AP Microeconomics

Unit 4: Imperfect Competition

4.1 Introduction to Imperfectly Competitive Markets

Most Competitive — Least Competitive

Table 57.2 Market Structure

Characteristic	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Number of firms	Many	Many	Few	One
Product differentiation	No	Yes	Yes or No	No
Control over price	None	Within narrow limits	Varies, depending on the degree of mutual interdependence and collusion	Considerable, limited by consumers' willingness to pay
Barriers to entry	None	Few if any	Considerable	Prohibitive
Example	Agriculture	Restaurants	Airlines	Utilities
Profit LR?	No	No	Yes	Yes
Efficient?	A+P	A(sometimes)	neither	A

Image source: https://t.me/apresources

- Common barriers that prevent other firms from entering an imperfectly competitive market:
  - Economies of scale (high start-up costs)
  - control of scarce resources
  - governmental or legal barriers
- **Herfindahl–Hirschman Index**, or **HHI**: the square of each firm's share of market sales summed over the industry. It gives a picture of the industry market structure.
- **Concentration ratios**: measures the percentage of industry sales accounted for by the "X" largest firms. For example, the four-firm concentration ratio or the eight-firm concentration ratio.
- Firms that are in imperfect competition are not price-takers; they are *price-makers*.
- In order to increase output, the firms must lower their price to sell additional units.
- Price is greater than MC, so firms do not produce at allocatively efficient levels (unless the government says otherwise)
- From a social standpoint, imperfectly competitive firms don't produce enough and charge too high of a price.
- Barriers to entry exist and that keeps other firms from entering the market
  - Examples of barriers: patent, high start-up costs, etc.

- In an imperfectly competitive market, a firm must lower its price in order to increase output. Price doesn't equal MR and MR will always be less than price.

4.2 Monopoly

- **Monopoly**: a market with one seller of the good. Monopolies exist due to barriers to entry, including patents, copyrights, ownership of key resources, or if the government gives the firm the exclusive right to sell a product (mass transit). Monopolies are legal in some cases (utility companies are natural monopolies).
- Downward-sloping demand curve
- MR ≤ Demand
- Produces at Profit Maximization: Q at MC=MR
- P = D at the point where MR=MC
- Sells at Price > MR → economic profit
  - The firm's total revenue would decrease if it sold one unit less than the profit-maximizing quantity because the percentage change in quantity demanded is greater than the percentage change in price. In addition, the quantity effect is greater than the price effect (because the change in quantity is greater than the change in price).
- **Deadweight loss:** output is below consumer/producer surplus
- Supply curve = MC where MC ≥ AVC
- Allocatively efficient since D = MC
- Productively inefficient since it does not produce at the minimum ATC
- **Natural Monopoly**
  - In a natural monopoly, long-run economies of scale exist for a single firm throughout the entire effective demand for its product (ex. utilities, mass transit). They are markets that have high start-up costs and create barriers for other firms to entry.

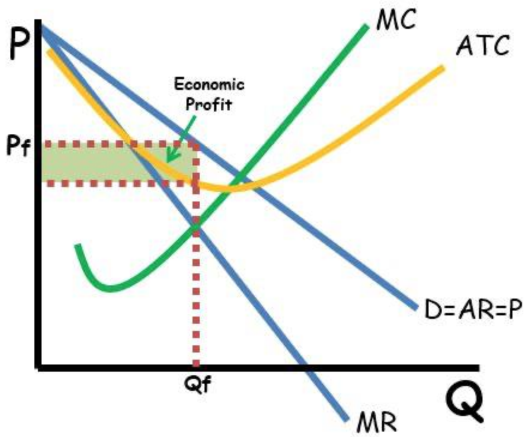
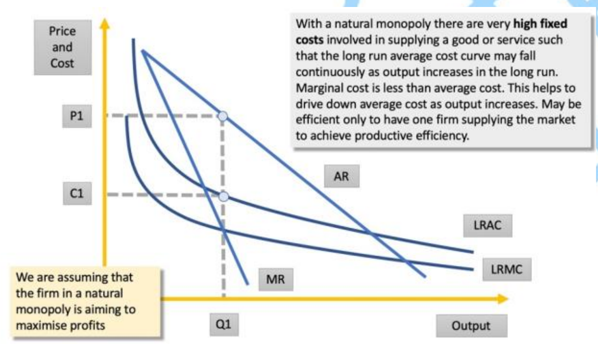


Image source: https://www.reviewecon.com/monopoly

- If a monopoly has decreasing ATC due to high start-up costs, and it is broken up into more than one firm, then all firms incur higher costs and the industry is less efficient
- A perfectly competitive firm's MR curve is constant, but a monopolist's MR curve decreases as it increases output. Therefore, the point at which MC intersects MR will occur at a lower quantity, for which the monopolists charge a higher price.
- In the long run, P > ATC > MR = MC



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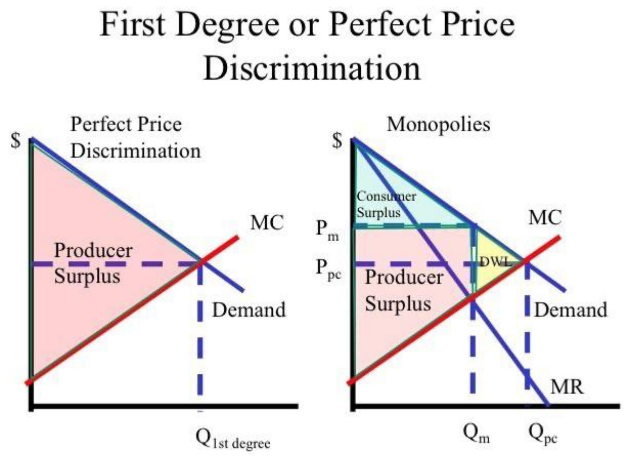
4.3 Price Discrimination

- **Price Discrimination**: The practice of selling the same goods to different consumers at different prices, even though the costs of production are the same.
    - Conditions: Have market power, be able to recognize differences in demand, prevent resale of product
- **Imperfect Price discrimination**: charging a different price based on buyer's willingness to pay
- Perfect Price discrimination eliminates deadweight loss → monopolists produce where P = MC to extract all economic surplus (D=MR)
- Firms engage in price discrimination to increase profits.
- In order to price discriminate:
    - Firms must have some market power; perfectly competitive firms can't price discriminate
    - Firms must have some control over price
    - There must be different levels of elasticity amongst buyers
        - if elasticities are identical, then changing the price of a good has the same effect for everyone
    - Firms must have the ability to prevent resale
        - price discrimination is charging different customers different prices for the same good based on willingness to pay. In order to do that, you need to be able to prevent people paying a low price from reselling the good to willing buyers
    - Firms must have the ability to identify a buyer's willingness to pay
        - charging different customers different prices for the same good based on their entire willingness to pay goods with identical production costs
- Perfect Price Discrimination
    - A firm that engages in perfect price discrimination sets the price where price equals marginal cost (allocative efficiency). This eliminates DWL and consumer surplus as it all becomes profit for the firm
    - MR < P = AR = D

- ○ If the monopolist perfectly price discriminates, consumer surplus will be 0 dollars.



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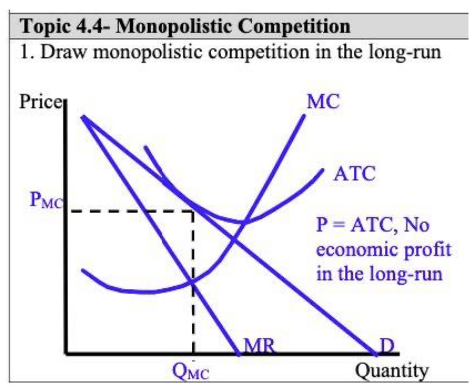
4.4 Monopolistic Competition

- Firms may earn positive, negative, or zero economic profit in the short run.
- Output is smaller than what is needed to minimize avg. cost, creating excess capacity.
- Usually caused by insurmountable barriers of entry
- Natural monopoly = similar to a long run economy of scale. ATC is minimized at the highest Q.



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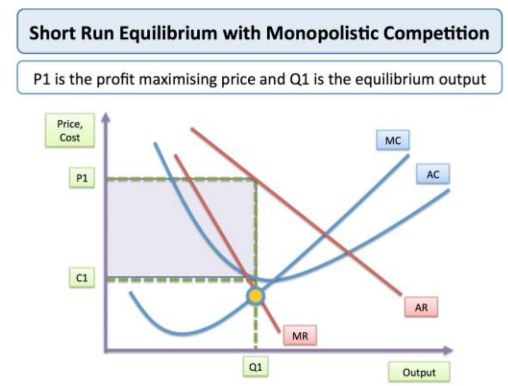
- Price is greater than MC (and firms produce a quantity where MB exceeds MC, due to markup) so not allocatively efficient. Firms have some control over price so they aren't price takers.
- Number of firms adjust in the long run until they are at 0 economic profit.
- Firms in monopolistic competition use advertising as a means of differentiating their product.
  - ○ If firms enter a monopolistically competitive industry, the demand for existing firms shifts leftward.
- Monopolistic competition in the long run has excess capacity when a firm produces less than its minimum efficient scale, which is at the bottom of the firm's average total cost curve. ATC is minimized in long-run equilibrium for perfect competition, not in monopolistic competition.
- Productively inefficient because the long-run price is above minimum ATC.

Short Run

- Many sellers, but not as many as perfect competition.
- Single firm pricing decisions have a negligible effect on the market price.
- Product is differentiated; very similar yet small differences - buyers are not indifferent.
- MC firms will use advertising to differentiate their product.
- Easy entry and exit.
- Productively inefficient (does not produce at minimum of ATC)
- Demand curve is downward sloping (market power) but is more elastic than the monopoly demand curve.
- Profit maximization & produce/produce at loss/shut down rules apply the same way here as it does in other markets structures.



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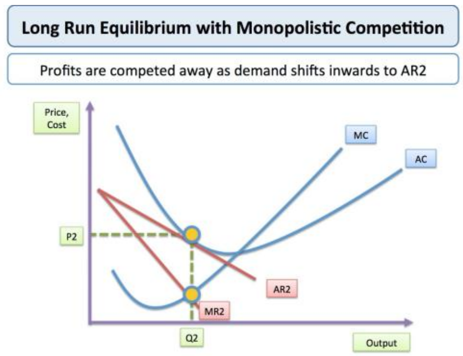
Long Run

- Monopolistically competitive firms earn a normal (0) profit in the long run
- Short run profits attract new firms to the industry, decreasing the demand for any singular firm's product until the demand curve is tangent to LRATC. In the long run, monopolistically competitive firms produce in a region where economies of scale exist because the firm produces in the declining portion of LRATC.



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4.5 Oligopoly

- A market with a few firms acting interdependently, with high barriers to entry
- Characteristics:
    - Small number of very large firms - each firm has a significant share of the total market.
    - Differentiated product
    - Interdependent - actions by one oligopoly firm affect profit outcomes of other firms.
    - State "the firm's actions are interdependent" if they are asking to explain why a market is an oligopoly.
    - Sometimes, companies form **cartels** - groups of firms that get together and coordinate output and price decisions. Collusion and cartel behavior is illegal in most cases, but it typically doesn't work, as each firm has incentive to cheat on the agreement
    - Inherently unstable - there is nothing stopping firms from cheating on the deal and expand production beyond the agreed quantity
    - Oligopolies have incentive to engage in **collusion** - when companies that typically compete with each other decide to work together to gain an unfair market advantage

4.6 Game Theory

- **Game Theory:** The study of how people behave in strategic situations, taking into account other people's decisions
- **Payoff Matrix**: represents the payoffs to each player for combinations of given strategies
- When making decisions about output or price, firms in an oligopolistic market must be strategic. It is an oligopolistic market because firms are interdependent

- “Both players usually confess so they have a dominant strategy”
    - A **dominant strategy** is when the payoff to a particular action is always higher, independent of the action taken by the other player. Regardless of what Player B does, Player A will not deviate from their strategy.
- **Nash equilibrium**: when no player can increase his or her payoff by taking any other action given the other players actions.