Chapter 15
Monopolistic Competition

15.1 What Is Monopolistic Competition?

1) List four characteristics of monopolistic competition.

   Answer: There are a large number of firms; each produces a slightly different product; firms compete on price, quality, and marketing; and firms are free to enter and exit. As a result of these characteristics, there are no dominant firms and each firm has a small market share. Because the firms produce differentiated products, firms can charge a markup and, in the long run, firms have excess capacity.

   Topic: Monopolistic competition, definition
   Skill: Level 2: Using definitions
   Objective: Checkpoint 15.1
   Author: CD

2) "One of the defining features of monopolistic competition is product variety." Is the previous statement correct or incorrect?

   Answer: The statement is correct. In monopolistic competition firms compete by producing similar but slightly differentiated products.

   Topic: Monopolistic competition, definition
   Skill: Level 2: Using definitions
   Objective: Checkpoint 15.1
   Author: WM

3) How do the characteristics of perfect competition and monopolistic competition differ?

   Answer: In monopolistic competition, the products sold are similar but differentiated, thereby enabling firms to compete on the basis of product development and marketing to further differentiate their products. In perfect competition the products are identical, thereby eliminating the opportunity for firms to compete by differentiating their product.

   Topic: Monopolistic competition, definition
   Skill: Level 1: Definition
   Objective: Checkpoint 15.1
   Author: TS
4) Why is collusion about the price and amount of output impossible in monopolistic competition?

Answer: The smaller the number of firms, the more likely collusion is to occur. Monopolistic competition has too many firms for collusion to be successful.

*Topic: Monopolistic competition, definition*
*Skill: Level 2: Using definitions*
*Objective: Checkpoint 15.1*
*Author: PH*

5) What do demand and marginal revenue curves look like in monopolistic competition? How do they compare to the demand and marginal revenue curves in perfect competition and monopoly?

Answer: In monopolistic competition, the product is differentiated. This fact gives each firm some control over price, so each firm’s demand curve is downward sloping. Because there are many close substitutes for these firms’ goods, demand is elastic. These firms must lower their price to sell more; therefore the marginal revenue curve is beneath the demand curve.

In perfect competition, the product is homogeneous, which makes firms price-takers, able to sell as much as they wish at the market price. Therefore, marginal revenue equals price, and the marginal revenue curve and the demand curve are the same and are horizontal.

In monopoly, there is only one firm. The firm faces the market demand, which is steep, because there are no close substitutes for the good. The firm must lower its price to sell more, so for a single-price monopoly, the marginal revenue curve is beneath the demand curve.

*Topic: Monopolistic competition, definition*
*Skill: Level 5: Critical thinking*
*Objective: Checkpoint 15.1*
*Author: SB*

6) How would a merger between Coca-Cola and Pepsi Cola affect the four-firm concentration ratio for the soft drink market? How would it affect the Herfindahl–Hirschman Index for the soft drink market?

Answer: Both Coca-Cola and Pepsi Cola are among the four largest firms in the soft drink market, so a merger between the two firms would (drastically) raise the four-firm concentration ratio and (drastically) raise the Herfindahl–Hirschman Index.

*Topic: Four-firm concentration ratio*
*Skill: Level 3: Using models*
*Objective: Checkpoint 15.1*
*Author: JC*
7) What is the Herfindahl–Hirschman Index and what does it measure?

   Answer: The Herfindahl–Hirschman Index, or HHI, is an index used to measure the extent to which a market is dominated by a small number of firms. The HHI equals the sum of the squared percentage market shares of each of the 50 largest firms in the market. A monopoly will have a HHI of 10,000 whereas perfect competition will have a small HHI.

   Topic: Herfindahl–Hirschman Index
   Skill: Level 1: Definition
   Objective: Checkpoint 15.1
   Author: SA

8) If the Herfindahl–Hirschman Index for an industry is 8,528, is the industry competitive or concentrated?

   Answer: With a Herfindahl–Hirschman Index of 8,528, the industry is quite concentrated or, in other words, the industry is not very competitive.

   Topic: Herfindahl–Hirschman Index
   Skill: Level 2: Using definitions
   Objective: Checkpoint 15.1
   Author: JC

9) What is the difference between a four-firm concentration ratio and a Herfindahl–Hirschman Index?

   Answer: A four-firm concentration ratio is the percentage of the total revenue in an industry accounted for by the four largest firms in the industry. The Herfindahl–Hirschman Index sums the squares of the market shares of the 50 largest firms.

   Topic: Herfindahl–Hirschman Index
   Skill: Level 1: Definition
   Objective: Checkpoint 15.1
   Author: TS

10) The four largest firms in an industry account for the following value of industry revenues: 12 percent, 8 percent, 5 percent and 4 percent. Calculate the four-firm concentration ratio. Would this industry be regarded as competitive or concentrated?

   Answer: The four-firm concentration ratio is 29 percent. The four-firm concentration ratio is less than 40 percent, so the industry would be regarded as competitive.

   Topic: Four-firm concentration ratio
   Skill: Level 3: Using models
   Objective: Checkpoint 15.1
   Author: WM
11) An industry’s total revenue is $100 million. The above table shows the total revenue of the four largest firms in an industry.
   a. Calculate this industry’s four-firm concentration ratio.
   b. Is this industry competitive?
   c. What market type does it most likely represent?

   Answer: a. The four-firm concentration rate is 30 percent.
          b. Because the four-firm concentration ratio is relatively low, the industry is competitive.
          c. The industry is most likely monopolistic competition.

   Topic: Four-firm concentration ratio
   Skill: Level 3: Using models
   Objective: Checkpoint 15.1
   Author: SB

12) An industry has only four firms, who have market shares of 45 percent, 25 percent, 20 percent, and 10 percent. What is the Herfindahl–Hirschman Index?

   Answer: The Herfindahl–Hirschman Index is 3,150.

   Topic: Herfindahl–Hirschman Index
   Skill: Level 3: Using models
   Objective: Checkpoint 15.1
   Author: WM
### Monopolistic Competition

Firm | Market share (percent) |
--- | ---------------------|
A  | 32                    |
B  | 17                    |
C  | 15                    |
D  | 10                    |
E  | 7                     |
F  | 7                     |
G  | 5                     |
H  | 4                     |
I  | 2                     |
J  | 1                     |

13) Suppose there are ten firms that occupy the Odell, Oregon cherry pie market. The market share of each firm is listed in the above table.

   a. What is the Herfindahl–Hirschman Index for this market?
   
b. If Firm H and Firm A merge, what is the new Herfindahl–Hirschman Index for this market?
   
c. A severe winter causes every firm except A, B, and E to close. With only these three firms operating, Firm A's market share is 71 percent, Firm B's market share is 23 percent, and Firm C's market share is 6 percent. What is the Herfindahl–Hirschman Index for this market now?

Answer: a. The Herfindahl–Hirschman Index is 1,782.
   
b. Once firms H and A merge, the new Herfindahl–Hirschman Index is 2,038.
   
c. The Herfindahl–Hirschman Index is now 5,606.

**Topic:** Herfindahl–Hirschman Index  
**Skill:** Level 3: Using models  
**Objective:** Checkpoint 15.1  
**Author:** JC
14) Listed in the above table are the total revenues for the firms in two different industries. Each industry has only eleven firms. Find the four-firm concentration ratio and the Herfindahl–Hirschman Index for each industry.

Answer: Industry A has a four-firm concentration ratio of 59 percent and a Herfindahl–Hirschman Index of 1,186. Industry B has a four-firm concentration ratio of 39 percent and Herfindahl–Hirschman Index of 914.

*Topic: Herfindahl–Hirschman Index*

*Skill: Level 3: Using models*

*Objective: Checkpoint 15.1*

*Author: JC*
15) There are 9 firms in an industry with market shares in the table above. Calculate the HHI for the industry. What kind of market does this operate in and why.

Answer: The HHI equals $20^2 + 20^2 + 15^2 + 10^2 + 8^2 + 7^2 + 5^2 + 5^2 = 1388$. With this HHI, the concentration ratio is low and so the market is monopolistic competition.

16) The Herfindahl–Hirschman Index is used as a guideline to determine if a market is competitive or concentrated. Calculate the index value for each market described below.

a. 100 firms, each of which produces 1 per cent of market output
b. 50 firms, each of which produces 2 per cent of market output
c. 25 firms, each of which produces 4 per cent of market output
d. 20 firms, each of which produces 5 per cent of market output
e. 10 firms, each of which produces 10 per cent of market output
f. 5 firms, each of which produces 20 per cent of market output
g. 2 firms, each of which produces 50 per cent of market output

Answer: a. $100 \times 1 = 100$
b. $50 \times 4 = 200$
c. $25 \times 16 = 400$
d. $20 \times 25 = 500$
e. $10 \times 100 = 1,000$
f. $5 \times 400 = 2,000$
g. $2 \times 2,500 = 5,000$
15.2 Output and Price Decisions

1) "A firm in monopolistic competition maximizes its profit by producing where its price is equal to its marginal cost." Is the previous statement correct or incorrect?

Answer: The statement is incorrect. A firm in monopolistic competition maximizes its profit by producing where its marginal revenue equals its marginal cost. Because the marginal revenue is less than the price for a firm in monopolistic competition, it definitely is not the case that the firm produces where its price equals its marginal cost!

Topic: Monopolistic competition, output and price
Skill: Level 2: Using definitions
Objective: Checkpoint 15.2
Author: TS

2) How does a firm in monopolistic competition determine its price and quantity? What type of profit can it earn in the short run and the long run?

Answer: The firm produces where its marginal cost equals its marginal revenue. Then the price is determined from the demand curve and is the highest price at which people will buy the quantity produced. The firm can earn an economic or a normal profit in the short run. (It could also suffer an economic loss in the short run.) In the long run, the firm cannot earn an economic profit; it can only earn a normal profit.

Topic: Monopolistic competition, output and price
Skill: Level 3: Using models
Objective: Checkpoint 15.2
Author: WM

3) What type of profit can a firm in monopolistic competition earn in the long run? Explain your answer.

Answer: In the long run, a firm in monopolistic competition can earn only zero economic profit, that is, a normal profit. It cannot earn a positive economic profit because there are no barriers to entry. So if a firm in monopolistic competition is earning an economic profit, in the long run new firms enter the market, produce a similar product, and decrease the demand for the initial firm's product. Entry continues until the firms earn zero economic profit, which is a normal profit.

Topic: Monopolistic competition, long run
Skill: Level 2: Using definitions
Objective: Checkpoint 15.2
Author: WM
4) Why are firms in monopolistic competition unable to earn an economic profit in the long run?

Answer: While firms in monopolistic competition do not produce an identical product, such as perfectly competitive firms, they face the same problem other competitive firms face: freedom of entry. When firms in monopolistic competition are earning an economic profit, other firms will enter the market. Entry decreases the demand for the products of the existing firms and thereby decreases their economic profit. Firms will continue to enter the market until the economic profit equals zero.

Topic: Monopolistic competition, long run
Skill: Level 2: Using definitions
Objective: Checkpoint 15.2
Author: JC

5) Why does a firm in monopolistic competition earn a normal profit (that is, zero economic profit) in the long run?

Answer: Entry into monopolistically competitive markets is easy because there are no barriers to entry. So when firms in monopolistic competition have an economic profit, other firms are attracted to enter the industry, thereby decreasing profits for everyone. Entry continues as long as there is an economic profit so, in the long run when all entry is completed, the firms earn only a normal profit, that is, zero economic profit.

Topic: Monopolistic competition, long run
Skill: Level 2: Using definitions
Objective: Checkpoint 15.2
Author: SA

6) What is excess capacity? What industry has excess capacity in the long run: perfect competition or monopolistic competition?

Answer: The efficient output is the level that minimizes the average total cost. Excess capacity occurs if the firm produces less than the amount of output that minimizes average total cost. In this case, the firm could boost its output and lower its average total cost. Firms in monopolistic competition have excess capacity. Firms in perfect competition produce at the minimum of the average total cost. They produce at the efficient scale of output and so do not have excess capacity.

Topic: Monopolistic competition, excess capacity
Skill: Level 2: Using definitions
Objective: Checkpoint 15.2
Author: PH
7) For a firm in monopolistic competition, define efficient scale and excess capacity. Briefly explain each.

Answer: The efficient scale is the quantity produced when average total cost is at its minimum. In the long run, a firm in monopolistic competition operates below the efficient scale when maximizing profits. The difference between the efficient scale and the quantity produced by a firm is the excess capacity. Because the firm is not producing at the efficient scale, its average total cost is higher than if it produced at the efficient scale.

**Topic:** Monopolistic competition, excess capacity  
**Skill:** Level 2: Using definitions  
**Objective:** Checkpoint 15.2  
**Author:** CD

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<th>Price (dollars per unit)</th>
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<th>Quantity produced (units)</th>
<th>Average total cost (dollars)</th>
<th>Marginal cost (dollars)</th>
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8) The demand and cost schedules for a firm in monopolistic competition are in the above tables. What is the profit-maximizing level of output and price? What amount of profit is the firm earning? Is this firm in a short-run or long-run equilibrium? Why?

Answer: To determine the quantity produced, the firm will set marginal cost equal to marginal revenue. Therefore it is necessary to determine the marginal revenue. The marginal revenue going from 3 to 4 units is $12 and the marginal revenue going from 4 to 5 units is $8. Thus the marginal revenue at 4 units is $10, which equals the marginal cost. Therefore the firm produces 4 units. The demand schedule shows that for 4 units, the price will be $16 per unit. The firm’s economic profit per unit equals the price, $16, minus its average total cost, $10.50, or an economic profit of $5.50 per unit. The firm produces 4 units, so its total economic profit is $22.00. The firm is in a short-run equilibrium because it is able to earn an economic profit. In the long run, entry will decrease its demand so that it no longer can earn an economic profit.

**Topic:** Monopolistic competition, output and price  
**Skill:** Level 3: Using models  
**Objective:** Checkpoint 15.2  
**Author:** TS
9) The above figure represents Tony’s Pizza Parlor, a firm in monopolistic competition.
   a. What quantity will be produced?
   b. What price will be charged?
   c. What is Tony’s total cost?
   d. What is Tony’s total revenue?
   e. What is Tony’s economic profit or loss?
   f. Is this a long-run equilibrium? Why or why not?

Answer: a. 40 pizzas per day
   b. $12.00 per pizza
   c. $320
   d. $480
   e. Tony has an economic profit of $160.
   f. This is not a long-run equilibrium because Tony is earning an economic profit. In the long run, new firms will enter and Tony’s economic profit will be eliminated.

*Topic: Monopolistic competition, output and price*

*Skill: Level 3: Using models*

*Objective: Checkpoint 15.2*

*Author: SB*
10) Draw an example of a firm in monopolistic competition that is earning an economic profit. Be sure to label all the curves. Indicate the area that equals the firm's economic profit.

Answer:

The completed figure is above.

*Topic: Monopolistic competition, output and price*

*Skill: Level 3: Using models*

*Objective: Checkpoint 15.2*

*Author: WM*
11) The above figure represents a restaurant operating in monopolistic competition.
   a. What is the profit-maximizing level of output?
   b. What price will the firm charge?
   c. What is the firm’s profit (or loss)?
   d. Is this a long-run equilibrium? Why or why not?
   e. Is this firm producing its efficient scale of output?

   Answer: a. The quantity is 20 meals a day.
   b. The price is $12 per meal.
   c. The firm is making zero economic profit, that is, the firm is earning a normal profit.
   d. This is a long-run equilibrium because the firm is making zero economic profits so there is no incentive for either entry or exit.
   e. No, the firm is not producing its efficient scale of output. It is producing less than the efficient scale. The efficient scale, where the average total cost is at its minimum, is 50 meals a day. Hence the firm has excess capacity.

Topic: Monopolistic competition, long run
Skill: Level 3: Using models
Objective: Checkpoint 15.2
Author: SB
15.3 Product Development and Marketing

1) How do product development and marketing affect a firm in monopolistic competition?

Answer: Product development and marketing have two effects on a firm. First, because these activities are costly, they increase the firm’s costs and shift its costs curves upward. Second, they can increase the demand for the firm’s products.

Topic: Innovation and product development
Skill: Level 2: Using definitions
Objective: Checkpoint 15.3
Author: TS

2) Why would a firm in a monopolistically competitive industry advertise?

Answer: Similar to virtually every other business decision, advertising carries with it benefits and costs. While advertising causes the fixed costs to increase, and thereby shifts the average total cost curve upward, advertising also might increase the demand for the company’s product by temporarily making people believe that the product is better than some other firm’s product. Firms in monopolistic competition frequently advertise extensively in order to differentiate their product from those of their competitors and thereby increase the demand for their particular version of the product.

Topic: Advertising
Skill: Level 2: Using definitions
Objective: Checkpoint 15.3
Author: JC

3) Explain the role of advertising in monopolistic competition. Describe how advertising by all firms in a monopolistically competitive industry impacts a firm’s ATC curve, its MC curve, its demand curve, and its MR curve.

Answer: In order to maintain (or regain) economic profit, a firm in monopolistic competition must continually develop new products that are unique and/or of high quality (or make consumers believe this). Advertising lets firms signal this information. So all firms in monopolistic competition tend to advertise extensively.

Advertising is a fixed cost and it shifts the ATC curve upward. Even though it shifts to the ATC curve upward, the total average cost might be lower if it increases the amount sold by enough. Because advertising is a fixed cost, it has no effect on the marginal cost, so the MC curve does not change. Because all firms advertise, advertising might or might not increase demand for a specific firm. When all firms advertise, the demand curve and marginal revenue curve for a specific firm become more elastic.

Topic: Advertising
Skill: Level 2: Using definitions
Objective: Checkpoint 15.3
Author: CD
4) Why are selling costs high in monopolistic competition?

Answer: In monopolistic competition, there are a large number of small firms producing differentiated products. Each firm’s output is a substitute for other firms’ output; therefore demand for any firm’s product is very elastic. If firms can further differentiate their product in the eyes of the consumer, they might be able to both increase demand and decrease demand elasticity, at least temporarily. In this case, the firm could then charge a higher price and, temporarily at least, earn an economic profit. This differentiation occurs through innovation, product development and marketing, which contribute to selling costs.

*Topic: Selling costs*
*Skill: Level 3: Using models*
*Objective: Checkpoint 15.3*
*Author: SB*

5) Explain how selling costs in monopolistic competition affect the efficiency of monopolistic competition.

Answer: The additional selling costs from product differentiation and marketing increase consumer choice by providing variety. This benefits society and weighs in favor of the efficiency of monopolistic competition. However, selling costs can add to the product’s price. Also, at times the product differentiation is more apparent than real. These factors harm society and count against the efficiency of monopolistic competition.

*Topic: Selling costs and efficiency*
*Skill: Level 2: Using definitions*
*Objective: Checkpoint 15.3*
*Author: PH*