Monopolistic Competition and Oligopoly

LEARNING OBJECTIVES

LO 15.1 Name the defining features of oligopoly and monopolistic competition.
LO 15.2 Calculate the profit-maximizing price and quantity for a monopolistically competitive firm in the short run.
LO 15.3 Describe a monopolistically competitive market in the long run.
LO 15.4 Compare the welfare costs of monopolistic competition.
LO 15.5 Explain how product differentiation motivates advertising and branding.
LO 15.6 Describe the strategic production decision of firms in an oligopoly.
LO 15.7 Explain why firms in an oligopoly have an incentive to collude, and why they might fail to do so.
LO 15.8 Compare the welfare of producers, consumers, and society as a whole in an oligopoly to monopoly and perfect competition.

WHICH ONE OF THESE IS JUST LIKE THE OTHERS?

What do the musicians Toby Keith, Bjork, and Kanye West have in common? We’ll give you a hint. It’s the same thing that Drake has in common with Death Cab for Cutie and Tracy Chapman. It’s also the same thing that Shakira shares with Bob Dylan and that the Decemberists share with the Rolling Stones.

Each of these groups of artists is on one of the four major recording labels that together account for more than 80 percent of the U.S. music market. These four—the Universal Music Group (Universal), Sony Music Group (Sony), Warner Music Group (Warner), and the EMI Group (EMI)—each control between 10 and 30 percent of the market. If you want to be a successful recording artist, you’ll have a much better chance with one of them on your side.

That wasn’t always the case, though. In the 1950s and 1960s, many stars were able to make their names with small record labels. An Alabama radio host named Sam Phillips started Sun Records out of a cheap storefront in Memphis. He promptly signed
then-unknown artists Elvis Presley, Johnny Cash, and B.B. King. A Ford assembly-line worker, Berry Gordy, formed Motown Records in Detroit with a tiny family loan, and made stars of artists including Marvin Gaye and Stevie Wonder. In the last decade, as the Internet has revolutionized music distribution, new ways have opened up again for musicians to market themselves independently of the four major labels. But it’s still not as common for an artist to break through on a small label today as it was in those early days of rock ‘n’ roll.

In previous chapters, we described two extreme market structures: monopoly and perfect competition. In this chapter, we’ll see why the music industry—both past and present—is not a good fit for either of those two models. Instead, the music industry is a market that is somewhat competitive, but not perfectly competitive. Such a market structure is quite common in the real world.

In particular, we’ll discuss two types of market structure that are useful to understanding how imperfect competition can play out: monopolistic competition and oligopoly. These market structures aren’t mutually exclusive. As we’ll see, many industries, including the music industry, display characteristics of both.

Understanding market structure is key to running a successful business. A business owner needs to know the type of market in which she is engaged in order to know how much freedom she has to set prices, or how much attention to pay to the behavior of other firms. Her business strategy may differ greatly depending on how much competition she faces and of what sort. But market structures matter beyond the firms embedded within them. Understanding them helps us to decide how we should respond to advertising, for example. It also helps us understand when we should favor regulators stepping in to address suspicions of “anti-competitive” business practices. The concepts that we explore in this chapter will help us understand choices faced by business people, consumers, and policy-makers.

What Sort of Market?
What sort of market is the music industry? That’s the 5-billion-dollar question for everyone from record-label executives to retailers to antitrust lawyers at the Department of Justice. In answering it, we’ll focus on the two characteristics that define a range of market structures: number of firms and product variety.

Let’s start by looking at the number of firms. Figure 15-1 shows that the music industry is dominated by four labels; no single one of them is big enough to dominate the industry in the way that De Beers dominated the diamond market in the twentieth century. This tells us the music industry is not a monopoly.
It’s also not perfectly competitive. That’s not simply because the market is dominated by a few large firms. It’s also because of product variety. Even if there were thousands of small record labels competing, the market would not be perfectly competitive because music is not a standardized product. There are many similarities between, say, a Kanye West file download and a music file by The Shins: They’re both digitized versions of music, using data-compression technology with a common digital encoding format; both emit sounds of instruments and voices when played. They’re similar enough that it makes sense for us to think of them both as products of the same industry, the music industry. But they are certainly not a standardized product—at least, not to diehard fans of Kanye West or The Shins.

As we shall see, these two features of the music industry—a small number of large firms, and product variety—are the defining features of two market structures that lie between the extreme models of monopoly and perfect competition. These two market structures—oligopoly and monopolistic competition—are common in the real world. While many industries display features of both models, understanding each model separately allows us to make powerful predictions about how firms will behave.

Oligopoly and monopolistic competition

LO 15.1 Name the defining features of oligopoly and monopolistic competition.

Oligopoly describes markets with only a few firms. (The word itself is derived from the Greek words for “few sellers.”) These companies sell a product or service that may or may not be completely standardized, but is similar enough that they’re in competition. Examples of oligopolies are wireless network providers (the U.S. market is dominated by four companies—AT&T, Verizon, T-Mobile, and Sprint), and fast-food burgers (think McDonald’s, Burger King, and Wendy’s).

One of the defining features of an oligopoly is that the success of firms in the market is largely determined by the actions of its major rivals. By definition, this isn’t true both for firms in perfectly competitive markets or monopolists. If you run a firm in a perfectly competitive market, there is no need to monitor what the other firms in the market are doing because their actions cannot affect the market.
Likewise, if you are a true monopolist, you don’t need to care about what other firms are doing—there are no other firms (unless another firm is trying to create a product that can substitute for yours).

If you are in charge of a company in an oligopoly, though, it is a vital part of your job to keep an eye on competitors. The shareholders of Wendy’s would not be impressed if the CEO had no idea that McDonald’s had just introduced a new kind of burger or that Burger King was offering promotional discounts on sodas.

Oligopolies are also characterized by the existence of some barriers to entry. Remember that barriers to entry explain why monopolies exist: You couldn’t set up in the diamond business to challenge De Beers without discovering a new source of diamonds. In perfect competition, by contrast, we assume there are no barriers to entry—it’s easy for new firms to enter the market. Oligopoly is somewhere in the middle. It would be possible to set up as a wireless carrier, but expensive to construct the infrastructure. It would be possible to break into the national burger chain market, but tough to overcome established brand loyalties.

Monopolistic competition describes markets with many firms that sell goods and services that are similar, but slightly different. Remember that a feature of perfect competition is that consumers are indifferent between the products of competing firms. A feature of monopoly is that the product has no close substitutes. In between these two extremes are markets in which products have substitutes that are close but not perfect. Consumers might be willing to pay a bit extra, but if the price differential is too large, they will choose a substitute product instead.

Although the name monopolistic competition sounds like a contradiction, it expresses the idea that firms in such a market have a kind of monopoly but in a limited sense. For example, in the 1950s Sun Records had a monopoly on selling Elvis records. If you wanted an Elvis record, you had no choice but to buy it from Sun. Devoted fans of Elvis might be willing to pay a bit more for an Elvis record than for records by other artists. Thus, Sun had some power to set its own price, but not much. If Sun raised the price of Elvis records too high, most people would prefer to save their money or to buy records by other artists instead.

Monopolistic competition describes a great many real-world markets. For example, General Mills, the parent company of Häagen-Dazs, has a monopoly on selling Häagen-Dazs brand ice cream, but not a monopoly on ice cream in general. If you especially like Häagen-Dazs, you might be willing to pay a bit extra for it. But if the price differential becomes too great you’ll switch to another brand, such as Ben & Jerry’s. Similarly, you might be willing to pay a little more for a meal at your favorite restaurant; if the price is too high, you’d be happy to settle for your second favorite.

Oligopoly and monopolistic competition are often found together, as in the music industry. Oligopoly is about the number of firms; monopolistic competition is about variety of products. Thus, you can have one without the other. Oligopolies can exist when products are standardized; monopolistic competition can exist when there are many small firms. For this reason we will now explore the two market structures separately.

**CONCEPT CHECK**

- What is the difference between oligopoly and monopolistic competition? [LO 15.1]
- Why does product differentiation encourage innovation? [LO 15.1]
Monopolistic Competition

Remember that under the model of perfect competition, firms do not make economic profits. It’s not surprising, then, that firms would rather be operating under conditions of monopolistic competition, where they can make economic profits.

How do monopolistically competitive firms make economic profits? By persuading consumers that their product is different from the products of their competitors. In other words, firms must offer goods that are close but imperfect substitutes for competitors’ products. This process is called product differentiation. It is an essential part of the strategy of many businesses in the real world.

Sometimes product differentiation is accomplished through genuine innovation. The many record labels operating in the 1950s music business are an example. They competed to discover and shape new, exciting, different performers who could attract a following of loyal fans. The more enthusiastic Elvis fans were, the less interchangeable they considered Elvis’s records to be with those of other artists. The less interchangeable the records, the more Sun could charge without fear of losing sales. The founder of Sun Records discovered a wealth of previously overlooked talent in and around Memphis: He was happy to work with black musicians who were otherwise excluded from white-dominated parts of the music business in that era of segregation. In doing so, he helped to create rock ‘n’ roll—not only recognizing talent, but shaping it into something new.

Regardless of whether or not genuine innovation is involved, firms have an interest in persuading customers that their products are unique. This is the role of advertising and branding. Even when a firm’s product is not really very different from other products on the market, it may be possible to convince customers that the product is different, and thereby persuade them to pay more for a particular brand. We’ll return to these issues later in the chapter.

Monopolistic competition in the short run

LO 15.2 Calculate the profit-maximizing price and quantity for a monopolistically competitive firm in the short run.

Product differentiation enables firms in monopolistically competitive markets to produce a good for which there are no exact substitutes. In the short run, this allows a firm to behave like a monopolist. In the long run, as we will see, the situation is different. This difference between the short and long run is the key to understanding monopolistic competition.

First, we’ll look at the short run. Let’s review what it means for firms in a monopolistically competitive market when they can behave like monopolists. Figure 15-2 shows the production choices of those firms:

1. Firms face a downward-sloping demand curve. Just like a monopolist, a monopolistically competitive firm cannot adjust its price without causing a change in the quantity consumers demand.
2. Assuming that production involves both fixed and marginal costs, firms face a U-shaped average total cost (ATC) curve.
3. The profit-maximizing production quantity is at the point where the marginal revenue (MR) curve intersects the marginal cost (MC) curve. The profit-maximizing price is determined by the point on the demand curve that corresponds to this quantity.
In summary, a monopolistically competitive firm can earn positive economic profits in the short run. To do so, it must behave just like a monopolist—by producing at the point where marginal revenue equals marginal cost.

Monopolistic competition in the long run

LO 15.3 Describe a monopolistically competitive market in the long run.

For all its similarities to a monopolist in the short run, the monopolistically competitive firm faces one huge problem that the monopolist does not: Other firms can enter the market. When existing firms are making positive economic profits, other firms have an incentive to enter the market.

**POTENTIALLY CONFUSING**

Why aren’t monopolistically competitive firms price takers?

Sun Records was a small player in a very competitive music market. So why wasn’t it a price taker, facing a horizontal demand curve, as a small firm in a perfectly competitive market would be? Why did it face a downward-sloping demand curve in the short run?

The key here is how we define the scope of the market. Sun Records was small relative to the market for records. But it was large—in fact, a monopolist—in the market for Elvis records. Consumers who wanted Elvis records could buy them only from Sun. Sun was not a price taker in the market for Elvis records, and so it faced a downward-sloping demand curve.

The steepness of the demand curve is determined in part by the degree of substitutability between Elvis records and other records. What if buyers see the records as very close substitutes? In that case, people will switch to other artists if Sun raises the price even a little bit, and the demand curve will be quite flat. What if, on the other hand, fans are very loyal to Elvis? In that case, most won’t stop buying Elvis records even when prices go up, and the demand curve will be steeper.

In other words, the less-differentiated the products are, the closer each firm’s demand curve is to the horizontal curve faced by perfectly competitive firms. By differentiating their products more—for example, finding a very distinctive artist such as Elvis and building a loyal following of devoted fans—firms can increase the steepness of the demand curve they face in the short run.

In summary, a monopolistically competitive firm can earn positive economic profits in the short run. To do so, it must behave just like a monopolist—by producing at the point where marginal revenue equals marginal cost.
Of course, it’s not always possible for other firms to enter the market and produce *exactly* the same product. There’s only one Elvis, after all, and he belongs to Sun Records. What other firms *can* do is look for artists who are *like* Elvis, and whose records will therefore be seen by music lovers as closer substitutes for Elvis records.

This explains why, in music and in many other industries, products tend to come in waves. A new musical performer with an original style comes along and makes a splash; other record labels rush to sign artists who have a similar style. A trendy high-fashion label produces a new range of clothing; other fashion labels rush to produce clothes that look similar. Apple releases the iPad, and other technology manufacturers rush to produce touchscreen tablet computers. And so on.

What effect does the entry of more firms have on the demand faced by each existing firm? Remember from Chapter 3 that availability of substitute goods is one of the determinants of demand. More firms making more products that are similar to the original product means that consumers have a wider range of substitutes. With more product options from which consumers can choose, demand for the original product decreases at every price. The demand curve faced by the firm shifts to the left.

As long as firms currently in the market are earning profits, more firms will enter the market with products that are very close substitutes. As a result, the demand curve will continue to shift to the left. This process will continue until the point when potential firms no longer have an incentive to enter the market. When does that happen? At the point when existing firms are no longer earning economic profits.

The opposite logic holds if firms in the market are losing money in the short run: Firms will have an incentive to exit the market when they are earning negative profits. These exits will drive up demand for the existing firms and shift the demand curves they face to the right. This process will continue until, in the long run, firms no longer have an incentive to exit. (They will stop exiting when they are no longer losing money.) You may have noticed something like this happening in the music industry: Sometimes so many performers are releasing similar-sounding music, the market niche becomes oversaturated.

In the long run, firms in a monopolistically competitive market face the same situation as firms in a perfectly competitive market—profits are driven to zero. Remember from earlier chapters that zero profit means that total revenue is exactly equal to total cost. In per-unit terms, zero profit means that price is equal to average total cost (ATC). Figure 15-3 shows this situation; the ATC curve is *tangent* to the demand curve at exactly one point, where ATC = Price. (In Figure 15-3, that point is 47,000 records at $4.70 a record.) That point represents the profit-maximizing quantity and is the optimal production point.

Note that ATC touches the demand curve at the same quantity where MR intersects MC. This graphic relationship is equivalent to saying that profits are zero. If ATC is not exactly tangent to the demand curve at the optimal point, then profits are positive or negative. If the ATC is above the demand curve, for example, this would mean that costs were higher than price, and firms would lose money and exit the market. If, on the other hand, ATC hit the demand curve at multiple places, costs would be below price and firms would earn profits. This situation would induce firms to enter the market. This process of entry and exit, which moves the demand curve left or right, continues until this relationship *does* hold.

In the long run, then, monopolistic competition has some features in common with monopoly, and others in common with perfect competition. Just like a *monopoly*, a monopolistically competitive firm faces a downward-sloping demand curve. Such a curve means that marginal revenue is less than price; this in turn means that marginal cost is also less than price. But, like a firm in a *perfectly competitive* market, a monopolistically competitive firm earns zero economic profits in the long run.
These differences have two important implications:

1. **Monopolistically competitive firms operate at smaller-than-efficient scale.** As we’ve just described, the optimal production point for a monopolistically competitive firm in the long-run market equilibrium will be where the ATC curve touches the demand curve. Because the demand curve is downward-sloping, this will always be on the decreasing section of the ATC curve, as panel A of Figure 15-4 shows.

   This contrasts with the situation in a perfectly competitive market, in which firms’ optimal production is at the lowest point on the ATC curve, as shown in panel B.

   When firms produce the quantity that minimizes average total cost (as in a perfectly competitive market), we say they are operating at their efficient scale. In contrast, a monopolistically competitive firm maximizes profits by operating at a smaller scale than the efficient one. Another way of saying this is that the firm has excess capacity.

2. **Monopolistically competitive firms want to sell more.** For a firm in a perfectly competitive market, price is equal to marginal cost. If the firm sold more, marginal cost would rise above price, and profit would fall.

   In contrast, a monopolistically competitive firm sells at a price that is equal to average total cost, but higher than marginal cost. (Look again at panel A of Figure 15-4.) If the firm sold an additional unit, that unit would generate more revenue than cost, and so increase the firm’s profits. In other words, as soon as we depart from the model of perfect competition, firms have an incentive to engage in tactics for bringing in more customers, such as advertising and brand promotion.

**The need for continual innovation.** Our analysis of monopolistic competition in the long run has another interesting implication. Ask yourself: How will firms respond to competitors entering the market with closer and closer substitutes for existing products? Clearly, existing firms will want to step up their own attempts to differentiate their product. Only by constantly finding new ways to be different is it possible for a monopolistically competitive firm to generate profits in the short run.
The need for continual innovation explains why record labels are constantly on the lookout for new talent. It also explains why existing performers are constantly reinventing themselves in new, creative directions. It explains why firms in so many industries put so much effort into launching new products and finding new ways to advertise their products. If they don’t, their competitors will catch up, and their economic profits will disappear. After all, we saw that in the long run firms earn zero profit under perfect competition. A truly innovative firm that manages to stay one step ahead of its competitors can continue to earn economic profits by always offering something slightly different.

For this reason, economists usually believe that competition encourages innovation. In contrast, a monopolist has far less incentive to innovate: There is no danger of customers switching to a firm with newer and better products.

The welfare costs of monopolistic competition

**LO 15.4** Compare the welfare costs of monopolistic competition.

Like any deviation from the equilibrium price and quantity that would prevail under perfect competition, monopolistic competition is inefficient. Because firms maximize profits at a price that is higher than marginal cost, some mutually beneficial trades do not occur. This means that there is deadweight loss—the market does not maximize total surplus.

Can anything be done about this problem? In the “Monopoly” chapter, we discussed ways that policy-makers try to address the welfare costs of monopolies, and noted that it is difficult to do so successfully. Unfortunately, regulating a
monopolistically competitive market to increase efficiency is even harder. By definition, there are many firms in the market, and many slightly different products. Trying to assess firms’ costs and regulate prices for every single one would be a gargantuan task.

The government could instead just regulate a single price for all firms in the market and then let the natural forces of competition take over. Since monopolistically competitive firms earn zero economic profits, regulating a lower price would mean that those firms which could not figure out how to produce at a lower cost would be forced to leave the market.

Such regulation would come with a definite cost. Although consumers would get a greater quantity of similar products at a lower price, they would also lose out on some product variety. Instead of dozens or hundreds of similar products aiming to suit consumers’ different tastes, everyone would have to make do with fewer options. How would you feel if instead of having five options for fast-food in town, you had only three, but the burgers were a little bit cheaper?

Unsurprisingly, most governments are not too bothered about the welfare loss from monopolistic competition. Even if they could do something about it, it’s not obvious whether consumers would appreciate having lower prices if it’s at the expense of having many products to choose from.

**Product differentiation, advertising, and branding**

**LO 15.5** Explain how product differentiation motivates advertising and branding.

We’ve seen that product differentiation enables firms to keep making economic profits in the short run. Firms therefore have an incentive to persuade customers that their products cannot easily be substituted with a rival product. They can do this either by making products truly different or by convincing consumers that they are different even when they really aren’t. Advertising is the profession devoted to persuading customers that products are different. It involves creative thinking that goes beyond economics, as described in the Where Can It Take You? box “The advertising age.”

**WHERE CAN IT TAKE YOU?**

**The advertising age**

What made you choose that particular brand of recycled paper notebook? The energy drink you had on your way to class? Your favorite whitening toothpaste? That novel for summer vacation? Someone spent a lot of time and energy figuring out how to make that particular product and brand appealing to you, often in ways you might not consciously have realized. If you have a creative spirit and a love of business, then working in advertising might be a good fit.

The biggest ad agencies work for a range of clients across industries. You might find yourself helping to launch a new brand of razor blades, revamping the brand of an organic supermarket, or developing a television strategy for a presidential campaign. Making successful ads requires many skills—not just economic but also psychological, literary, and artistic. Advertisers must figure out what images and words will trigger emotions, create desires, and stay in the minds of the particular demographic groups their clients are trying to reach.
Whether advertising is a good or bad thing is a subject for debate. On the one hand, advertising can convey useful information to consumers. You may learn about a new product or technology from an ad, or find out where something you want is sold, or when it is on sale, or what styles or flavors are available. In general, advertising provides this information in a pleasant, easy-to-understand format, free of cost and inconvenience. We don’t need to trudge from store to store to find out where the sales are, or search online every day to see whether that new movie has been released yet. Instead, companies will spend money to hand us all of this information.

If we believe that the main effect of advertising is to provide useful information about products and prices, then we should conclude it is a good thing. More information will increase competition in a marketplace. Consumers will learn when a firm is offering a cheaper product that is a close substitute for higher-priced competitors. This will drive prices down, bringing the market closer to the model of perfect competition.

On the other hand, advertising rarely consists of a bullet-pointed list of straightforward facts. Instead, advertisers go to great lengths to make viewers feel good about the thing being advertised. Ads portray beautiful people having a fabulous time, or heart-warming family moments, or adrenaline-inducing stunts and special effects. Often, this portrayal has little or nothing to do with the product being advertised. Instead, it is intended to make us associate a particular image or emotion with that product. The image of happy lovers embracing in a romantic location doesn’t tell us anything about the unique qualities of a particular company’s jewelry. It may, though, create a strong mental association between falling in love and receiving a new pair of earrings. For evidence that this kind of advertising can and does work, see the Real Life box “What really sells loans?”

**REAL LIFE**

**What really sells loans?**

Ads often aim to make the viewer feel good and to associate feeling good with the product. For example, an ad might try to associate a new car with shots of long sunny adventures with attractive friends. But how much of a difference does this really make? Don’t potential customers just see through these ads?

Could emotions really matter as much as something economically important, such as the price of the good? Several economists (including one of the authors of this book) designed a study to answer this question in the context of advertising for consumer loans. In the experiment, a lender in South Africa sent ads by mail...
What if we believe that the main effect of advertising is not to convey useful information but to persuade customers that products are more different than they truly are? Then we may conclude that advertising is a bad thing. In this view, advertising decreases consumers’ willingness to substitute between similar products. The result is that firms can charge a higher markup over marginal cost. This in turn drives prices up throughout the market.

So which is the main effect of advertising? There’s no simple answer. Whether advertising serves mainly to provide useful information or to trigger gut-level reactions probably varies across markets. Sometimes, however, we can get a clue as to which effect is stronger from the reaction of producers when lawmakers consider banning advertising. (They have proposed such bans for tobacco, prescription drugs, alcohol, legal services, and even cosmetic surgery.) If producers object strongly to a ban on advertising, it is probably because they believe advertising persuades customers that products are more different than they really are. Producers’ silence in the face of bans, or even support of them, may indicate that advertising in this industry serves mostly to inform consumers and promote competition—something that existing firms won’t want to see happen.

**Advertising as a signal.** It’s often hard to tell what real information about a product we’re supposed to get from an ad. Why should we believe an actor who is well paid to say that a particular cellular network is faster than another? What does GEICO Insurance’s green animated gecko know about car insurance? Sometimes, though, advertising may contain useful information for customers, even if it’s not stated explicitly.

Think about the problem of *asymmetric information* (discussed in the “Information” chapter). Firms know more about the true quality of their products than consumers do. Consumers would like to find the best products, and the firms who make the best products would like to make themselves known to customers. But consumers can’t trust a firm that simply says it has high-quality products; both high-quality and low-quality firms have an incentive to claim that their products
are the best. The high-quality firms need a way to credibly signal the quality of their products. Advertising fits the bill, because advertising costs money.

Let’s think, from a firm’s perspective, about the choice to advertise. Suppose that a record label has signed a brilliant new artist and is sure people will love his first album if they hear it. The record label calculates that if it spends a large amount of money on a high-profile TV advertising campaign, lots of people will buy the album; they will like it so much they will tell their friends and will buy concert tickets, fan merchandise, and the artist’s future albums; the label will end up making $10 million in profits. If the record label is wrong, and people don’t like the album, the firm won’t recover the cost of the money it spends on advertising—and will lose $5 million. The advertising expenditure will be a great investment for the label if the quality of the product is good, and a terrible investment if the quality is bad.

On the other hand, what does this decision look like if the label is not so confident about the quality of the new album? If the firm doesn’t promote the album, there’s still a chance that people who buy it will love it and tell their friends. But the sales will be much lower than if there was a huge TV campaign behind it. Let’s say the label makes $2 million if people like the unadvertised album. And what if the people who buy the album don’t like it? The label will lose some money it spent producing the music, but only $50,000. If the label is not so confident in the quality of the album, then it makes sense not to advertise. If people don’t like it, at least the label will lose much less money than it would have done if it had advertised it. The choice to advertise or not advertise is illustrated in the decision tree in Figure 15-5.

Now let’s think from a consumer’s perspective about the firm’s choice to advertise. Consumers can observe only the final outcome—whether the firm chooses to advertise or not—and not the true quality of the product. However, consumers can view the advertising as a credible signal. If they see that a record label is spending a lot of money on high-profile TV advertising for a new singer’s album, they may be perfectly reasonable, therefore, for consumers to try a product

**FIGURE 15-5**

*Advertising as a signal of quality* If the record label suspects fans will not like the album, it will actually lose money by advertising. Because rational record companies will choose to advertise an album only if it knows it is good, consumers can use promotion efforts as a signal of album quality.
based on advertising. The important factor for consumers in assessing the usefulness of advertising as a signal is not the ad’s content, but how much it cost. The more expensive the advertising is, the more consumers can assume the firm is confident that it has a good product that will earn repeat business from satisfied customers.

**Branding.** In 2009, two kitchen staff employed by Domino’s Pizza uploaded videos to YouTube showing themselves contaminating food in various ways—we’ll spare you the details—before allegedly giving the food to customers. (When the story was made public, the makers of the videos insisted it was a prank, and that none of the food had ever been served.) The employees responsible were immediately fired, but the damage to the Domino’s brand had been done. Consumer surveys completed after the story broke showed a marked downturn in perception of the brand, moving from positive to negative in a matter of days. It needed quick action and some savvy public relations work for Domino’s to help its brand recover.

This story illustrates why it may be rational for consumers to think of a strong brand as being an implicit guarantee of a product’s quality. Firms with no reputation to protect may not be too concerned with the repercussions of selling a bad-quality product. But just one unfortunate incident can undo years of careful thought and hard work that a firm such as Domino’s has put into building a strong brand. Because consumers know that firms stand to lose when their brand’s reputation is damaged, they can conclude that firms with strong brands probably have strong quality control in all locations and levels of the company.

For this reason, a brand may also convey useful information in a confusing situation. A traveler in a strange city may have little information about the quality of food and drink available in local stores. If she sees a Starbucks, however, she can assume with confidence that she will be able to buy a familiar drink of predictable quality. The local tea shop might actually be better than Starbucks, but the traveler doesn’t know that. She may rationally choose to go for the known quantity of the Starbucks brand, rather than taking a risk on the local competition.

It isn’t always rational to rely on brand names to make decisions, however. Brands may also perpetuate false perceptions of quality or product differences. For instance, brand-name pharmaceuticals often command much higher prices than their generic counterparts, despite the fact that the two are made with identical active ingredients and have the same medical effect. In such cases strong brands can even form a barrier to entry in a market, moving it toward a structure of oligopoly in which a few leading players have a significant amount of market power. Before we look at how oligopolies work, see the From Another Angle box “Coke, Pepsi, and the not-so-secret formula” for an illustration of just how important it can be for firms to use branding to differentiate their products.

**FROM ANOTHER ANGLE**

**Coke, Pepsi, and the not-so-secret formula**

In its advertising, Coca-Cola makes a big deal about its “secret formula.” When two employees tried to sell the company’s confidential recipe to Pepsi in 2007, you might think Pepsi would have jumped at the chance to learn how its great rival makes its product. In fact, Pepsi not only refused to buy the information, it participated in an FBI operation that led to the arrest of the would-be informants. What was going on here?
To answer that question, we have to understand the structure of the cola industry. The Coca-Cola Company and PepsiCo have been battling it out for over a century. Coke has around 80 percent of the cola market and Pepsi around 20 percent. Like the music industry, the cola industry is therefore an oligopoly: Two firms dominate, and it would be hard for new cola manufacturers to break into the global market. This is partly because both Coke and Pepsi have successfully built such strong brands; it would be tough to persuade consumers to switch to new colas.

But the market for colas also has features of monopolistic competition: Each company tries to increase the size and loyalty of its customer base by emphasizing the differentiation of its product. Many blind taste tests have found that most people—even those who claim to be ardent fans of one brand of cola or the other—can’t distinguish between them when they don’t know which they’re drinking. So this seems to be a clear example of an industry in which advertising mainly serves to persuade people that products are more different than they really are.

Consider for a moment what would happen if Pepsi were to buy Coke’s secret formula and publish it for the world to see. That information would make it easier for new companies to enter the cola market; they could advertise that their products are exactly identical to Coke. The entrance of new companies with undifferentiated products would bring the market closer to the model of perfect competition. The result would be to push down the price of Coke. This would be a disaster for Coke—but it would be bad news for Pepsi, too. The new colas would be close substitutes for Pepsi; some Pepsi customers would probably switch to the new wave of cheaper, undifferentiated colas. Under this scenario, Pepsi loses customers, and profits.

Why, then, didn’t Pepsi buy the recipe, keep it secret, and use it to make its own cola taste exactly like Coke? After all, Coke has 80 percent of the market to Pepsi’s 20 percent, so Coca-Cola must be doing something right. The problem for Pepsi was that since Coke has an established brand, Coke customers would have no reason to switch to Pepsi for the same taste at the same price. Pepsi would have to reduce its price to attract Coke customers to switch, and it would meanwhile lose the ability to charge a premium to the loyal 20 percent who actually claim to prefer the taste of Pepsi. If Pepsi made the move, it would not be able to earn as much economic profit.

Pepsi did the right thing in an ethical sense. But we also see why Pepsi’s move may have been smart from an economic angle too. Pepsi’s profit-maximizing decision was to ignore the chance to learn Coke’s secret formula, and continue to differentiate its own product instead.


✓ CONCEPT CHECK

- How does product differentiation allow monopolistically competitive firms to gain market power? [LO 15.2]
- How does the short run differ from the long run in a monopolistically competitive market? [LO 15.2]
- Why are monopolistically competitive firms always willing to increase the quantity they sell? [LO 15.3]
Why is it difficult to regulate a market with monopolistic competition? [LO 15.4]

Why might it be rational for a consumer to make purchasing decisions based on advertising? [LO 15.5]

Why do firms want to develop their brands? [LO 15.5]

Oligopoly

Suppose you’re an executive at Universal Music. Your day-to-day decisions hinge on how to make your company as profitable as possible. You have a lot to think about: Which new artists should we sign? How should we advertise upcoming releases? How much can we charge for CDs and legitimate downloads without driving customers into illegal downloading? What should we do to get more radio play for our latest singles?

One common thread runs through these decisions: You know your competition. You know you’re playing to win against Sony, EMI, and Warner. You know their executives, their catalogues of artists, and at least a bit about their distribution and advertising deals. You probably also have some idea of what new releases they have coming in the pipeline. You might keep an eye on smaller, independent companies too, but your real preoccupation is with the other major players. In other words, you’re playing in a game with three very identifiable competitors.

This contrasts sharply with the situation in a perfectly competitive market. As a price-taking firm in such a market, you’d be competing against dozens, hundreds, or even thousands of other firms. You probably wouldn’t know the managers at those firms, and it wouldn’t matter. Making business decisions with the intent of beating out any one of them would be pointless anyway, since all of the other firms would simply move in to fill the gap.

The fact that firms in an oligopoly market compete against a few identifiable rivals with market power drives our analysis. Firms in a perfectly competitive market have only one choice—what quantity to produce given the market price. Oligopolists, on the other hand, make strategic decisions about price and quantity that take into account the expected choices of their competitors. As we analyze oligopolies, we’ll draw on our discussion of game theory from the “Game Theory and Strategic Thinking” chapter.

Oligopolies in competition

LO 15.6 Describe the strategic production decision of firms in an oligopoly.

Let’s begin our analysis of oligopoly with a pared-down example from the music industry. For the sake of simplicity, suppose that there are only two big labels rather than four—Universal and Warner. (Technically, an oligopoly with two firms, like Universal and Warner, is known as a duopoly.) And suppose that music is a standardized good, so that consumers are indifferent between buying music released by Universal and music released by Warner. Actually, this is not so unrealistic—each label has such a large stable of artists, fans of any particular musical genre will be likely to find very close substitutes for their tastes between the two rival labels.

Figure 15-6 shows the market demand schedule for albums, and the corresponding demand curve, for this two-company market. As we’d expect, the number of albums demanded increases as the price decreases. The third column of the table in panel A shows total revenue at each price-quantity combination. Remember that the quantity in the first column represents the total quantity demanded in the whole
market, so column 3 shows the combined revenue of the two firms. Suppose that each firm pays a fixed cost of $100 million to sign artists and record albums. Let’s also assume, for the sake of simplicity, that the marginal cost of producing each new album is zero.

Remember from the “Perfect Competition” chapter that in the perfect-competition model, price is driven down until it equals marginal cost. Since we’re assuming the marginal cost of production is zero, the market equilibrium under perfect competition would be 140 million albums at a price of zero. (Of course, in the long run, albums couldn’t remain free because music labels would not be covering their fixed costs; firms would exit the market until the price rose to a level where fixed costs were covered.) This is just another way of saying something we know already: In the model of perfect competition, no firm makes any economic profits.

In contrast, what if the market were a monopoly? We know from the “Monopoly” chapter that the monopolist would choose to sell the price and quantity combination that maximizes profits. Looking at the table, we can see this point would be 70 million albums at a price of $14. The monopolist’s profit would be $880 million, which is its total revenue of $980 million minus its fixed cost of $100 million.

What happens when there are two firms in the market—Universal and Warner? Since the monopoly production choice maximizes profits, the best the two firms could do would be to agree to act like a joint monopolist. If each produced 35 million albums, total quantity sold would equal 70 million, and the two labels could each earn profits of $390 million:

Profits for each of two firms in an oligopoly:

\[ \text{TR} - \text{TC} \]

\[ (35 \text{ million} \times $14) - $100 \text{ million} = $390 \text{ million} \]
Sounds great, right? But let’s say that Warner has a wily CEO, who decides to produce another 5 million albums without letting the CEO of Universal know about her plan. The total quantity of CDs sold on the market goes up to 75 million, which pushes the price down to $13. However, rather than splitting production equally, Warner is now selling 40 million albums to Universal’s 35 million. As a result, Warner’s profits go up to $420 million; Universal’s profits are reduced by $35 million because each of the 35 million albums it sells is now going for one dollar less than it was before:

\[
\text{Warner’s profits} = (40 \text{ million} \times $13) - $100 \text{ million} = $420 \text{ million}
\]

\[
\text{Universal’s profits} = (35 \text{ million} \times $13) - $100 \text{ million} = $355 \text{ million}
\]

The CEO of Universal won’t be happy. What happens if he responds by sneaking an extra 5 million albums onto the market himself? The total quantity sold will be 80 million, which pushes the price down even further to $12. Now, each firm is selling 40 million albums, rather than 35 million, for a price that is $2 less per album:

\[
\text{Profits for each of two firms} = (40 \text{ million} \times $12) - $100 \text{ million} = $380 \text{ million}
\]

Universal has gained some ground by retaliating, though each label is worse off than it was when it agreed to cooperate by producing 35 million albums each. This logic continues to drive quantity sold up and price down: Now Warner’s CEO decides to produce 45 million albums, which would drive price down to $11 and increase her firm’s profits to $395 million. However, the Universal CEO responds with the same decision, and each firm actually sells 45 million albums at a price of $10 each, for a lower profit of $350 million. Competition between oligopolists drives price and profits down to below the monopoly level, just as perfect competition does.

However, unlike perfect competition, oligopolistic competition does not necessarily drive profits all the way down to the efficient level. Remember from the “Monopoly” chapter that monopolists considering whether to produce an additional unit of output need to weigh two effects:

- **Quantity effect**: An additional unit of output sold at a price above marginal cost increases the firm’s profit.
- **Price effect**: An additional unit of output raises the total quantity in the market and drives down the market price. The firm receives a lower price and therefore lower profit for each unit it sells.

The same thing happens in oligopoly: When the quantity effect outweighs the price effect, an increase in output will raise a firm’s profit level. In this case, profit-maximizing firms will increase their output.

But when the quantity effect does not outweigh the price effect, the firm has no incentive to increase output. Consider the next quantity decision faced by Warner’s CEO. If she produces another 5 million albums, she’ll still make only $350 million in profits (50 million \times $9 = 45 million \times $10). The quantity effect (selling an extra 5 million units) is exactly canceled out by the price effect (the price is $1 lower). She has no incentive to increase production.

Universal faces the same decision. Thus, we can predict that both companies will choose to stay at a production level of 45 million albums. The market equilibrium in this competitive duopoly is 90 million albums at a price of $10.
In reality, of course, there aren’t just two big firms in the music business; there are four. But the principle with four remains exactly the same: Suppose we begin again with the total profit-maximizing monopoly quantity—70 million albums at a price of $14 each—with output divided equally among the four firms. Each firm produces 17.5 million albums, and brings in $245 million in revenues, minus its fixed costs of $100 million, for profits of $145 million.

Profits for each of four firms in an oligopoly:

\[
TR - TC = (17.5 \text{ million} \times $14) - $100 \text{ million} = $145 \text{ million}
\]

But each firm has an incentive to raise its own profits if it can, even if it means decreasing the profits of other firms and of the market as a whole. For as long as the quantity effect is greater than the price effect, each firm will keep increasing its output.

Now that there are four firms rather than two in the market, though, the price effect is smaller. When the market is split evenly between two firms, a 20 percent increase in one firm’s output increases the total quantity in the market by 10 percent. If the two firms each produce 35 million albums, a 20 percent increase in output from one firm would increase its production by 7 million albums, from 35 million to 42 million. Total production of albums would increase by only 10 percent, from 70 million to 77 million.

In a market that is split evenly among four firms, a 20 percent increase in one firm’s output increases the total quantity in the market by only 5 percent. The smaller the increase in total quantity, the smaller the downward effect on market price. The price effect is smaller when there are more firms; thus, each firm will increase its quantity by more before the quantity effect becomes equal to the price effect—the point at which the incentive for further increases in production disappears.

Thus, when the quantity effect outweighs the price effect, an increase in output will raise a firm’s profit level. In this case, profit-maximizing firms will increase their output. But when the price effect outweighs the quantity effect, the firm would lose by increasing production and has no incentive to increase output. In sum, an oligopolist will continue to increase output up to the quantity at which the positive quantity effect of an additional unit on profits is exactly equal to the negative price effect.

Analyzing an oligopolist’s production decision in terms of the price and quantity effects highlights an important general idea: An oligopolist’s production decision affects not only its own profits, but those of other firms as well. The profit-raising quantity effect is felt only by the individual firm that decides to produce more; the profit-lowering price effect also affects all other firms in the market. A decision that is profit-maximizing for an individual firm lowers combined profits for the market as a whole.

This is an example of a general economic truth: When an individual (person or firm) reaps all of the benefits and all of the costs of a decision, he (or it) will rationally make an optimal choice. But when a decision imposes costs or benefits on others, an individual’s rational choice will not necessarily be optimal for the group. In the case of oligopoly, other firms have to bear the costs of one firm’s rational decision to increase output. We’ll return to this topic in much more detail in later chapters when we talk about externalities and public goods.
Compete or collude?

LO 15.7 Explain why firms in an oligopoly have an incentive to collude, and why they might fail to do so.

You don’t get to be CEO of Warner or Universal if you don’t understand how an oligopoly works. You can bet these are smart people who know that they are engaged in a strategic “game” like the prisoners’ dilemma discussed in the “Game Theory and Strategic Thinking” chapter. In our simplified example, the two firms have two options: to compete with each other, or to join forces and act like a monopolist. The act of working together to make decisions about price and quantity is collusion. As we have seen, when Warner and Universal choose to compete with each other, they end up producing 45 million albums each and making profits of $350 million. If they agree to collude, they will each produce 35 million albums and make $390 million in profits. If collusion can enable firms to earn higher, monopoly profits, why isn’t everyone doing it?

When Universal’s CEO decides how many albums to produce, he will think strategically and ask himself what Warner’s CEO is thinking. What if Warner decides to produce 35 million albums? Looking at the payoff matrix in Figure 15-7: Reading across the top row of the matrix, we see that Universal will make $390 million if it also produces 35 million albums; it will make $440 million if it produces 45 million albums. The right choice for Universal is clear—produce more albums and make more profit.

But what if Warner also decides to produce 45 million albums? Reading across the bottom row, we see that if Universal makes 35 million albums it will make $320 million; if it produces 45 million albums it will make $350 million. Again, the choice is clear. Looking at his options, the CEO of Universal will conclude that whatever Warner decides to do, Universal should produce 45 million albums.

Looking at the strategic decision illustrated in Figure 15-7, two things stand out. First, as we’ve already discovered through our calculations, both firms do worse
when they compete with each other than when they collude. This is because, by competing, they drive quantity sold above the profit-maximizing monopoly level that would be achieved by collusion.

Second, each firm has an incentive to renege on the deal and compete, regardless of what the other firm does. Consider the decision from Warner’s point of view. If Warner expects Universal to produce the lower, “collusion” quantity, it can earn $50 million more in profits by competing than by colluding. (How do we know? Compare Warner’s profits in the top left square of Figure 15-7 to those in the bottom left square.) If Warner expects Universal to produce the higher, “competitive” quantity, it still earns more profits by competing than by sincerely sticking to the collusion agreement. (Compare the $350 million of the bottom right square to the $320 million of the top right square.)

When one strategy is always the best for a player to choose, regardless of what other players do, we call it a **dominant strategy**. In an oligopoly, competition is a dominant strategy for Universal. Unfortunately, it is also a dominant strategy for Warner, whose CEO is meanwhile making exactly the same calculation. As a result, both firms produce 45 million albums and make $350 million in profits.

When all players in a game have a dominant strategy, the result is called a **Nash equilibrium**. It is an outcome in which all players choose the best strategy they can, given the choices of all other players. (Nash equilibrium can be reached even when firms don’t have a dominant strategy, but in this case they do.) Nash equilibrium is significant because when it is reached, no one has an incentive to break the equilibrium by changing his strategy.

However, as described in the “Game Theory and Strategic Thinking” chapter, there is a way out of this dilemma for the two CEOs. The key is to remember that decisions are made not once, but over and over again between the same set of firms. Once the Universal CEO considers that the interaction is a “repeated game,” his incentives change. If he reneges on the deal while Warner keeps its word, he will gain $50 million in profits for this year. But he will be sure that Warner will retaliate next year by also producing 45 million CDs. He therefore knows Universal will lose $40 million in profits every year thereafter; the firm will earn $350 million in the competitive equilibrium rather than $390 million in the collusion equilibrium. With future profits in mind, both companies may take an initial chance that the other will hold up its end of an initial agreement to collude. If both stand firm, they may keep cooperating, each producing 35 million CDs, year after year.

This sort of strategy is often the glue that holds firms together in a **cartel**—a number of firms who collude to make collective production decisions about quantities or prices. A well-known cartel is the Organization of Petroleum Exporting Countries (OPEC). Member countries agree to limit the amount of petroleum they produce, in order to manipulate the market price and maximize their profits. The fact that each member country knows it is in its long-term interest to collude rather than compete is enough to keep OPEC together. Interest in future profits dissuades any individual country from chasing short-term profits by producing more oil in any given year. Although OPEC does not control all of the global supply of oil, it is a powerful force in global oil prices.

If cartels are so advantageous for firms operating in an oligopoly, why don’t we see more of them? There’s a pretty straightforward reason: They’re usually illegal. No international court has the power to force OPEC to stop colluding in the global oil market. Most countries, however, have laws against firms making agreements about prices or quantities. If they’re caught, they can be fined and punished.
Oligopoly and public policy

LO 15.8 Compare the welfare of producers, consumers, and society as a whole in an oligopoly to monopoly and perfect competition.

We saw in the “Monopoly” chapter that the United States has strict laws prohibiting “anti-competitive” behavior. It is even illegal for an oligopolist to offer to collude, regardless of whether the collusion actually happens. The reason lawmakers are so concerned about collusion, of course, is that while it’s good for the oligopolists, it’s bad for the rest of us. In our hypothetical example, when Warner and Universal are colluding, the price of CDs is $14. When they are competing, the price is only $10. The music-buying public is better off if Warner and Universal compete rather than collude.

Remember that in a monopoly, there is deadweight loss—a welfare loss caused by the transactions that did not take place because the market equilibrium was at a higher price and lower quantity than under the model of perfect competition. Figure 15-8 compares the producer surplus, consumer surplus, and deadweight loss under varying amounts of competition. Note that the last two graphs—collusion and monopoly—are identical. Because the market outcomes in a competitive oligopoly are between those of a monopoly and a perfectly competitive market, deadweight loss still exists, but it is lower than when there is collusion.

FIGURE 15-8
Deadweight loss under varying amounts of competition

Perfect competition represents one end of the deadweight loss spectrum, and collusion/monopoly represent the other. A competitive oligopoly falls some where in between. There is less deadweight loss than in the case of collusion or monopoly, but it does not eliminate deadweight loss in the way that perfect competition does.
It’s no wonder governments are so keen to prevent firms from colluding, and no wonder firms are so keen to collude without being caught. In 1960, for example, the U.S. government reviewed its annual records for bids it had received when it invited companies to supply certain types of heavy machinery. Government agencies discovered that 47 manufacturers had submitted identical bids for the previous three years of bidding. This showed the manufacturers were secretly colluding on their bids. They were taking turns to submit the lowest bid, at a price that would be much higher than if they were actually competing. It is estimated that the cartel, until it was broken up, cost U.S. taxpayers $175 million each year.

Firms in oligopolistic markets are always on the lookout for clever legal ways in which they can work together to keep prices high. We saw one clever way of doing so in the “Game Theory and Strategic Thinking” chapter (on page XXX)—the Real Life box “What do price-matching guarantees guarantee?”

✓ CONCEPT CHECK

- Why is the equilibrium in an oligopolistic market less efficient than a competitive market? [LO 15.6]
- Why would two companies in an oligopoly benefit from colluding? [LO 15.7]
- Why is it difficult for companies to collude? [LO 15.7]
- What happens as the number of firms in an oligopolistic market increases? [LO 15.8]

Conclusion

In previous chapters, we’ve explored two opposite ends of the spectrum of market structures: perfect competition and monopoly. In this chapter, we’ve moved to the grey area in between, learning about imperfect competition and the characteristics of industries that fall into the categories of monopolistic competition and oligopoly. Knowing about these market structures helps business owners make optimal decisions about production and pricing. Such knowledge also helps consumers make sense of firms’ behavior and the abundance of advertising they see in the real world.

Market structure can tell us a lot about how firms make decisions, but there are still a number of other factors that we haven’t explored yet. Up until now, we’ve focused on the amount of any given good that firms choose to produce. In the next chapter, we’ll see how markets for the factors of production play an important role in how firms choose to produce goods.

Key Terms

- oligopoly, p. xxx
- monopolistic competition, p. xxx
- product differentiation, p. xxx
- collusion, p. xxx
- dominant strategy, p. xxx
- cartel, p. xxx
- Nash equilibrium, p. xxx
Summary

**LO 15.1** Name the defining features of oligopoly and monopolistic competition.

Most markets in the real world don’t fit perfectly into any one model of market structure, but it can be useful to categorize markets in terms of the number of firms and product variety. Oligopoly describes a market with only a few firms that sell a similar good or service. In this setting, firms tend to know their competition and each firm has some price-setting power, but no one has total market control. Monopolistic competition, in contrast, describes a market with many firms that sell goods and services that are similar, but slightly different. These firms are not necessarily price takers, but they still face competition in the long run.

**LO 15.2** Calculate the profit-maximizing price and quantity for a monopolistically competitive firm in the short run.

In the short run, monopolistically competitive firms behave just like monopolists. They face a downward-sloping demand curve and cannot change price without causing a change in the quantity consumers demand. The profit-maximizing production quantity is at the point where the marginal revenue (MR) curve intersects the marginal cost (MC) curve. The profit-maximizing price is determined by the point on the demand curve that corresponds to this quantity.

**LO 15.3** Describe a monopolistically competitive market in the long run.

In the long run, monopolistic competition has some features in common with monopoly, and others in common with perfect competition. Just like a monopoly, a monopolistically competitive firm faces a downward-sloping demand curve, which means that marginal revenue is less than price. This in turn means that marginal cost is also less than price. Like a firm in a perfectly competitive market, however, a monopolistically competitive firm earns zero economic profits in the long run.

**LO 15.4** Compare the welfare costs of monopolistic competition.

Like any deviation from the equilibrium price and quantity that would prevail under perfect competition, monopolistic competition is inefficient. Because firms maximize profits at a price that is higher than marginal cost, some mutually beneficial trades never occur. This means that there is deadweight loss—the market does not maximize total surplus. However, regulating monopolistically competitive markets to increase efficiency is difficult, and usually comes at the expense of product variety.

**LO 15.5** Explain how product differentiation motivates advertising and branding.

Producers invest in advertising to convince consumers that their products are different from other similar products. The less substitutable a good seems with other goods, the less likely consumers are to switch to other products if the price increases. Thus, producers have an incentive to differentiate their products—either by making them truly different or by convincing consumers that they are different. Through advertising and branding, firms either explicitly give the desired information to the consumer or signal the quality of their products.

**LO 15.6** Describe the strategic production decision of firms in an oligopoly.

Oligopolists make strategic decisions about price and quantity that take into account the expected choices of their competitors. Unlike price-taking firms in a competitive market, an oligopolist produces a quantity that affects the market price. The increase in profit retained from an additional unit of output is called the quantity effect. The decrease in profit caused by an additional unit of output lowering the market price is called the price effect. Typically, an oligopolistic firm will increase output until the positive quantity effect outweighs the negative price effect.

**LO 15.7** Explain why firms in an oligopoly have an incentive to collude, and why they might fail to do so.

An oligopolist has an incentive to produce more output than is profit maximizing for the market as a whole, driving down price and imposing costs on its competitors. By colluding, firms can maximize industry profits by producing the equivalent monopoly quantity and splitting revenues. However, each firm involved always has an incentive to renege on the agreement, since a firm could earn higher profits by competing.
LO 15.8 Compare the welfare of producers, consumers, and society as a whole in an oligopoly to monopoly and perfect competition.

The competitive equilibrium in an oligopoly leads to a quantity and price that are somewhere between the outcomes of a perfectly competitive market and those of a monopoly. Because the equilibrium is not the same as in a competitive market, oligopoly results in some deadweight loss and increases producer surplus at the expense of consumer surplus. When oligopolists collude, the equilibrium looks like a monopoly outcome and results in even higher deadweight loss and higher producer surplus.

Review Questions

1. Explain why an oligopolist (with few competitors) pays more attention to what its competitors are doing than a producer in a competitive market (with many competitors) does. [LO 15.1]

2. If a market has few barriers to entry and many firms, how might firms still have positive economic profit? Describe a strategy a firm in this type of market might use to maintain economic profits. [LO 15.1]

3. McDonald’s, Burger King, and Wendy’s all produce hamburgers, among other things. However, if you prefer burgers from McDonald’s, you might consider other burgers an imperfect substitute. With this in mind, how would you expect McDonald’s to set its prices in the short run? Describe the relationship between price, marginal revenue, and marginal cost. [LO 15.2]


5. Restaurants offer related, but differentiated products to their consumers. In the long run, new restaurants enter the market and imitate the cuisine and atmosphere of successful competitors. How would you expect a restaurant to set its prices in the long run? Describe the relationship between price and average total cost. Does a restaurant earn economic profits? [LO 15.3]

6. In both perfectly competitive and monopolistically competitive markets, when firms are making positive economic profits, other firms will enter until price equals ATC and profits are zero. Despite these similarities, in a perfectly competitive market total surplus is maximized, while in a monopolistically competitive market surplus is not maximized. Explain this difference. [LO 15.3]

7. Suppose a perfectly competitive market for hot-dog stands in New York City becomes monopolistically competitive when gourmet, discount, and ethnic hot-dog retailers show up, making each cart slightly different. If hot dogs from different stands are now imperfect substitutes and there are numerous carts in the city, compare the producer and consumer surplus and total social welfare before and after the change. [LO 15.4]

8. Given that the market for smart phones is inefficient, explain why consumers of smart phones might not want the price to be regulated. [LO 15.4]

9. Imagine that you have a program on your cell phone that allows you to walk up to any item in the supermarket and have your phone recognize it and display all the necessary information about the product. The program tells you where and how it is made, and when it is predicted to go on sale next. Does a firm selling goods in this setting need to advertise? Why or why not? [LO 15.5]

10. Why might the cost of advertising be relevant to a consumer’s decision about which brand of a product to purchase? [LO 15.5]

11. Suppose that the market for e-readers is an oligopoly controlled by Amazon.com, Barnes and Noble, Sony, and Apple. Barnes and Noble is considering increasing its output. How would this affect the market price? How would it affect the profits of each company? [LO 15.6]

12. Compare the efficiency of perfectly competitive markets, monopoly markets, and oligopoly markets. Explain why the same profit-maximizing behavior for the individual firm leads to different levels of efficiency in these three types of markets. [LO 15.6]

13. The Organization of the Petroleum Exporting Countries (OPEC) is a cartel of 12 countries that controls roughly two-thirds of the world’s oil production. The cartel gives
countries quotas for production. Why might a country be tempted to produce above quota for a year? How do you think other OPEC countries might respond if it did so? [LO 15.7]

14. Isabella runs an IT solutions business for her college peers and has only one competitor, Franco. Isabella and Franco have decided to collude and provide monopoly-level output. Given that they are both freshmen and intend to run their businesses for the next three years, is this agreement sustainable? Would your answer change if Franco knew he planned to transfer to another college next year? [LO 15.7]

15. The United States Postal Service (USPS) has a government monopoly on home mail delivery, but several private companies, such as FedEx, UPS, and DHL, compete with the USPS for other types of delivery service. Describe the differences in producer and consumer surplus, and in overall social welfare, that would occur in each of the following scenarios. [LO 15.8]
   a. The USPS has a monopoly on every type of mail or package.
   b. Consumers are allowed to choose between USPS, UPS, FedEx, and DHL for home mail delivery.
   c. There are an infinite number of local and national mail providers.

16. Explain why government is usually more concerned about regulating an oligopoly than a monopolistically competitive market. [LO 15.8]

Problems and Applications

1. Identify whether each of the following markets has few or many producers, and uniform or differentiated products. Which market is an oligopoly? Which market is monopolistically competitive? [LO 15.1]
   a. College education
   b. Retail gas market

2. Match the statement about goods sold in a market with the market type. [LO 15.1]
   a. There are imperfect substitutes for the goods.
   b. There are no substitutes for the goods.
   c. The goods may or may not be standardized.

3. Interscope sells the music of Lady Gaga, who promotes a unique public image and fashion style. Given her huge success, it is likely that by the end of the coming year, multiple performers will be imitating or borrowing heavily from her style. Suppose the current period’s supply and demand for Lady Gaga mp3s is given in Figure 15P-1. [LO 15.2, 15.3]
   a. What are the profit-maximizing price and quantity for Lady Gaga mp3s in the short run?
   b. In the long run, what happens to the demand curve?
   c. In the long run, what happens to the profit-maximizing price?

4. Figure 15P-2 shows the monopolistically competitive market for smart phones. [LO 15.3]
   a. Is this producer earning positive or negative profits in the short run?
   b. In the long run, will economic profits increase or decrease for this producer?

5. Figure 15P-3 shows a monopolistically competitive market for a fictional brand of shampoo called SqueakyKleen. [LO 15.4]
   a. What is the price and quantity of SqueakyKleen in the short run?

![Figure 15P-1](image-url)

![Figure 15P-2](image-url)

![Figure 15P-3](image-url)
b. What is the efficient price and quantity of SqueakyKleen?

c. Draw the deadweight loss.

6. For which good would you expect deadweight loss to be smaller relative to the total surplus in its market: Burger King hamburgers or Lady Gaga mp3s? Explain your answer. [LO 15.4]

7. For which product would you expect producers to have a stronger reaction to a ban on advertising: music artists or fast-food burgers? Explain your answer. [LO 15.5]

8. Suppose you manage a firm in a monopolistically competitive market. Which of the following strategies will do a better job of helping you maintain economic profits: obtaining a celebrity endorsement for your product or supporting the entry of firms that will compete directly with your biggest rival? Explain your answer. [LO 15.5]

9. Table 15P-1 shows the monthly demand schedule for a good in a duopoly market. The two producers in this market each face $5,000 of fixed costs per month. There are no marginal costs. [LO 15.6]

a. What is the monthly profit for each duopolist if they evenly split the quantity a monopolist would produce?

b. What is the monthly profit for duopolist A and duopolist B if duopolist A decides to increase production by 200 units?

10. Figure 15P-4 shows the monthly demand curve for a good in a duopoly market. There are no fixed costs. [LO 15.6]

a. What is the monthly profit for each duopolist if they evenly split the quantity a monopolist would produce?

b. What is the deadweight loss if the duopolists evenly split the quantity a monopolist would produce?

c. What is the monthly profit for duopolist A and duopolist B if duopolist A decides to increase production by 10 units?

d. What is the deadweight loss if duopolist A increases production by 10 units?

<table>
<thead>
<tr>
<th>Table 15P-1</th>
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<tbody>
<tr>
<td>Quantity</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>400</td>
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<tr>
<td>600</td>
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<td>1,400</td>
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<tr>
<td>1,600</td>
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</table>
11. Oil Giant and Local Oil are the only two producers in a market, as shown in Figure 15P-5. They have an agreement to restrict oil output in order to keep prices high. [LO 15.7]
   a. What is the dominant strategy for each player?
   b. If this game is played once, what is the Nash equilibrium?
   c. Now suppose that both players know that the game will be played multiple times. What outcome would we expect?

12. Suppose Warner Music and UMG are in a duopoly and currently limit themselves to 10 new artists per year. One artist sells 2 million songs at $1.25 per song. However, each label is capable of signing 20 artists per year. If one label increases the number of artists to 20 and the other stays the same, the price per song drops to $0.75, and each artist sells 3 million songs. If both labels increase the number of artists to 20, the price per song drops to $0.30, and each artist sells 4 million songs. [LO 15.7]
   a. Fill in the revenue payoffs for each scenario in Figure 15P-6.
   b. If this game is played once, how many artists will each producer sign, and what will be the price of a song?
   c. If this game is played every year, how many artists will each producer sign, and what will be the price of a song?

13. Suppose a new product is developed and is supplied by a monopolist with a patent. Compared with the monopoly outcome, indicate whether consumer surplus, producer surplus, and total surplus increase, decrease, or remain the same under the following scenarios. [LO 15.8]
   a. Another producer creates a similar product and colludes with the original producer.
   b. Another producer creates a similar product and competes with the original producer.
   c. The patent expires.

14. For which of the following markets would there be a greater increase in total welfare if
government were able to intervene and regulate prices: OPEC or the music industry? Explain your answer. [LO 15.8]

**Chapter Sources**


http://www.peterjalexander.com/images/Market_Structure_and_Product_Variety.PDF
