

OLIGOPOLY

- **OLIGOPOLY** = a market in which only a few firms compete with one another and entry by new firms is impeded.
- In oligopolistic markets the products may or may not be differentiated but the most important feature is that a few firms provide most of the total production.
- Oligopoly is the most prevalent form of market structure.
- **EXAMPLES** : cement producers, steel manufacturers, motor vehicle assemblers and manufacturers of electrical appliances.

Reasons for the barriers to entry :

1. Economies of scale make it unprofitable for more than a few firms to operate in the market
 2. Patent rights or access to technology may exclude potential competitors
 3. The funds required to establish a brand name and to gain market recognition may be prohibitive.
 4. Natural barriers to entry
 5. Incumbent firms may take strategic actions to deter entry of new firms eg. a threat to flood the market with a product.
- Managing a firm in an oligopolistic market is complicated because of considerations of pricing, output, advertising and investment decisions.

- Complications exist because there are only a few firms and they develop an interdependence among each other.
- This interdependence leads to a range of behaviour patterns by the firms within the oligopoly.

➤ **EQUILIBRIUM IN AN OLIGOPOLISTIC MARKET**

- It is standard practice to determine the equilibrium position for any market structure.
- For monopoly the equilibrium occurs where $MR = MC$.
- In an oligopolistic market, a firm will ^{SET} the price or output based on strategic considerations influenced by the behaviour of its competitors.
- The behaviour of the competitors will be influenced by the behaviour of the first firm.

• **QUESTIONS :**

1. Will there be an equilibrium point?
2. What will be the equilibrium price and quantity?

• **ANSWER:**

An underlying principle is required to describe equilibrium

- When a market is in equilibrium firms are doing their best and they have no reason to change price or output

• **NASH EQUILIBRIUM**

- * A set of strategies or actions in which each firm does the best it can, given the actions of its competitors
- * Because the firm will do the best it can, given that the competitors are doing what they want to, it is natural to assume that these competitors will do the best they can given what that firm is doing.

- * Each firm considers the competitors and each will do the best they can given what the firm is doing.
- * All firms thus consider their competitors and assume that every firm does the same.
- * John Nash (1951) clearly explained the concept known as Nash equilibrium.
- * Nash equilibrium – each firm is doing the best it can, given what its competitors are doing.
- * To keep matters uncomplicated two firms competing with each other are considered.

- **Duopoly** : a market in which two firms compete with each other.

- **THE COURNOT MODEL :**

An oligopoly model in which firms produce a homogeneous product, each firm treats the output of its competitors as fixed and all firms decide simultaneously how much to produce.

- This simple duopoly model was first introduced by the French economist, Augustin Cournot in 1838.
- The essence of the Cournot model is : each firm treats the output level of its competitor as fixed when deciding how much to produce.

THE COURNOT MODEL

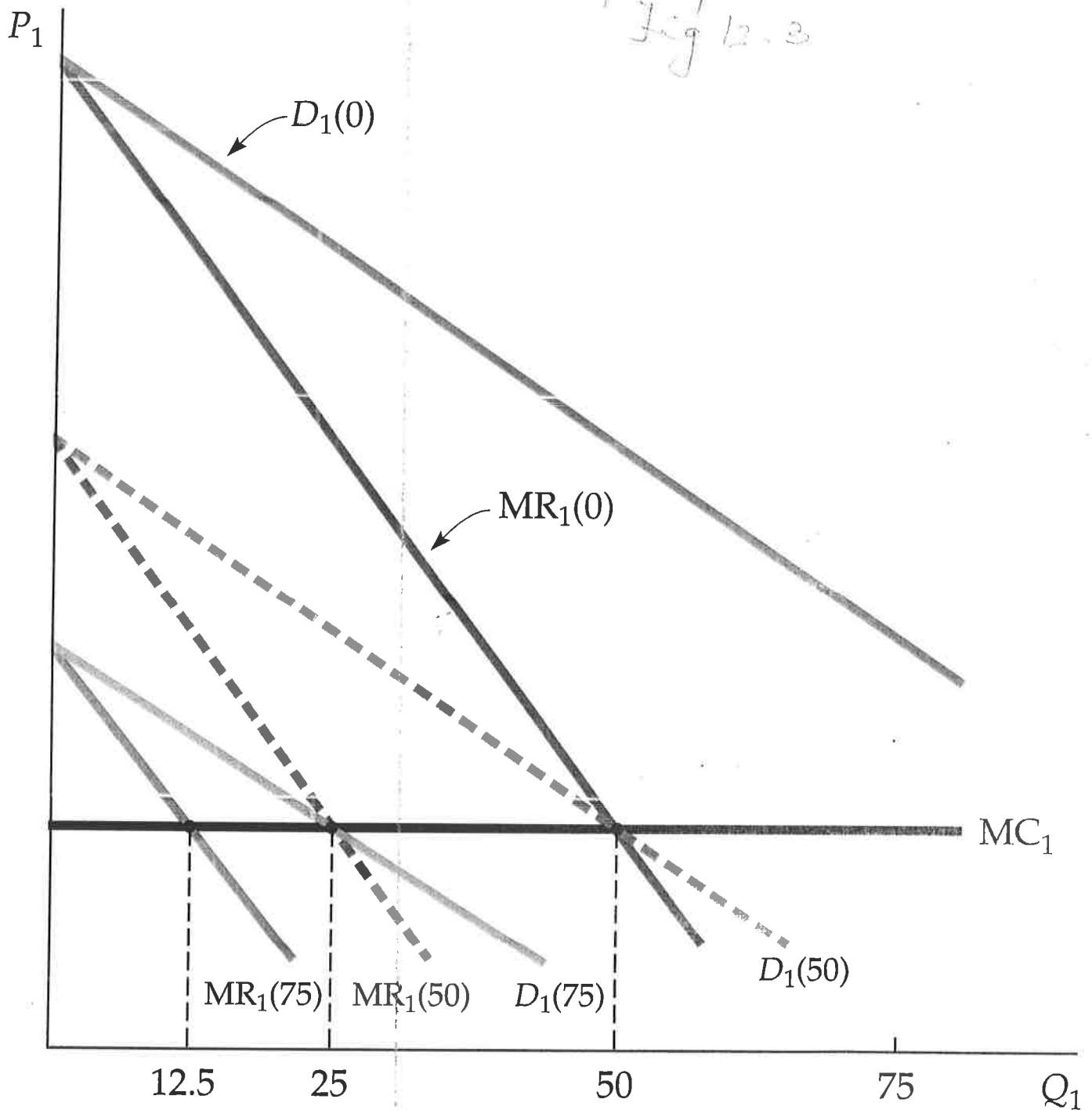
ASSUMPTION :

- Each firm treats the output level of its competitors as fixed when deciding how much to produce.
- Suppose Firm 1 thinks that Firm 2 will produce nothing.
- The market D-curve is also the D-curve for Firm 1 (shown as $D_1 (O)$).
- The MR – curve is $MR_1 (O)$
- Assume that Firm 1's MC – curve is constant at MC_1 (a horizontal).
- The profit maximization output for Firm 1 is 50 (where $MC = MR$)
- Thus if Firm 2 produces zero, Firm 1 should produce 50 units.
- If Firm 1 expects Firm 2 to produce 50 units, the market, D- curve from Firm 1 will shift to the left by 50 units.
- The D-curve is labeled $D_1 (5)$ and the MR – curve is labeled $MR_1 (50) = MC_1$
- The same applies if Firm 1 expects Firm 2 to produce more eg. 75 units or 100 units.

T-225 Figure 12.3

Harmon Model

p. 44-3
Fig 12.3

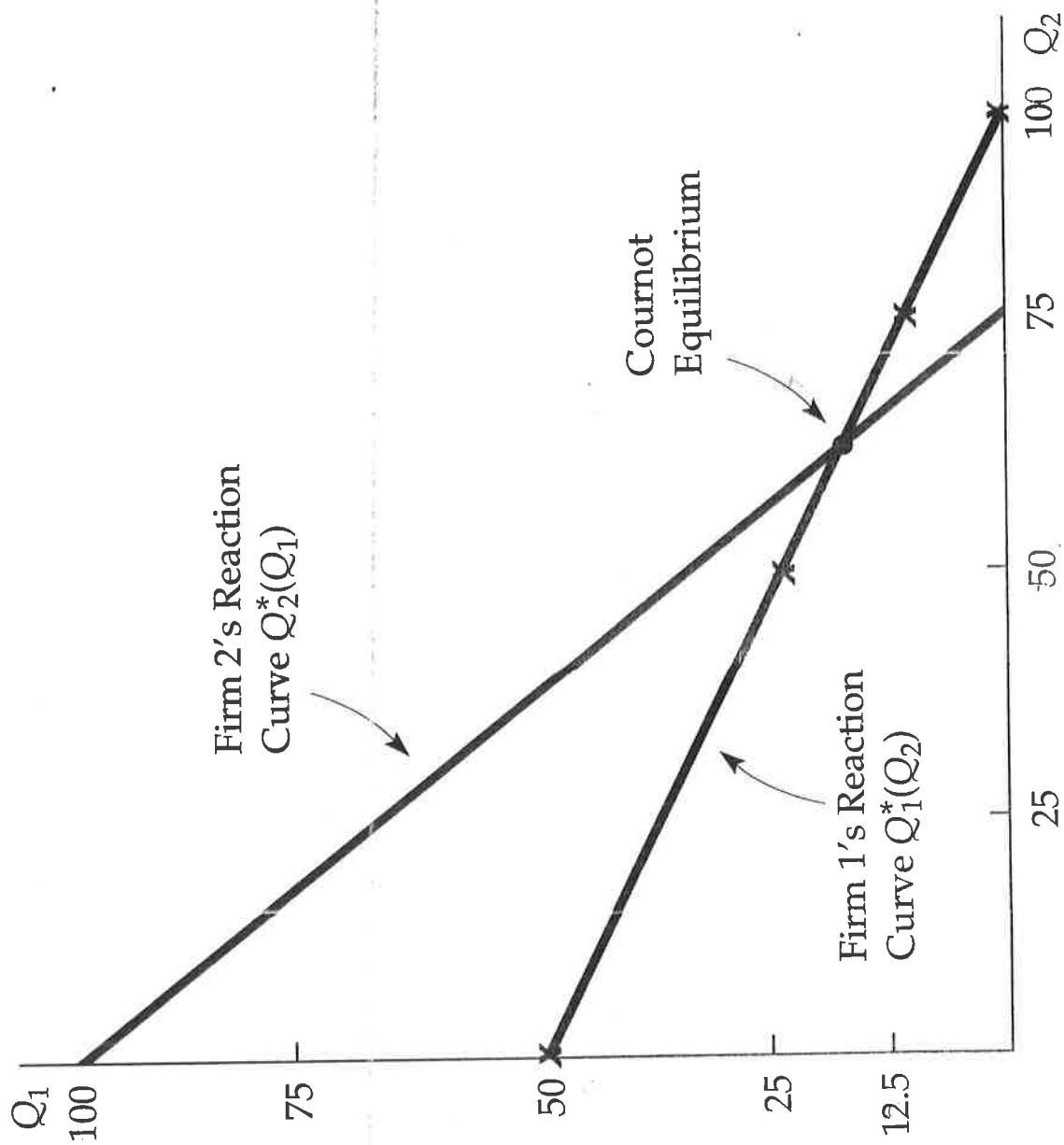


- **The working of the Cournot model :**

- 4 Scenarios

- A
- Suppose Firms 1 think Firm 2 will produce zero
 - Firm 1's D – curve is the market D – curve
 - refer to Fig 12.3 (Pindyck p. 443)
 - The D – curve for Firm 1 is shown as $D_1(O)$
 - MR – curve is $MR_1(O)$
 - MC – curve for Firm 1 is constant
 - Profit – maximizing output for Firm 1 is 50 units
 - This is where $MR_1(O)$ intersects the MC_1 - curve
 - Thus if Firm 2 produces zero, Firm 1 should produce 50 units of output.
- B.
- Suppose Firm 1 expects Firm 2 will produce 50 units of output.
 - The D-curve for Firm1 is the market D – curve shifted to the left $D_1(50)$
 - The accompanying MR – curve is $MR_1(50)$
 - The profit – maximization output is now 25 units i.e. where $MR_1(50) = MC_1$
- C.
- Suppose Firm 1 thinks that Firm 2 will produce 75 units
 - D – curve for Firm 1 will be to the left and will be $D_1(75)$
 - Profit maximization position for Firm 1 is where $MR_1(75) = MC$

T-226 Figure 12.4



- D
- Suppose Firm 1 expects that Firm 2 will produce 100 units
 - The D - and MR - curves will intersect on the vertical axis (not shown on graph)
 - Firm 2 will produce 100 units or more but Firm 1 will produce nothing

• **Reaction curves :**

- **Summary :**

- * If Firm 1 thinks that Firm 2 will produce zero, Firm 1 will produce 50.
- * If Firm 1 thinks that Firm 2 will produce 50, Firm 1 will produce 25
- * If Firm 1 thinks Firm 2 will produce 75, Firm 1 will produce 12.5
- * If Firm 1 thinks that Firm 2 will produce 100, Firm 1 will produce nothing

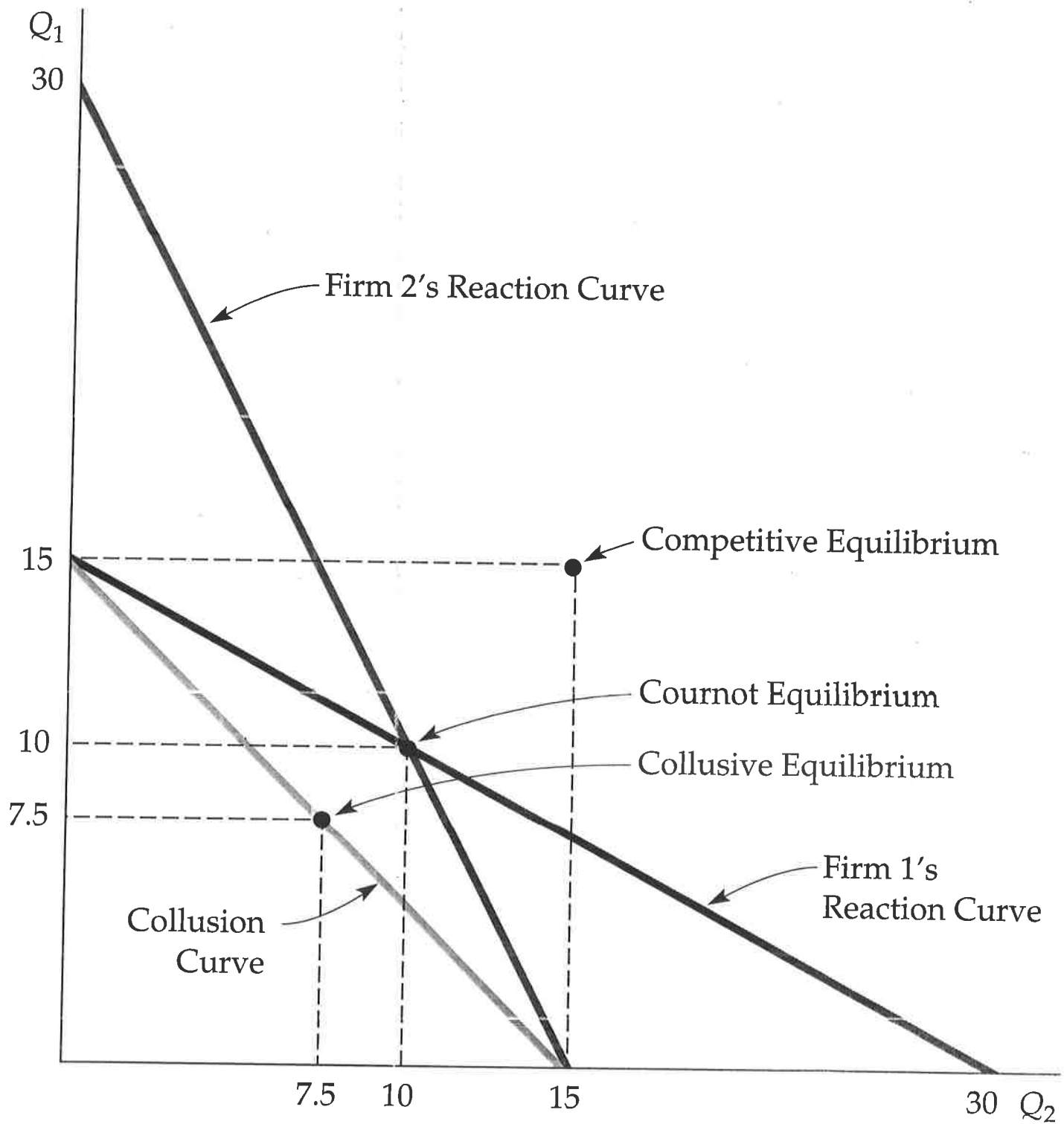
- **Conclusion :**

- The profit – maximizing output of firm 1 will be a decreasing schedule of how much it thinks Firm 2 will produce.
 - This is the reaction curve of Firm 1
 - Refer to fig 12.4
 - The reaction curve is the downward sloping graph Q_1^* (Q_2)
- A reaction curve will show the relationship between a firm's profit maximizing output and the amount it thinks a competitor will produce.

THE ESSENCE OF THE COURNOT MODEL :

- * Each firm must **decide** how much to produce.
 - * When making its production decision Firm 1 will consider what its competitor, Firm 2 will produce.
 - * The two firms will make their production decisions at the same time.
 - * The market price will depend on the total output of the two firms together.
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- Firm 1's profit – maximization output is a decreasing schedule of what it thinks Firm 2 will produce.
 - Firm 1's response to what it thinks the competitor (Firm 2) will produce is known as a **REACTION CURVE**.

T-227 Figure 12.5



- **The Kinked Demand Curve Model**

- This model is based on the assumption that each firm believes that if it raises its price, other firms will not follow, but if it cuts its price others will follow.
- This situation may be represented by the following
- **D** represents the demand curve a firm believes it faces.
- The **D**-curve has a kink at the current price **P** and at quantity **Q**.
- At prices above **P**, a small price change brings about a big decrease in quantity sold.
- If the other firms maintain their price at **P**, the firm with the higher price will lose market share.
- At a price below **P**, even a large price cut will cause a small increase in quantity sold.
- In this scenario other firms will match the price cut thus the firm setting the lower price will not gain any advantage.
- The kink in the **D**-curve creates a break in the **MR**-curve.
- To maximize profit, the firm will produce a quantity at which $MC = MR$.
- That quantity will be where the **MC**-curve passes through the gap **AB** in the **MR**-curve.