CHAPTER 22

MONOPOLISTIC COMPETITION, OLIGOPOLY, AND GAME THEORY

Introduction

How do firms in a market act toward each other? Are they fiercely competitive, much as runners in a race to the finish line where only one can be the winner? Or do firms act like people strolling in a park on a warm spring day, without a care in the world and certainly without competition on their minds? As you read this chapter, keep these two images in your mind. Also keep two words in mind: competition and collusion. This chapter is about both.

THE THEORY OF MONOPOLISTIC COMPETITION

Monopolistic Competition
A theory of market structure based on three assumptions: many sellers and buyers, firms producing and selling slightly differentiated products, and easy entry and exit.

The theory of **monopolistic competition** is built on three assumptions:

1. *There are many sellers and buyers.* This assumption holds for perfect competition too. For this reason, you might think the monopolistic competitor should be a price taker, but this is not the case. It is a price searcher, basically because of the next assumption.
2. *Each firm (in the industry) produces and sells a slightly differentiated product.* Differences among the products may be due to brand names, packaging, location, credit terms connected with the sale of the product, the friendliness of the salespeople, and so forth. Product differentiation may be real or imagined. For example, aspirin may be aspirin, but if some people view a name brand aspirin (such as Bayer) as better than a generic brand, product differentiation exists.
3. *There is easy entry and exit.* Monopolistic competition resembles perfect competition in this respect. There are no barriers to entry and exit, legal or otherwise.

Examples of monopolistic competition include retail clothing, computer software, restaurants, and service stations.

The Monopolistic Competitor's Demand Curve

The perfectly competitive firm has many rivals, all producing the same good, and so there are an endless number of substitutes for the good it produces. The elasticity of demand

for its product is extremely high—so high, in fact, that the demand curve it faces is horizontal (for all practical purposes).

The monopoly firm has practically no rivals, and it produces a good for which there are no substitutes. The elasticity of demand for its product is low, as reflected by its downward-sloping demand curve.

What is the situation for the monopolistic competitor? Like the perfectly competitive firm, it has many rivals. But unlike the perfectly competitive firm, its rivals don't sell exactly the same product the monopolistic competitor sells. Because there are substitutes for its product, but not perfect substitutes, the elasticity of demand for its product is not as great as that of the perfectly competitive firm. Nor does its demand curve look like the demand curve faced by the perfectly competitive firm. The monopolistic competitor's demand curve is not horizontal; it is downward sloping.

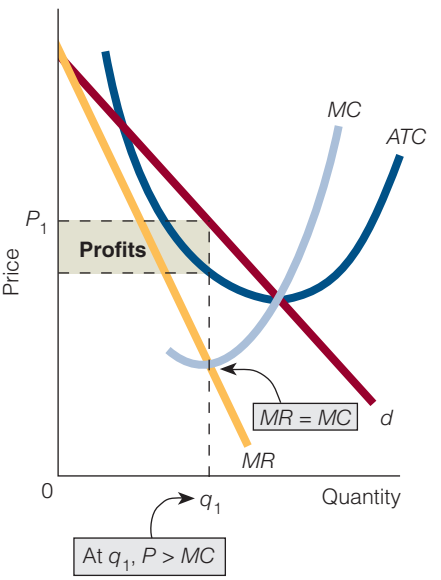
The Relationship Between Price and Marginal Revenue for a Monopolistic Competitor

Because a monopolistic competitor faces a downward-sloping demand curve, it has to lower price to sell an additional unit of the good it produces. (It is a price searcher.) For example, let's say that it can sell 3 units at $10 each but that it has to lower its price to $9 to sell 4 units. Its marginal revenue is therefore $6 (total revenue at 3 units is $30 and total revenue at 4 units is $36), which is below its price of $9. Thus, for the monopolistic competitor $P > MR$.

exhibit 1

The Monopolistic Competitive Firm's Output and Price

The monopolistic competitor produces that quantity of output for which $MR = MC$. This is q_1 in the exhibit. It charges the highest price consistent with this quantity, which is P_1.



Output, Price, and Marginal Cost for the Monopolistic Competitor

The monopolistic competitive firm is the same as both the perfectly competitive firm and the monopoly firm in one regard: It produces the quantity of output at which $MR = MC$. We see this in Exhibit 1, where the firm produces q_1. What price does the monopolistic competitor charge for this quantity? Answer: The highest price it can charge. This is P_1 in the exhibit.

For the monopolistic competitor, $P > MR$. Because the monopolistic competitor produces the quantity of output at which $MR = MC$, it must produce a level of output at which price is greater than marginal cost, $P > MC$. This is obvious in Exhibit 1.

micro*theme* ➜ We have studied various firms in the last three chapters. A firm faces either (1) a horizontal demand curve or (2) a downward-sloping demand curve. Another way of putting this is to say that a firm is either (1) a price taker or a (2) price searcher. If it faces a horizontal demand curve (which means it can sell its good only at the market equilibrium price), then it is a price taker. If it faces a downward-sloping demand curve (which means it can sell some of its good at different prices, albeit less at higher prices), then it is a price searcher. In other words, the firms you encounter in the real world are either price takers or price searchers.

Will There Be Profits in the Long Run?

If the firms in a monopolistic competitive market are currently earning profits, such as the firm in Exhibit 1, will they continue to earn profits in the long run? Most likely they

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THE PEOPLE WEAR PRADA

Suppose you own a business that is considered a monopolistic competitive firm. Your business is one of many sellers, you sell a product slightly differentiated from the products of your competitors, and there is easy entry into and exit from the industry. Would you rather your business were a monopoly firm? Wouldn't it be better for you to be the only seller of a product than to be one of many? Most business owners would say that it is better to be a monopoly firm than a monopolistic competitive firm. This being the case, we consider how monopolistic competitors may try to become monopolists.

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One possibility is through a designer label. If a monopolistic competitor can, through the use of a designer label, persuade the buying public that her product is *more than just slightly differentiated* from those of her competitors, she stands a better chance of becoming a monopolist. (Remember that a monopolist produces a good for which there are no close substitutes.)

For example, many firms produce women's jeans, and, to many people, the jeans produced by these firms look very much alike. How, then, does any one firm differentiate its product from the pack? It could add a designer label to the jeans to suggest uniqueness—that they are the only *Tag Jeans*, for example. For added impact, it could try to persuade the buying public through advertising that its jeans are "the" jeans worn by the most famous, best looking people.

Think of a list of firms that have gone with a designer label to try to outcompete their competitors: Gucci, Tommy Hilfiger, Perry Ellis, Liz Claiborne, Armani, Versace, Dolce & Gabbana, Prada, Valentino, Chanel, L.L. Bean, Da-Nang, Primp, and many others.

The Monopolistic Competitor and Two Types of Efficiency

An earlier chapter explained that a firm is resource allocative efficient if it charges a price that is equal to marginal cost, $P = MC$. Because the monopolistic competitive firm charges a price that is greater than marginal cost ($P > MC$), it is not resource allocative efficient.

An earlier chapter also explained that a firm is productive efficient if it charges a price that is equal to its lowest ATC. Because the monopolistic competitor operates at excess capacity, it is not productive efficient.

SELF-TEST

(Answers to Self-Test questions are in the Self-Test Appendix.)

1. How is a monopolistic competitor like a monopolist? How is it like a perfect competitor?
2. Why do monopolistic competitors operate at excess capacity?

Oligopoly
A theory of market structure based on three assumptions: few sellers and many buyers, firms producing either homogeneous or differentiated products, and significant barriers to entry.

OLIGOPOLY: ASSUMPTIONS AND REAL-WORLD BEHAVIOR

Unlike perfect competition, monopoly, and monopolistic competition, there is no one theory of **oligopoly**. However, the different theories of oligopoly have the following common assumptions:

1. *There are few sellers and many buyers.* The assumption is usually that the few firms of an oligopoly are interdependent; each one is aware that its actions influence the other firms and that the actions of the other firms affect it. This interdependence among firms is a key characteristic of oligopoly.
2. *Firms produce and sell either homogeneous or differentiated products.* Aluminum is a homogeneous product produced in an oligopolistic market; cars are a differentiated product produced in an oligopolistic market.
3. *There are significant barriers to entry.* Economies of scale are perhaps the most significant barrier to entry in oligopoly theory, but patent rights, exclusive control of an essential resource, and legal barriers also act as barriers to entry.

The oligopolist is a price searcher. Like all other firms, it produces the quantity of output at which $MR = MC$.

The Concentration Ratio

Which industries today are dominated by a small number of firms, that is, are oligopolistic? Economists have developed the *concentration ratio* to help answer this question. The **concentration ratio** is the percentage of industry sales (or assets, output, labor force, or some other factor) accounted for by x number of firms in the industry. The x number in the definition is usually four or eight, but it can be any number (although it is usually small).

Concentration Ratio
The percentage of industry sales (or assets, output, labor force, or some other factor) accounted for by x number of firms in the industry.

Four-firm concentration ratio: CR_4 = Percentage of industry sales accounted for by four largest firms

Eight-firm concentration ratio: CR_8 = Percentage of industry sales accounted for by eight largest firms

A high concentration ratio implies that few sellers make up the industry; a low concentration ratio implies that more than a few sellers make up the industry.

Suppose we calculate a four-firm concentration ratio for industry Z. Total industry sales for a given year are $5 million, and the four largest firms in the industry account for $4.5 million in sales. The four-firm concentration ratio is 0.90, or 90 percent ($4.5 million is 0.90 of $5 million). Industries with high four- and eight-firm concentration ratios in recent years include cigarettes, cars, tires, cereal breakfast foods, farm machinery, and soap and other detergents, to name a few.

Although concentration ratios are often used to determine the extent (or degree) of oligopoly, they are not perfect guides to industry concentration. Most important, they do not take into account foreign competition and competition from substitute domestic goods. For example, the U.S. automobile industry is concentrated, but it still faces stiff competition from abroad. A more relevant concentration ratio for this particular industry might be one computed on a worldwide basis.

Price and Output Under Three Oligopoly Theories

There is not just one theory of oligopoly; there are many. We present three in this section: the cartel theory, the kinked demand curve theory, and the price leadership theory.

Cartel Theory
In this theory of oligopoly, oligopolistic firms act as if there were only one firm in the industry.

Cartel
An organization of firms that reduces output and increases price in an effort to increase joint profits.

The Cartel Theory

The key behavioral assumption of the **cartel theory** is that oligopolists in an industry act as if there were only one firm in the industry. In short, they form a cartel to capture the benefits that would exist for a monopolist. A **cartel** is an organization of firms that reduces output and increases price in an effort to increase joint profits.