Monopoly

- Major Questions:
  - What are the key features of a monopoly and how natural monopolies arise?
  - What is the relationship between price, marginal revenue, average cost, and marginal cost for a monopoly?
  - Why do monopolies restrict output to an economically inefficient quantity compared to pure competition?
  - What are the social benefits of regulation imposing average cost pricing?
  - Why does marginal cost pricing for a natural monopoly require a subsidy?
Monopoly

- A monopoly is characterized by
  - Only 1 seller
  - Specialized product with no substitutes
  - High Barriers to entry (BTE)
    - Types of barriers
    - Legal barriers: Patents, copyrights, government granted franchises
    - Natural barriers: high capital costs and economies of scale or scope, e.g.: electric utility.
      - Typically AC falls throughout the relevant range of demand (vis-à-vis a normal AC, which is U shaped), this is due to constant MC and fixed cost contribution falling throughout as output increases

- Monopoly arises due to patents, technical barriers, control over scare natural resources which are needed as raw material or due to government policy
- Price setting strategies include Single price or Price Discrimination
Monopoly … Downward Sloping Demand Curve

• No difference between industry and firm
• **Downward sloping demand curve**
  – Meaning demand will decrease if high prices are fixed or vice versa
  – Profit maximization involves a trade-off between price and quantity
• To maximize profit, monopolists will expand output until MR = MC
  – Demand curve must lie above ATC to earn profits
• Due to high BTE, monopolist profits do not attract new market entrants.
  ⇒ **In LR economic profits can exist unlike pure competition markets**
• Monopolists do not charge the highest possible price because monopolists want to maximize profits, not price.
Monopolistic Short-Run Costs and Revenues

- Profit maximizing at the quantity when MR = MC.
  - The economic profit equal to \((P – ATC) \times Q\).
- Demand curve must lie above ATC at Q so that price > ATC and firm earn profit.
- Optimal quantity will be in the elastic range of the demand curve.
Price Discrimination

- Charging different prices for identical product / service from different customers
  - E.g. Pricing of airlines tickets – Early discounts
  - The price differentiation arising due to different cost structures (lower price, due to cost benefit) is NOT called Price Discrimination

- **Conditions for price discrimination**
  - Seller must have at least two identifiable groups of customers with
    - **Different price elastic ties** (high price to group with more inelastic demand)
  - Seller face a downward-sloping demand curve.
  - Seller can prevent the customers paying the lower price from reselling the product to the customers paying the higher price – prevent consumer switching
  - The primary motive of Price Discrimination is to convert consumer surplus into producer surplus / monopoly profit

- Two methods of Price Discrimination
  - Among units of goods – Buy a larger quantity and get reduced price
  - Among groups of buyers – More common, depending on customer segmentation
Effect of Price Discrimination

- **Price discrimination** ⇒ $Q$ ↑, Economic Profit ↑,
- Example assumes no fixed costs & constant variable costs so that MC=ATC
- Total profit is increased to $3,200 and total Output is increased from 80 units to 110 units.
- In a PD, where total output remains same, some (shaded) part is converted from CS to monopoly profits
- Where total output increases (shown above), Some part of deadweight loss also converts into monopoly profits
Deadweight Loss in Monopoly

- **In monopoly, consumer surplus is reduced due to**
  - Reduction in output
  - Sum of consumer and producer surplus in monopoly < Perfect competition
  - High prices paid by consumers compared to perfect competition
  - As represented by Deadweight loss
  - Difference between Monopoly profit and DWL
    - Monopoly profit is additional profit (over perfect competition) due to increased profit – This directly goes to the producer / monopolist – This earlier was a part of CS in Perfect competition
    - DWL is the loss due to restricted output (difference in quantities of perfect competition and monopoly) – this comes from both CS and producers surplus
  - However, price discrimination reduces this inefficiency
    - By increasing output and allocating more resources where MR = MC
    - Firm gains from customers with inelastic demand while still providing goods to customers with more elastic demand.
Rent Seeking

- Any surplus (whether PS, CS or economic profit) is called Economic RENT. Rent seeking is the behavior of pursuing rent (converting CS into PS in monopoly).
- Ways of rent seeking – (1) Buy a monopoly (buy at a price lower than monopolist’s economic profit) (2) Create a monopoly (substantial costs influencing political and legal systems).
- Generally due to competitive rent seeking behaviour, AC curves shift upwards to ensure that economic profit is zero.

Rent Seeking Equilibrium

[Diagram showing the concepts of Price, MC, ATC, Consumer Surplus, Rent-seeking costs exhausting producer surplus, Rent Seeking Equilibrium, DWL, and Q_M.]
**Perfect Price Discrimination**

- **Results for Perfect price discrimination (PPD)**
  - Monopolist charges each **consumer the maximum they are WTP**
  - Monopolist earns entire profit with **zero consumer surplus**
  - No deadweight loss (Deadweight loss is converted into producers surplus)
  - Monopolist produces the same Q as under perfect competition

- Since producer can charge a different price on every consumer on the demand curve, MR curve shifts upwards to align itself with Demand curve.

- **Hence PPD brings efficiency**

![Diagram](https://via.placeholder.com/150)
The Case of a Natural Monopoly

A single-price monopolist will maximize profits by producing where $MR = MC$, producing quantity $Q_u$ & charging $P_u$.

If two firms produced approximately one-half of output $Q_{AC}$
- ATC for each firm would be much higher than for a single producer producing $Q_{AC}$
- **Potential gains from monopoly** – (1) Incentive to innovation (mixed results) (2) Economies of scale and scope
Regulation of Monopoly

• Monopolists produce less than the optimal quantity (the sum of producer surplus and consumer surplus is not maximized) ⇒ inefficient resource allocation and causes creation of deadweight loss
• Government regulation may improve resource allocation by limiting the prices monopolies may charge
  – Using average cost pricing
  – Using marginal cost pricing
Average cost pricing is the most common form of regulation

- Monopolists to reduce price to where ATC intersects the demand curve.
  - Ensure normal profit since price = ATC.
  - Increase output and decrease price.
  - Increase social welfare through allocative efficiency
Marginal Cost Pricing

- Reduce price to a level where MC curve meets the demand curve,
  - Monopolist incur a loss since price is below ATC
  - Increases output and reduces price
  - **Government subsidy** is offered to the firm to compensate for normal profit and prevent it from leaving the market entirely.
Regulation of Monopoly

- Regulators sometimes go astray and faces following problems
  - **Lack of information**: firm’s ATC, MC, or demand schedule.
  - **Difficult to regulate quality**: Firm starts reducing the quality of the good or service which is difficult to monitor
  - **Special interest effects**: Firm try to influence regulation by political manipulation designed to influence the composition & decisions of the regulatory board.
  - **Cost shifting**: Firm has no incentive to reduce costs, since this will cause the regulators to reduce price.