
UNIT 4 MONOPOLISTIC COMPETITION

Structure

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4.0 OBJECTIVES

After going through the unit, you will be able to explain:

- characteristic features of monopolistic competition;
- short-run and long-run equilibrium condition for a firm in monopolistic competition;
- social cost associated with monopolistic competition as compared to perfect competition and monopoly; and
- non-price competition under monopolistic market structure.

4.1 INTRODUCTION

An economy is composed of various market structures with varying characteristics. We have already covered two such structures, viz. Perfect competition in Intermediate Microeconomics-I of Semester 3 (Units 7 and 8) and Monopoly (Unit 3) in Intermediate Microeconomics-II of the present semester. Both these market structures have defining features which differentiate these structures and place them at two extremes. For instance, in perfect competition we have many buyers and sellers, with each firm being a price taker; in contrast to this, in monopoly there is a single seller who acts as a price-maker. In perfect competition, demand curve faced by a single firm is infinitely elastic (horizontal), whereas in monopoly the market demand curve faced by the monopolist is downward sloping. We also came across the equilibrium outcomes in terms of equilibrium quantity and price for each of these market structures. In equilibrium, monopolist charges more than the price charged by a perfect competitive firm, consequently it

supplies lower quantity of output than that is supplied by a firm in perfect competition.

These two extreme market structures with such extreme assumptions hardly exist in reality. For instance, one may rarely find perfect substitutes or identical products. Instead products available in the market are most of the times similar but not identical. Such products are in fact deliberately differentiated by their supplier in their attempt to have some pricing power (though limited). In the late 1920's economists became increasingly dissatisfied with the use of extreme market structures (perfect competition and monopoly) as analytical models of economic behaviour. Sraffa, Chamberlin and Joan Robinson worked individually to get closer to the market structure that fit into the real world. In his revolutionary book Chamberlin introduced a new market structure with the flavours of both perfect competition and monopoly. He called this new market structure monopolistic competition. This particular market structure neither qualifies for monopoly nor for perfect competition, that is, it has features of both the extreme cases. The present unit is an attempt to discuss this form of market structure.

4.2 MONOPOLISTIC COMPETITION MARKET

Imperfect competition market structure is the one which falls between the perfect competitive and the monopolistic market structure. Under imperfect competition comes the Monopolistic competition and Oligopoly (which will be discussed in the next unit). The monopolistic competitive market was first discussed in 1933 by Prof. Chamberlin in his book titled *The Theory of Monopolistic Competition*. A monopolistic competitive market can be defined as a market where many sellers compete by selling differentiated products which are close substitutes but are not perfect substitutes. In other words, products sold by different sellers are similar but not identical having positive and high cross price elasticity. As the name itself suggests, this market has some features of monopoly and some features of perfect competition. Product differentiation gives monopolistic competition its monopolistic aspect. Each firm produces a product that is slightly different from that of others. This way firm retains some monopoly power to determine good's price rather than being a price-taker, that is, each firm faces a downward-sloping demand curve. Like a monopoly, a monopolistic competitive firm faces a downward sloping demand curve. Like a perfect competition market structure, under monopolistic competition, there are many firms competing for the same group of customers. There are no barriers to enter and exit the market. This limits the long-run economic profit to zero for all the firms. In order to create the market for their product, firms resort to both price and non-price competition. They spend aggressively on advertisements, brand creation and promotion of their product. The selling cost is quite substantial in this market. Since all the firms do not sell identical products, they are collectively called a product

group rather than an industry. There are many buyers and sellers in this market. Since the products are unique in some way, each producer has some control on the determination of price of its product. We know that the monopolistic control over price (also known as mark-up, the relative difference between price and marginal cost) depends on the price elasticity of demand. The higher the elasticity, lower the mark-up and vice versa. This condition is widely known as Lerner's index in economics. In the market under discussion the elasticity of demand is relatively higher than that under monopoly, hence the mark-up is small.

Check Your Progress 1

- 1) What are the main characteristics of a monopolistic competitive market structure?

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- 2) Do you think that firms in a monopolistic competition can independently determine price? Explain.

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- 3) A monopolistic competitive market has characteristics of both perfect competition and monopoly. Explain.

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4.3 EQUILIBRIUM UNDER MONOPOLISTIC COMPETITION

As we are aware, a firm under monopolistic competition produces a differentiated good with close substitutes. Accordingly, these firms have limited monopoly power over price determination. Monopolistic competitive market is not enough to ensure a profit as high as in monopoly.

The free entry and exit from the product group ensures that firms make only normal profit or in other words, zero economic profit in the long-run.

A significant difference between this form of market structure with that of monopoly is that any firm i 's inverse demand curve depends not only on the output q_i but also on the total number of firms in the market (n). Let $p_i(q_i, n)$ be the inverse demand curve for firm i in a monopolistic competitive industry. Similar to monopoly market structure, as q_i rises, $p_i(q_i, n)$ falls and when q_i falls, $p_i(q_i, n)$ rises. Further we also assume as n , that is, the number of firms rises in this monopolistic competitive industry, firm loses its market share and hence the market power over price determination. That is, as n rises, $p_i(q_i, n)$ falls and as n falls, $p_i(q_i, n)$ rises. This means to sell a given level of output firm i must charge a lower price if the number of competing firms increases. Firm i 's problem is to choose its output q_i to maximise its profit $\pi_i(q_i, n)$. However it cannot control the entry and exit of the number of firms (only drastic step it can take is to leave the market itself). So the i^{th} firm's profit is given by:

$$\pi_i(q_i, n) = R_i(q_i, n) - C_i(q_i) = p_i(q_i, n)q_i - C_i(q_i)$$

where $R_i(q_i, n)$ represents the total revenue earned by firm i , given by $p_i(q_i, n)q_i$ and $C_i(q_i)$ is the cost function faced by this firm. First-order condition for profit maximisation is given by:

$$\frac{d\pi_i(q_i, n)}{dq_i} = 0 \Rightarrow MC_i(q_i, n) = MR_i(q_i, n)$$

\Rightarrow Marginal cost of firm i is equal to the Marginal revenue of firm i .

So far this is exactly similar to the equilibrium condition of the monopoly. We need to solve for the equilibrium number of firms in this market. Since there is free entry into the monopolistic competition market structure, no firm can enjoy supernormal profit, for they will attract new entries driving down the price and output of the incumbent firms till supernormal profit falls to zero in the equilibrium. This results in the situation where every i^{th} firm charges a price equal to its average costs. That is, $p_i(q_i, n) = AC_i(q_i)$. However this condition is subject to the long-run equilibrium. In the short-run firms enjoys supernormal profits. We will now illustrate the short run and long run equilibrium graphically.

4.3.1 Short-run Equilibrium

In the short-run, a firm can earn positive profits or it may incur losses. Positive profit in the short-run attracts competition from other firms. Each new entry results in the introduction of a new competing brand in the product group and such entries continue till positive profit is wiped out. Fig. 4.1 illustrates the short-run equilibrium of a monopolistic competitive firm where firm is earning positive economic profit. The demand curve (which is also the average revenue curve) of a monopolistic competitive firm is a downward sloping curve with the corresponding marginal revenue (MR)

curve also sloping downwards (Refer Fig. 4.1). MC and ATC are marginal cost and average total cost curves, respectively. The demand curve of a monopolistic competitive firm is relatively flatter, that is, the curve is more elastic than the demand curve under the monopolistic market structure. This results from the fact that the power of price determination in a monopolistic competitive market is limited because of the availability of close substitutes. At point E both conditions of profit maximisation are satisfied, that is, at E , MR is equal to MC and MC intersects MR from below. Accordingly, point E provides profit maximising output and price. The short-run equilibrium quantity and price are Q^* and P^* respectively. We can easily check that at this equilibrium price, ATC is less than the per-unit price and the difference between the price and ATC is the per-unit profit. Total profit is the product of the per unit profit and the total quantity. In this case, firm is making positive profit (shown by the shaded region) which equals area of rectangle ABCD.

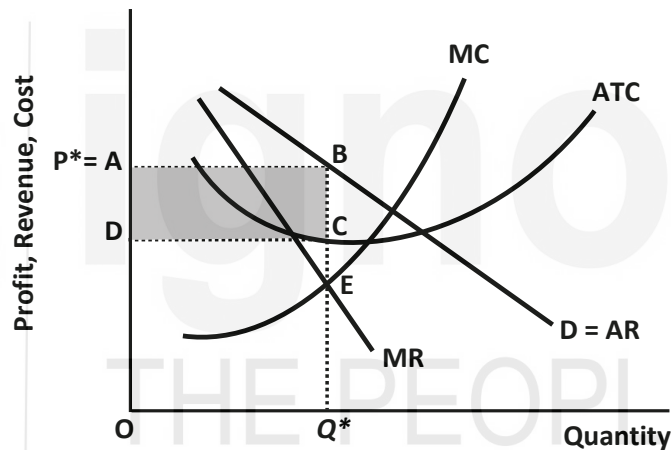


Fig. 4.1: Short-run Equilibrium under Monopolistic Competition

If a monopolistic competitor earns positive profit in the short-run, this attracts new entrants to compete away the positive profits by producing close substitutes. The entry of new firms causes two types of externalities. First, the entry of new firms in the product group will introduce more differentiated products in the market, because of which consumers will have a wider choice. At the same time, due to more suppliers supplying close substitutes of the commodity than before, the price of the commodity will fall. This is definitely a positive externality for the consumers. Consumers can now choose from a larger commodity bundle and at a lower price. Second, some of the incumbent (already existing) firms would find it difficult to operate in this market situation because of a reduced price and a smaller market share as new firms capture a portion of the existing market. This may force some of the existing firms to leave the market. This is a case of negative externality for the incumbent firms in the product group.

Fig. 4.2 illustrates the impact of new entrants on the demand and profit conditions of an incumbent firm. The demand curve (D_1) and the corresponding marginal revenue curve (MR_1) will shift to left to D_2 and MR_2

respectively, reflecting the decreased demand and market share of the incumbent firm. Increased competition will cause price to fall and with cost remaining the same (as shown by the ATC curve), the positive economic profit or the above normal profit will fall. Entry of new firms producing differentiated product will continue as long as above-normal profit exists for the existing firms. When the demand curve of an existing monopolistic competitor just touches the ATC curve with the profit reducing to the normal level (or zero economic profit level) is when the entry by new entrants ceases. Fig. 4.2, illustrates the long-run equilibrium position (E) where the firm in the monopolistic competition earns a normal profit.

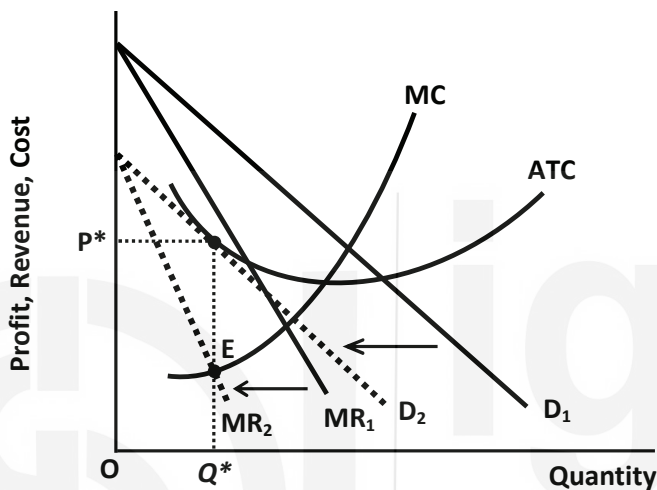


Fig. 4.2: Long-run Equilibrium under Monopolistic Competition

In the short-run an incumbent firm may also incur loss. This result when at the equilibrium point like E in Fig. 4.3 ATC is greater than the equilibrium price given by the demand curve. At point E , MR equals MC and the slope of MC is greater than that of MR . The per-unit loss is AD and the total loss is the area of the rectangle $ABCD$ (given by the shaded region in Fig. 4.3).

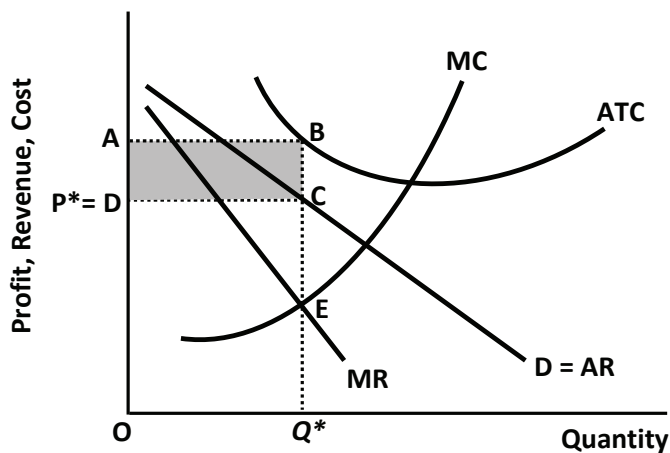


Fig. 4.3: Short-run Equilibrium under Monopolistic Competition

Short-run losses will encourage firms to exit the market. This exit will reduce the number of differentiated product choices offered to the consumers. This in turn will increase the demand and hence the market share of the remaining firms— as is captured by the rightward shift of the demand and the corresponding marginal revenue curve of a monopolistic competitor firm in Fig. 4.4. Lower product choices will increase market price. With cost remaining the same as is given by the ATC curve, a rightward shift in the demand curve will cause a fall in individual firm's losses to the level where they break-even or in other words earn a normal or zero economic profit. At this moment, the exit from the product group ceases with the remaining firms earning normal profit. Fig. 4.4, illustrates the long-run equilibrium position (*E*) where the firm in the monopolistic competition earns a normal profit.

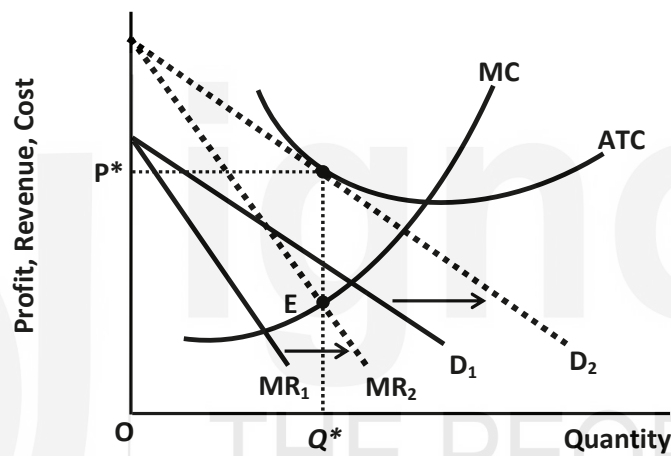


Fig. 4.4: Equilibrium under Monopolistic Competition

4.3.2 Long-run Equilibrium

Fig. 4.5 depicts the long-run equilibrium. At point *A*, ATC is tangent to the demand curve. In long-run equilibrium (as given by point *E*), price P^* equals average total cost which means that the firm is earning only normal profit which are in turn enough to stay in the product group. Thus in the long-run there is no tendency to enter or exit the product group. One interesting fact about monopolistic competition is that though firms earn only normal profit, they manage to sell the additional unit at a price higher than the cost of production of the additional unit. This is evident from Fig. 4.5 which illustrates long-run equilibrium (as is given by point *E*) of a firm in monopolistic competition. Here, in equilibrium, cost of production of the marginal unit, that is, the marginal cost equals OB , whereas the price at which that additional unit is sold equals OP^* with $OP^* > OB$. In contrast, in perfect competition, at the point of equilibrium the cost of production of an additional unit is the same as the price of the commodity. We will talk about this phenomenon later when we will discuss the case of excess capacity.

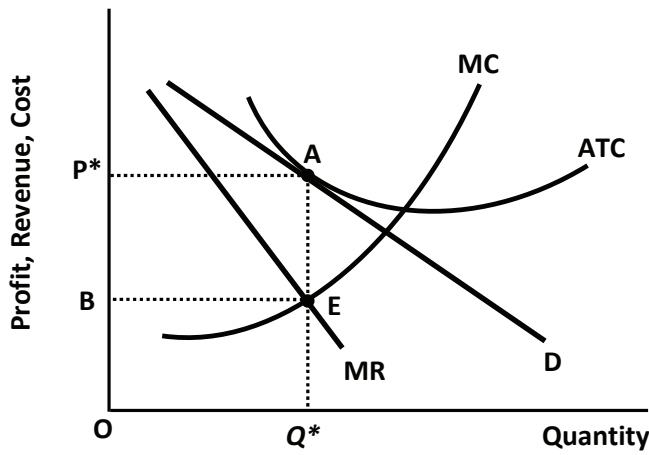


Fig. 4.5: Long-run Equilibrium under Monopolistic Competition

Check Your Progress 2

1) What happens to the demand curve of an incumbent firm when new firms enter with differentiated products as a close substitute under monopolistic competition?

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2) a) Explain how a monopolistically competitive firm maximises profit in the short run?

b) Suppose a monopolistic competitive firm is earning positive economic profits in the short run, analyse the long run equilibrium situation of this firm.

3) a) How is long run equilibrium under monopolistic competition different from that of monopoly?

b) Why is a monopolistic competitor's demand curve flatter than the market demand curve in monopolistic competition?

4) Consider the following statements and answer whether they are True or False.

a) A monopolistic competitive firm does not have complete control over the price of the commodity.

- b) Even in the short run, a monopolist competitive firm cannot earn a positive profit.
- c) A monopolist firm does not face the entry of other firms in the product group.
- d) At the point of equilibrium the marginal cost is equal to the price in both perfect competition and monopolistic competition.
- e) There is no difference between the demand curve of a monopolist and a monopolistic competitive firm.
- f) The average revenue and marginal revenue curves are the same in a monopolistic competitive market as in the case of perfect competition.

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4.4 SOCIAL COSTS OF MONOPOLISTIC COMPETITION

Now let us analytically discuss the social cost associated with the monopolistic competition in terms of welfare loss.

4.4.1 Monopolistic Competition versus Perfect Competition

Let us start with comparing long-run equilibrium of a monopolistic competitive firm with that of a perfect competitive firm. Both the monopolistic competitor and perfect competitor make zero economic profit in the long run, yet their impact on the total welfare (that is, a sum of consumers' surplus and the producers' surplus) varies. The perfect competitive firm produces at the point where the price line or the horizontal demand (also the MR) curve intersects the MC curve. In the long-run, this intersection happens at the minimum efficient scale or in other words at the level of output (Q_{PC}) where average total cost is minimised (point E_{PC} in Fig. 4.6). This results in maximum overall social welfare (i.e., sum of consumer and producer surplus).

A monopolistic competitive firm also produces where $MR = MC$, but here the difference arises due to the downward sloping demand curve. In the long run equilibrium, in contrast to the perfect competition where price equals marginal cost, under monopolistic competition, price is marked up over marginal cost. This results due to the different slopes of the demand curve faced by the firms in each market forms, which in turn results in allocative inefficiency (where allocative efficiency reached when $P = MC$) under monopolistic competition. Moreover, in contrast to the perfect competitive firm, under monopolistic competition, in the long run, each firm produces at the falling portion of the average total cost curve and not at its minimum. This is what is referred to as the productive inefficiency, with firm

operating at higher costs and not at the minimum average cost, as attained under perfect competition.

In the long run equilibrium under monopolistic competition (point E_{MC}) the equilibrium output (Q_{MC}) is less than that produced by a perfect competitive firm (Q_{PC}) and the equilibrium price (P_{MC}) is more than that charged under perfect competition (P_{PC}) and hence the social welfare is not maximised. There is a resulting deadweight loss as is represented by the shaded area ACE_{MC} in Fig. 4.6. Moreover, area $P_{MC}ABP_{PC}$ which was part of the consumer's surplus in perfect competition became part of the producer's surplus in monopolistic competition. Flatter (or more elastic) the demand curve, smaller is the area of deadweight loss. In other words, flatter the demand curve, closer is the market structure towards perfect competition. The consumers in a monopolistic competitive market, while foregoing a part of consumers' surplus, enjoy a wider choice set due to the differentiated products. The tradeoff between the consumers' surplus and availability of variety of choice is something Chamberlin himself defended by saying it as "*consumers' love for variety*". The net effect although depends on whether the positive effects of diversified choice are greater or smaller than the negative effect of loss of the consumer's surplus.

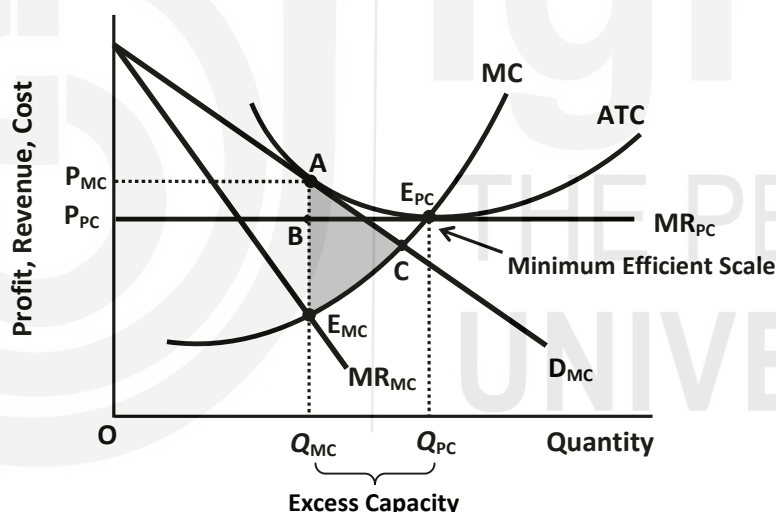


Fig. 4.6: Equilibrium under Perfect Competition and Monopolistic Competition

Excess Capacity

In the long run equilibrium, free entry results in competitive firms producing at the point where average total cost is minimised, which is the efficient scale of the firm. On the other hand, a monopolistic competitor produces in the falling portion of the average cost curve, point A in Fig. 4.6. There is no excess capacity under perfect competition in the long run. The efficient scale of production reached by the perfectly competitive firm in the long run (at the point E_{PC} , with output Q_{PC} , as shown in the Fig. 4.6) implies that no further decrease in the average cost of production is possible by increasing the scale of production. On the other hand, monopolistic competitor at the long run equilibrium point E_{MC} produces Q_{MC} level of output which is less than the efficient level of production (Q_{PC}). Here, there is a possibility of

lowering down the average cost of production by increasing the output supply to output level Q_{PC} . Thus, there exists excess capacity in monopolistic competition in the long run. In other words, a monopolistic competitor under-utilises the existing capacity; and steeper the demand curve, the more is the underutilisation of the installed capacity.

4.4.2 Monopolistic Competition versus Monopoly

Both the monopolistic competitor and monopolist face a downward sloping demand curve. Also firms in both the market structures possess market power to set market price. However, market power with a monopolistic competitor is limited as it faces competition from the differentiated products which are close substitutes to its products. Moreover free entry and availability of close substitutes result in a relatively elastic demand curve faced by a monopolistic competitor (D_{MC} in Fig. 4.7) than that faced by a monopolist (D_M in Fig. 4.7). In the long run, like in monopoly (P_M), firms in a monopolistic competition are able to charge a price (P_{MC}) marked up over marginal cost, which in turn results in a deadweight loss. The magnitude of the mark-up (relative difference between price and marginal cost) depends on the price elasticity of demand of the commodity. Higher the elasticity, smaller the mark-up, hence lower the deadweight loss and vice versa. In the case of perfect competition the price elasticity of demand is infinity and hence the mark-up and the deadweight loss is zero. While in case of monopolistic competition due to relatively elastic demand curve than that faced by a monopolist, deadweight loss (shaded area ABC) is relatively lower than that resulting in monopoly (shaded area DEF).

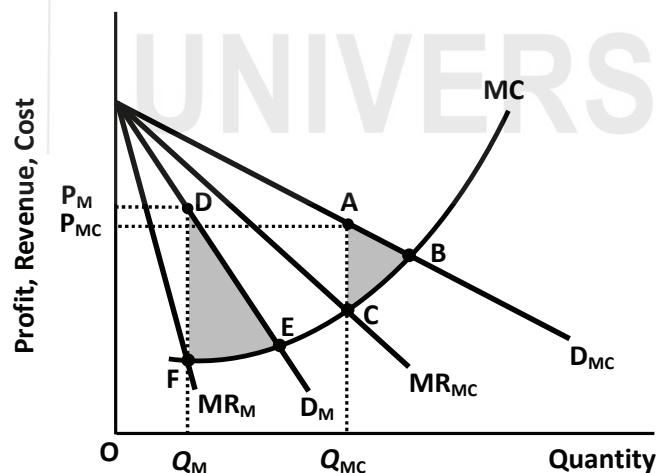


Fig. 4.7: Equilibrium under Monopoly and Monopolistic Competition

The regulatory implication of the monopolistic competition is not clear. When a firm i enjoys a market power (earning supernormal profit), forcing it to act competitive (i.e., producing at a point where price equals to its marginal costs) makes sense. However when firm i is a monopolistic competitive firm, there is not much scope for the government to do

anything, as it is already earning zero super normal profits in the long-run. However consumer should be alert that some of the firms in the market might want to force other firms out, to reduce competition, or that some of the firms in the market might want to create barriers to prevent other potential competitors from coming in.

Example1: The demand curve of a monopolistic competitive firm is as follows:

$$P = 185 - 15q$$

Where p and q are price and output, respectively. Assuming marginal cost is constant and given by, $MC = 5$. Find the deadweight loss of the monopolistic competitive firm.

Solution

Given, Demand curve, $P = 185 - 15q$

Total Revenue = $P \times q = 185q - 15q^2$

From TR, we calculate $MR = \frac{dTR}{dq} = 185 - 30q$

Now, monopolistic equilibrium condition is $MR = MC$

$$\Rightarrow 185 - 30q = 5 \quad (\because MC = 5, \text{ given})$$

From this, we get equilibrium quantity $q^* = 6$.

Inserting q^* in demand function, we get equilibrium price $p^* = 95$

Now deadweight loss equals area of the shaded triangle (in Fig. 4.8) which is given by $\frac{1}{2} \times \text{Base} \times \text{Height}$

where base is $12 - 6 = 6$ and height equals $95 - 5 = 90$. The resultant area is then

$$\frac{1}{2} \times 6 \times 90 = 270.$$

Note: '12' represents the output quantity under perfect competition, which is given by the relation $P = MC \Rightarrow 185 - 15q = 5 \Rightarrow q = 12$.

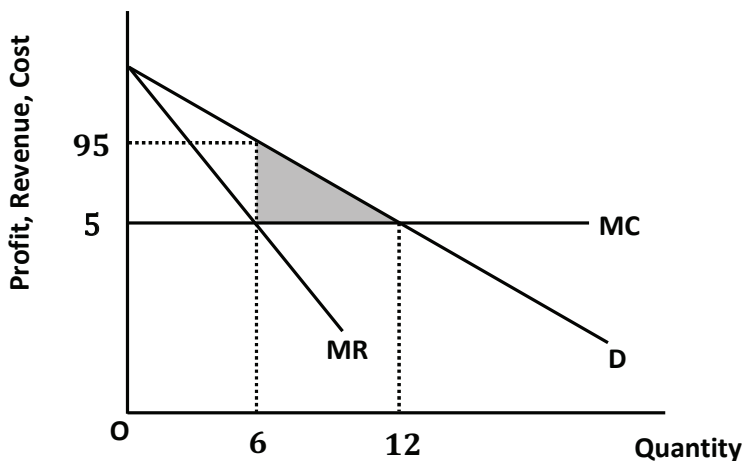


Fig. 4.8: Equilibrium under Monopolistic Competition

Example 2: In monopolistic competition, a firm produces 5 unit of output. The total cost (TC) function of the firm is given by:

$$TC = 256 + 4q^2 + 150q$$

Where q is the output of the firm.

- a) what is the efficient level of output of the firm?
- b) Do you think that the firm is producing at the efficient point?

Solution

- a) Given $TC = 256 + 4q^2 + 150q$, we need to find ATC (Average total cost) from it.

$$ATC = \frac{TC}{q} \Rightarrow ATC = \frac{256}{q} + 4q + 150.$$

Efficient output is attained when ATC is minimised. First order condition for minimising ATC is given by

$$\begin{aligned} \frac{dATC}{dq} = 0 &\Rightarrow -\frac{256}{q^2} + 4 = 0 \\ &\Rightarrow q = 8 \end{aligned}$$

Hence, the efficient level of output is 8.

- b) No, firm is not producing at the efficient point with 5 units of output production. At this level, there is presence of excess capacity which equals efficient output level minus level of production of the firm $\Rightarrow 8 - 5 = 3$ units.

Check Your Progress 3

- 1) Compare the efficiency of monopolistic competition with that of perfect competition.

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- 2) Differentiate welfare loss of a monopolistic competition with that resulting in case of a monopoly.

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- 3) Consider the following statements and answer whether they are True or False.
- a) A monopolistic competitive firm produces at the minimum average unit cost.
 - b) Deadweight loss in monopoly is more than that in the monopolistic competitive market.
 - c) The minimum point of average cost curve is the efficient production point.
 - d) A perfectly competitive market has the highest deadweight loss.
- 4) Suppose the demand curve of a firm in a monopolistic competitive market is as follows.

$$P = a - bq$$

Where p and q are respectively price and output of the firm. The constant marginal cost of the firm is c . Find the deadweight loss. Also draw the diagram.

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- 5) The equilibrium output of a monopolistic competitive firm is 25 units. The total cost of production is as given below:

$$TC = 0.25q^2 - 10q + 400$$

Where q is the output of the firm. We assume that the cost of producing a differentiated product is included in the fixed cost. Do you think that the firm's equilibrium output is efficient? Justify your answer. What is the firm's efficient output level? Also find the excess capacity of the firm in terms of the lost output.

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4.5 NON-PRICE COMPETITION: ADVERTISEMENT

Under monopolistic competition, firms resort to both, price and non-price competition in their attempt to create and retain their brand loyalty. Non-price competition involves firms adopting various measures like providing after-sales services, extended warranty, onsite service, 24x7 helpline, home delivery, etc. These measures are adopted to create and increase demand

for the differentiated products. The cost incurred in such measures is also known as the selling cost. It is interesting to note that a perfect competitive firm will never provide for the selling cost as the given competitive market price does not provide enough cushion to incur such enhanced cost of production. Any increase in the cost of production would be translated into increased price for the firm in discussion. Further, any increment in the price of a specific firm would wipe out its total demand in this market structure. Similarly, a monopolist need not incur selling cost in its attempt to maintain its market share which is itself maintained by the barriers to entry.

For a monopolistic competitive firm, increasing the market share is of the utmost importance and at the same time its price is greater than the marginal cost, thus firms resort to various sales promotion schemes. Advertisement accounts for a substantial part of the total cost of production under monopolistic competition. When firms sell differentiated products and charge prices above marginal cost, each firm has an incentive to advertise in order to attract and retain more buyers to its particular brand of product. Some advertisements are informative, telling consumers about the characteristics of the commodity such as the unique quality of the product or about its uses. Advertisement, besides disseminating information about the product, also generates demand for products with insufficient demand. Such kind of advertisement is persuasive and is often aimed at manipulating people's tastes. Sometimes firms while promoting their product attempt to downgrade their rivals' commodities. Such negative campaigns are not allowed in our country. By portraying that products are way too different than they truly are, advertisements are often criticised for impeding competition. This in turn is defended with the argument that advertisements by offering a greater variety of products increase competition. Sometimes willingness of a firm to spend on advertising acts as a signal to consumers about the quality of the product. A product that is highly advertised is usually considered as the product with high quality. Also, firm which establishes a brand name using advertisements makes the consumers brand conscious and make them to believe differences that do really exist, and moreover ensure that the product they are buying is of high quality. This sometimes acts as an incentive for the firm to maintain high quality. Sometimes consumers are also loyal to a particular brand. The loyalty of consumers to a particular brand is conditional on the price of rival products. Consumers remain loyal only up to a certain level of price difference between their choice of a particular brand and the similar product of some other brand. If the price difference is greater than their range then they would shift to other competing brands.

The primary objective of advertising is to create loyalty for the similar but not-identical products of the firms in monopolistic competition. This shifts the demand curve facing a monopolistic competitive firm towards right and moreover makes it relatively inelastic. Advertising also increases the cost of production shifting the average total cost curve up.

Check Your Progress 4

1) Selling cost is an important component of the total cost in a monopolistic competitive market. Explain.

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2) Give some examples of non-price competition among monopolistic competitive firms.

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4.6 LET US SUM UP

In this unit we discussed the monopolistic competitive market structure. The special features of this market include a large number of buyers and sellers of a differentiated product with close substitutes in the market. There is no restriction on firms as regards to entry and exit in the market. This structure has attributes of both monopoly and perfect competition. Like monopoly, it also faces a downward sloping demand curve and given the same profit-maximisation condition (i.e., $MR=MC$ and MC cuts MR from below), the market price is greater than the marginal cost. The latter condition is a trait of the long-run equilibrium as well. Like monopoly such a market causes deadweight loss to the society. In other words, monopolistic competitive firms underutilise their existing production capacity. Like a perfect competitive market structure, in monopolistic competition there are no barriers to entry or exit from the industry, which in turn drives down the long run profits to normal levels. We also came across the social cost of the monopolistic competition market structure in terms of both, allocative as well as productive inefficiency. A monopolistic competitor is allocatively inefficient, as price in the equilibrium is above the marginal cost. The firm is productively inefficient due to the fact that it does not produce at the minimum unit cost of production. Firms under monopolistic competition try to compete with both price and non-price competition. Advertisements play a very crucial role in creation and increasing the demand for the differentiated products of the firms in the monopolistic competition. Consumers are generally loyal to a particular brand. The determining factor of this loyalty is the price difference among the rival brands. The selling

costs incurred on advertising the product may result in shifting the demand for the product of a monopolistic competitor towards right and even make it relatively more inelastic.

4.7 SOME USEFUL REFERENCES

- Kutsoyiannis, A. (2005), *Modern Microeconomics*, 2nd edition, International edition, (Macmillan Press Ltd. London), pp. 202-214.
- Browning and Browning (1994), *Microeconomic Theory and Applications*, (New Delhi, Kalyani Publishers, 2nd edition), pp.399-407.
- Pindyck and Rubinfeld, *Microeconomics*, (New York, Macmillan Publishing Company, 1989), pp. 421-426.
- Mankiw, N. G. (2012), *Principles of Economics*, (New Delhi, CengageLearning), pp. 329-348.

4.8 ANSWERS OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Refer Section 4.2 and answer
- 2) No, the availability of close substitutes and free entry checks the monopolistic power of the firm to mark up price over marginal cost.
- 3) Refer Section 4.2 and answer.

Check Your Progress 2

- 1) Demand curve of an incumbent firm will shift left.
- 2) a) A monopolistically competitive firm maximises profits at the level of output where $MR = MC$, with MC intersecting MR from below.
b) If a monopolistically competitive firm is earning economic profits in the short run, entry of new firms will eliminate those profits in the long run. Refer Sub-section 4.3.2 to answer with the help of a diagram.
- 3) a) In the long run equilibrium under monopolistic competition, due to free entry and exit into the industry, a firm earns normal or zero economic profits, while a monopolist, whose market share stays intact as a result of barriers to entry, may earn supernormal or positive economic profits. Also, a monopolistic competitor faces a relatively elastic demand curve than that faced by the monopolist. As a result of this, the equilibrium price of monopolistic competitor is lower than that charged under monopoly, and the resultant equilibrium quantity supplied by the monopolistic competitor is more than that supplied by the monopolist.

b) Due to presence of differentiated products which act like close substitutes and that there is free entry and exit into the industry.

4) (a) True; (b) False, (c) False, (d) False, (e) False, (f) False

Check Your Progress 3

- 1) Refer Sub-section 4.4.1 and answer.
- 2) Refer Sub-section 4.4.2 and answer.
- 3) (a) False, (b) True, (c) True, (d) False
- 4) $DWL = \frac{(a-c)^2}{8b}$

Solution: Given, Demand curve, $P = a - bq$.

Total Revenue = $P \times q = aq - bq^2$, from this we calculate $MR = \frac{dTR}{dq} = a - 2bq$

Now, monopolistic equilibrium condition is $MR = MC \Rightarrow a - 2bq = c$ ($\because MC = c$, given)

From this, we get equilibrium quantity $q^* = \frac{a-c}{2b}$. Inserting q^* in demand function, we get equilibrium price $p^* = \frac{a+c}{2}$. Now deadweight loss equals area of the shaded triangle (in Figure 4.9) which is given by $\frac{1}{2} \times \text{Base} \times \text{Height}$, where base is $\frac{a-c}{b} - \frac{a-c}{2b} = \frac{a-c}{2b}$ and height equals $\frac{a+c}{2} - c = \frac{a-c}{2}$. The resultant area is then $\frac{1}{2} \times \frac{a-c}{2b} \times \frac{a-c}{2} = \frac{(a-c)^2}{8b}$

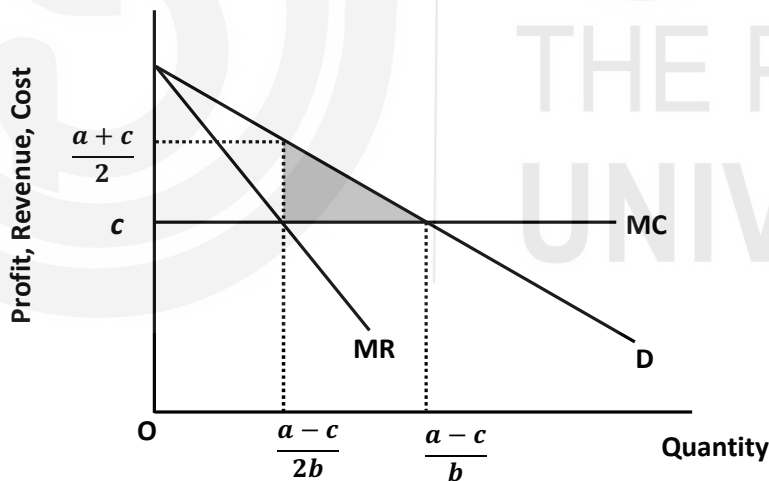


Fig. 4.9

5) No the firm's equilibrium output is not efficient. Efficient output = 40 units, Excess capacity = 15 units

Solution: Given $TC = 0.25q^2 - 10q + 400$, we need to find ATC (Average total cost) from it.

$ATC = \frac{TC}{q} \Rightarrow ATC = 0.25q - 10 + \frac{400}{q}$. Efficient output is attained when ATC is minimised.

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First order condition for minimising ATC is given by $\frac{dATC}{dq} = 0 \Rightarrow$
 $0.25 - \frac{400}{q^2} = 0 \Rightarrow q = 40$

Excess capacity = Efficient output level – equilibrium output level of the
firm = $40 - 25 = 15$

Check Your Progress 4

- 1) Refer Section 4.5 and answer
- 2) Refer Section 4.5 and answer



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