As you move your cart down the grocery isle, stop in front of the canned soups. You see before maybe four or five different brands of soup. If you stop in front of the frozen pizzas you might find that 8 different pizza brands are for sale. But take a close look at some of the boxes: you will find that behind these different brands are perhaps only three different firms that operated under a couple of different names. As you move through the grocery store you will find you have a choice between only a relatively few producers for most types of products. Indeed, if you visit a grocery store in a different part of the United States you will find that the exact same companies that provide the products in your local grocery store produce most of the products available in this other store too.

For the most part, you only encounter products produced under competitive conditions—many firms selling in the market—only when you move to the produce section of the store: apples, broccoli, and potatoes are generally produced by firms in competitive markets.

When you go to buy a car, you find that almost all of the cars available are produced by a relatively small number of firms: Ford, GM, Honda, Toyota, and a few other firms produce a vast majority of cars sold in the United States. If you go to rent a video a good chance exists that you rent from either Hollywood Video or Blockbuster. If you decide to buy a ping-pong table you do find many different brand names labeling ping-pong tables. However, behind the many brand names in the U.S. are really two different ping-pong producers that sell their products under many different names.

The examples could go on and on: most products you buy on a yearly basis are produced within industries in which a relatively few firms dominate. Industries in which a few firms dominate are called oligopolies.
OLIGOPOLY DEFINED

The key characteristic of an oligopoly market is that a few sellers dominate the market. An oligopoly market might have dozens or even hundreds of individual firms but most of them are unimportant in the industry; a small number of them—perhaps only 2 to 20 firms—dominate the industry.

In what way might these firms “dominate” the industry? These firms are much larger than the other firms in the industry and they have a dominant role in determining the prices in the industry. The other, smaller firms in the industry are often minor niche marketers who only survive in the same industry with the giant firms because these smaller firms sell a line of goods that oligopoly firms are not interested in selling. Perhaps the markets for these particular lines are too small and too unprofitable to make with worth the while of the oligopoly firms.

For instance, dozens of firms sell dry breakfast cereal in the United States. But, the dry breakfast cereal industry is considered to be an oligopoly because a few firms dominate industry sales. For instance, the largest four firms in this industry account for 80-90% of all cereal sales in the United States. The other, smaller, firms in the industry sell cereals that only a relatively few people buy.

TWO UNIQUE ASPECTS OF OLIGOPOLY COMPETITION

In oligopoly industries, competition occurs in ways that are unique to these industries. Two unique aspects of oligopoly competition are mutual interdependence and repeated interaction.

MUTUAL INTERDEPENDENCE

Mutual interdependence exists when the actions of one firm has a major impact on the other firms in the industry. For instance, if Coke decides to sell more of its product (and to do so they reduce their prices), Pepsi will certainly notice that its sales fall. Coke’s behavior affects Pepsi: mutual interdependence exists with in the US soft drink market.

But, if a corn farmer in Kansas decides to plant another few more of corn, the sales of other corn farmers in the US will not be affected. An individual corn farmers’ output is a very small part of US corn output; changes in output by one farmer will have no impact on the corn market. Mutual interdependence does not exist in the corn market.

Mutual interdependence exists within an oligopoly industry because each of the oligopolists has a sizable part of the market. As a consequence, when it
changes its sales, its prices, or its marketing strategies, this oligopoly firm will likely affect the sales of other firms within the industry.

An analogy is the following. If you are on a ocean liner that holds 1,000 people you can stand up and jump up and down and have no effect on the other passengers. This is because you are very, very small compared to the boat and to the number of other passengers on the boat.

But, if you are in a small rowboat with 2 other people and you stand up the other 2 people will instantly notice that the boat is more unstable and, perhaps, threatens to capsize. They must actively shift their weight to keep the small boat from tipping over. The 3 people in the small row boat are mutually interdependent: what one person does can directly affect what happens to the other people on the boat.

REPEATED INTERACTION

Often the oligopolists within an industry have been competing with one another for a long time. For instance, Pepsi and Coke have competed within the same market for decades. Ford, GM, and Chrysler have faced one another in the US auto market for a very long time. Oligopolists in other markets might have competed with one another for a much shorter period of time, perhaps only a few years.

But, in each of these cases, the oligopolists within these industries have experience with the others within the industry. For instance, whenever Pepsi decides to lower the price of its products it knows how Coke responded in the past to previous reductions in price by Pepsi. Perhaps Coke matches a Pepsi price reduction 10 out of the past 12 times Pepsi reduced its prices. In this case, Pepsi likely anticipates that when it lowers its prices this time, the odds are that Coke will respond in kind.

Coke, on its part, also remembers what happened in its past competitive interactions with Pepsi. Coke and Pepsi remember, and take into account, what happened in the past when they design their current competitive strategies.

The situation is characterized as “repeated interaction.” The existence of repeated interaction does not imply, however, that Pepsi or Coke know with perfect certainty how their rival will react to the current strategy. They do have, however, some general sense of what is most likely to occur and they take into account this anticipated response when they design their current competitive strategy.

I return to the rowboat analogy. When you stand up the first time in the small rowboat perhaps the two other passengers yelled at you with scowls on
their faces. As a consequence you sit down not wanting to incur the wrath of your fellow passengers. Ten minutes later you stand up a second time. Again, your fellow passengers make clear their displeasure with your behavior. Perhaps one of the passengers picks up an oar and raises it menacingly. You sit down again. After another 15 minutes you think about standing up again, but remembering what happened in the past, you decide not to do so. So, you stay put.

Because of the repeated interaction and your remembering of what happened in the past, you are able to take into account these past interactions as you decide what to do—or not do—in the current moment.

**REPRESENTATION OF COMPETITION BETWEEN OLIGOPOLIES**

A simple diagram can illustrate the nature of competition within an oligopoly industry.

Recall that in a monopoly industry, the single seller faces the market demand curve. This demand curve represents the collective behavior of all of the consumers in the market. Once the monopolist selects the price, it can determine (from the demand curve) what the level of sales will be. The monopolist simply picks that price that gives it the best—profit maximizing—combination of price and sales.

**MUTUAL INTERDEPENDENCE**

An oligopoly firm faces a much more complex market environment. The level of sales for an oligopoly firm depends on the price the oligopolist sets and on the prices set by the other oligopoly firms within the industry. The latter is due to the mutual interdependence within the industry.

For example, suppose that Dell Computer is currently selling an entry-level computer for $1,000 and, at this price, is selling 10,000 of these computers each week.

Dell considers lowering the price of this computer to $900. They are interested, of course, in knowing how many they will sell at this lower price. They know they will most likely sell more than 10,000 (which was the level of sales at the higher price). They do not know, however, by how much their sales will grow. This is because they do not know what their rivals in the computer market will do after they—Dell—lowers its price. For instance, if no one in the
industry responds to Dell’s price cut than Dell’s weekly sales of their entry-level computer might rise to 14,000.

But Dell can’t be sure that the other computer companies will not respond to Dell’s lower price by lowering their own prices. Other computer companies might respond to a lower price by Dell because this lower price (by Dell) will likely lower their sales. If these other firms do lower their price—say they all match the price cut—then Dell will still find its sells grow but by less than to 14,000. Perhaps the increased sales might only be from 10,000 to 11,000.

The rise in demand experience by Dell depends both in the price cut it imposes and on the prices of competitors.

This situation is illustrated in Figure 1-1 below. This figure is known as the Oligopoly Dual Demand Curve diagram.

Figure 1-1

Here, the initial point for Dell is $1,000 and 10,000 in weekly sales. When Dell lowers its price to $900 demand might grow to 14,000 if other firms do not lower their prices in response to Dell’s price cut. In this case, Dell is moving along the dotted demand curve. But, if the other firms in the industry respond to Dell’s price cut by lowering their prices, then demand might grow only to
11,000. In this case, Dell is moving along the demand curve drawn with a solid line.

A similar story can be told about what would happen if Dell increased its price. If other firms in the industry did not match Dell’s price increase, then Dell might find its sales will drop sharply. It might move up the dotted demand curve. But if the other firms in the industry copy Dell’s price increase, then Dell’s higher price will lead to a more modest decline in sales for the company: Dell might move up the solid demand curve.

This diagram illustrates, then, mutual interdependence within the computer industry. What happens to Dell (in this case, the change in sales following a price change) depends both on what Dell does and on how rivals respond to Dell’s actions.

Of course, the other firms in the computer industry face similar dual demand curves. If Gateway lowers the price of its entry-level computer, the increase in sales it experiences depends both on the size of the price decline and on the response by other firms (including Dell) in the industry to Gateway’s actions.

The pricing decision facing Dell—or most oligopoly firms—is quite complicated. Unlike a monopoly, oligopoly firms do not select the base price from a set demand curve. Rather, the oligopoly firm setting its price does not know what demand curve they will be on until they set their price and find out who other firms in the industry respond.

REPEATED INTERACTION

A characteristic of oligopoly industries, however, sometimes simplifies matters for the firms within an oligopoly industry. Oligopoly firms would have a much simpler pricing decision if they know—or at least could guess—what other firms would do if the oligopoly firm raised or lower prices.

Firms within an oligopoly industry often have years—even decades—of experience with each other. Dell and Gateway have competed with each other (and other firms) for many years. Pepsi and Coke, on the other hand, have competed for decades. Ford, GM, and Chrysler have also competed for decades.

These firms, who have competed with each other for years, frequently notice a pattern in the interactions between firms. For instance, perhaps Dell has raised the price of its products 15 times over the past 5 years and it notices that for 12 out of these 15 times Gateway failed to raise its own prices. Dell, perhaps, lowered the price of its product 17 times over the past 5 years and it
noticed that Gateway lowered its own prices in response 14 out of these 17 times.

Dell and Gateway have had repeated interaction over the years and they have likely noted certain patterns of their interactions.

Dell does not know with certainty what Gateway will do if Dell raises its prices. Nevertheless, it does know that 80 percent of the time (12/15) Gateway did not raise its prices in response. Dell also knows that 82 percent of the time (or 14/17) Gateway matched a price reduction.

Dell can set prices with the reasonable working assumption that Gateway will not match a price increase but that Gateway will match a price decline. The working assumption permits Dell to make a good guess about which demand curve they will move along if they change their price.

Figure 1-2 shows Dell’s best guess for the demand curve they face in the industry. A double line marks this demand curve. It is bent at the initial price and quantity offered by Dell. Because of its bend—or kink—this demand curve has been called the “kinked demand curve.”

**Figure 1-2**

![Kinked Demand Curve](image-url)
With this demand curve, Dell might feel that it is stuck at its current prices: if it raises prices Gateway will most likely fail to match the price increase and Dell will experience a significant decline in demand. If Dell lowers its price, it might set off a price war: the price will be lower for its products but sales will only increase slightly. Dell might experience in this situation worsening revenues and worsening profits. This is not a good outcome for Dell.

On the other hand, Dell does know that Gateway sometimes does match a price increase. Dell might occasionally experiment with higher prices on the off chance that Gateway matches the price increase (and Dell and Gateway both benefit). If Gateway does not match the price increase, however, Dell can quickly reduce its price back down to the original level.

**COMPETITION WITHIN OLIGOPOLY INDUSTRIES**

In this example above, if either firm changes prices, they generally expect the worse. If Dell increases prices, Gateway does nothing and Dell gets hurt. If Dell reduces prices, Gateway responds by imposing their own price cut and the ensuing price war likely hurts Dell.

Why would Gateway do this? Simply because these actions best help Gateway protect or increase its profit. If Dell increases their prices and Gateway does not, then Gateway will experience a boost in demand (Gateway computers and Dell computers are substitute products). As Dell computers are now higher priced, more consumers will buy from Gateway (although Gateway kept the same price as before). This can only help Gateway’s sales, revenue, and profits.

It is rational, then, for Gateway to keep their prices the same when Dell raises their prices.

If Dell reduces their prices and Gateway does not, then Gateway will find they lose many sales to the (now) lower-priced competitor, Dell. In this situation, Gateway might find it is best to respond with their own price reduction in order to help maintain their sales, revenues, and profits.

It is likely rational for Gateway to reduce prices when Dell reduces prices.

As is clear, competition within this industry can be very nasty as firms attempt to take advantage of other firms (if these other firms raise their prices) or firms act to protect themselves by matching price reductions.
EXPLICIT/OVERT COLLUSION

A way to avoid this nasty competition—and even to increase profits—often exists for firms in an oligopoly.

If Dell and Gateway both raise prices at the same time, both will likely experience a small decline in sales but the price increase will actually lead to higher revenues and profits for both firms.

That is, if both firms move up the solid demand curve in the above diagrams, both firms will be better off. The problem is, however, that both firms fear if they raise prices unilaterally, the other firm will stab it in the back by keeping its price low.

But, if both firms can agree to raise prices before either one does anything they might be able to simultaneously move up their own solid demand curve.

Collusion exists when firms are able to agree to act in ways that benefit all who engage in this collusion. Firms have a clear incentive to collude as successful collusion leads to higher profits.

When firms directly communicate with one another in order to arrange a collusive outcome, this is known as explicit (or overt) collusion.

For instance, the firms can send representatives to meet face-to-face in order to make a collusive arrangement. Alternatively, firms might communicate over the phone, fax, or e-mail. If the firms in an industry meet to discuss pricing, and cause prices to rise above competitive levels, this is called a cartel.

Among the types of explicit collusion are price fixing, market division, and bid rigging. I will discuss each in turn.

PRICE FIXING

Price fixing is an agreement among competitors to increase, fix, or maintain the price at which their goods or services is sold. It also involves any agreement to restrict price competition. Conspirators do not always agree that they will all charge the exact same price.

Price fixing can involve any of the following:

- Hold prices unchanged or increase prices together
- Eliminate or reduce discounts
- Adopt a standard formula for setting prices of goods and services
- Establish a minimum price for the good
- Adopt standard credit terms
- Refrain from advertising prices to the public
Participants in a price fixing scheme typically establish some system for monitoring compliance to the scheme in order to catch those who attempt to cheat on the others in the conspiracy.

**MARKET DIVISION**

Market division schemes are agreements in which competitors divide the market among themselves. These schemes involve firms allocating different consumers, product lines, or geographical regions among themselves. For instance, one firm might be granted the right to be the single seller in some geographical regions in exchange for its not selling—or quoting only very high prices—to buyers in other regions controlled by other members of the conspiracy.

**BID RIGGING**

Sometimes sellers compete for a sale by submitting bids. This is often the case when private firms sell large quantities of goods/services or very expensive products to local, state, and federal governments. For instance, the Veterans Administration (VA), which runs many major hospitals, buys aspirin in huge quantities. They solicit bids from aspirin suppliers and buy from the firm that offers the aspirin at the lowest cost.

In some situation, firms can increase their profits by rigging the bidding process. For instance, suppose there are three aspirin suppliers and that the VA buys aspirin three times a year. If the three firms competitively bid in each of the three bidding process, the VA might get a very good price as the firms all try to undercut their rivals. But suppose these three firms collude. They might decide that they will each win one of the bids. For instance, firm A might be assigned to win the first bid. They know that the other two firms will be submitting high bids. Firm A knows that they can win the contract with what ordinarily would have been a high price. Then, in the other two contract bidding processes firm A knows that it suppose to submit very high prices and that the other two firms will be permitted to win each of the other two contracts. All firms earn more profit by rigging the bidding then if they competed strongly for each of the contracts.

Firms have been very creative in how they have rigged bidding processes in order not to be caught.
ILLEGALITY OF EXPLICIT COLLUSION

The activities detailed above—price fixing, market division, and bid rigging—are usually illegal. Those caught acting in such a way face the possibility of costly fines and/or jail time.

However, this does not mean that explicit collusion does not occur in the United States. It does happen and sometimes those participating in this explicit collusion are caught and punished. Nevertheless, sometimes those engaging in explicit collusion are not caught and they earn the higher profits that collusion can bring.

DIAGRAMMING EXPLICIT COLLUSION

In terms of the diagram developed above, firms will have the option of moving up the steeper demand curve if they effectively collude.

This ability to simultaneously move up the steeper demand curve will most likely give both firms the ability to earn greater profits than if the two firms competed against one another without colluding.

TACIT COLLUSION

Collusion can bring higher profits to the colluding firms. But explicit collusion is not legal in the United States and those caught engaging in such behavior can be severely punished.
So what are firms to do? In some industries, firms have achieved a collusive outcome *without* directly communicating. As long as the firms involved do not directly communicate, they are unlikely to be charged with breaking any law. If they can do this, the firms involved earn higher profits.

How do firms achieve this “tacit collusion?”

Tacit collusion is the achievement of collusive results *WITHOUT* actual agreements. This type of collusion is *not necessarily illegal* in the U.S. There is a large gray area in the law that permits many tacit collusive behaviors.

Many different types of tacit collusions exist. The best known is price leadership.

**PRICE LEADERSHIP**

*Price leadership* is a type of tacit collusion. It is a set of industry practices or customs in which firms throughout the industry follow the prices changes made by a firm recognized as the “price leader.”

None of these firms ever talk about playing “follow the leader.” Rather this practice evolves over time in the give and take of competition within the industry.

In such a setting, the price leader knows that the other firms in the industry will most likely follow the price change that it initiates. The price leader can then act to slowly increase prices throughout the industry—increasing profits for all—without violating the letter of the law. No explicit collusion occurs; firms are merely following the customs of the industry.

But, if things work well price leadership can significantly increase the prices in an industry and boost profits for all in the industry.

**THE BREAKDOWN OF COLLUSION**

Successful explicit or tacit collusion leads to high profits. But collusion tends to be very fragile. There are differences over what prices to set, total industry production, and over market shares of participant firms. In addition, cheating by firms (offering secret low prices to some buyers) is rewarded highly.

Consequently, firms might try to engage in more competition in order to benefit at expense of competitors. This might provoke other firms (if these other firms discover this cheating) to also increase their competitive aggression. This can lead to a very competitive environment for firms.
In some oligopoly industries, collusion exists for some period but is then followed by a period of competition. After a while, however, the firms once again achieve a collusive result. But competition always threatens to break out.

**EFFICIENCY WITHIN OLIGOPOLIES**

It is hard to determine, in theory, whether oligopoly industries will—or will not—be efficient. This is something that can only be determined by investigating individual oligopoly industries. Some oligopoly industries are found to be efficient; other oligopoly industries are found to be inefficient.

Some oligopoly firms earn relatively high profits. They have, then, the resources needed to achieve production efficiency and dynamic efficiency. Both some oligopoly industries have found a way to generally avoid extensive competition. Firms in these industries have little incentive to invest in ways that might lead to productive efficiency or dynamic efficiency.

Other oligopoly industries do face occasional extreme competition from within the industry. Sometimes the extent of competition within an oligopoly can be extremely high. It might be the case that in those oligopolies which do fact occasional extreme competition that the firms have an incentive to achieve productive efficiency and dynamic efficiency.

It is an empirical matter whether a particular oligopoly industry does—or does not—achieve efficiency. No general conclusions are possible.
Oligopoly