



# **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

(1/3)

**MONOPOLISTIC COMPETITION** = the form of market organization with **many sellers of a heterogeneous or differentiated product** (similar but not 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.

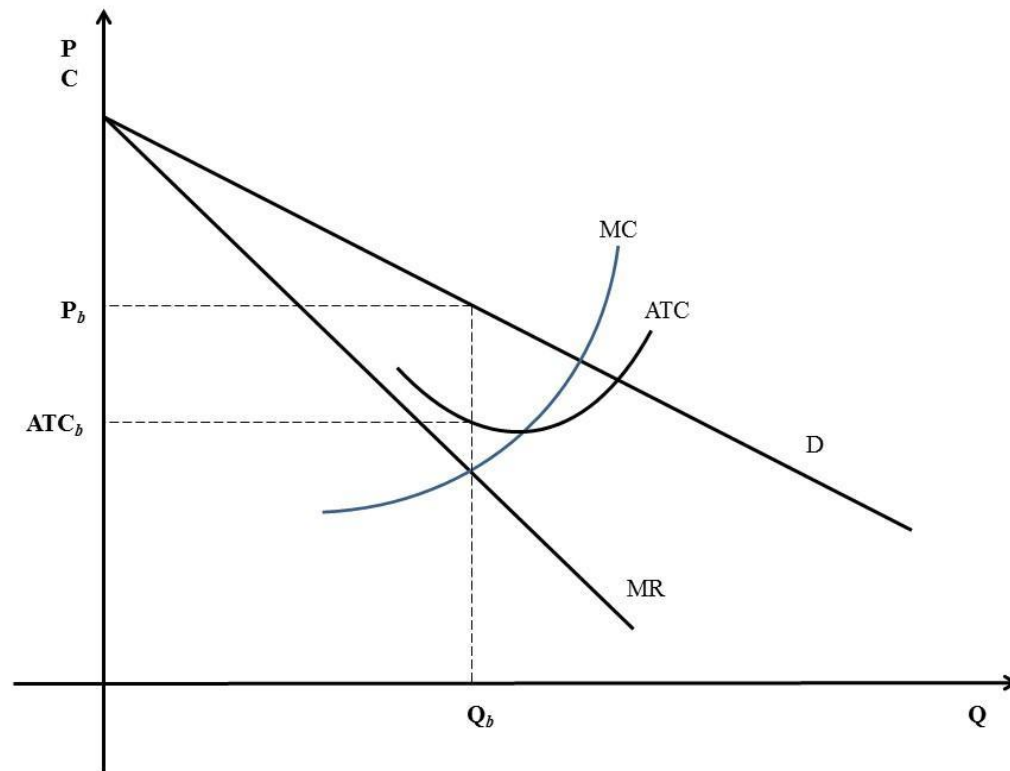
It is common in the **retail** and **service sectors** (clothing, cotton textiles, food processing, gasoline stations,...)

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

(2/3)

## MONOPOLISTIC COMPETITION IN SHORT-RUN ANALYSIS



$P > ATC$  = profit

$P = ATC$

$P < ATC$  = loss

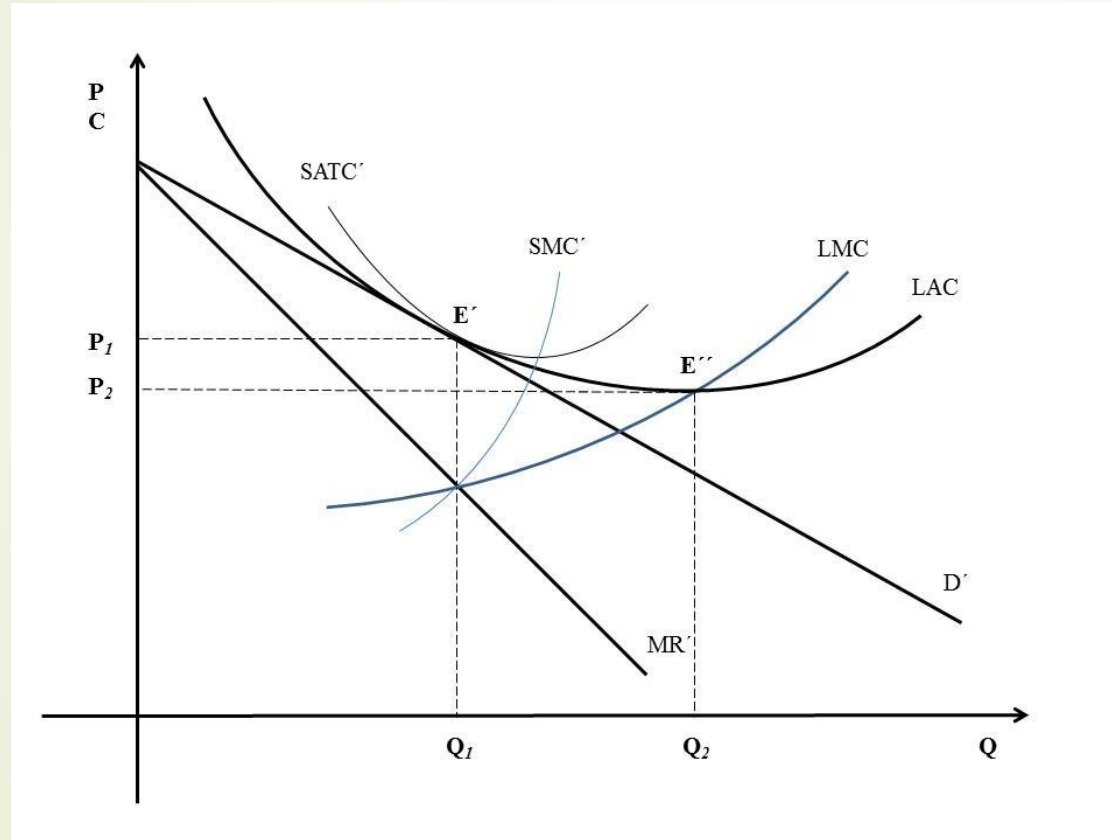
**$MR = MC < P$**  at the best level of output so that (as in the case of monopoly) the **rising portion of the MC curve above the AVC curve does not represent the short-run supply curve of the monopolistic competitor.**

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

# 1. Monopolistic competition

(3/3)

## 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

(1/11)

**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

(2/11)

### 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  $c_i \cdot q_i$ , for  $i = 1, 2$ .

$$\pi_1 = (P - c_1)q_1 = Pq_1 - c_1q_1 = [a - b(q_1 + q_2)]q_1 - c_1q_1$$

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

(3/11)

### OLIGOPOLY MODELS

#### Cournot competition (duopoly)

$\pi_1(q_1, q_2)$  = profit function of firm 1

$$\frac{\partial \pi_1}{\partial q_1} = 0$$

$$\frac{\partial \pi_1}{\partial q_1} = \frac{d[[a - b(q_1 + q_2)]q_1 - c_1q_1]}{dq_1} = \frac{d[[a - b(q_1 + q_2)]q_1]}{dq_1} - \frac{d(c_1q_1)}{dq_1} =$$

$$= \frac{d[aq_1 - b(q_1 + q_2)q_1]}{dq_1} - \frac{c_1 dq_1}{dq_1} = \frac{d[aq_1 - bq_1^2 - bq_2q_1]}{dq_1} - \frac{c_1 dq_1}{dq_1} = a - 2bq_1 - bq_2 - c_1 = 0$$

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

(4/11)

### 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:

$$\pi_2 = (P - c_2)q_2 = Pq_2 - c_2q_2 = [a - b(q_1 + q_2)]q_2 - c_2 \cdot q_2$$

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

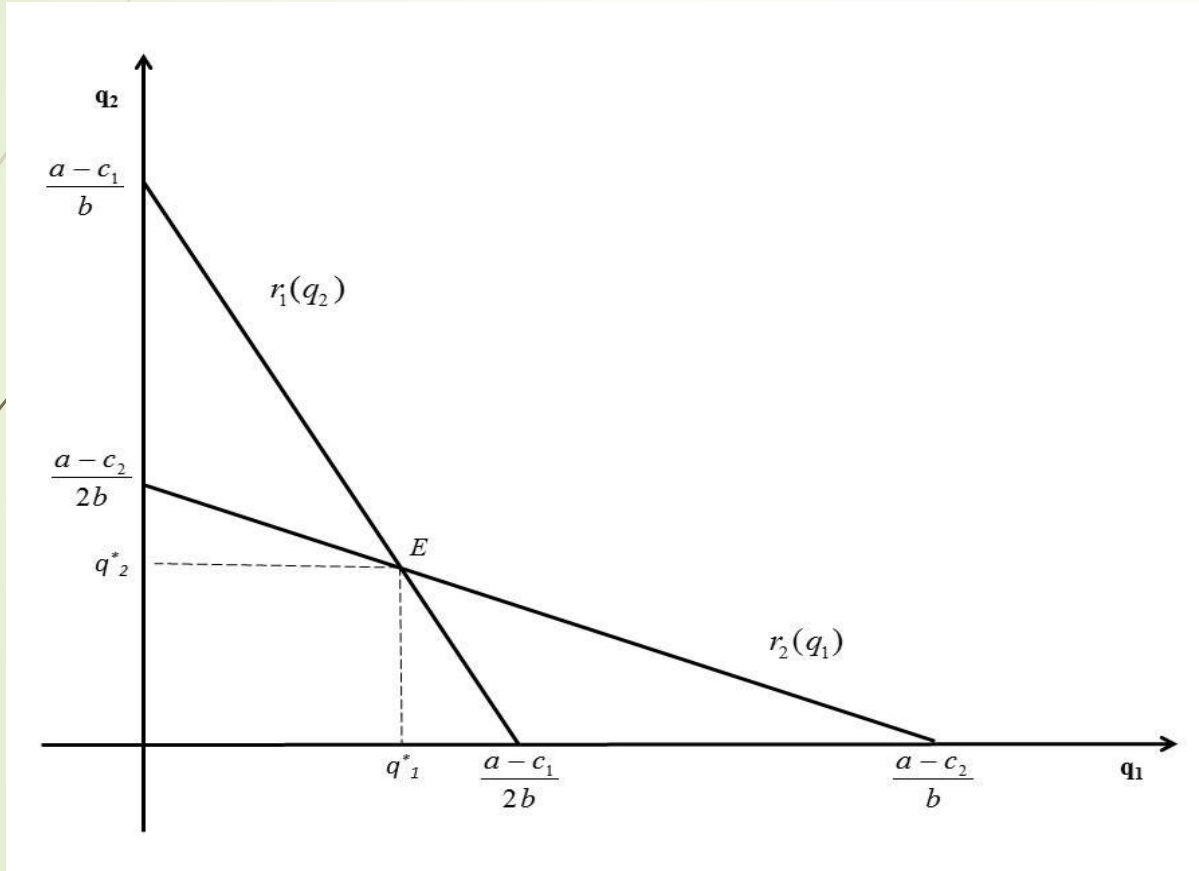
$$q_2 = r_2(q_1)$$

# 2. Oligopoly

(5/11)

## 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:

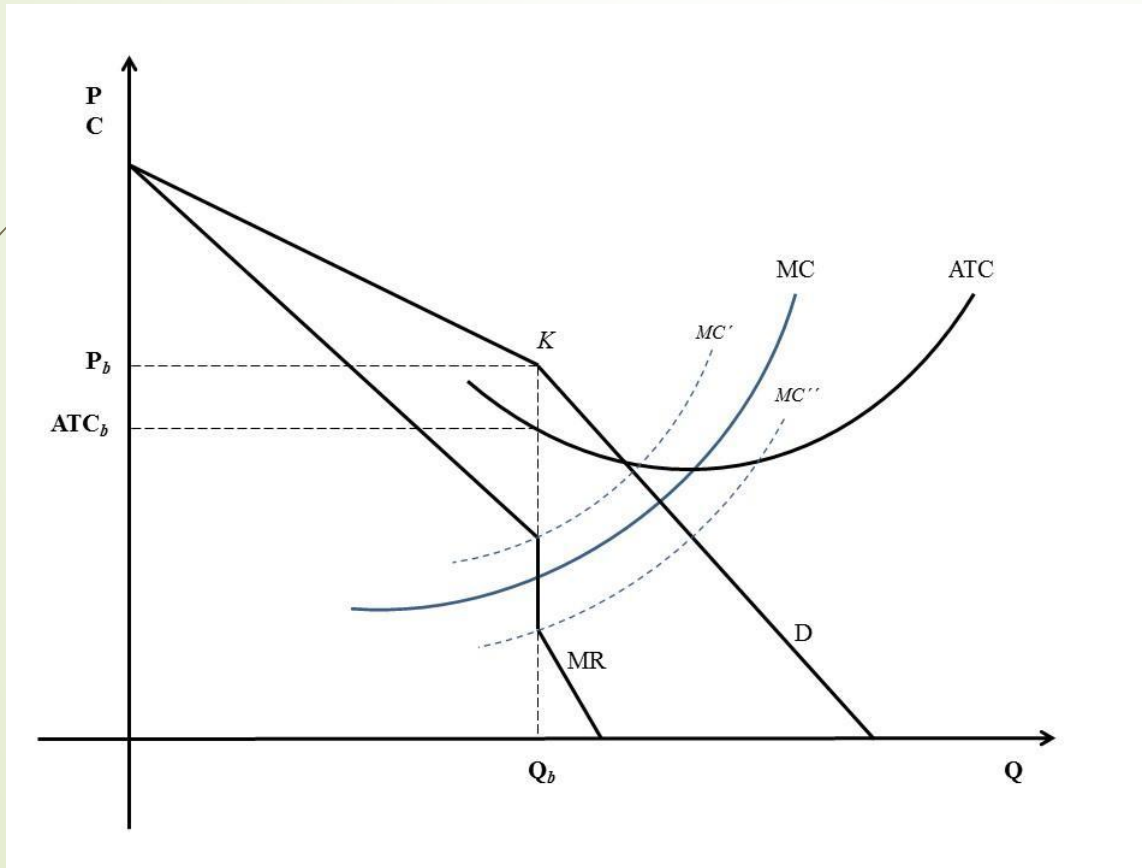
$$q_2 = \frac{a - bq_1 - c_2}{2b} = r_2(q_1)$$

# 2. Oligopoly

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## 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**.

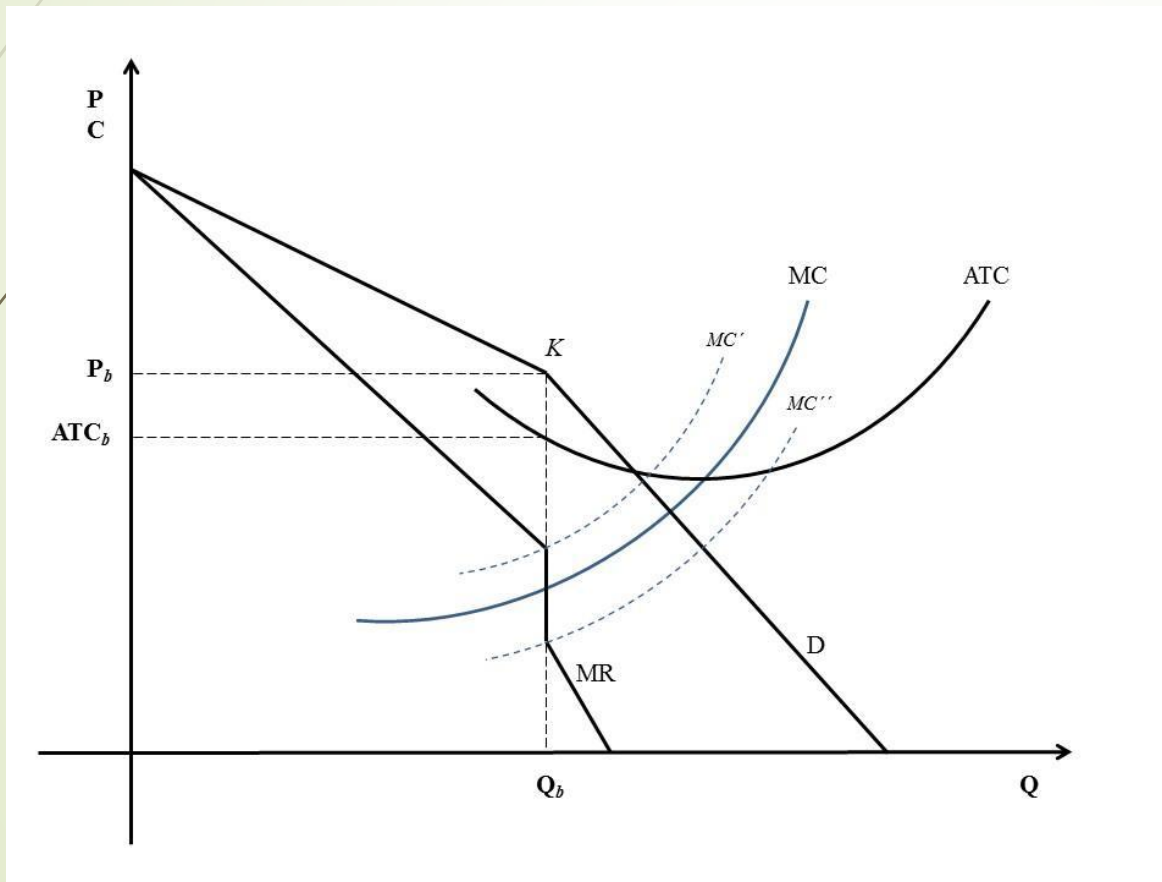
In the case that **other firms are willing to follow** the **price change** of the one competitor, the **demand curve** they would face is the **demand curve with a new development** (the curve below the kink).

# 2. Oligopoly

(7/11)

## OLIGOPOLY MODELS

### The kinked curved demand model



**MR = 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

(8/11)

### 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**.

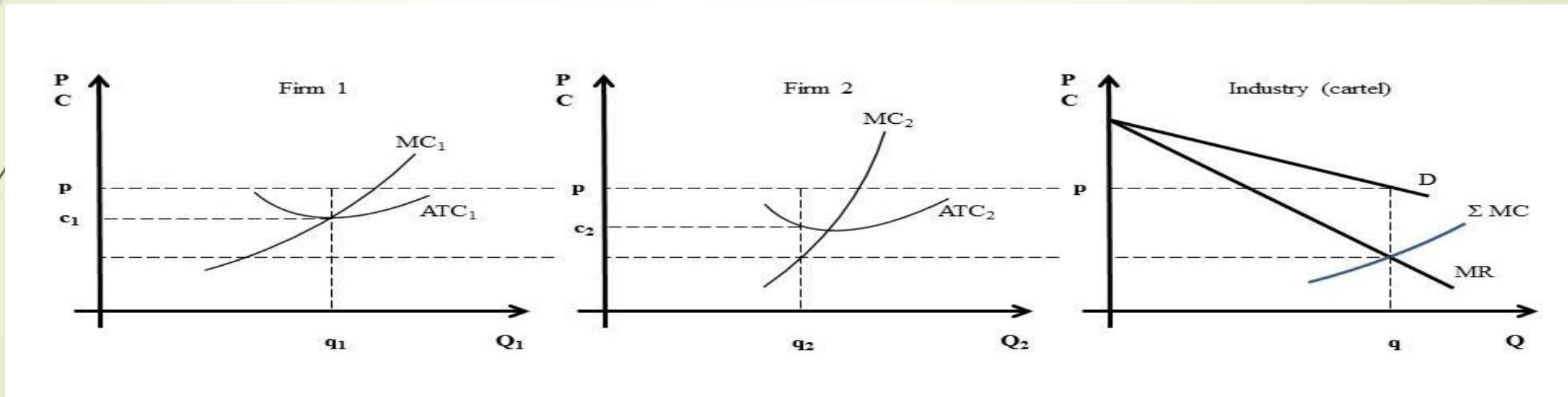
If the **firm 1 would decide to not advertise**, **firm 2** will **earn more profits** also **by advertising**. It is the same in case firm 2 will do its decision. Regardless on the decision of the firm 2, firm 1 will always choose to advertise. So, **the dominant strategy is to advertise** and we found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

## 2. Oligopoly

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### 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.



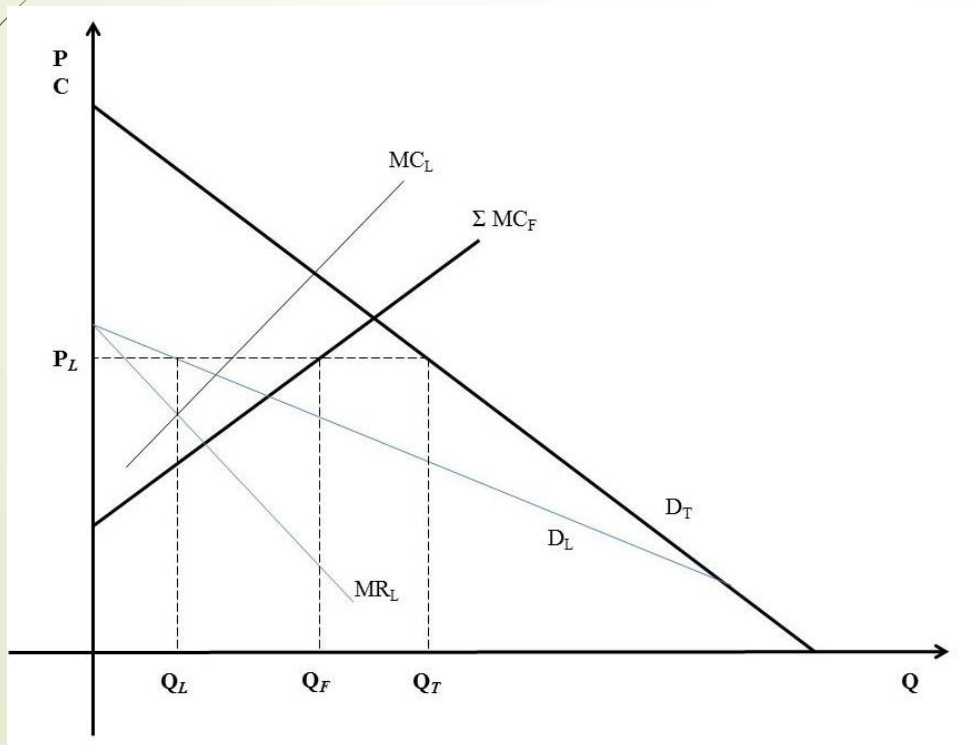
The best levels of output for each firm in the cartel:  
 $MC = MR = MC_1 = MC_2$

# 2. Oligopoly

(10/11)

## 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.



$D_L$  = demand curve of the leader firm

$MR_L$  = marginal revenue curve

$D_T$  = total market demand curve of the homogeneous product

$MC_F$  = horizontal summation of the marginal cost curves of the follower firms in the industry

LEADER:

$MC_L = MR_L$  supplying  $Q_L$  units

FOLLOWERS:

$P_L = MC_F(Q_F)$

$Q_L + Q_F = Q_T$

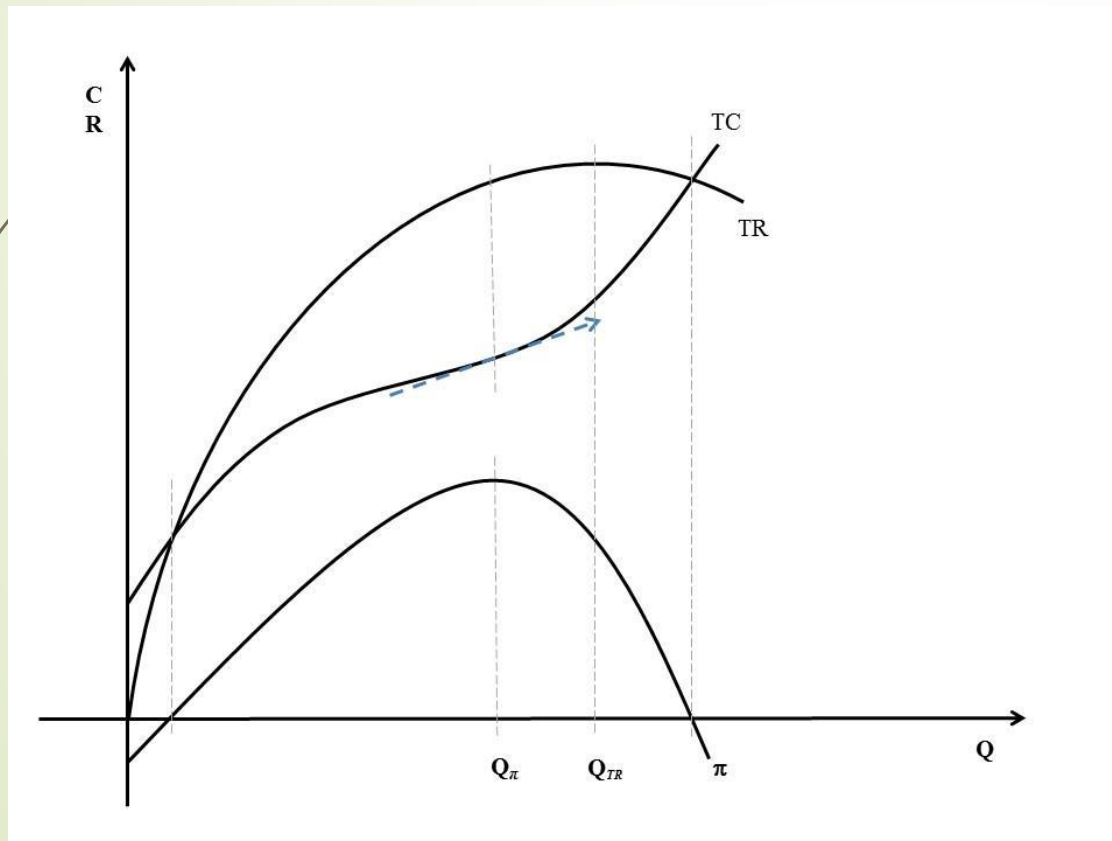


# 2. Oligopoly

(11/11)

## 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** = total revenue curve

**TC** = total cost curve

**$\pi$**  = 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.**

# Sources

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## Next lesson

### ► INTERNATIONAL TRADE AND WELFARE ANALYSIS

Tariffs

Non-tariff barriers



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