

How to Study for Chapter 21 Oligopoly

Chapter 21 introduces the tools for analyzing the behaviors of companies in oligopolies.

1. Begin by looking over the Objectives listed below. This will tell you the main points you should be looking for as you read the chapter.
2. New words or definitions and certain key points are highlighted in italics and in red color. Other key points are highlighted in bold type and in blue color.
3. You will be given an In Class Assignment and a Homework assignment to illustrate the main concepts of this chapter.
4. There are a few new words in this chapter. Be sure to spend time on the various definitions. The graph is a repeat of the monopoly graph.
5. The teacher will focus on the main technical parts of this chapter. You are responsible for the cases and the ways by which each case illustrates a main principle.
6. When you have finished the text, the Test Your Understanding questions, and the assignments, go back to the Objectives. See if you can answer the questions without looking back at the text. If not, go back and re-read that part of the text. When you are ready, take the Practice Quiz for Chapter 21.

Objectives for Chapter 21 Oligopoly

At the end of Chapter 21, you will be able to answer the following:

1. Define "oligopoly".
2. What is the **concentration ratio**? How is it interpreted?
3. What is the **Herfindahl Index**? How is it calculated? How is it interpreted? Compare it to the concentration ratio.
4. What has been the trend in competition in recent years?
5. What are the necessary steps to form an effective **cartel**?
6. What is meant by "**price leadership**"?
7. Explain why cartels are unstable (i.e., tend to break-apart). Give some example of the ways by which the stability problem is overcome.
8. Apply the analysis of cartels to the case of the NCAA or OPEC or DeBeers or Agricultural Cooperatives

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In Chapter 16, we defined four types of industries. Oligopoly is the last of the four that we will analyze. While pure monopoly is illegal in America, oligopoly is not. ***Oligopoly means that there are few sellers.*** How few is "few"? The answer is "***few enough that each seller CAN have an effect on the price of the product***". Many of our least competitive industries are oligopolies. For example, considering only American companies, there are three automobile companies, four main cigarette producers, five main gasoline sellers, two or three large beer manufacturers, and so forth. In this case, companies have considerations that are different than competitive companies. If competitive companies raise their prices, they must consider the response of buyers. Companies in oligopoly must also consider this; however, they must also consider the responses of other sellers. So if Ford raises its prices, the result depends not only on

the response of the buyers but also on whether or not General Motors, Chrysler, Nissan, Toyota, and Honda raise their prices. This makes analysis of oligopoly very difficult.

Determining Oligopoly

There are two measures to determine whether oligopoly exists or not. The first, and oldest, is **the concentration ratio**. Imagine that all companies in an industry are ranked in order of sales. *The concentration ratio is the percent of the total sales sold by the four largest companies.* (Occasionally, a number other than four is desired. In this case, the writer must tell you of that fact. So, I might tell you that the five firm concentration ratio for beer producers was 87% in 1992. This means that the five largest beer companies sold 87% of all of the beer sold in the United States in that year.) The dividing lines, using this measure, are arbitrary. *But commonly, industries in which the concentration ratio is under 50% are considered effectively competitive. Industries in which the concentration ratio is at least 50% but less than 70% are considered weak oligopolies (the other companies still sold at least 30% of the total.). And industries in which the concentration ratio is at least 70% are considered strong oligopolies.* Of course, the higher is the concentration ratio, the stronger is the oligopoly. **“Stronger” means that the companies in that industry have a greater ability to influence the price.**

The other (and better) measure was discussed in Chapter 10 and is called **the Herfindahl Index (actually the Herfindahl - Hirschman Index, or HHI)**. Let us review this measure here. *The Herfindahl Index takes the percent of sales of each company (not just the top four), squares each number, and then adds up the squares.* Again, the dividing lines are arbitrary. *But, if the Herfindahl Index is under 1,000, the industry is usually considered effectively competitive. If the index is at least 1,000 but less than 1,800, the industry is a weak oligopoly (weak power to affect the price). And if the index is 1,800 or more, the industry is a strong oligopoly (strong power to affect the price).* The maximum for this number is $100 \times 100 = 10,000$. To see why the squaring is needed, consider two industries. In one industry, there are five companies, each with 20% of the total sales. In the other, there are six companies. One company sells 50% of the total while the other five companies sell 10% each. In both industries, the concentration ratio is 80% ($20\% + 20\% + 20\% + 20\% = 80\%$ and $50\% + 10\% + 10\% + 10\% = 80\%$). Both industries are strong oligopolies. But they are not equally strong. The ability to raise prices is clearly much greater in the second industry where one company dominates the others. The squaring takes this into account. So, in the first industry, the Herfindahl Index is 2,000 ($400+400+400+400+400$ as 20 squared equals 400). In the second industry, the Herfindahl Index is 3,000 ($2,500+100+100+100+100+100$ as 50 squared equals 2,500 and 10 squared equals 100). Although both industries are once again strong oligopolies, the Herfindahl Index shows the greater market power in the second industry. The higher the number, the greater is the market power.

Test Your Understanding

For breweries, the Herfindahl Index was 310 in 1958, 690 in 1968, 1,292 in 1978, 1,938 in 1984, and 2,594 in 1992. What has been happening to competition in the brewery industry?

Test Your Understanding

The following are the shares of sales of tobacco for the main tobacco companies:

| | 1980 | 1995 |
|----------------------|------|------|
| American Tobacco | 11% | * |
| Liggett and Myers | 2% | 2% |
| Lorillard | 10% | 8% |
| R.J. Reynolds | 33% | 26% |
| Philip Morris Co. | 31% | 46% |
| Brown and Williamson | 14% | 18% |

* Brown and Williamson acquired American Tobacco. The 1995 share for American is included in the Brown and Williamson share.

1. Calculate the **concentration ratio** and the **Herfindahl Index (HHI)** for 1980.
2. Calculate the **concentration ratio** and the **Herfindahl Index (HHI)** for 1995.
3. Based on your answers to questions 1 and 2, plus a perusal of the data above, draw a conclusion as to what happened to the competitiveness of the tobacco industry between 1980 and 1995.

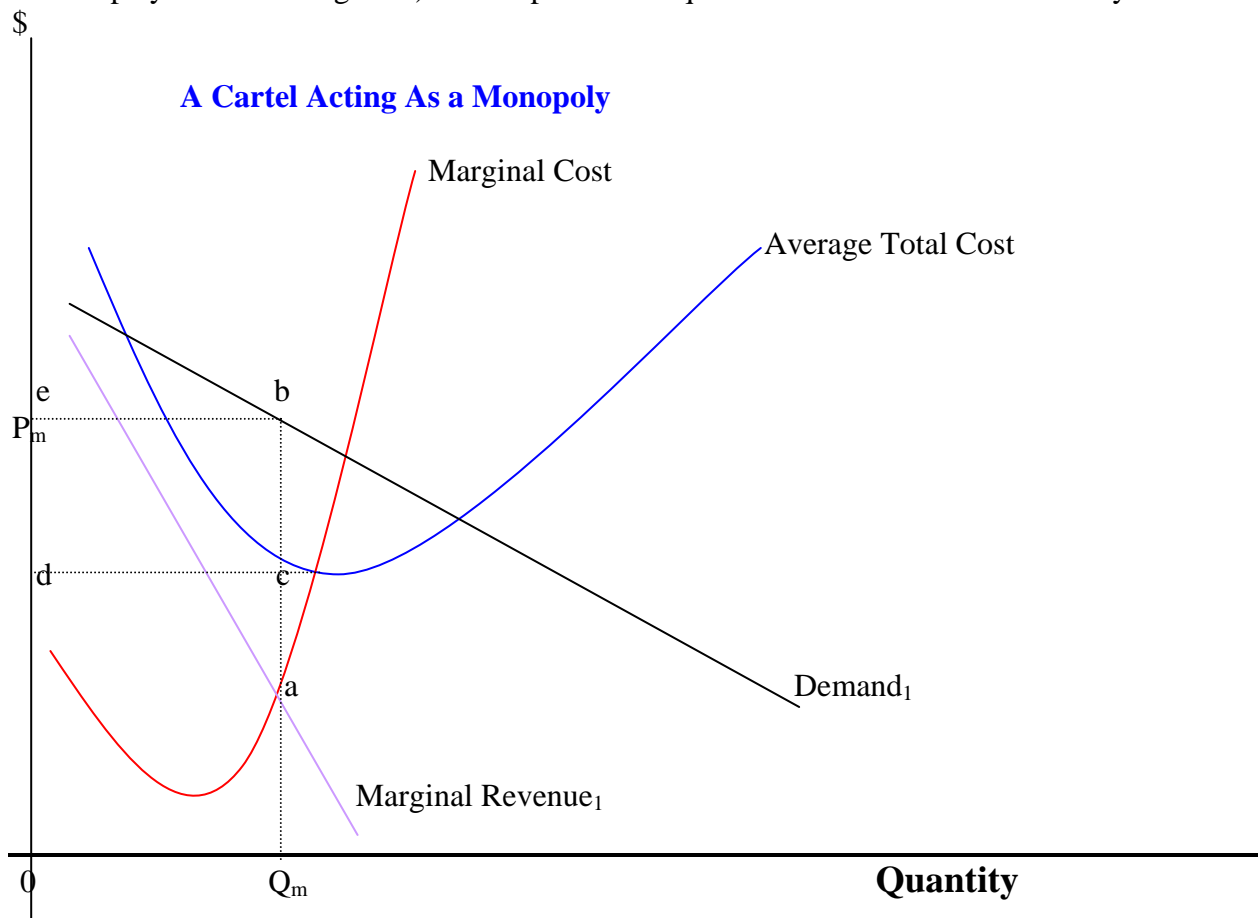
Cartel Behaviors

As noted above, oligopolies are difficult to analyze because the behavior of each company depends on its expectation of the responses of the other companies. So, it is easier for us to begin to understand oligopolies by focusing on cartels. ***A cartel is a group of sellers who come together to try to act as though they are a monopoly.*** Decisions are made collectively. As we saw in Chapter 10, in the United States, cartels are illegal. Yet, there are several examples commonly found in sports. Major League Baseball, Inc., The National Football League, Inc., the National Basketball Association, and the National Collegiate Athletic Association (NCAA) are all examples of cartels. Internationally, there have been famous cartels in oil and diamonds. In agriculture, cartels are called “cooperatives”, such as Sunkist, Sun-Maid Raisins, and Calavo for avocados.

Since cartels are illegal in the United States, there have been attempts to form a cartel without actually breaking the law. The main practice involved here is called ***“price leadership”***. ***In price leadership, one company sets the price and the others follow. But the companies do not actually meet.*** This was practiced in steel, automobiles, banking, and a few other industries, but has faded out in recent years. The practice of price leadership seems to have originated with the creation of United States Steel. Under the leadership of Judge Gary, United States Steel held the famous ***“Gary dinners”*** in New York each year. All of United States Steel’s competitors would come to New York. After dinner, Judge Gary would announce the prices of steel products that all would charge in the coming year. Since United States Steel sold two-thirds of all of the steel sold in the United States at the time, it was understood that any competitor charging a lower price would be driven out of business. This behavior was a cartel and was clearly illegal. Beginning in the 1920s, United States Steel would simply skip the dinners. It would announce its prices at a press conference. All of its competitors understood that they must charge the same prices or risk being driven out of business. Because it had not met with its competitors, United States Steel had not done anything illegal. It became the “price leader”; the smaller companies would charge the same prices that it had announced. General Motors developed into the price leader for automobiles. The practice began to fade out in the 1960s as some of the smaller competitors grew into large companies and as competition opened from foreign countries.

If a cartel actually acted as a monopoly, as shown in the graph below, it would produce the

monopoly quantity (Q_m) and would charge the monopoly price (P_m). As a group, the cartel would earn the monopoly profits (bcde). To make this happen, *(1) the cartel would have to be able to make accurate estimates of the demand for the product and the costs of production.* Doing so is not always easy. Much costly statistical analysis needs to be done. *It helps the cartel to make these estimates if (2) the products are similar and (3) if the members of the cartel have similar costs of production.* (It is easier to form a cartel for oranges, where each seller's product is the same and each growers' costs are similar, than it would be for automobiles, where the competing products are very different.) Once it estimates the demand and costs, the cartel can determine the quantity --- where the marginal revenue equals the marginal cost. However, this quantity must be allocated among the members of the cartel. That is, *(4) each company must be given a production quota to produce less than they otherwise would, so that the total production adds up to Q_m .* Sometimes, the total production is divided equally (for example, each college in the NCAA plays 11 football games). Some production quotas are determined in other ways.



Since each producer is being asked to produce less than it otherwise would, the determination of these production quotas can be the source of considerable disagreement. *Once the quantity is set, (5) the price can be determined by going up to the demand curve to point b.* The profits (bcde) go to the entire group. *This means that (6) the profits must be divided in some way among the members of the cartel.* Obviously, this can cause considerable disagreement; witness the fighting among baseball owners over "revenue sharing". *To make an effective cartel, (7) it is necessary that the demand for the product be relatively inelastic.* Because the cartel will

charge a higher price, there must be very few substitutes that consumers can turn to. *To make an effective cartel, (8) there also must be high barriers to entry.* If there were low barriers to entry, new sellers would enter, motivated by the high economic profits. The new sellers would either lower prices to take customers away from the cartel members, forcing the cartel to lower its prices, or would become members of the cartel (thereby reducing the profits of the existing cartel members). *Finally, to make an effective cartel, (9) there must be effective monitoring of each cartel member.* In the graph above, notice that the price is considerably above the marginal cost. If a seller can produce more than its quota, each additional unit produced will bring-in much more than it costs to produce. For example, in oil, an additional barrel of oil produced could bring-in an additional \$30 to \$40 of revenue while adding only about \$1 to costs. *Each seller therefore has an incentive to “cheat” on the other members of the cartel* --- produce more than one’s quota, hope that the other members do not produce more than their quotas, and hope that the other members do not catch-on to what one is doing. *Since most cartel members are likely to “cheat”, most cartels tend to break-apart after just a few years.* To be able to last, cartels must be able to monitor their members to eliminate the “cheating”.

In summary, to form an effective cartel, (1) it is necessary to be able to estimate the demand and the costs, (2) it is helpful if the products of the cartel members are similar, (3) it is helpful if the costs of the cartel members are similar, (4) there must be an ability to set production quotas, (5) there must be an ability to set a price to be charged by each member of the cartel, (6) profits must be distributed (or re-distributed) among the cartel members in ways that each member finds acceptable, (7) the demand for the product needs to be relatively inelastic, (8) there must be relatively high barriers to entry, and (9) there must be some means to prevent “cheating” by the individual members of the cartel.

Case: The National Collegiate Athletic Association (NCAA)

The National Collegiate Athletic Association (NCAA) provides one example of an effective, but unstable cartel. Its main product is the sale of football and basketball games, mainly to television networks. While most cartels are small, the NCAA is a large group of universities, with over 750 members. And, while it does not conduct elaborate studies of demand and cost, **(4) it does set production quotas.** For football, this means no more than eleven games per year (plus a possible bowl game). For basketball, it means no more than 27 games (plus tournament games). The NCAA used to limit the number of football games that could be shown on television in a week. This was ruled illegal when the courts declared that the NCAA was, in fact, a cartel. The NCAA also controls the number of post-season games and **sets quotas on the number of athletes** --- 85 for football and 13 to 15 for basketball per team. **(5) The price charged to television networks** is based on the maximum the NCAA can induce them to pay. However, **the price paid to athletes** (tuition and book money) is rigidly controlled. **(6) The economic profits are distributed** --- usually within a conference. So, in each conference with a team in the Bowl Championship Series received about \$15 million for each team playing (6 conferences had one team playing and 2 conferences had 2 teams playing). This money, as well as the money for the other Bowl games, is shared among all members of the conference. Each team in the conference gets a share of this money, whether it played in the game or not. So Arizona, which finished last in the Pacific Ten conference in 2003, got as much money from the Bowl games as any other team. The same principle operates for the basketball

tournaments. (7) The NCAA cannot create **inelastic demand**. However, the demand for college football and basketball is great enough that television networks are willing to pay high prices to be able to televise the games. The NCAA does act to **(8) create barriers to entry**. To be able to compete at the lucrative Division I level, the requirements are difficult for many universities and colleges to achieve. They include requirements regarding scheduling (must sponsor at least 14 varsity sports), attendance at games (must be at least 17,000), size of stadiums (must hold at least 30,000 people), other facilities, and so forth. Finally, (9) there has been considerable **“cheating”** within the NCAA. Some has involved selling games without the consent of the cartel. The most notable case came when Notre Dame University negotiated its own seven year \$45 million television deal with NBC to televise Notre Dame home games. Much more frequently discussed are complaints of “cheating” in the “hiring” of athletes. A top football player is worth at least \$750,000 in revenues to the college. A top basketball player is worth in the neighborhood of \$1 million in revenues to the college. So “cheating” is not unusual. It is commonly found that one university or another gave an athlete access to money, cars, and so forth that broke the rules of the cartel. The NCAA has an extensive and expensive monitoring system. The offending university is then punished by the cartel --- being denied bowl games, access to television, or access to athletes. At the worst, the NCAA can banish a university from the cartel --- the so-called “death penalty”. While acting only partially in the manner of a theoretical cartel, the NCAA has managed to survive basically intact for nearly a century while **earning large economic profits** for the universities who are its members. These “profits” go mainly to the coaches and athletic directors as high salaries and perquisites. (It is now not unusual for football or men’s basketball coaches to earn incomes of well over \$1 million.)

Case: the Civil Aeronautics Board (CAB)

Because of the importance of controlling “cheating”, **cartels are often actually operated by a government agency**. This seems ironic since the same government also makes private cartels illegal. To understand why the government would operate a cartel for the benefit of a few companies, review the Chapter 11 on Public Choice. **One example of a government-operated cartel occurred in airlines**. Until the early 1980s, airline travel was regulated by a government agency called **the Civil Aeronautics Board (CAB)**. The CAB (no longer in existence) determined which airlines could make which flights (point 8). Most routes had only two or three airlines, with many being dominated by only one airline. The large airlines would set the prices (point 5) and submit them to the CAB, where they would be routinely approved. It was estimated that these regulations raised airline prices as much as 50%. **Because no airline could enter a route without CAB approval and because no airline could lower the price, “cheating” was basically eliminated**. However, even a government-operated cartel could not completely eliminate competition. Instead of price competition, **there was great non-price competition** --- competition through decor, meals, frequency of flights, advertising, etc. The result was that operating costs were much higher than they otherwise would have been.

Case: The Oil Cartel

When people think of “cartel”, they often think of oil. The first oil cartel, and the best example of an oil cartel, was the **International Petroleum Cartel (IPC)** that existed from 1928 to the early 1960s. This cartel consisted of seven companies (the **“Seven Sisters”**). Using

today's names, these would be Exxon, Mobil (now merged with Exxon), Chevron, Shell, BP, Texaco, and Gulf (now part of Chevron). The cartel was headquartered in London, thereby getting around American laws against cartels. In this case, **the cartel did do elaborate studies of demand and costs (point 1)**. This allowed it to set **a production quota for the seven companies (point 4)**. Each company then produced its quota in its part of the world, charged the agreed upon **price (point 5)**, and kept its own economic profits. **There was no redistribution of the profits (point 6)**. **Inelastic demand** resulted because oil was so much superior to any other form of fuel (point 7). **Barriers to entry** were created by **“concessions” --- exclusive rights to search for and then produce oil in a given area in return for a given percent of the revenues**. BP (British Petroleum, but called “Anglo-Persian at the time) gained the exclusive right to the area that is now Iran. Four companies together created the Arabian-American Oil Company (ARAMCO) and gained the exclusive right to what is now Saudi Arabia. Two of the companies formed the Kuwait Oil Company. By locking up all of the known oil supplies, it was virtually impossible for others to enter (point 8). The cartel also acted to **prevent “cheating” (point 9)**. Each of the seven companies agreed to an outside audit every month. Any company found producing more than its quota or charging a higher price would then pay a “fine” to the other members of the cartel. This control allowed the cartel to survive, and earn high economic profits for the companies, for about 35 years --- an unusually long time.

The International Petroleum Cartel fell apart in the early 1960s. At that time, **large new supplies of oil were discovered in Russia and in North Africa**. This allowed new companies to enter and compete with the “Seven Sisters”. As they did, the prices fell greatly and so did the economic profits. Those remembering the 1960s can remember gasoline selling at 32 cents per gallon unless there was a price war going on. When there was a price war (which could occur several times a year), gasoline could sell at prices of less than 20 cents per gallon. In addition, gasoline stations would give away knives, forks, glasses, and blue chip stamps for buying gasoline. The loss of revenues to the seven oil companies also meant a loss of revenues to those oil-producing countries. In granting the concessions to the oil companies, they had received a fixed share of the revenues. In 1960, as their revenues were falling, thirteen of the oil producing countries formed an organization, ***the Organization of Petroleum Exporting Countries (OPEC)***. From its formation in 1960 until 1973, most Americans never heard of OPEC. But in 1973, after reducing supplies of oil in an act relating to the Arab-Israeli War, OPEC formed into a cartel.

OPEC, in its main period from 1973 to 1981, was a strange cartel. While it did meet and did announce increases in the price of oil (point 5), **it did none of the other behaviors usually associated with cartels**. It did not have a headquarters. Therefore, it collected no data by which to analyze the demand or costs (point 1). It did not determine production quotas (point 4). It did not redistribute profits (point 6). It did not have high barriers to entry (point 8). In fact, there were several new oil producers in this period --- Britain, Alaska, China, and Mexico. **However, strangely, the new oil producers charged the same prices as did OPEC**. They did not undercut OPEC prices so as to take away its market share. Nor did they become members of the cartel. And while there was “cheating” among OPEC members, it was not the kind one typically expects (point 9). In this case, the “cheaters” would actually charge a **higher price** than had been announced at the OPEC meeting. And Saudi Arabia, the largest producer in the cartel, would sometimes respond by increasing its own production in order to **drive the prices down**. Such unusual behaviors led many economists to believe that OPEC was not actually a cartel at

all. Others believed that it was a weak cartel that met only to set a high price and did nothing to assure that that high price would prevail in the market (in fact, often the high price announced by OPEC did not prevail.).

As would be expected, the high price of oil encouraged new producers to enter. It also made the demand for oil more elastic. That is, buyers learned to respond to the high price of oil in ways that would reduce their buying of it substantially. These two occurrences, plus a worldwide recession that reduced oil buying in the early 1980s, pushed **OPEC to try to form a more effective cartel**. OPEC now has a headquarters that collects data, allowing it to estimate demand and costs (point 1). And while it still does not reallocate profits (point 6), it has tried to set production quotas (point 4). **OPEC, as a cartel, has been quite weak. First, the demand for oil today is much more elastic than it was in the 1970s** as people have discovered many ways to conserve oil. **Second, OPEC still has no way to prevent entry from anyone who can discover oil (point 8). And third, OPEC has been subjected to several episodes of “cheating”** --- this time, in the way we expect it to occur in a traditional cartel (point 9). In the mid-1980s, the “cheating” became so severe that Saudi Arabia, who produce half of OPEC’s oil, decides to “punish the cheaters”. It increased its own production greatly, driving the market price of oil to near \$10 per barrel. Gasoline was selling in some parts of the United States for \$0.60 to \$0.70 per gallon. The other members of OPEC then “surrendered”, announcing that they would follow Saudi Arabia’s lead in their production and pricing decisions. The price then rose to about \$20 per barrel; it stayed near \$20 per barrel for awhile (a barrel of oil equals 42 gallons). After some time, the “cheating” began again. In 1990, one of the “cheaters” was Kuwait, who wanted the extra oil sales in order to earn dollars to be able to pay off some of its debt. One of the OPEC members hurt by Kuwait’s “cheating” was Iraq. As we all know, Iraq invaded Kuwait, igniting the Gulf war. (While there were many political issues involving Iraq and Kuwait, the decrease in the price of oil by Kuwait was one of the precipitating incidents.)

In recent years, OPEC has gained some strength. This strength has come as the demand for oil has risen greatly. Several countries that were formerly poor have been developing fast. China is the best example. Their demand, added to the demand for oil on the part of the United States, Europe, and Japan, has made it easier for OPEC to raise oil prices. In 2004, oil was selling for as much as \$40 per barrel.

Case: The Diamond Cartel

The diamond cartel has existed for about 100 years largely controlled by a single family, the Oppenheimers of South Africa. This result is remarkable considering that diamond is extremely plentiful. Extinct volcanoes in Africa, Russia, Asia, Australia, and even America are littered with diamond. In river beds in southern Africa, diamonds can literally be picked off the ground.

The story begins with a huge find of diamond, the Kimberly find, in South Africa in 1871. For 6,000 British pounds, Cecil Rhodes bought out the diamond claim of the farmer DeBeer. He then brought all of the other claimholders to the Kimberly find into a cartel. The name of DeBeer was maintained. The cartel used its profits to buy out all other claims to diamond in South Africa.

In 1914, Ernest Oppenheimer, a diamond dealer, went into southwest Africa to survey it. He found the richest diamond field that has ever been found. Diamonds could literally be picked off the ground. The land in the area was owned mainly by Germans. Fearing that their lands would be taken away as a result of World War I, the German landowners agreed to merge their lands

with his. The result was a company called **Anglo-American** (Oppenheimer was British. One of his financiers, J. P. Morgan, was American). Anglo-American then threatened to flood the world with diamonds, and thus drive prices down, unless Oppenheimer became chairman of DeBeers. Today, the Oppenheimer family owns a small but controlling share of the stock of Anglo-American. Anglo-American owns DeBeers. DeBeers owns Anglo-American. Through this cross-ownership, the Oppenheimer family has been able to maintain its control over the diamond industry.

Three aspects of this cartel fit into our description of cartel behavior: **the ability to set production quotas (point 4), the ability to create barriers to entry (point 8), and the manipulation of the demand for diamonds (point 7).**

The first aspect is the ability to set production quotas. DeBeers has controlled the supply on the market as well as any cartel that ever existed. DeBeers is headquartered in London (the behaviors would clearly be illegal under American law). **It distributes through only 200 diamond merchants worldwide.** These 200 people qualify for what is called a “site” --- the right to buy diamonds from what is called “**The Central Selling Organization of DeBeers**”. The Central Selling Organization controls about 80% of the world’s diamonds. Each “site holder” must travel to London. ***The Central Selling Organization of DeBeers determines the overall supply of diamonds to be distributed to the site holders.*** Which diamonds are given to which site holder depends on how favorably each site holder is perceived. They are at the mercy of the cartel. Those diamond merchants who are considered favorably are not only given more diamonds but also better (i.e., more profitable) diamonds to sell. Those diamond merchants who are considered unfavorably (perhaps they have tried to undercut the cartel - determined price) may find themselves with nothing at all to sell. **Diamond merchants are much too afraid of losing their business to ever “cheat” on this cartel.**

The second aspect is the ability to create barriers to entry. Since diamond is very plentiful, maintaining a barrier to entry has proven very difficult for DeBeers. **Every time diamond was found, DeBeers would buy up the new mines.** DeBeers often would use its immense political influence to assure that those who found diamond and tried to resell it outside of the cartel would be arrested as criminals and held in prison. When Zaire (formerly the Belgian Congo) was taken over by General Mobutu in a military coup, DeBeers arranged to be the exclusive supplier of all of the diamonds found in this country. In return, General Mobutu was allowed to choose some of the best stones for himself and became one of the wealthiest people in Africa. (This money was spent on the military that general Mobutu uses to keep himself in power.) In the 1950s, diamonds were found in Siberia in the former Soviet Union. DeBeers created a special section to do business with the Russians, ensuring that all of its diamonds came through the Central Selling Organization in London. When large quantities of diamonds were found in Australia in the 1970s, DeBeers brought the new mines into the cartel. It did this by bringing immense political pressure on the Australian government, including an advertising campaign to enhance DeBeers’ image, by threatening to flood the world with diamonds if the new mines would not become part of the cartel, by buying shares in other Australian companies and threatening harm to them (and therefore to the Australian economy) if the new mines did not become part of the cartel, and so forth. Finally, when synthetic diamonds came on the market, DeBeers entered into a partnership with the main producer, General Electric, to reduce the competition to real diamonds.

The third aspect is the manipulation of the demand. DeBeers has acted both to increase the

demand for diamond and to make the demand more inelastic. Until the 1930s, an insignificant amount of diamond was sold in the United States (compared to over \$2 billion worth per year today). **This increase in demand involved an extensive advertising campaign. The heart of this campaign was to give diamonds to Hollywood producers to use in films.** The films actually promoted the sale of diamonds. Diamonds were always given by a man to a woman as a surprise gift in order to “win her heart”. Slogans such as “diamonds are a girl’s best friend” were even made into songs. Because diamonds came largely from former British colonies, the British royal family frequently wore diamonds as a way to promote their sales. **Advertising was used to create the idea that one should never sell a diamond (and thereby provide competition for the cartel’s diamonds); the slogan “a diamond is forever” is still promoted.** Special promotions have also been used to enhance demand --- the 25th Anniversary Diamond and the “Eternity Ring”, a ring designed to enhance demand for the smaller stones found in Siberia.

DeBeers activities are clearly illegal under American law. There have been four investigations of DeBeers in the past fifty years. However, DeBeers operates outside of American jurisdiction. The main executives of DeBeers would be arrested immediately should they ever try to enter the United States.

Case: Agriculture in California

We have looked at various aspects of agriculture in previous chapters. Here let us look at California growers of fruit. In the nineteenth century, growers of fruit faced considerable risk. The growers sold their fruit to commission merchants who arranged for the final sale of the fruit to retailers for a percentage of the price. Because fruit is highly perishable, it lost most of its value if not shipped to market relatively soon after harvesting. Markets were mainly on the East Coast. Because the fruit was so highly perishable, the growers had little negotiating power against the commission merchants.

The economic depression of 1893 compounded the problem. California fruit in the East was considered a luxury item. As incomes fell, the demand for the fruit fell greatly. Combining the fall in demand with the poor bargaining position with the merchants caused the growers to experience considerable losses. ***The growers responded with the formation of agricultural cooperatives. In a cooperative, the members, organized by specific crop, are the owners and the decision-makers. The profits are distributed to the members according to their production (point 6). The cooperative contracts with its members for a specified amount of fruit to be delivered (point 4).*** By controlling the supply, the cooperatives were able to negotiate from strength in order to raise the price and were able to adjust the supply of the fruit when the demand for it fell.

California agriculture is inherently a competitive industry. During and after World War I, the demand for California fruit was high and the growers made large profits. This attracted many new growers. Thousands of acres of fruit trees were planted. This should have increased supply, lowered prices, and caused profits to fall. But the growers, through their cooperatives, decided to deal with this problem by raising the demand (point 7). They advertised heavily to create an image for California fruit as objects for everyday consumption (not just as luxury goods). To keep the demand high, the growers knew that the fruit needed to be of high quality. So the cooperatives created and enforced standards for fruit that could be marketed. Their were names for the standards such as “fancy”, “choice”, “standard”, and “juice grade”. Growers learned that

the market was such that good looking fruit sold better than good tasting fruit. By regulating the supply of fruit and by raising the demand, the cooperatives have been able to both raise and to stabilize their incomes.

Let us examine the specific case of the citrus industry. In 1925, lemon growers established an agreement that the amount of the fruit sold would be that which could be sold at prices determined by a grower committee. Each grower was given a quota (point 4). Any other lemons that were grown were diverted to the production of lemon juice and lemonade. Their ability to control the supply was aided by the fact that lemons can be stored for long periods. The organization that enforced this agreement was the California Fruit Growers Exchange, now known as **Sunkist**. In the 1920s and 1930s, lemon prices rose considerably. Higher prices led to increased planting and later to increased supply. This led to **“cheating”** (point 9) by having new growers sell outside of the cooperative at prices slightly below the cooperative price. The lemon agreement was dead by the mid-1930s. There was no enforcement mechanism available.

The failure of the voluntary agreement led the growers to turn to the government. In 1937, the **Agricultural Marketing Agreement Act** was passed. As long as a majority of producers agreed, they were allowed to collectively determine the quantity to be sold each year, when it would be sold, and the minimum size of the fruit. Their agreements, called **“marketing orders”**, now had the force of law (point 4). Producers who try to sell more than their quota face substantial penalties (point 9). Undersized fruit must be diverted into processed products (for example into lemon juice or orange juice concentrate). In fact, much of the fruit that is qualified for the fresh market is sold to be processed. This is done to keep the supply of fresh fruit low enough to keep the prices high. The citrus cooperatives were able to achieve all of the requirements for a successful cartel except the ability to restrict entry (point 8).

Test Your Understanding #1

In the reading, it was mentioned that agricultural cooperatives are examples of cartels. One example is **CALAVO**, the cooperative for avocado growers. Another is Sun Maid, a cooperative for raisin growers. **Use the nine points in the reading to write a brief explanation of the manner in which CALAVO or Sun Maid would try to act as an effective cartel.** Your answer to this question is hypothetical. Consider the ways by which you believe this cooperative WOULD operate.

Then, choose an agricultural cooperative and find its homepage on the Internet. For example, you will find information about CALAVO at: <http://www.calavo.com/>. Sun Maid has its site at <http://www.sun-maid.com/>. You may find other information about agricultural cooperatives at the National Center of Farm Cooperatives: <http://www.ncfc.org/>. Find out as much as you can about the way agricultural cooperatives actually operate. In what ways do they operate in a manner similar to your hypothetical answer? In what ways do they operate in a manner that is different? Give examples.

Test Your Understanding #2

The following represents the situation for the lumber industry from 1890 to 1940. First, there were a large number of producers of lumber. Concentration ratios were low --- under 25%. Second, for most companies, there were two main costs of production. One was the cost of the land. The second was the cost of the taxes on the land. The land tax was based on the value of the land, not on the amount of lumber products produced. Third, the lumber industry faced a chronic problem of overproduction. The quantity supplied exceeded the quantity demanded. As a result, prices were continually falling and economic profits were low. Fourth, the lumber industry tried to form a cartel many times. However, their attempts to form a cartel failed. Finally, the industry had to turn to the government to enforce an effective cartel.

1. Why would this industry face a chronic problem of overproduction (supply exceeding demand)? In answering this question, you need to consider whether the costs of production are fixed or variable?
2. When the prices of lumber products were falling, why did the individual lumber company not just reduce its own production?
3. If there had been an effective cartel in the lumber industry, explain how it would have operated. Use the nine points in this chapter in your explanation.
4. Explain why the lumber industry would not be able to form an effective cartel on its own.
5. The lumber industry turned to the government to help it enforce an effective cartel. Why can the government enforce an effective cartel when the companies themselves cannot do so?
6. Finally, use the theory of Public Choice from Chapter 11 to explain why the government would help the lumber companies form an effective cartel when more Americans would be hurt (higher prices for lumber and less lumber available) than would be helped.

Practice Quiz on Chapter 21

1. Assume that the percent of sales in an industry is as follows:
(1) 50% (2) 20% (3) 10% (4) 10% (5) 5% (6) 5%
The **concentration ratio** for this industry is:
a. 50% b. 80% c. 90% d. 95% e. 100%
2. Using the numbers in question 1, the **Herfindahl Index** is equal to:
a. 2500 b. 8100 c. 3150 d. 10,000 e. 90
3. Using the numbers in question 1, the industry would be categorized as:
a. effectively competitive b. weak oligopoly c. strong oligopoly d. monopoly
4. “One company announces a price and the others announce the same price, with no meeting” is called
a. a cartel b. price leadership c. monopoly d. monopolistic competition
5. In order to have an effective **cartel**, there must be
a. few sellers b. relatively inelastic demand c. high barriers to entry d. all of the above
6. **Cartels** tend not to last very long because:
a. the demand for their product is inelastic c. they have high barrier to entry
b. there are few sellers in a cartel d. each seller has an incentive to cheat on the others
7. According to the text, from 1960 to 1973, which of the following was true about **OPEC**?
a. its members met to set prices c. it set production quotas
b. it measured demand and costs d. its members cheated by charging a lower price than agreed
8. According to the text, the diamond cartel (**DeBeers**) has done which of the following?
a. set production quotas on diamonds c. manipulated the demand for diamonds
b. created artificial barriers to entry d. all of the above

Answers: 1. C 2. C 3. C 4. B 5. D 6. D 7. A 8. D