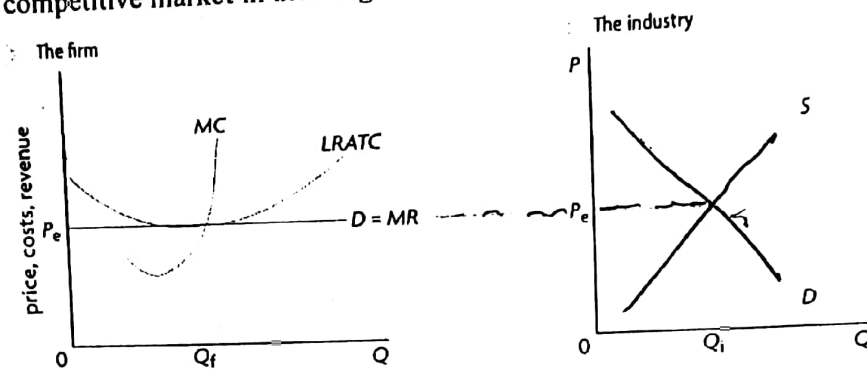
Loss – with shut-down | $P < AVC$ | $P < AC$



When price falls below the shut-down price, so that $P < \text{minimum AVC}$, the firm should shut down in the short run, and will make a loss equal to its fixed costs. If it continues production every next unit would add to the loss.

3. PROFIT MAXIMIZATION | LONG-RUN

In a perfectly competitive market in the long-run a firm can make only normal profits.

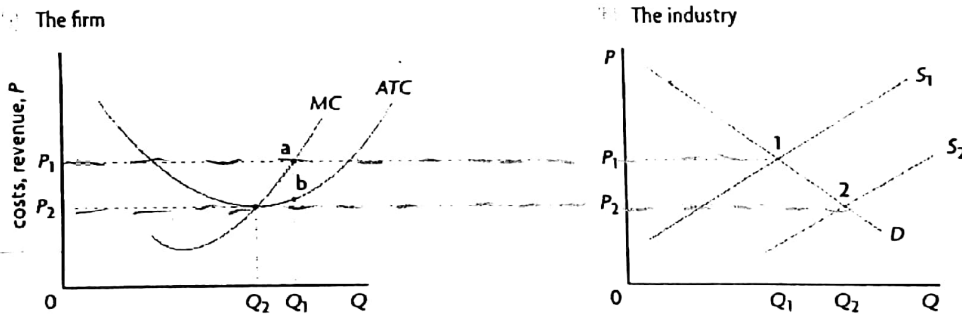


There are TWO reasons for that:

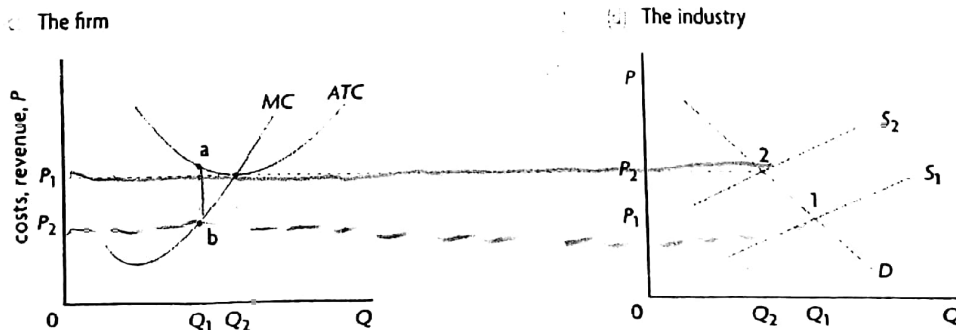
1. **Abnormal Profits → Normal Profits:** As in the long run if firms are making abnormal profits more firms will start to enter the industry this will shift the supply to the right. This shift to the right will cause the price to fall down until only normal profits are earned.

2. **Losses → Normal Profits:** If the firms are making losses, firms will start leaving the industry. This will shift the supply curve to the left. This will increase prices which will clear losses and this will continue until only normal profits are earned.

From economic (supernormal) profit to normal profit



From loss to normal profit



4. THE SUPPLY CURVE IN PERFECT COMPETITION

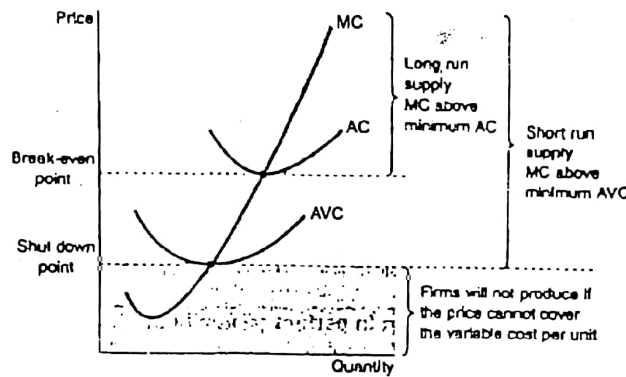
In perfect competition $P = AR = MR$ and Profit Maximizing output will be where $MC = MR$. Hence a firm will produce where $P = MC$.

Short-Run Condition | $P > AVC$

In the short-run the firm must be able to cover its AVC otherwise it will shut down because it would be making the goods (AVC) lower than the price (P) and every unit sold would be at a loss. Hence the supply curve would be represented by that area of the MC that lies above the AVC.

Long-Run Condition | $P > AC$

In the long-run the firm must cover its AC otherwise it will not break-even. So the supply curve would be the area that lies above the AC curve.



5. EFFICIENCY AND PERFECT COMPETITION

In order to understand efficiency in market structures we need to look at TWO types of efficiencies:

Allocative Efficiency	Productive Efficiency
Definition: Allocative efficiency occurs when firms produce the particular combination of goods and services that consumers mostly prefer. $P = MC$	Definition: Productive (also known as technical) efficiency occurs when production takes place at the lowest possible cost. Production at minimum ATC

1. Efficiency and Perfect Competition | Short-Run

In the short run, the perfectly competitive firm achieves allocative efficiency but is unlikely to achieve productive efficiency.

	Allocative Efficiency	Productive Efficiency
1. Supernormal Profits	YES	NO
2. Normal Profits	YES	YES
3. Loss	YES	NO

2. Efficiency and Perfect Competition | Long-Run

In long-run equilibrium under perfect competition, the firm achieves both:

1. Allocative efficiency ($P = MC$)
2. Productive efficiency (production at minimum ATC).

This is because in the long-run a perfectly competitive firm can only earn normal profits.

Advantages and Disadvantages of Perfect Competition

Advantages

1. Allocative efficiency: Perfect competition leads to the best or 'optimal' allocation of resources based on the mix of goods and services that consumers mostly want.
2. Productive efficiency: Perfect competition also leads to production at the lowest possible cost, avoiding waste in the use of resources.
3. Low prices for consumers: Consumers benefit from low prices, due to production at the lowest possible cost and absence of economic profits in the long run.
4. Competition leads to the closing down of inefficient producers: Inefficient firms are those that produce at higher than necessary costs. Inefficiency could be due to factors like less productive labor, or the use of outdated technologies, or poor entrepreneurship. The revenues of inefficient firms are insufficient to cover all costs, leading to losses that force these firms to leave the industry in the long run.
5. The market responds to consumer tastes: Changes in consumer tastes are reflected in changes in market demand and therefore market price. Therefore the firms focus on that to maximize profits.
6. The market responds to changes in technology or resource prices: If there is an improvement in the technology of production, or a change in resource prices, the cost curves will shift upward or downward, leading to economic profits or losses, once again leading to new long-run equilibria that accommodate the changes.

Due to excessive
Due to excessive competition

Disadvantages

1. Unrealistic assumptions: The model rests on strict and unrealistic assumptions that are rarely met in the real world.
2. Limited economies of scale: In perfect competition the requirement that the firms are many and small prevents them from growing to a size large enough to take advantage of economies of scale.
3. Lack of product variety: All firms within an industry produce identical or undifferentiated products. This is a disadvantage for consumers, who prefer product variety.
4. Limited research and development: The lack of economic profits in the long run does not offer firms the necessary funds to pursue research and development. *no supernormal profit*
5. Market failure: Even if it were possible to meet all of the assumptions of the perfectly competitive market model, there are numerous real-world situations where resources are allocated inefficiently because of market failures. *due to lack of gov't intervention, there can be over and under production in market*
6. Waste of resources in the process of long-run adjustment: It is possible that the continuous opening and closing of firms as the industry responds to changes in demand, resource prices and technology in the long run may lead to a waste of resources (the model unrealistically assumes there are no costs of adjustment). *Money can be wasted on advertisements and technology however advertisement is less likely the reason due to perfect knowledge in the market.*

Lecture 1

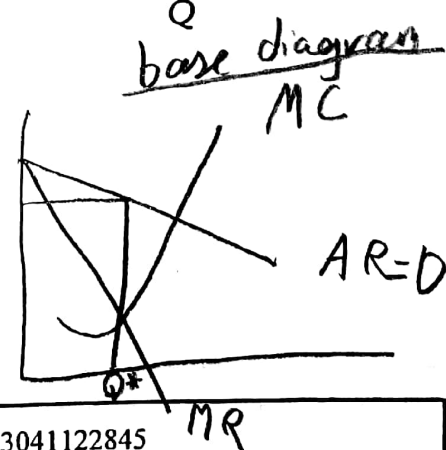
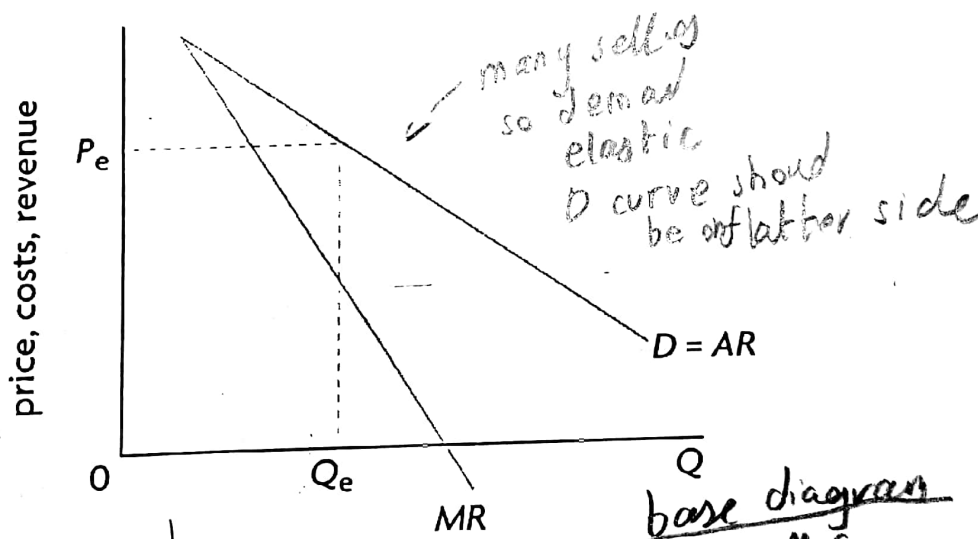
TOPIC 2: MONOPOLISTIC COMPETITION

Lecture 2

Definition: This is a type of market structure in which there are many firms but each firm produces a product that is slightly differentiated from that of others. Examples: Retail clothing stores, restaurants, mobile companies etc. Features of monopolistic competition includes:

Feature / Assumption	Description
1. Large number of firms	This is similar to perfect competition, where the large firm number ensures that each firm has a small share of the market, and that each firm acts independently of the others. They compete in the form of price and non-price competition .
2. No barriers to entry and exit	This assumption is also similar to perfect competition in that there are no significant barriers to entry of new firms into the industry.
3. Product differentiation	Unlike in perfect competition, where firms in each industry produce an identical product, in monopolistic competition each firm produces a product that is different from any other. Product differentiation can be achieved by physical difference, quality difference, location, service quality, brand image etc.
4. Price Makers	Firms have some influence on the market price and therefore price makers.
5. Profit Maximization	Each firm seeks to maximize profits

1. Demand and Revenue Curves — Monopolistic Competition



1. PROFIT MAXIMIZATION | SHORT-RUN

There are **THREE** situations available to the firm in the short-run:

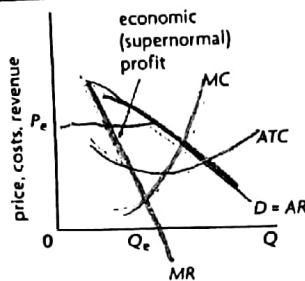
1. Abnormal or Supernormal Profits
2. Normal Profits
3. Losses

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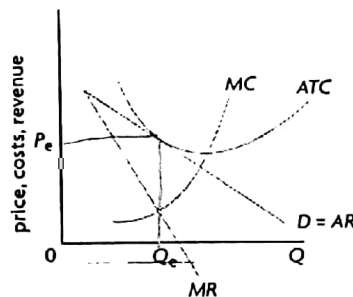


Abnormal or Supernormal Profits | $P > AC$



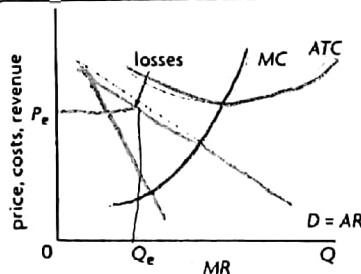
When $P > ATC$ at the level of output where $MC = MR$, the firm earns positive economic profit (supernormal profit).

Normal Profits | $P = AC$



The price $P = AC$ is the firm is breaking even. It is making normal profit.

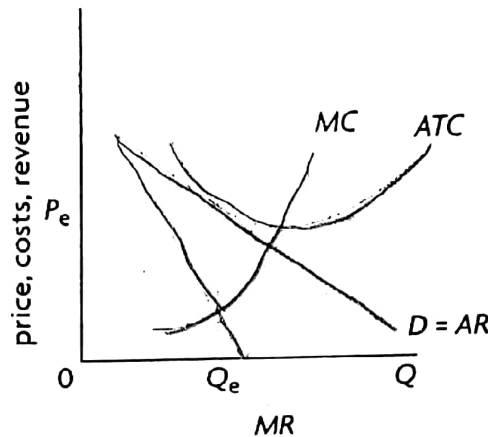
Loss – the firm continues to produce | $P > AVC$ | $P < AC$



When $ATC > P$ at the level of output where $MC = MR$, the firm is making a loss.

2. PROFIT MAXIMIZATION | LONG-RUN

In monopolistic competition the firms can only make **normal profits** in the long run. In monopolistic competition, in the long run, profit-making industries attract new entrants; in loss-making industries, some firms shut down and exit the industry. The process of entry and exit of firms in the long run ensures that economic profit or loss is zero and all firms earn normal profit.



1. **Abnormal Profits → Normal Profits:** Presence of abnormal profits make new firms enter the market. These new firms that enter attract customers away from existing firms which shifts the demand curve to the left until it becomes tangent to AC curve. Hence the point where $AR=AC$ (Normal Profit)

2. **Losses → Normal Profits:** Presence of losses will make some firms leave or shut down completely. As they do their customers shift to the remaining firms, hence increasing their demand. The demand continues to shift rightwards until it becomes tangent to the AC curve. Hence the point where $AR=AC$ (Normal Profit)

3. EFFICIENCY AND MONOPOLISTIC COMPETITION

In order to understand efficiency in market structures we need to look at **TWO** types of efficiencies:

Allocative Efficiency	Productive Efficiency
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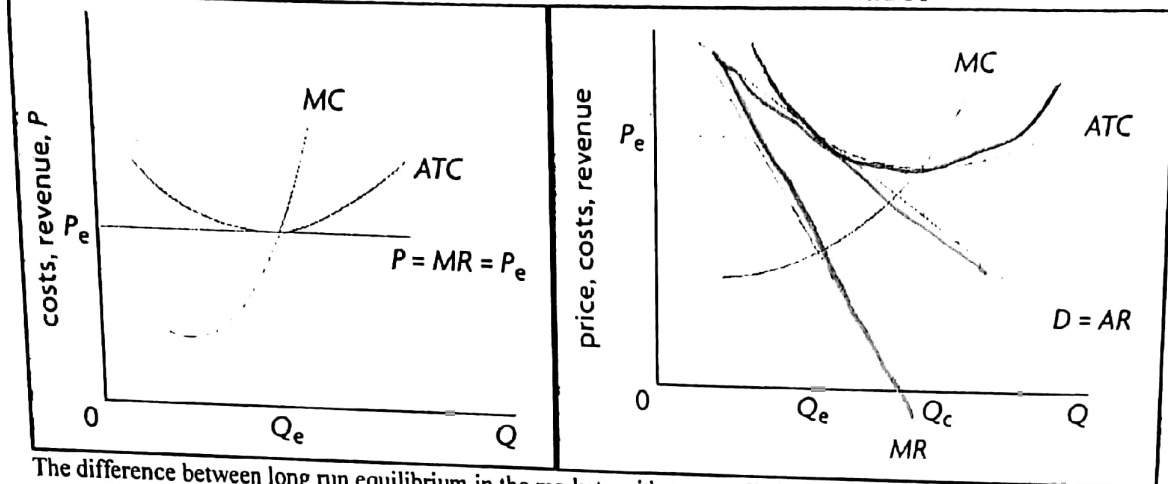
1. Efficiency and Monopolistic Competition | Short-Run

In the short run, the monopolistic competitive firm achieves neither allocative efficiency nor productive efficiency. This results in under allocation of resources ($P > MC$) and average costs are higher than the optimal (not production at the min of AC curve).

	Allocative Efficiency	Productive Efficiency
1. Supernormal Profits	NO	NO
2. Normal Profits	NO	NO
3. Loss	NO	NO

2. Efficiency and Monopolistic Competition | Long-Run [Same as Short-run]

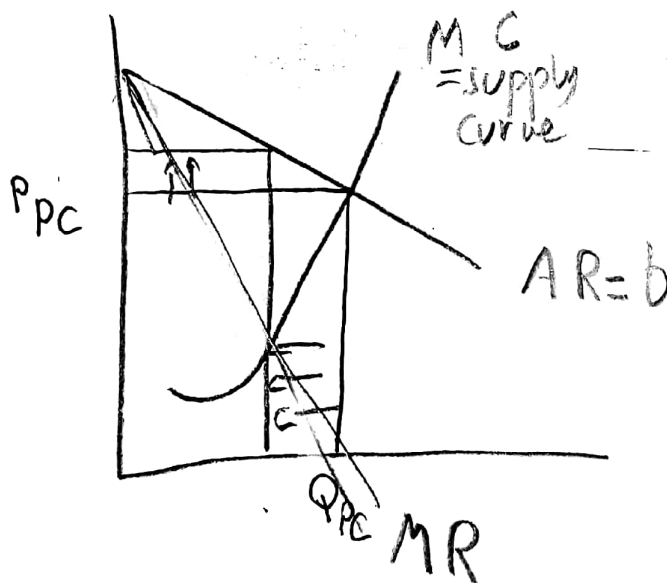
4. PERFECT COMPETITION VS. MONOPOLISTIC COMPETITION



The difference between long run equilibrium in the markets with monopolistic competition and markets with perfect competition. There are **THREE** insights:

Insight	Description
1. $P > MC$	In monopolistic competition $P > MC$ which shows producers can charge a markup.
2. AC is NOT at its min [Excess Capacity]	This shows that there is excess capacity or inefficient scale of production. Hence the Area from Q_e to Q_c shows excess capacity. This is because of product differentiation which results in the downward sloping demand curve.
3. $P_{mc} > P_{pc}$	Price in Monopolistic is greater than Price in Perfect Competition This is because of product differentiation. Since consumers might be willing to pay a higher price for the variety of goods.

Lecture 2



When the markets convert from being perfectly competitive to a monopolistic market the prices start to go up and the quantity shrinks. This causes damage to the consumer in terms of welfare.

TOPIC 3: OLIGOPOLY

Lecture 3

Definition | Oligopoly: An oligopoly is a market structure where a few firms dominate a market. Since there are only a few firms the actions of one can have a significant effect on the behavior of the others. There is no one price and output in oligopoly. Firms are interdependent and firms' behavior will depend on what it thinks the others are going to do. Examples: Oil, pharmaceuticals, aircraft manufacturing etc. Therefore, we will examine **THREE** different models with different assumption, each will have its own price and output decisions

1. Non Collusive Model of Oligopoly: Kinked Demand Curve
2. Collusive Model of Oligopoly
3. Oligopoly and Game Theory

The features of oligopoly will include:

Features	Description
1. Small number of firms <i>dominant to control market</i>	There are few firms with different sizes
2. High barriers to entry	It is difficult to entry the industry because of several reasons like, high start-up costs, aggressive advertising or takeover potentials, product differentiation, legal barriers like patents, large economies of scale etc.
3. Products might differentiated or homogeneous	Differentiated products include pharmaceuticals, cars, aircraft, breakfast cereals, cigarettes, refrigerators and freezers, cameras, tires, bicycles, motorcycles, soaps, detergents. Homogeneous products are fewer; examples include oil, steel, aluminum, copper, cement.
4. Interdependence <i>* MCQ</i>	Decisions taken by one firm affect other firms in the industry, so they depend on each other. <u>If any one firm changes its behavior, this can have a major impact on the demand curve facing the other firms.</u> Therefore, firms are keenly aware of the actions of their rivals. They make strategies to compete along with anticipating the moves of their rivals.
5. Price Rigidity	The <u>uncertainty and risks associated with price competition may lead to price rigidity</u> which means: (i) If price goes up no one would follow as there are substitutes (ii) If price goes down all firms will reduce the price hence there is no incentive to change the price.
6. Profit Maximization is optional	Firms may or may not choose to maximize profits. It depends on the situation of the market.

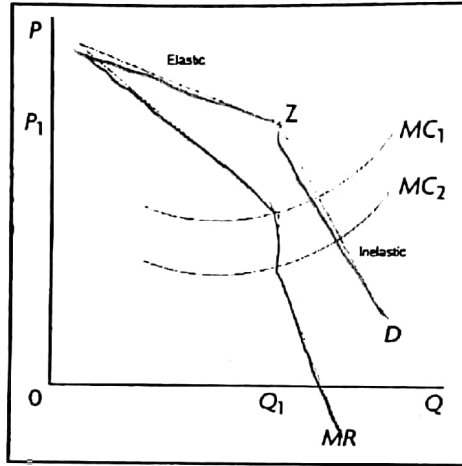
1. NON-COLLUSIVE MODEL OF OLIGOPOLY: KINKED DEMAND CURVE

Definition | Non-Collusive Model: This is a model where the firms do not agree, whether formally or informally to fixed price or collaborate in some way.

1. Demand and Revenue Curves — Oligopoly: Kinked Demand Curve

The model is based on **THREE** assumptions:

1. If the price increase other firms will not follow, this leads to an elastic curve above point Z
2. If the price decrease other firms will follow, this will lead to an inelastic curve below point Z.
3. Therefore the price would be fixed at P_1 .



MCQ
 ↳ Shape of AR shows interdependence
 ↳ price rigidity is due to firms avoiding price wars
 ↳ lowest MC and AC generates max. profit

2. The Kinked Demand Curve

In the kinked demand curve model, each firm perceives the demand curve it faces to be elastic for prices above P_1 and inelastic for prices below P_1 . If one firm raises its price above P_1 , the others will not follow; if it lowers its price below P_1 , the others will match the price decrease. In either case, the firm will be worse off. Therefore, no firm takes the initiative to change its price, and they all remain 'stuck' at point Z for long periods of time.

Above Z → Elastic	$P \uparrow$ $TR \downarrow$ Profits \downarrow
Below Z → Inelastic	$P \downarrow$ $TR \downarrow$ Profits \downarrow

3. The broken MR Curve

The broken marginal revenue curve occurs exactly at the point of the kink in the demand curve, and is a reflection of the abrupt drop in marginal revenue at the point where the demand curve suddenly bends.

4. Profit Maximization | Kinked Demand Curve Model

The kinked demand causes a discontinuity in the MR curve. Hence changes between MC_1 and MC_2 do not change the profit maximizing price and output. Hence prices are likely to be relatively fixed despite cost changes. The profit maximization point would be:

$MC = \text{Broken part of MR curve}$

5. Key Points of the Kinked-Demand Curve Model

Key Point	Description
1. Take actions of rivals into consideration when deciding price.	The risk of lowering their revenues and profits, which in turn could lead to price instability. The kinked demand curve model illustrates the interdependence of oligopolistic firms.
2. Price Stability, without collusion	Firms are reluctant to change their price because of the likely actions of their rivals, which could result in lower profits for the firm initiating price changes.
3. Non-Price competition	They do not try to increase their sales by attracting customers through lower prices. Rather they focus on more non-price competition. advertising, research and development etc.

2. COLLUSIVE MODEL OF OLIGOPOLY

Definition | Collusive Model: A collusive model in oligopoly refers to an agreement between firms to limit competition, increase monopoly power and increase profits. The most common form of collusion involves price-fixing agreements such as by holding prices constant at some level, raising prices by some fixed amount, fixing price differences between different products, adopting a formula for calculating prices, and others. Collusion is illegal in most countries, because it works to limit competition. Collusion has TWO types:

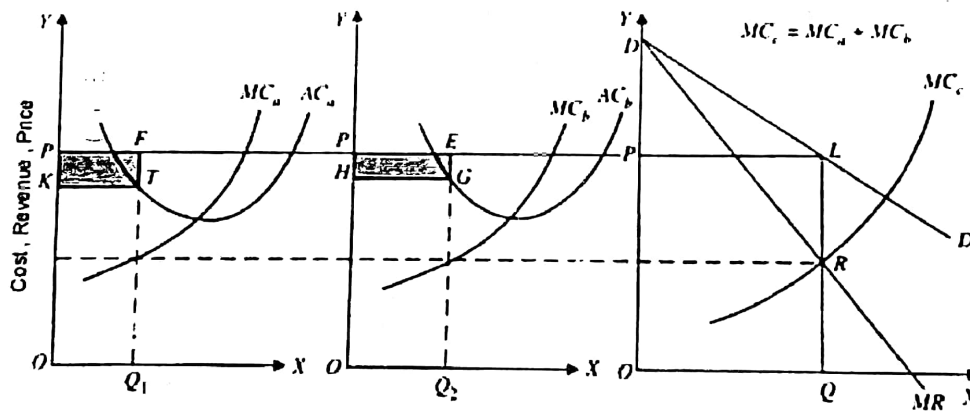
1. Formal Collusion - Cartels
2. Informal Collusion - Price leadership

1. Formal Collusion - Cartels

Definition | Cartels: A cartel is a formal agreement between firms in an industry to take actions to limit competition in order to increase profits. In cartels firms work together to act as monopolistic firms that aim to maximize profits. They fix a profit maximizing price and output. Example: OPEC This is achieved through multiple ways:

1. Limiting and fixing the quantity to be produced by each, which results in an increase in price
2. Fixing the price at which output can be sold
3. Setting restrictions on non-price competition (such as advertising)
4. Dividing the market according to geographical or other factors
5. Agreeing to set up barriers to entry

Note: However in cartels the firms have an incentive to cut their own prices and exceed their quota limit to increase their profits at the expense of the industry. Hence unless there is an effective policing mechanism which ensures that firms are not producing too much or cutting price cartel can work.



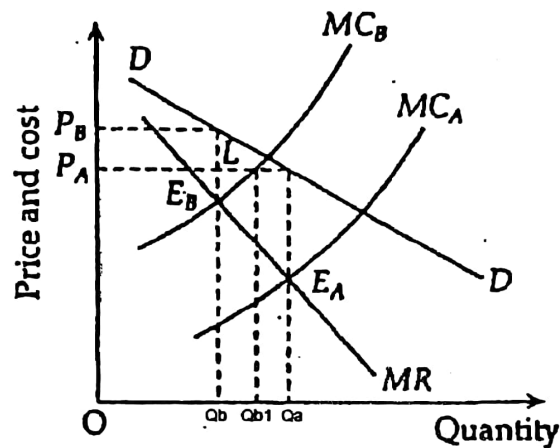
Note: The diagram for cartel is exactly the same for a profit maximizing monopoly. What should be noted here is the Q is the profit maximizing output for the industry. This output would now be divided among firms in the form of Q1 and Q2. In some markets firms tend to just divide it on the percentage of their previously held market share and some firms just compete using non-price competition to gain more market share.

Lecture 4

2. Informal Collusion - Price leadership

Definition | Informal collusion: Informal collusion or tacit collusion refers to co-operation that is implicit or understood between the co-operating firms, without a formal agreement. The objectives of informal collusions are also to co-ordinate prices, avoid competitive price-cutting, limit competition, reduce uncertainties and increase profits. It also attempts to bypass the obstacles created by the illegality of formal collusion (cartels).

Definition | Price leadership: This is where a dominant firm in the industry (which may be the largest, or the one with lowest costs) sets a price and also initiates any price changes. The remaining firms in the industry become price-takers, accepting the price that has been established by the leader. The informal agreement binds the firms as far as price goes, but they are free to engage in non-price competition. A characteristic of price leadership arrangements is that price changes tend to be infrequent, and are undertaken by the **leader only** when major demand or cost changes occur. Examples of industries that have at different times followed the price leadership model include US Steel, Kellogg's (breakfast cereals) and R. J. Reynolds (cigarettes).



In price leadership firm A has a lower marginal cost (MC_A) and firm B has a higher marginal cost (MC_B). Hence firm A is the leader and firm B must follow that price. If firm B continues to sell at a price higher than P_A (at price P_B) it loses sales to firm A and would make even more losses. If firm B reduces the price from P_A firm A would follow that price and since firm A has lower costs firm B can't win in a price war. Hence in price leadership the firm with the lower cost sets the price and other firms follow it. The best course of action for B would be to produce quantity Q_{b1} .

Non-price competition in oligopoly

Sometimes in oligopoly firms prefer not to compete on price but look for other means to compete these are called non-price competition. This is done because they know that a price war makes all the firms of an industry collectively worse off due to lower prices and lower profits. A price war may even lead to prices lower than average costs, leading to losses for the firms. Firms in oligopoly are better off coordinating their pricing behavior where they can, and when they do not collude they still avoid competitive price-cutting. The most common forms of non-price competition are:

Method	Description
1. Product differentiation	Product differentiation can increase a firm's profit position without creating risks for immediate retaliation by rivals. It takes time and resources for rival firms to develop new competitive products. It would be very difficult to engage in a 'new product war' as opposed to a price war, in which price cuts can be very quickly matched or exceeded by rival firms.
2. Advertising and branding	Firms that can attract customers by use of these methods increase their monopoly power and their ability to control the price of their product. They can charge a higher price without risking loss of buyers to rival firms.
3. R&D in product development	Research that leads to new and/or better products can help the companies develop USPs which can be patented and even create barriers to entry further increasing the dominance of the firm in the market.
4. Distribution	This is controlling the distribution of outlets to prevent competitors from selling in this market.

Factors that make collusion more likely / Cheating less likely

- 1. Few Firms:** If there are only few firms in the market it is easier to check on each other and share information.
- 2. Trust:** If the firms trust each other they are
- 3. Similar Cost Structure:** The closer the firms, lesser the incentive they have to cheat since no firm would be able to assume a competitive edge using price.
- 4. Clear Leader**
- 5. Agreement can be policed**
- 6. High barriers to entry:** This would remove the danger from new entrants
- 7. Stable cost and demand conditions**
- 8. No government intervention**

Concentration Ratio

Definition: A concentration ratio provides an indication of the percentage of output produced by the largest firms in an industry. There is no fixed number of firms for which a concentration is calculated. For example, we could say that the 3-firm concentration ratio of industry X is 78%, which means that the three largest firms of industry X produce 78% of the industry's total output; or the 4-firm concentration ratio of industry Y is 45%, which means that the four largest firms in industry Y produce 45% of the industry's total output. Concentration ratios are used to provide an indication of the degree of competition in an industry. They suggest that the **higher the concentration ratio, the lower the degree of competition**, while a low concentration ratio would indicate a greater degree of competition. In general, an industry is considered to be oligopolistic if the four largest firms control 40% of output. (This is an arbitrary cut-off point, as there is nothing special about a concentration ratio of 40%.)

3. OLIGOPOLY AND GAME THEORY

Definition | Game Theory: Game theory, a mathematical technique analyzing the behavior of decision-makers who are dependent on each other, and who use strategic behavior as they try to anticipate the behavior of their rivals. One model of this strategic game is called prisoner's dilemma.

Definition | Prisoner's Dilemma: Prisoner's dilemma, showing how two rational decision-makers, who use strategic behavior to maximize profits by trying to guess the rival's behavior, may end up being collectively worse off. The final position that results from the game is called a Nash equilibrium.

Definition | Nash Equilibrium: This is reached when the choices of all firms are such that there is no other choice that makes any firm better off i.e. (increases profits or decreases losses).

Two prisoners A and B are believed to have committed a serious crime. However the prosecutor does not feel that the police has sufficient evidence for a conviction. The prisoners are separated and offered the following deals (this is shown by the payoff matrix):

Work case scenario in every option where case scenario minimize → cheat

	Prisoner B is silent	Prisoner B confesses
Prisoner A is silent	A gets 6 months B gets 6 months	A gets 10 years B goes free
Prisoner A confesses	A goes free B gets 10 years	A gets 2 years B gets 2 years

The Nash Equilibrium is for both prisoners is to confess (each get a 2 year sentence). Although the best overall outcome would be for both to remain silent and get sentences of 6 months.

However this is **not** a Nash Equilibrium since either prisoner can improve this situation from [Silent/Silent] by confessing as then he can go free.

[Confess/Confess] is the Nash Equilibrium since neither prisoner can on its own reduce the sentence by changing to silence. In other words whatever the other prisoner chooses the best sentence for a prisoner comes from confessing.

Game theory to understand oligopoly

A two-firm oligopoly game can be designed where the equilibrium outcome is for both firms to cheat on a collusive agreement by charging a low price, even though the best overall outcome is for both to honor the agreement and charge a high price.

	Firm B (Honors)	Firm B (Cheats)
Firm A (Honors)	A earns 150 B earns 150	A earns 50 B earns 200
Firm A (Cheats)	A earns 200 B earns 50	A earns 100 B earns 100

Assume the firms have agreed to both charge a high price. The Nash Equilibrium is for Firm A and Firm B is to cheat and charge a lower price This is the only combination for which neither firm can on its own change its action to improve its profits. The profits are greater in [Honor/Honor] but either Firm A or Firm B can improve profits from 150 to 200 by cheating on the agreement. Hence this proves that if firms can enter into an agreement to restrict output and charge high prices and share the resulting profits they are better off.

4. EFFICIENCY AND OLIGOPOLY

In order to understand efficiency in market structures we need to look at TWO types of efficiencies:

Allocative Efficiency	Productive Efficiency
<p>Definition: Allocative efficiency occurs when firms produce the particular combination of goods and services that consumers mostly prefer.</p> <p style="text-align: center;">$P = MC$</p>	<p>Definition: Productive (also known as technical) efficiency occurs when production takes place at the lowest possible cost.</p> <p style="text-align: center;">Production at minimum ATC</p>

Efficiency and Oligopoly

Oligopolies are neither allocative efficient nor productive efficient. This results in:

1. **Not Allocative efficient:** Under allocation of resources ($P > MC$) and
2. **Not Productive Efficient:** Average costs are higher than the optimal (not production at the min of AC curve).

Some economists believe that oligopolies are even less desirable than pure monopolies because government regulates pure monopolies whereas oligopolies may yield price and output similar to those under pure monopoly yet give the outward appearance of competition.

Advantages and Disadvantages of Oligopoly

Advantages	Disadvantages
<p>1. Economies of scale: These can be achieved due to the large size of oligopolistic firms, leading to lower production costs to the benefit of society and the consumer (through lower prices).</p> <p>2. Product development and technological innovations: These can be pursued <u>due to the large economic (supernormal) profits</u> from which research funds can be drawn. This benefit of oligopoly is more important than in the case of monopoly, since non-price competition forces firms to be innovative in order to increase their market share and profits.</p> <p>3. Technological innovations that improve efficiency: This lowers costs of production may be passed to consumers in the <u>form of lower prices</u>.</p> <p>4. Product development leads to increased product variety: Thus providing consumers with greater choice (monopoly does not offer product differentiation and variety).</p>	<p>1. Not efficient: Neither productive nor allocative efficiency is achieved.</p> <p>2. Under allocation of resources: Higher prices are charged and lower quantities of output are produced than under competitive conditions.</p> <p>3. X-inefficiency: There may be higher production costs due to lack of price competition (X-inefficiency) <i>operating on lowest cost curve</i>.</p> <p>4. Lack of regulation: Many countries have anti-monopoly legislation that protects against the abuse of monopoly power, the difficulties of detecting and proving collusion among oligopolistic firms means that such firms may actually behave like monopolies by colluding and yet may get away with it.</p>

Lecture 4

TOPIC 4: MONOPOLY

*Pure monopolies are usually state owned
a one seller*

Lecture 5

Definition: A monopoly is where a single firm controls the entire output of the industry. This is called a pure monopoly. In other words, if a firm has a dominant market share it is considered as a monopoly usually more than 25% of the market share.

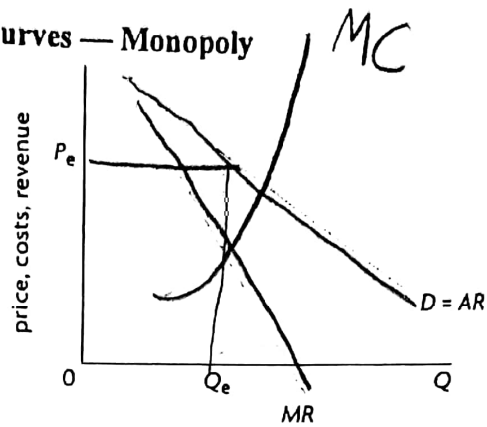
The features of monopoly will include:

Features	Description
1. Single seller or dominant firm	When there is a single firm producing a good or service for the entire market, it is called a pure monopoly. The firm is therefore the entire industry.
2. No close substitutes	If substitute goods existed, then consumers could easily switch to buying a substitute good, in which case there would no longer be a monopoly for the good in question. Therefore, the monopolist produces a good or service that has no close substitutes.
3. High barriers to entry	The absence of competitor firms partly to the inability of other firms to enter the industry. Anything that prevents other firms from entering the industry is called a barrier to entry.
4. Price maker	The firm has a lot of control over the price and hence the demand curve for a monopoly is inelastic and downward sloping

Sources of Monopoly power / Barriers to entry

Source	Description
1. High Start-up Cost	The markets that monopolies usually operate in require a lot of capital investment in order to achieve the minimum efficient level of scale of production, then it would be difficult for new firms to enter the industry.
2. Control over sources of supply	Monopolies can control a significant proportion of the supply of raw material. This can be done by control the distribution contracts, patents etc.
3. Legal Barriers	These include rights over new invents, processes, intellectual property rights for a period of time preventing others from using them. Examples of these legal barriers can be patents, licenses, copyrights, public franchises.
4. Economies of Scale	Established firms experience significant economies of scale which enable them to produce at low unit costs. New firms will not immediately be able to benefit from these economies of scale and so existing firms may be able to charge low prices with which new firms could not compete (This is called predatory pricing). EOS also result in the downward-sloping portion of a firm's long-run average total cost curve (LRATC)
5. Brand Loyalty	Brand loyalty is usually to sustain monopoly rather than creating it. If a brand becomes popular and people identify it with a produce then this may create a loyalty to the product preventing customers to shift. Examples: Coca-Cola, Nike etc.
6. Legal Protection	In several countries public utilities such as water, postal services and nationalized industries are given monopoly status by the government.
7. Mergers and Takeovers	A firm usually becomes a monopoly by combining its business (merger) or buying out another business (takeover) to gain more control over the industry. Usually old firms takeover the new firms.
8. Location	Some businesses have monopolies in a particular area. Example: Small shops and post offices in a remote town.

1. Demand and Revenue Curves — Monopoly



1. PROFIT MAXIMIZATION | SHORT-RUN

There are **THREE** situations available to the firm in the short-run:

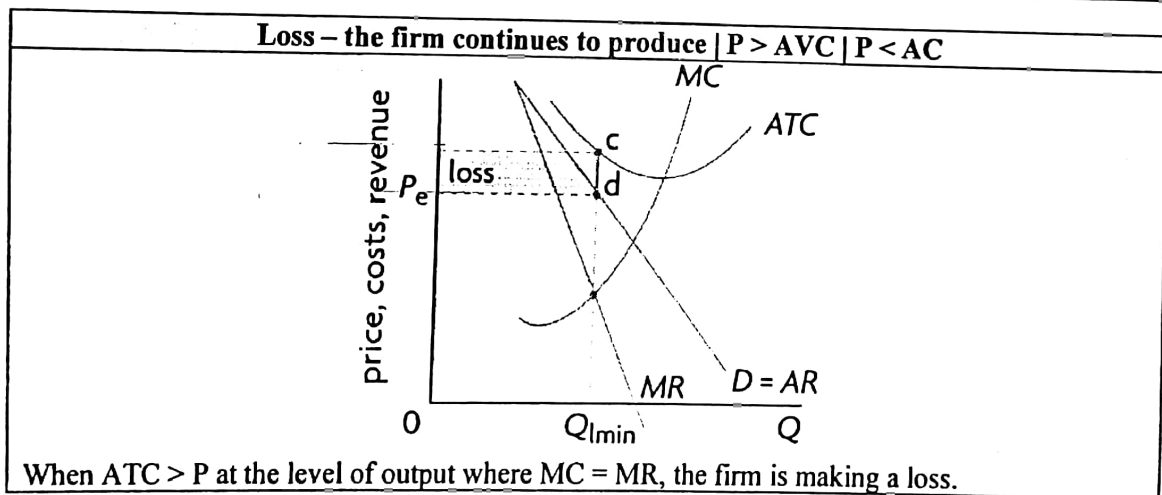
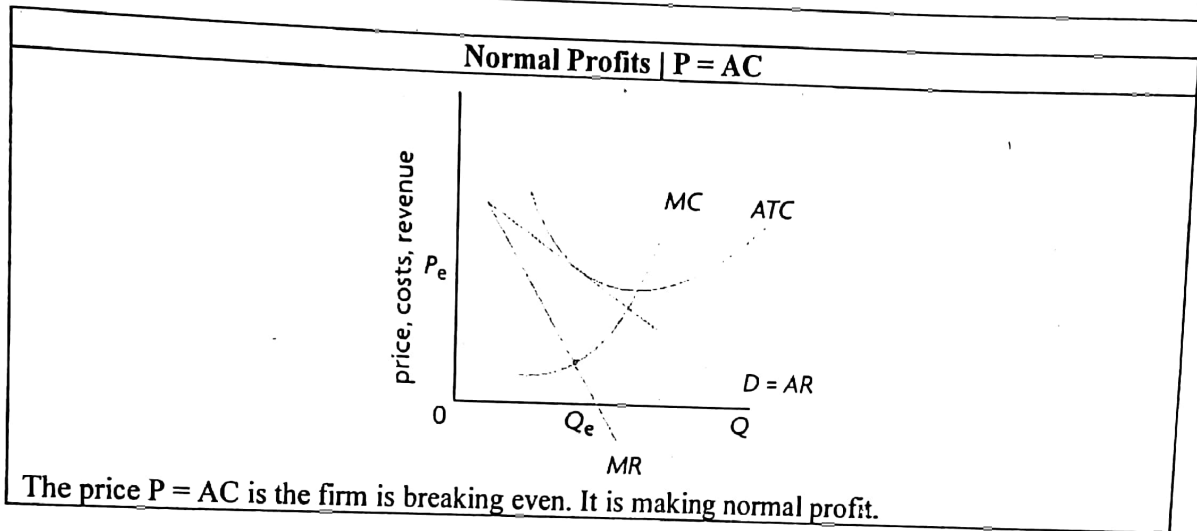
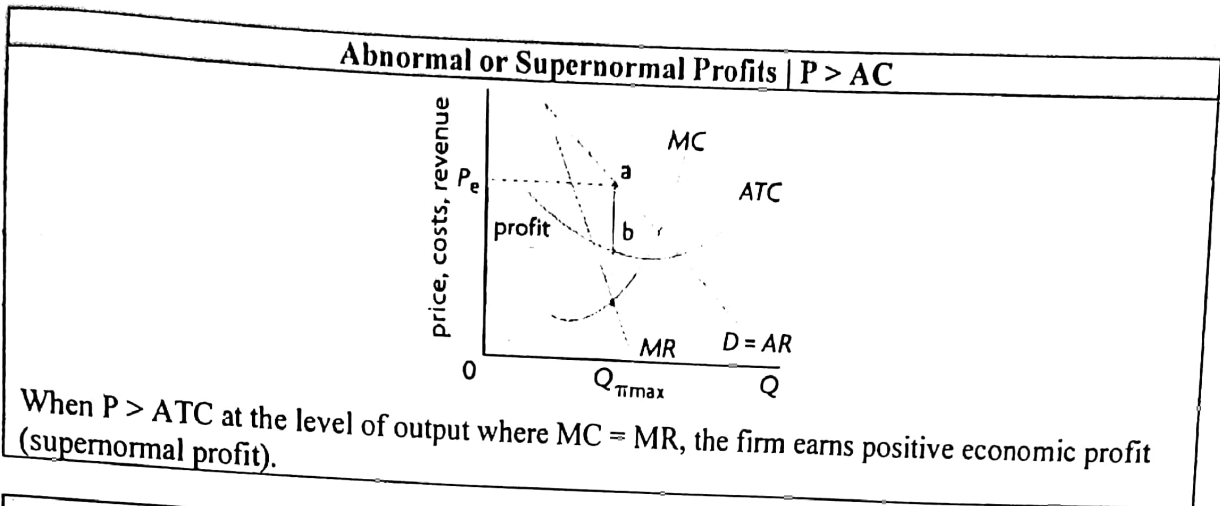
1. Abnormal or Supernormal Profits
2. Normal Profits
3. Losses

The analysis consists of **THREE** steps:

STEP 1: Identify ($MC = MR$) to calculate the profit maximizing output level

STEP 2: Identify (AC and AR) to calculate the profit per unit

STEP 3: Multiple with number of units to calculate the total profit



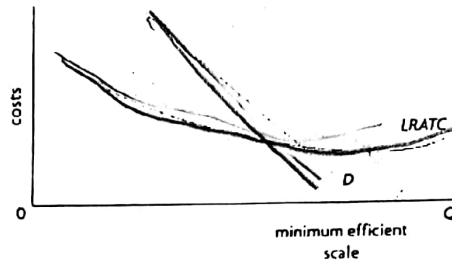
2. PROFIT MAXIMIZATION | LONG-RUN

A monopoly is able to keep the potential rivals out of the market with natural and artificial barriers to entry. Therefore, a monopolist is able to earn same economic profits as it was earning in the short-run (Supernormal, Normal and Losses). The profit would be determined upon the costs it is facing and the price it can charge for its product.

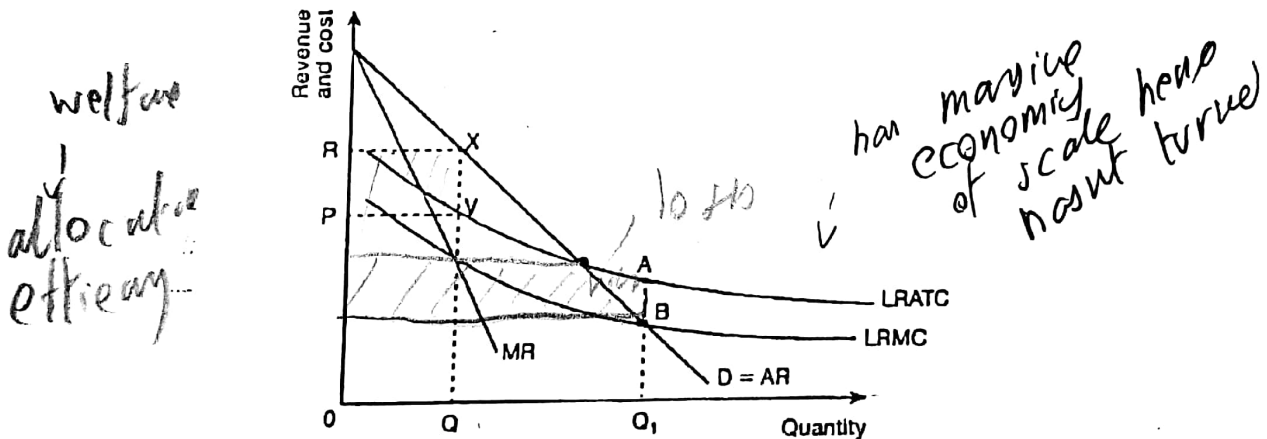
3. NATURAL MONOPOLY

Definition: A natural monopoly is a firm that has economies of scale so large that it is possible for the single firm alone to supply the entire market at a lower average cost than two or more firms. It exists where it would be inefficient and a wasteful duplication of resources if there are more than one firm operating in the market. Example: Public utilities, railways etc.

Natural monopolies usually have high startup-costs and because they experience economies of scale over most of their production the minimum efficient scale of production is only achieved at an extremely high level of output. Hence making the LRAC curve downward sloping through its length which means that the associated LRMC would always be below because it has to cut the LRAC at its minimum.



Profit Maximizing in Natural Monopoly



The profit maximizing monopolist will produce at point Q where $MC=MR$, but this output will not enable the full benefits of the economies of scale to be obtained.

The allocative efficient position occurs where $P=MC$ which occurs at an output of Q_1 with a price equal to B. However at this point price is below the LRAC and so the firm would be operating at a loss. Therefore if the government thinks that the service is sufficiently important to be provided at this price it must take it into state ownership or provide a subsidy.

Lecture 5

monopoly
↓
both supernormal profit and loss

4. PRICE DISCRIMINATION

Definition: It is a situation where a firm sells the same product, with same cost at different prices in separate markets. There are several conditions necessary for price discrimination:

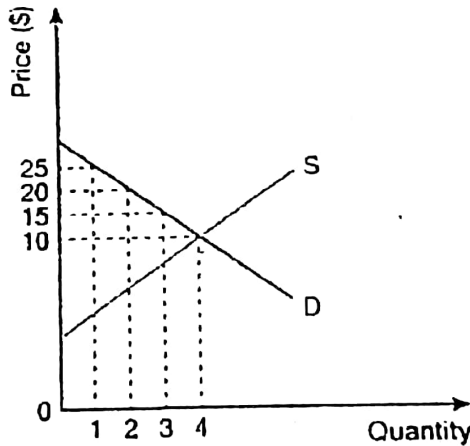
Condition	Description
1. Monopoly Power	The firm must exercise some monopoly power in the market meaning the firm must be a price marker.
2. Separate the two markets	The firm must be able to keep the two markets separate example: Student vs. Professionals, Children vs. elders etc.
3. Prevent Re-Sell	It should be possible to buy in one market and re-sell in the other. Otherwise people will tend to buy in the cheaper market and sell it in the expensive market. (Prevent arbitrage)
4. Different PEDs in different markets	This would allow the firm to charge a high price to the inelastic consumers and low price to the elastic consumers. Examples: More rates on peak hours and cheaper rates on off-peak hours.

THREE Types of Price Discrimination

1. First-Degree Price Discrimination
2. Second-Degree Price Discrimination
3. Third-Degree Price Discrimination

1. First-Degree Price Discrimination

Definition: This occurs when the monopolist charge each individual consumer the maximum amount they are prepared to pay for a product. Individuals with spare tickets for major sell-out concerts and sports events will try to bargain with potential buyers to try and estimate the maximum they are prepared to pay. If first degree price discrimination is successful the whole consumer surplus will be eliminated.



As we see from the diagram that if all four units were sold at the same price the total revenue would be \$40 [$\10×4] however if each unit was sold at the maximum price the total revenue would be \$70 [$\$25 + \$20 + \$15 + \10]

2. Second-Degree Price Discrimination

Definition: This occurs when once price is charged for some units of the product and a different price is charged for further units. Some companies charge a high price for the first block of units and then lower prices for the rest.

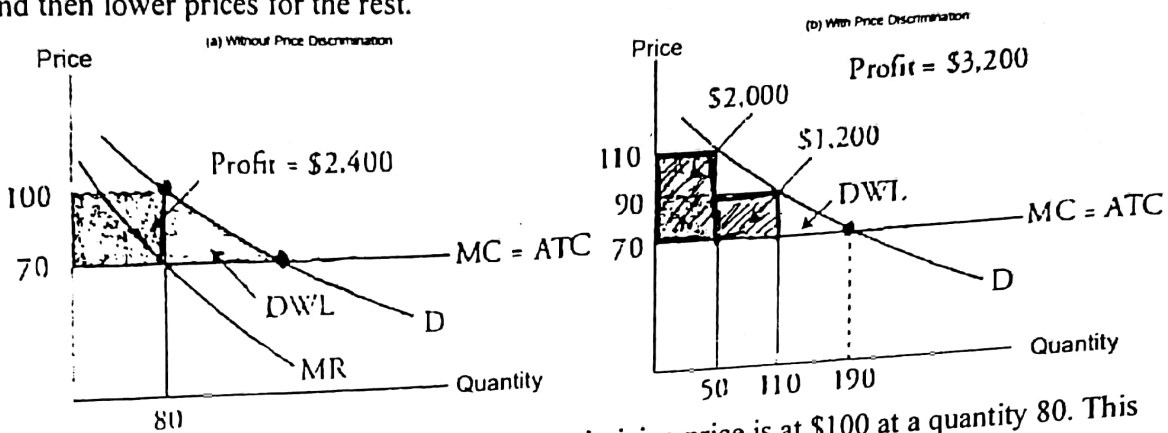


Diagram (a): In the first diagram the profit maximizing price is at \$100 at a quantity 80. This makes the overall profit \$2400 (30 x 80).

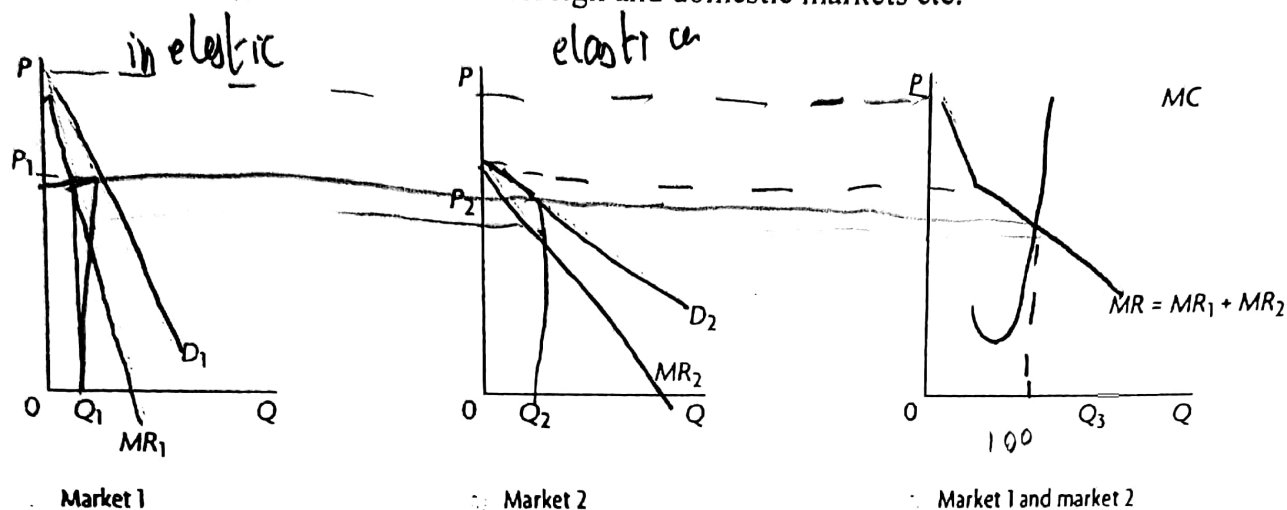
Diagram (b): In the second diagram the firm is able to separate the consumers. It charges one group \$110 and sells them 50 units and sells an additional 60 units to another group at price \$90. The total profits increases to \$3200 units and the total output increases from 80 to 110 units.

Note: Compared to the quantity produced under perfect competition, the quantity produce by a monopolist reduces the sum of consumer and producer surplus by an amount represented by the triangle DWL.

1. Diagram (a): Consumer surplus reduced not only by the decrease in quantity but also by the increase in price relative to perfect competition.
2. Monopoly is considered inefficient because the reduction in output compared to perfect competition reduces the sum of consumer and producer surplus. Since $MB > MC$ less than efficient quantity of resources are allocated to the production of the good.
3. Diagram (b): Price discrimination reduces this inefficiency by increasing output toward the quantity where marginal benefit equals marginal cost.

3. Third-Degree Price Discrimination

Definition: This refers to the selling of the same product in different markets to different consumers at different prices. Examples: Airline tickets, public transport (different age groups pay different rates), different rates in foreign and domestic markets etc.



Assume there are two consumer groups (or two markets) for product X, distinguished from each other on the basis of differing PEDs.

- Part (a) shows the consumer group of market 1 to have a relatively inelastic demand (low PED)
- Part (b) shows the consumer group of market 2 to have a relatively elastic demand (high PED).

The two marginal revenue curves are added horizontally, leading to the total market marginal revenue curve in part (c), which also shows the firm's marginal cost curve. To maximize profit, the firm equates market MR with MC, thus finding the profit-maximizing level of output Q_3 . Output Q_3 must now be divided between the two markets. The firm does this by equating its MC of the total market with the MR of each individual market:

- **Output Level Q_1 :** $MC = MR_1$. This determines output level Q_1 in market 1, sold at price P_1 (given by the demand curve D_1)
- **Output level Q_2 :** $MC = MR_2$. This determines the output level in market 2, sold at price P_2 (given by the demand curve D_2).

This shows that:

1. A higher price (P_1) for the consumer group with relatively inelastic demand
2. A lower price (P_2) for the consumer group with relatively elastic demand.

Note: Third-degree price discrimination results in higher revenues and profits for firms. If profits did not increase, firms would not practice price discrimination.

2-3
Advantages and Disadvantages of Price Discrimination

Advantages	Disadvantages
<p>1. More Revenue and Profits: This allows the monopolist to operate even in markets where other structures won't work due to losses since they won't be able to cover the costs.</p> <p>2. Poor people can benefit: Poor people who were not able to afford the product previously can now do so since the firm can charge higher prices to few consumers and lower prices to the rest. Example: Health care.</p> <p>3. Research and Development: Price discrimination allows firms to enjoy supernormal profits which will be used in R&D and product and process innovation which will benefit the society due to earn supernormal profit.</p> <p>4. Efficiency: If output increases, then under certain conditions allocative efficiency will also improve.</p>	<p>1. Higher Prices: Some consumers might end up paying higher price forcing them to discontinue the product. This also reduce the consumer surplus</p> <p>2. Supernormal Profits: Firms tend to earn supernormal profits at the expense of consumer surplus.</p> <p>3. Welfare loss for some consumers as consumer surplus is removed.</p> <p>4. Some individuals pay higher prices.</p> <p>5. Low income earners cannot afford the product.</p>

Lecture 6

Lecture 7

5. EFFICIENCY AND MONOPOLY

In order to understand efficiency in market structures we need to look at TWO types of efficiencies:

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1. Efficiency and Monopoly | Short-Run

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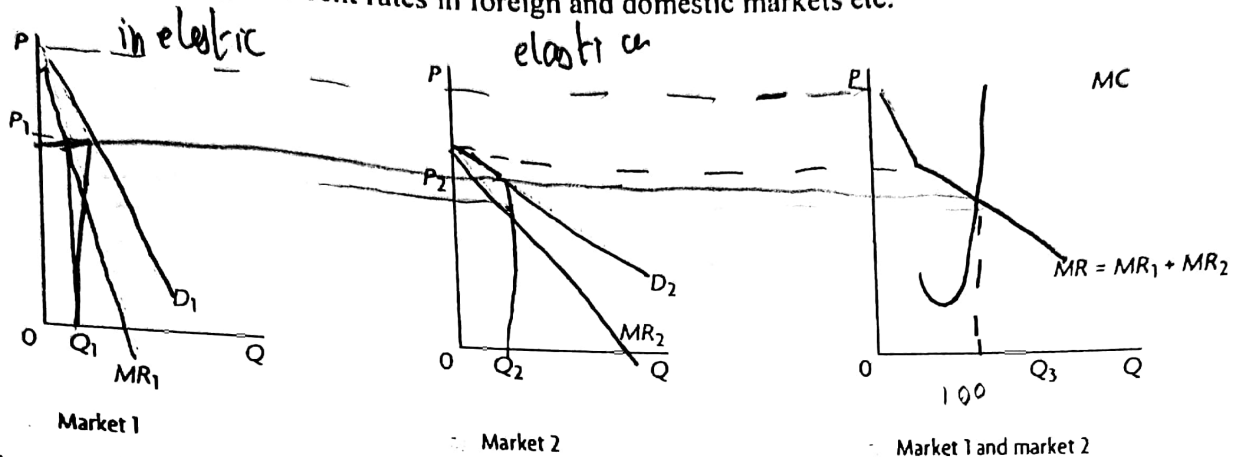
	Allocative Efficiency	Productive Efficiency
1. Supernormal Profits	NO	NO
2. Normal Profits	NO	NO
3. Loss	NO	NO

2. Efficiency and Monopoly | Long-Run

[Same as Short-run]

3. Third-Degree Price Discrimination

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Lecture 6

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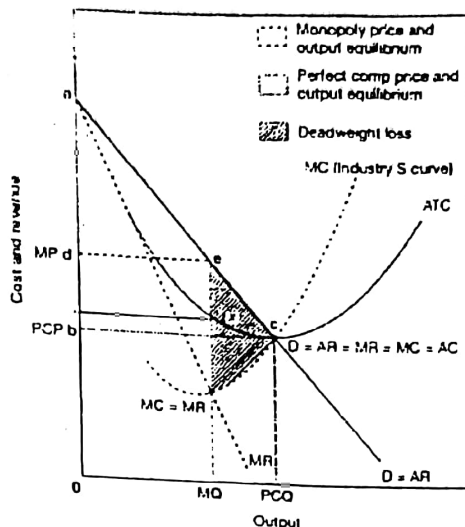
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	Allocative Efficiency	Productive Efficiency
1. Supernormal Profits	NO	NO
2. Normal Profits	NO	NO
3. Loss	NO	NO

2. Efficiency and Monopoly | Long-Run
[Same as Short-run]

6. PERFECT COMPETITION VS. MONOPOLY



1. Price in Monopoly is higher than it is in perfect competition
2. Monopoly output is low
3. Monopolist makes short-run and long-run abnormal profits whereas perfect competition can only make abnormal profits in the short-run.
4. Perfect competition is productively and allocatively efficient whereas a monopoly is not
5. The monopolist captures the consumer surplus and turns it into abnormal profits.
6. If the perfectly competitive firm is turned into a monopoly there would be a welfare loss of area X (e, c, MC=MR)

Advantages and Disadvantages of Monopoly

Advantages	Disadvantages
<p>1. Normal Profits: A monopolist cannot always make abnormal profits. It depends on how high its costs are. In situations with high fixed costs it might only make normal profits.</p> <p>2. Stable Profits: In competitive markets profits are unstable however for a monopoly profits are certain which allows them to plan future investments and finance it through they guaranteed profits. This offers customers better products and workers more security.</p> <p>3. Research and Development: Since they earn abnormal profits these firms can invest in R&D and can be involved in product and process innovation lower their AC per unit.</p> <p>4. Lower Prices: Since the firms would be experiencing EOS they can pass the benefits of innovation to the consumer either in the form of low prices greater consumer choice.</p> <p>5. International Advantage: Monopolies since they are technically and financially superior they are more competitive in the international market.</p>	<p>1. Not efficient: Neither productive nor allocative efficiency is achieved.</p> <p>2. Under allocation of resources: Higher prices are charged and lower quantities of output are produced than under competitive conditions.</p> <p>3. X-inefficiency: There may be higher production costs due to lack of price competition (X-inefficiency). They lack the incentive for process innovation. <i>Not operating on lowest cost curve</i></p> <p>4. Lack of regulation: Many countries they have poor legal systems and monopolies go unchecked.</p> <p>5. No consumer sovereignty: Consumer have to accept whatever goods and services are produced by the monopolist. This violates the principal of free enterprise. <i>When market is converted perfectly competitive \rightarrow monopolistic situation, the CS is involved. Part of it goes into the deadweight and a part is taken over by producer.</i></p>

*If they're
govt
intervention
or it's
a natural
monopoly*

MCOQS **TOPIC 5: CONTESTABLE MARKETS**

Definition: In a traditional model of oligopoly it is assumed that there are barriers to entry; in reality it is likely that other firms can enter the market. A market in which the existing firm makes only normal profit in the long-run, as it cannot set a price higher than average cost without attracting entry, this is because of the absence of barriers to entry and sunk costs. According to the theory of contestable markets, abnormal profits are earned in the short-run this attracts firms into the market and in the long-run only normal profits (even in a monopoly). Perfectly contestable markets can deliver the theoretical benefits of perfect competition, but without the need for a large number of firms. Features include:

1. Freedom of entry and exit
2. The number of firms competing will vary. Example: It may be a monopoly at one time and then there may be many other firms competing at other times
3. Firms compete (rather than collude)

Note: A perfectly contestable market is the one in which there costs of entry and exit are zero. In this situation there is a high degree of pressure on firms to act competitively. Abnormal profits will act as an incentive to bring in more firms. Entry is likely to lead to lower prices, batter quality services, more choice and higher output.

Factors of contestability

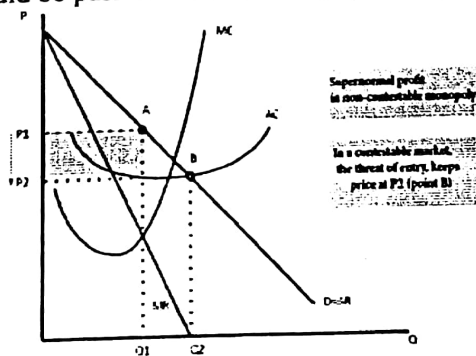
1. Profits – If profits are high there would be more competition
2. Barriers to entry and exit – If the barriers to entry and exit are low so it is easy to join a market and leave the market if needed. The industry might suffer from “Hit-and-Run” competition whereby firms entre when profits are high and level when they fall. This results in incumbent firms to suffer.

Sources of Barriers to entry

Barrier	Description
1. Sunk Costs	These are costs invested in an industry which cannot be recovered. Decisions should be taken while ignoring the sunk costs. These are low if it is cheap to set up a business. (E.g. no specialized equipment needed, no major investment in land etc.)
2. Marketing Costs	Lower the marketing costs and lower the brand image of the established brands, lower the barriers to entry
3. Previous Action	If firms in the industry tend to cut prices in the past to prevent new competition (predatory pricing) then new firms would find it difficult to compete.

Profits in Contestable Markets

Firms are forced to keep excess profits to a minimum, and move towards sales maximization or output maximization rather than profit maximization. In a perfectly contestable market with an unlimited number of potential entrants, profits would be pushed down to normal profits (where $AR = AC$)



TOPIC 6: OBJECTIVES OF FIRMS**Definition | Objectives:** These are aim of an organization.

Lecture 8

1. Profit Maximization

This is a point where $MC = MR$. This is because self-interest is a dominant motive for producers and consumers. However some firms still avoid this because they don't want govt. to intervene, they don't want to attract competition, they don't want to damage their relationship with their stakeholders or sometimes there is a principal agent problem etc.

2. Sales Revenue Maximization

This is a point where $MR = 0$. Some firms ignore profit and focus on sales maximization as customers prefer to buy more from known companies, lenders are more willing to lend to known companies and high sales means high salaries in some industries. These firms tend to produce till the MR is positive because till it is positive it will contribute to the total revenue. The diagrams can show that this objectives can be achieved with normal, supernormal and losses.

3. Output Maximization

This is a point where $AR = AC$. This is the point where the firm makes normal profits and would seek to increase its size. Firms enjoy EOS, they are less chance to be taken over and brand image improves. However the firm will not produce beyond this point. The firm will spend most of its money on increasing its production rather than on advertising, however its revenue sales might be less than sales maximization.

MCQs**4. Growth Maximization**

This objective believes that the firms expand in new markets through the creation of new products and new demand. The firms achieve this objective through either internal growth or external growth (mergers and acquisitions). The aim is to enjoy economies of scale. There are THREE types of external growth:

1. Horizontal

Definition: This is a merger between firms that are dealing in similar products at the same stage of production. For example, if two car manufacturers join hands, it would be classified as horizontal integration. This decreases competition in the market and leads to higher profitability since prices can be increased and marketing can be reduced however it can lead to conflicts between members since workers come from different corporate cultures which can cause diseconomies of scale.

2. Vertical (Backward and Forward)

Definition: When merging, firms are engaged in different stages of the same production process, it is called vertical integration. This could be a further categorized into:

(1) Forward vertical integrating, e.g. the owner of a cotton field taking over a textile mill

(2) Backward vertical integration, e.g. the owner of a petrol station taking over an oil refinery.

The advantage is that it is easier to keep a check on quality related issues since the manufacturer owns and controls the source of raw material also. The level of customer service can also be raised however lack of expertise in the other sector might lead to management problems.

3. Conglomerate Integration

Definition: Also, known as diversification, is formed when two or more unrelated firms are involved in the merger or takeover. They deal in totally dissimilar products at different stages of production, e.g., a car manufacturer takes over a restaurant. Examples of conglomerates include, P&G, Unilever, Virgin Group, Alphabet Inc. etc. The advantage is that these companies spread their risk and leads to innovation and creation of synergies. As even if one industry isn't performing well the company can make profit from the other industry however the business can lack focus. This might lead to business to shift from their original products and focus on the ones that are in development. This can potentially harm the company's image.

MCQs *

5. Utility Maximization

Principal-agent Problem

Definition: This is a situation in which people (Principal) cannot be sure that those who act on their behalf (Agents) will act in their best interests, as a result of asymmetric information. Example: In a public limited company the shareholders (principal) delegate the day-to-day activities to managers (agents) who act on their behalf. Hence there is a divorce between ownership and control.

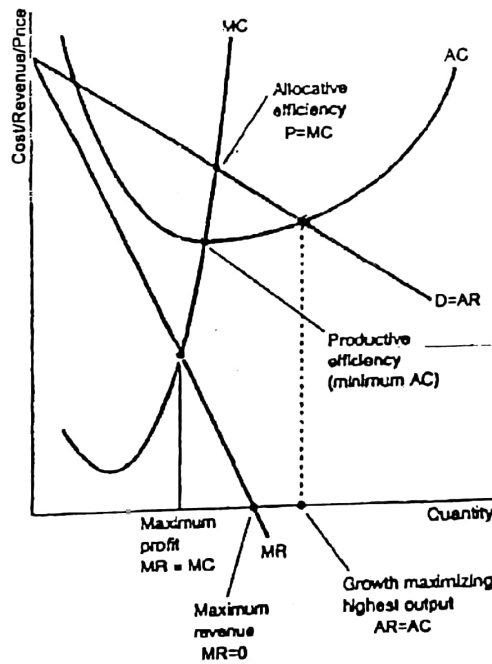
In companies where there is a divorce between ownership and control the managers and owners have different objectives. Hence managers tend to maximize their own utility like increasing salaries, increasing employees, increasing perks and start making discretionary investments which means making investments that are close to his heart rather than advancing or promoting the company's objectives and rather than focusing on profit maximization.

a symmetric info. imperfect this is when one party has more info than the other party. In a negotiated or economic transaction the party with more info will tend exploit one with less info.

6. Satisficing

— Since the firm have several stakeholders some firms tend to keep everyone into consideration before taking a decision. The overall objectives of an organization will be the result of discussion, negotiation and bargaining with all the stakeholders. The end result would be a compromise where nothing is maximized and the firm aims to satisfy these different groups and still function.

— Another situation of this can be that managers simply do not push enough for profit maximization because they like a quiet life. They will just make enough profits just to keep shareholders off their backs. This can lead to x-inefficiency.



8. PRICING STRATEGIES

Pricing is a vital business decision making in markets and price decisions are also important to the government when it wants to control the rate of inflation. Different firms have different power over the pricing:

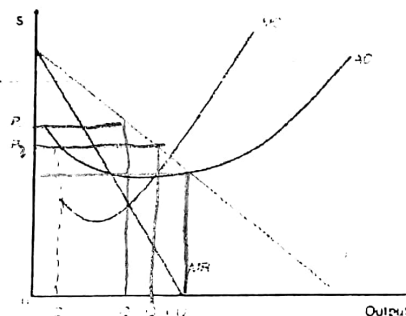
- Perfect Competition: Price takers, hence the market decides the price for them
- Imperfect Markets: They can choose their price and output but are constrained with the demand curve. They might choose to maximize their profits but might have other objectives as well.

Pricing Strategy	Description
1. Profit Maximization	This is a pricing strategy that sets price on and output where the $MC=MR$ intersect.
2. Marginal Cost Pricing	Marginal-Cost Pricing is the setting of the price for a product which is based upon the marginal cost of producing and distributing $P=MC$. This is usually done in the case of public utilities where marginal costs are close to zero like public parks. Whether MC-pricing is profitable or not depends upon the cost of the firm. This is also known as allocative efficient pricing .
3. Revenue Maximization	This the price and output were $MR=0$. This is also the price where PED equals to unity.
4. Average Cost Pricing	This is a point where $AR = AC$. This is also known as output maximization . This is the point where the firm makes normal profits and would seek to increase its size. Firms enjoy EOS, they are less chance to be taken over and brand image improves. Also called break-even pricing. Note: The firm will not produce beyond this point.
5. Full Cost Pricing	It is a pricing method which sets the price of a product by adding a percentage profit mark-up to average cost or unit total cost (Average variable + Average Fixed Cost). Also known as cost plus pricing .
6. Predatory Pricing	This is an anti-competitive strategy in which the firm sets price <u>below the average variable cost in an attempt to force a rival or rivals out of the market and prevent new firms from entering</u> . This helps the firm achieve market dominance. Consumers only gain for the short-term because the firm increases the prices again once it has driven the other firms out of the market. The success depends on the relative strength of the existing firm and the new firm entering the market.

Limit Pricing

This strategy assumes that the already existing firm has some sort of cost advantage over potential entrants due to factors like economies of scale. The objective is to sell products at a price low enough to make it unprofitable for other players to enter the market.

Diagram
not undertaken
imp limit pricing
imp



The firm would normally be earning supernormal profits (shown in the diagram above). However, if we assume that the barriers to entry are weak, the supernormal profits will attract potential entrants. The existing firm is still not producing at the minimum but is gaining economies of scale. A new firm then enters producing less amount Q_1 because it does not have economies of scale. This entry causes the production to be Q_0+Q_1 and pushing the price down to P_2 . The new firm is just making normal profits where the existing firm is still making supernormal profits however at a lower level than before. Hence the existing firm should have kept the price lower than P_0 . If the existing firm charged P_2 from the start it would have made the new firm launch with an even lower price. Hence a such a low price and without economies of scale the new firm would have left the market.

Lecture 8