MARKET STRUCTURES

Market structure; Degree of competition
Monopolistic competition
Oligopoly
MARKET STRUCTURE

MARKET = a place where forces of demand and supply operate, and where buyers and sellers interact in order to facilitate an exchange of goods.

MARKET STRUCTURE = organizational and competitive characteristics or other features of the market

Types of market structure:

- perfect competition
- monopoly
- monopolistic competition
- oligopoly
MARKET STRUCTURE

STRUCTURE OF PRESENTATION

1. Monopolistic competition
   Monopolistic competition in short-run analysis
   Monopolistic competition in long-run analysis

2. Oligopoly
   Cournot competition
   The kinked curved demand model
   Non-price competition
   The centralized cartel
   Price leadership
   The sales maximization model
1. Monopolistic competition

MONOPOLISTIC COMPETITION = the form of market organization with many sellers of a heterogeneous or differentiated product (similar but no identical), each too small to affect other seller.

If the seller of a particular brand of the product increased its price even moderately, it would stand to lose a great deal of its sales.

It is common in the retail and service sectors (clothing, cotton textiles, food processing, gasoline stations,...)

Monopolistically competitive firm can determine the characteristics of the products, the amount of selling expenses to incur, as well as the price and quantity of the product.
1. Monopolistic competition

MONOPOLISTIC COMPETITION IN SHORT-RUN ANALYSIS

The price elasticity is higher the smaller is the degree of product differentiation.

\( P > ATC = \text{profit} \)
\( P = ATC \)
\( P < ATC = \text{loss} \)

\( MR = MC < P \) at the best level of output so that (as in the case of monopoly) the rising portion of the \( MC \) curve above the \( AVC \) curve does not represent the short-run supply curve of the monopolistic competitor.

The price elasticity is higher the smaller is the degree of product differentiation.
1. Monopolistic competition

MONOPOLISTIC COMPETITION IN LONG-RUN ANALYSIS

Each firm has a smaller share of the market and a more price elastic demand curve because of the greater range of products available.

The best level of output $MR' = LMC = SMC'$

Firm produces to the left of the lowest point on its LAC curve when it is in long-run equilibrium = the average cost of production and price of the product under monopolistic competition is higher than under perfect competition.

There are many more firms when the market is organized along monopolistically competitive rather than along perfectly competitive lines.
2. Oligopoly

**OLIGOPOLY**: the form of market organization in which there are few sellers of a homogeneous or a differentiated product. It is common in the manufacturing sector (automobile, steel, glass and other industries).

Industry products are homogeneous (steel, aluminium), or differentiated (automobiles). Differentiation is a dominant determinant of the price elasticity of demand.

Types of oligopoly:
1. **duopoly** = oligopoly that consists only of two sellers.
2. **pure oligopoly** = type of oligopoly producing homogeneous products.
3. **differentiated oligopoly** = differentiated products.

**Non-price competition** = competition on the basis of product differentiation, advertising, and service.

The sources (barriers) of oligopoly are generally the same as for monopoly + **limit pricing**.
2. Oligopoly

OLIGOPOLY MODELS

Cournot competition (duopoly) = each firm assumes the other firm’s output is given and fixed, and maximizes its profit based on that assumption.

Firm 1 produces $q_1$ units of the good; firm 2 produces $q_2$ units. The total level of output produced is $q = q_1 + q_2$.

$$P = a - b(q_1 + q_2)$$

Firm $i$ has a total cost curve $c_i q_i$, for $i = 1, 2$.

$$\pi_i = (P - c_i)q_i = Pq_i - c_i q_i = [a - b(q_1 + q_2)]q_i - c_i q_i$$

When firm 1 chooses its output $q_1$ to maximize its profit, it takes firm 2’s output $q_2$ as given and fixed; and, contrariwise.
2. Oligopoly

OLIGOPOLY MODELS

Cournot competition (duopoly)

\[ \pi_1(q_1, q_2) = \text{profit function of firm 1} \]

\[ \frac{\partial \pi_1}{\partial q_1} = 0 \]

\[ \frac{\partial \pi_1}{\partial q_1} = \frac{d}{dq_1} \left[ \left[ a - b(q_1 + q_2) \right] q_1 - c_1 q_1 \right] = \frac{d}{dq_1} \left[ \left[ a - b(q_1 + q_2) \right] q_1 \right] - \frac{d}{dq_1} \left[ c_1 q_1 \right] = \frac{d}{dq_1} \left[ a q_1 - b(q_1 + q_2)q_1 \right] - \frac{c_1 dq_1}{dq_1} = \frac{d}{dq_1} \left[ a q_1 - b q_1^2 - b q_2 q_1 \right] - \frac{c_1 dq_1}{dq_1} = a - 2 bq_1 - bq_2 - c_1 = 0 \]

The level of output that the firm 1 will choose to produce is given as a function of \( q_2 \).

\[ q_1 = r_1(q_2) \]
2. Oligopoly

OLIGOPOLY MODELS

Cournot competition (duopoly)

Firm 2’s maximizes its profit subject to the assumption that $q_1$ is a constant. The firm 2 wants to maximize its profit $\pi_2$, given by:

$$\pi_2 = (P - c_2)q_2 = Pq_2 - c_2 q_2 = [a - b(q_1 + q_2)]q_2 - c_2 q_2$$

$$\frac{\partial \pi_2}{\partial q_2} = \frac{d[[a - b(q_1 + q_2)]q_2 - c_2 q_2]}{dq_2} = a - 2bq_2 - bq_1 - c_2 = 0$$

$$q_2 = r_2(q_1)$$
Oligopoly Models
Cournot competition (duopoly)

The reaction functions intersect at a point $q^*_1$ and $q^*_2$, and suppose firm 1 chooses $q^*_1$ and firm 2 chooses $q^*_2$.

$r_1 = \text{firm 1's reaction function}$
It shows, for any output level $q_2$ of firm 2, the quantity of the good that firm 1 should produce in order to maximize its profits:

$$q_1 = \frac{a - bq_2 - c_1}{2b} = r_1(q_2)$$

$r_2 = \text{firm 2's reaction function}$
It shows, for any output level $q_1$ of firm 1, the quantity of the good that firm 2 should produce in order to maximize its profits:

$$q_2 = \frac{a - bq_1 - c_2}{2b} = r_2(q_1)$$
2. Oligopoly

OLIGOPOLY MODELS

The kinked curved demand model

Demand curve facing the oligopolist is \( D \) and has a kink at point \( K \).

If the other firms would NOT follow the price change of one competitor, the demand would continue its original development.

In the case that other firms are willing to follow the price change of the one competitor, the demand curve they would face is the demand curve with a new development (the curve below the kink).
2. Oligopoly (7/11)

OLIGOPOLY MODELS

The kinked curved demand model

\[ MR = \text{MARGINAL REVENUE CURVE} \]

The kink in the demand curve causes a discontinuity in MR. The best level of output = point at which the MC intersects the vertical portion of the MR. Oligopolist will charge the price \( P_b \).

The model may be applicable only in a new industry and in the short run when firms have no clear idea as to how competitors might react to price changes. Even more, the model was criticised because it cannot explain or predict at what price the kink will occur.
2. Oligopoly

OLIGOPOLY MODELS

Non-price competition

The goal of the non-price competition is to increase demand and develop brand loyalty by the customers. It can be examined with game theory.

If the firm 1 would decide to advertise, firm 2’s choice would be also advertise, because this choice would bring the highest payoff for the firm 1.

If the firm 1 would decide to not advertise, firm 2 will earn more profits also by advertising. It is the same in case firm 2 will do its decision. Regardless on the decision of the firm 2, firm 1 will always choose to advertise. So, the dominant strategy is to advertise and we found the so-called NASH EQUILIBRIUM and equilibrium of this market.
2. Oligopoly

OLIGOPOLY MODELS

The centralized cartel = a formal agreement among the oligopolistic producers of a product to set the monopoly price, allocate output among its members, and determine how profits are to be shared.

The best levels of output for each firm in the cartel:
\[ MC = MR = MC_1 = MC_2 \]
2. Oligopoly

OLIGOPOLY MODELS

Price leadership = the price leader initiates a price change and the other firms in the industry follow the lead. The price leader is usually the largest or the dominant firm in the industry. It could also be a low-cost firm.

\[ D_L = \text{demand curve of the leader firm} \]
\[ MR_L = \text{marginal revenue curve} \]
\[ DT = \text{total market demand curve of the homogeneous product} \]
\[ MC_F = \text{horizontal summation of the marginal cost curves of the follower firms in the industry} \]

LEADER:
\[ MC_L = MR_L \text{ supplying } Q_L \text{ units} \]

FOLLOWERS:
\[ P_L = MC_F, (Q_F) \]

\[ Q_L + Q_F = Q_T \]
2. Oligopoly

OLIGOPOLY MODELS

The sales maximization model (W. Baumol) = managers of modern corporations seek to maximize sales after an adequate rate of return has been earned to satisfy stockholders.

\[ TR = \text{total revenue curve} \]
\[ TC = \text{total cost curve} \]
\[ \pi = \text{total profit} \]

Inflection point = a point at which the TC curve changes from being concave to convex.

Firm`s aim is to maximise sales (or total revenues), so it will fix its output at level \( Q_{TR} \) which is a greater quantity than \( Q_{\pi} \). At that level of output the slope of the TR curve is zero.
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