10.E: Monopolistic Competition and Oligopoly (Exercises)

10.1: Monopolistic Competition

Self-Check Questions

Q1
Suppose that, due to a successful advertising campaign, a monopolistic competitor experiences an increase in demand for its product. How will that affect the price it charges and the quantity it supplies?

Q2
Continuing with the scenario outlined in question 1, in the long run, the positive economic profits earned by the monopolistic competitor will attract a response either from existing firms in the industry or firms outside. As those firms capture the original firm's profit, what will happen to the original firm's profit-maximizing price and output levels?

Review Questions

https://socialsci.libretexts.org/Bookshelves/Economics/Book%3A_Microeconomics_(OpenStax)/10%3A__Monopolistic_Competition
Updated: Fri, 14 Feb 2020 04:05:14 GMT
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Q3
What is the relationship between product differentiation and monopolistic competition?

Q4
How is the perceived demand curve for a monopolistically competitive firm different from the perceived demand curve for a monopoly or a perfectly competitive firm?

Q5
How does a monopolistic competitor choose its profit-maximizing quantity of output and price?

Q6
How can a monopolistic competitor tell whether the price it is charging will cause the firm to earn profits or experience losses?

Q7
If the firms in a monopolistically competitive market are earning economic profits or losses in the short run, would you expect them to continue doing so in the long run? Why?

Q8
Is a monopolistically competitive firm productively efficient? Is it allocatively efficient? Why or why not?

Critical Thinking Questions

Q9
Aside from advertising, how can monopolistically competitive firms increase demand for their products?
Q10

Make a case for why monopolistically competitive industries never reach long-run equilibrium.

Q11

Would you rather have efficiency or variety? That is, one opportunity cost of the variety of products we have is that each product costs more per unit than if there were only one kind of product of a given type, like shoes. Perhaps a better question is, "What is the right amount of variety? Can there be too many varieties of shoes, for example?"

Problems

Q12

Andrea's Day Spa began to offer a relaxing aromatherapy treatment. The firm asks you how much to charge to maximize profits. The demand curve for the treatments is given by the first two columns in Table below; its total costs are given in the third column. For each level of output, calculate total revenue, marginal revenue, average cost, and marginal cost. What is the profit-maximizing level of output for the treatments and how much will the firm earn in profits?

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
<th>TC</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25.00</td>
<td>0</td>
<td>$130</td>
</tr>
<tr>
<td>$24.00</td>
<td>10</td>
<td>$275</td>
</tr>
<tr>
<td>$23.00</td>
<td>20</td>
<td>$435</td>
</tr>
<tr>
<td>$22.50</td>
<td>30</td>
<td>$610</td>
</tr>
<tr>
<td>$22.00</td>
<td>40</td>
<td>$800</td>
</tr>
<tr>
<td>$21.60</td>
<td>50</td>
<td>$1,005</td>
</tr>
<tr>
<td>$21.20</td>
<td>60</td>
<td>$1,225</td>
</tr>
</tbody>
</table>

Solution

S1

An increase in demand will manifest itself as a rightward shift in the demand curve, and a rightward shift in marginal
revenue. The shift in marginal revenue will cause a movement up the marginal cost curve to the new intersection between \( (MR) \) and \( (MC) \) at a higher level of output. The new price can be read by drawing a line up from the new output level to the new demand curve, and then over to the vertical axis. The new price should be higher. The increase in quantity will cause a movement along the average cost curve to a possibly higher level of average cost. The price, though, will increase more, causing an increase in total profits.

**S2**

As long as the original firm is earning positive economic profits, other firms will respond in ways that take away the original firm’s profits. This will manifest itself as a decrease in demand for the original firm’s product, a decrease in the firm’s profit-maximizing price and a decrease in the firm’s profit-maximizing level of output, essentially unwinding the process described in the answer to question 1. In the long-run equilibrium, all firms in monopolistically competitive markets will earn zero economic profits.

### 10.2: Oligopoly

**Self-Check Questions**

**Q1**

Consider the curve shown in the figure below, which shows the market demand, marginal cost, and marginal revenue curve for firms in an oligopolistic industry. In this example, we assume firms have zero fixed costs.

![Oligopoly Diagram](https://socialsci.libretexts.org/Bookshelves/Economics/Book%3A_Microeconomics_(OpenStax)/10%3A__Monopolistic_Com…)

a. Suppose the firms collude to form a cartel. What price will the cartel charge? What quantity will the cartel supply? How much profit will the cartel earn?
b. Suppose now that the cartel breaks up and the oligopolistic firms compete as vigorously as possible by cutting the price and increasing sales. What will the industry quantity and price be? What will the collective profits be of all firms in the industry?

c. Compare the equilibrium price, quantity, and profit for the cartel and cutthroat competition outcomes.

Q2

Sometimes oligopolies in the same industry are very different in size. Suppose we have a duopoly where one firm (Firm A) is large and the other firm (Firm B) is small, as shown in the prisoner's dilemma box in Table below.

<table>
<thead>
<tr>
<th>Firm B colludes with Firm A</th>
<th>Firm B cheats by selling more output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm A colludes with Firm B</td>
<td>A gets $1,000, B gets $100</td>
</tr>
<tr>
<td>Firm A cheats by selling more output</td>
<td>A gets $1,050, B gets $50</td>
</tr>
</tbody>
</table>

Assuming that the payoffs are known to both firms, what is the likely outcome in this case?

Review Questions

Q3

Will the firms in an oligopoly act more like a monopoly or more like competitors? Briefly explain.

Q4

Does each individual in a prisoner's dilemma benefit more from cooperation or from pursuing self-interest? Explain briefly.

Q5

What stops oligopolists from acting together as a monopolist and earning the highest possible level of profits?

Critical Thinking Questions
Q6

Would you expect the kinked demand curve to be more extreme (like a right angle) or less extreme (like a normal demand curve) if each firm in the cartel produces a near-identical product like OPEC and petroleum? What if each firm produces a somewhat different product? Explain your reasoning.

Q7

When OPEC raised the price of oil dramatically in the mid-1970s, experts said it was unlikely that the cartel could stay together over the long term—that the incentives for individual members to cheat would become too strong. More than forty years later, OPEC still exists. Why do you think OPEC has been able to beat the odds and continue to collude? Hint: You may wish to consider non-economic reasons.

Problems

Q8

Mary and Raj are the only two growers who provide organically grown corn to a local grocery store. They know that if they cooperated and produced less corn, they could raise the price of the corn. If they work independently, they will each earn \( \$(100) \). If they decide to work together and both lower their output, they can each earn \( \$(150) \). If one person lowers output and the other does not, the person who lowers output will earn \( \$(0) \) and the other person will capture the entire market and will earn \( \$(200) \). Table below represents the choices available to Mary and Raj. What is the best choice for Raj if he is sure that Mary will cooperate? If Mary thinks Raj will cheat, what should Mary do and why? What is the prisoner’s dilemma result? What is the preferred choice if they could ensure cooperation? A = Work independently; B = Cooperate and Lower Output. (Each results entry lists Raj’s earnings first, and Mary’s earnings second.)

\[
\begin{array}{cc}
| \text{Mary} & \text{A} & \text{B} \\
| \text{A} & (100, 100) & (200, 0) \\
| \text{B} & (0, 200) & (150, 150) \\
\end{array}
\]

Q9

Jane and Bill are apprehended for a bank robbery. They are taken into separate rooms and questioned by the police about their involvement in the crime. The police tell them each that if they confess and turn the other person in, they will receive a lighter sentence. If they both confess, they will be each be sentenced to \( (30) \) years. If neither confesses, they will each receive a \( (20) \)-year sentence. If only one confesses, the confessor will receive \( (15) \) years and the one who stayed silent will receive \( (35) \) years. Table below represents the choices available to Jane and Bill. If Jane trusts Bill to
stay silent, what should she do? If Jane thinks that Bill will confess, what should she do? Does Jane have a dominant strategy? Does Bill have a dominant strategy? A = Confess; B = Stay Silent. (Each results entry lists Jane’s sentence first (in years), and Bill's sentence second.)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>(30, 30)</td>
<td>(15, 35)</td>
</tr>
<tr>
<td>Bill</td>
<td>(35, 15)</td>
<td>(20, 20)</td>
</tr>
</tbody>
</table>

### Solution

#### S1

a. If the firms form a cartel, they will act like a monopoly, choosing the quantity of output where \( MR = MC \). Drawing a line from the monopoly quantity up to the demand curve shows the monopoly price. Assuming that fixed costs are zero, and with an understanding of cost and profit, we can infer that when the marginal cost curve is horizontal, average cost is the same as marginal cost. Thus, the cartel will earn positive economic profits equal to the area of the rectangle, with a base equal to the monopoly quantity and a height equal to the difference between price (on the demand above the monopoly quantity) and average cost, as shown in the following figure.

b. The firms will expand output and cut price as long as there are profits remaining. The long-run equilibrium will occur at the point where average cost equals demand. As a result, the oligopoly will earn zero economic profits due to “cutthroat competition,” as shown in the next figure.
c. \(P_c > P_{cc}\). \(Q_c < Q_{cc}\). Profit for the cartel is positive and large. Profit for cutthroat competition is zero.

S2

Firm B reasons that if it cheats and Firm A does not notice, it will double its money. Since Firm A’s profits will decline substantially, however, it is likely that Firm A will notice and if so, Firm A will cheat also, with the result that Firm B will lose \(90\%\) of what it gained by cheating. Firm A will reason that Firm B is unlikely to risk cheating. If neither firm cheats, Firm A earns \(\$1000\). If Firm A cheats, assuming Firm B does not cheat, A can boost its profits only a little, since Firm B is so small. If both firms cheat, then Firm A loses at least \(50\%\) of what it could have earned. The possibility of a small gain \(\$50\) is probably not enough to induce Firm A to cheat, so in this case it is likely that both firms will collude.

Contributor

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