I. Learning Objectives—In this chapter students should learn:
   A. The characteristics of monopolistic competition.
   B. Why monopolistic competitors earn only a normal profit in the long run.
   C. The characteristics of oligopoly.
   D. How game theory relates to oligopoly.
   E. Why the demand curve of an oligopolist may be kinked.
   F. The incentives and obstacles to collusion among oligopolists.
   G. The potential positive and negative effects of advertising.

II. Monopolistic Competition: Characteristics
   A. Monopolistic competition refers to a market situation in which a relatively large number of sellers offer similar—but not identical—products.
      1. Each firm has a small percentage of the total market.
      2. Collusion is nearly impossible with so many firms.
      3. Firms act independently; the actions of one firm are ignored by the other firms in the industry.
   B. Product differentiation and other types of nonprice competition give the individual firm some degree of monopoly power that the purely competitive firm does not possess.
      1. Product differentiation may be physical (qualitative).
      2. Services and conditions accompanying the sale of the product are important aspects of product differentiation.
      3. Location is another type of differentiation.
      4. Brand names and packaging lead to perceived differences.
      5. Product differentiation allows producers to have some control over the prices of their products.
   C. Similar to pure competition, monopolistically competitive firms can enter and exit these industries relatively easily. Trade secrets or trademarks may provide firms some monopoly power.
   D. Monopolistically competitive firms heavily advertise their products, relying on nonprice competition to highlight the differences from competitors’ products.
   E. Table 11.1 lists examples of real-world industries that fit this model.

<table>
<thead>
<tr>
<th>Industry</th>
<th>(2) Percentage of Industry Output produced by the Four Largest Firms</th>
<th>(3) Herfindahl Index for the Top 50 Firms</th>
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<th>(2) Percentage of Industry Output produced by the Four Largest Firms</th>
<th>(3) Herfindahl Index for the Top 50 Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt paving</td>
<td>25</td>
<td>207</td>
<td>Metal windows and doors</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Plastic pipe</td>
<td>24</td>
<td>212</td>
<td>Women’s dresses</td>
<td>13</td>
<td>84</td>
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<tr>
<td>Textile bags</td>
<td>24</td>
<td>262</td>
<td>Ready-mix concrete</td>
<td>11</td>
<td>63</td>
</tr>
<tr>
<td>Bolts, nuts, and rivets</td>
<td>24</td>
<td>263</td>
<td>Ready-mix concrete</td>
<td>11</td>
<td>63</td>
</tr>
<tr>
<td>Plastic bags</td>
<td>23</td>
<td>240</td>
<td>Stone products</td>
<td>10</td>
<td>59</td>
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<tr>
<td>Quick printing</td>
<td>22</td>
<td>319</td>
<td>Metal stamping</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td>Textile machinery</td>
<td>20</td>
<td>206</td>
<td>Wood pallets</td>
<td>7</td>
<td>24</td>
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<tr>
<td>Sawmills</td>
<td>18</td>
<td>117</td>
<td>Sheet metal work</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Jewelry</td>
<td>16</td>
<td>117</td>
<td>Signs</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Curtains and draperies</td>
<td>16</td>
<td>111</td>
<td>Retail bakeries</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>
III. Price and Output in Monopolistic Competition

A. The firm’s demand curve is highly, but not perfectly, elastic. It is more elastic than the monopoly’s demand curve, because the seller has many rivals producing close substitutes. It is less elastic than in pure competition, because there are fewer sellers and the seller’s product is differentiated from its rivals; therefore, the firm has some control over price.

B. In the short run, the firm will maximize profits or minimize losses by producing where marginal revenue equals marginal cost, as was true in pure competition and monopoly. Price is set on the demand curve at the output where MR=MC, as was true with the monopoly.

C. Profit or loss is determined by calculating the difference between the price and the average total cost at the MR=MC output. Profit maximization is illustrated in Figure 11.1a (Key Graph), while loss minimization is illustrated in Figure 11.1b (Key Graph).

D. In the long run, the firm will tend to earn a normal profit only; that is, it will break even because the ATC is tangential to the demand curve at the MR=MC output (Figure 11.1c Key Graph).

1. If firms are making an economic profit, new firms will enter the industry. This entry decreases the demand curve facing an individual firm, because buyers will shift some demand to the new firms. The demand curve will shift leftward until
the firm just breaks even. If the demand shifts below the break-even point (including a normal profit), some firms will leave the industry in the long run.

2. If firms are making a loss in the short run, some firms will leave the industry. This will shift the demand curve facing each remaining firm to the right, as there are fewer substitutes for buyers. As this happens, each firm will see its losses disappear until it reaches the break-even (normal profit) level of output and price.

3. Complicating factors are involved with this analysis.
   a. Some firms may achieve a measure of differentiation that is not easily duplicated by rivals (brand names or location) and can realize economic profits even in the long run.
   b. There are some restrictions to entry, such as financial barriers that exist for new small businesses, so economic profits may persist for existing firms.

IV. Monopolistic Competition and Efficiency

A. Productive and Allocative Efficiency
   1. **Productive efficiency occurs when price = minimum average total cost** (where production occurs using the least-cost combination of resources).
   2. ** Allocative efficiency occurs when price = marginal cost** (where the right amount of resources are allocated to producing the product).

B. Monopolistically competitive firms do not achieve productive or allocative efficiency in the long run.
   1. Monopolistically competitive firms generally experience excess capacity; plant and equipment are underused because firms are producing less than the minimum ATC output (Figure 11.2).

2. Price exceeds marginal cost in the long run, suggesting that society values additional units that are not being produced.

3. The gap between price and marginal cost for each firm creates an efficiency (or deadweight) loss industry-wide, illustrated in the same way as for the monopoly.
4. Average costs may also be higher than under pure competition, due to advertising and other costs involved in differentiation.

V. Product Variety

A. A monopolistically competitive producer may be able to postpone the long-run outcome of just normal profits through product development and improvement and advertising.

B. Compared with pure competition, this suggests possible advantages to the consumer.
   1. Developing or improving a product can provide the consumer with a diversity of choices.
   2. Product differentiation is at the heart of the tradeoff between consumer choice and productive efficiency. The greater number of choices the consumer has, the greater the excess capacity problem.

C. The monopolistically competitive firm juggles three factors—price, product, and advertising—in seeking maximum profit.
   1. This complex situation is not easily expressed in a simple economic model such as Figure 11.1. Each possible combination of price, product, and advertising poses a different demand and cost situation for the firm.
      (See 11.1a,b,c Above)
   2. In practice, the optimal combination cannot be readily forecast, but must be found by trial and error.

VI. Oligopoly: Characteristics

A. Oligopoly is a market dominated by a few large producers of a homogeneous or differentiated product.
   1. Each firm is a “price maker;” it can set its price and output levels to maximize profit.
   2. There are so few firms in the industry that firms are mutually interdependent—each must consider its rivals’ reactions in response to its decisions about prices, output, and advertising.
   3. Some oligopolistic industries produce standardized products (steel, zinc, copper, cement), while others produce differentiated products (automobiles, detergents, greeting cards).

B. Barriers to Entry
   1. Economies of scale may exist due to technology and market share.
   2. The capital investment requirement may be very large.
   3. Control of raw materials, patents, preemptive and retaliatory pricing, substantial advertising budgets, and brand loyalty also serve as barriers to entry.

C. Although some firms have become dominant as a result of internal growth, others have gained this dominance through mergers.
E. Measuring Industry Concentration (Table 11.2)

<table>
<thead>
<tr>
<th>Industry</th>
<th>(2) Percentage of Industry Output&lt;sup&gt;1&lt;/sup&gt; Produced by the Four Largest Firms</th>
<th>(3) Hirschman Index for the Top 50 Firms</th>
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<th>(3) Hirschman Index for the Top 50 Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary copper</td>
<td>99</td>
<td>ND</td>
<td>Petrochemicals</td>
<td>85</td>
</tr>
<tr>
<td>Cane sugar refining</td>
<td>99</td>
<td>ND</td>
<td>Small-arms ammunition</td>
<td>83</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>85</td>
<td>ND</td>
<td>Motor vehicles</td>
<td>81</td>
</tr>
<tr>
<td>Household laundry equipment</td>
<td>92</td>
<td>ND</td>
<td>Men's slacks and jeans</td>
<td>80</td>
</tr>
<tr>
<td>Beer</td>
<td>91</td>
<td>ND</td>
<td>Aircraft</td>
<td>81</td>
</tr>
<tr>
<td>Electric light bulbs</td>
<td>89</td>
<td>2582</td>
<td>Household vacuum</td>
<td>78</td>
</tr>
<tr>
<td>Glass containers</td>
<td>88</td>
<td>2582</td>
<td>cleaners</td>
<td>78</td>
</tr>
<tr>
<td>Turbines and generators</td>
<td>88</td>
<td>ND</td>
<td>Phosphate fertilizers</td>
<td>78</td>
</tr>
<tr>
<td>Household refrigerators</td>
<td>85</td>
<td>1986</td>
<td>Tires</td>
<td>77</td>
</tr>
<tr>
<td>and freezers</td>
<td>85</td>
<td>1986</td>
<td>Electronic computers</td>
<td>76</td>
</tr>
<tr>
<td>Primary aluminum</td>
<td>85</td>
<td>ND</td>
<td>Alcohol distilleries</td>
<td>71</td>
</tr>
</tbody>
</table>

1. Concentration ratios are one way to measure market dominance. The four-firm concentration ratio gives the percentage of total industry sales accounted for by the four largest firms. If the four largest firms control 40 percent or more of the market, the industry is considered an oligopoly.

2. The concentration ratio has several shortcomings in terms of measuring competitiveness.

   a. Some markets are local rather than national, and a few firms may dominate within the regional market.

   b. Interindustry competition sometimes exists, so dominance in one industry may not take into account competition from substitutes.

   c. World trade has increased competition, despite high domestic concentration ratios in some industries like the auto industry.

   d. Concentration ratios fail to measure accurately the distribution of power among the leading firms.

VII. Oligopoly Behavior: A Game Theory Overview

A. Oligopoly behavior is similar to a game of strategy, such as poker, chess, or bridge. Each player’s action is interdependent with other players’ actions. Game theory can be applied to analyze oligopoly behavior. A two-firm model or duopoly will be used.
B. Figure 11.3 illustrates the profit payoffs for firms in a duopoly in an imaginary athletic shoe industry. Pricing strategies are classified as high-priced or low-priced, and the profits in each case will depend on the rival’s pricing strategy.

C. Mutual interdependence is demonstrated by the following: RareAir’s best strategy is to have a low-price strategy if Uptown follows a high-price strategy. However, Uptown will not remain there, because it is better for Uptown to follow a low-price strategy when RareAir has a low-price strategy. Each possibility points to the interdependence of the two firms. This is a major characteristic of oligopoly.

D. Another conclusion is that oligopoly can lead to collusive behavior. In the athletic shoe example, both firms could improve their positions if they agreed to both adopt a high-price strategy. However, such an agreement is collusion and is a violation of U.S. anti-trust laws.

E. If collusion does exist, formally or informally, there is a great incentive for both parties to cheat and secretly break the agreement. For example, if RareAir can get Uptown to agree to a high-price strategy, then RareAir can sneak in a low-price strategy and increase its profits.

F. CONSIDER THIS … Creative Strategic Behavior
   Strategic behavior can come in the form of pricing decisions, product differentiation, or creative marketing (creating perceived product differences). It can apply to either competitive or collusive behavior (including cheating on collusive agreements).

G. CONSIDER THIS … The Prisoner’s Dilemma
   In the game in Figure 11.3 (above), both firms realize they would make higher profits if each used a high-price strategy. But each firm ends up choosing a low-price strategy because it fears that it will be worse off if the other firm uses a low-price strategy against it.

VIII. Three Oligopoly Models
   A. No single model can portray this market structure, because the wide diversity of situations and mutual interdependence make predictions about pricing and output precarious.
B. In oligopolies, prices are generally less flexible; when prices do change, the firms tend to change their prices together.

B. Kinked-demand theory (Figure 11.4 Key Graph)

1. An oligopolistic firm will not match a rival’s price increase, hoping the rival’s customers will be attracted to buy their relatively lower-priced product.
2. An oligopolistic firm will match a rival’s price decrease, for fear of losing customers to the lower-priced rival.
3. The model does not explain how prices are first established and does not account for price wars.

C. Cartels and Other Collusion (Figure 11.5)

1. Game theory suggests that collusion is beneficial to the participating firms, because collusion reduces uncertainty, increases profits, and may prohibit the entry of new rivals.
   a. A cartel may reduce the chance of a price war, particularly during a recession.
b. The kinked demand curve’s tendency toward rigid prices may adversely affect profits if inflationary pressures increase production costs.

c. New firms may be able to overcome the barriers to entry and aggressively cut prices in order to gain market share in the industry; collusion reinforces the barriers to entry.

2. To maximize profits, the firms collude and agree to a certain price. Assuming the firms have identical cost, demand, and marginal revenue data, collusion creates a model as if the firms made up a single monopoly firm (Figure 11.5). Firms produce at the output where MR=MC, set the price on the demand curve at that output, and enjoy a profit per unit of \( P – ATC \).

3. A cartel is a group of producers that creates a formal written agreement specifying how much each member will produce and charge. The Organization of Petroleum Exporting Countries (OPEC) is the most significant international cartel.

4. Cartels are illegal in the United States; thus any collusion that exists is covert. In 1993, dairy companies were convicted of rigging bids for milk products sold to schools and military bases. In 1996, American, Japanese, and South Korean firms were found to have conspired to fix the worldwide price and sales volume of a livestock feed additive.

5. Tacit understandings or “gentlemen’s agreements,” often made informally, are also illegal but difficult to detect.

6. Obstacles to Collusion
   a. Differing demand and cost conditions among firms in the industry
   b. A large number of firms in the industry
   c. The incentive to cheat
   d. Recession and declining demand (increasing ATC)
   e. Potential entry of new firms if prices are too high
   f. Antitrust laws that prohibit collusion

E. Price Leadership Model

1. Price leadership is a type of “gentlemen’s agreement” that allows oligopolists to coordinate their prices legally. No formal agreements or clandestine meetings are involved. Instead, the practice has evolved whereby one firm, usually the largest, changes the price first, and then the other firms follow.

2. Several price leadership tactics are practiced by the leading firm.
   a. Prices are changed only when cost and demand conditions have been altered significantly and industry-wide.
   b. Impending price adjustments are often communicated through publications and speeches. Publicizing the “need to raise prices” elicits a consensus among rivals.
   c. The new price may be below the short-run profit-maximizing level to discourage new entrants.
3. Price leadership in oligopoly occasionally breaks down and sometimes results in a price war. In 1995–1996 a price war occurred in the breakfast cereal industry; in 2009 a price war broke out in the bookselling industry. After a period of low profits or losses, firms tend to re-establish price leadership and prices begin to rise.

IX. Oligopoly and Advertising

A. Each firm’s share of the market is typically determined through product development and advertising.
   1. Product development and advertising campaigns are more difficult to combat and match than lower prices.
   2. Oligopolists have substantial financial resources to support advertising and product development.

B. Positive Effects of Advertising on Prices, Competition, and Efficiency
   1. Advertising reduces a buyer’s search time and minimizes costs.
   2. By providing information about competing goods, advertising diminishes monopoly power, resulting in greater economic efficiency.
   3. By facilitating the introduction of new products, advertising speeds up technological progress.
   4. If advertising is successful in boosting demand, increased output may reduce long-run average total cost, enabling firms to enjoy economies of scale.

C. Negative Effects of Advertising
   1. A lot of advertising is designed to manipulate with misleading claims, rather than to inform buyers.
   2. Increased monopolization resulting from a larger market share reduces competition; consumers face lower output and higher prices, and potential competitors face greater barriers to entry into the industry.
   3. When advertising either leads to increased monopoly power or is self-canceling, economic inefficiency results.

X. Oligopoly and Efficiency

A. Allocative and productive efficiency are not realized because price exceeds marginal cost; therefore, output will be less than minimum average total cost output level (Figure 11.5).
Informal collusion among oligopolists may lead to price and output decisions that are similar to that of a pure monopolist, while appearing to involve some competition.

B. The economic inefficiency may be lessened because:
1. Foreign competition has made many oligopolistic industries much more competitive when viewed on a global scale.
2. Oligopolistic firms may keep prices lower in the short run to deter entry of new firms.
3. Over time, oligopolistic industries may foster more rapid product development and greater improvement of production techniques than would be possible if they were purely competitive (Web Chapter 11).

XI. LAST WORD: Oligopoly in the Beer Industry
A. In 1947, there were 400 independent brewers in the United States; by 1967 the number had declined to 124, and by 1980 the number was 33.
B. In 1947, the five largest brewers sold 19 percent of the nation’s beer; by 2007, the Big Three brewers sold 76 percent of the total, and as the result of a merger, the Big Three became the Big Two.
C. Demand has changed.
   1. Tastes have shifted from stronger-flavored beers to lighter products.
   2. Consumption has shifted from taverns to homes, changing packaging and distribution.
D. Supply has changed.
   1. Technology has changed, speeding up production.
   2. Large plants can reduce labor costs by automation.
   3. Large fixed costs are spread over larger outputs, deterring entry of new competitors.
   4. Mergers have occurred but are not the fundamental cause of increased concentration.
   5. Advertising and product differentiation have been important in the growth of some firms such as Miller, while building state-of-the-art breweries and forging strong relationships with regional distributors have been more important factors for Anheuser-Busch InBev.
E. Competition is rising from imported beers (about 15 percent of the market) and, to a lesser extent, microbreweries (about 6 percent of the market).