

## How to Study for Class 13: Benefits of Competition and Monopoly

Class 13 considers the opposite of perfect competition --- pure monopoly.

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 new calculations in this chapter. Go over each carefully. Be sure you understand how each number was derived (do the calculations for yourself). The calculations of this chapter continue the same case from the calculations of the previous chapters (the case of the construction company). Pay particular attention to the relation of the marginal revenue and the price in the case of pure monopoly.
5. 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 Class 13.

## Objectives for Class 13 Benefits of Competition and Monopoly

At the end of Class 13, you should be able to answer the following:

1. Explain the following benefits to society of a perfectly competitive industry:
  - a. economic profits (both in the short-run and in the long-run)
  - b. productive efficiency (both short-run and long-run)
  - c. improvements in productive efficiency over time and improvements in products
2. What is meant by “**pure monopoly**”? by “**market power**”?
3. For a monopoly seller, what is the demand curve facing the company?
4. For a monopoly seller, what is the relation between the price and the marginal revenue? Why?
5. Given data representing the demand schedule for a monopoly seller, calculate the marginal revenue.
6. How does a monopoly seller decide on the quantity to produce and the price to charge?
7. What is wrong with the statement: “Because a company is a monopoly, it can charge any price that it wants.”?

## Class 13 Benefits of Competition and Monopoly (latest revision August 2004)

### 1. Benefits To Society From Perfect Competition

Let us conclude the discussion of perfect competition by summarizing the benefits to society from it. People believe that competition is good for the society as a whole. Why is this so? Let us list some of these benefits.

### (1) Economic Profit of Zero

As we saw, in perfect competition, companies earn an **economic profit of zero in the long-run**. While the long-run is not specified in weeks or years, we can presume it is a relatively short period. (The long-run is the time it takes for new companies to enter the industry.) Why is this good for society? The answer is that, when companies are earning economic profits above zero, new companies enter the industry. The entry of the new companies will soon eliminate the economic profits. *The only way a company can earn economic profits for a long time period is to be able to prevent other companies from producing products that consumers desire. This clearly is not good for society.* For many years, companies like General Motors, IBM, and CBS earned economic profits that were well above zero. They were able to maintain these profits only by having barriers to entry that kept other companies from producing products that consumers definitely desired.

### (2) Productive Efficiency

Productive efficiency involves producing at the lowest possible cost of production. In our example, the construction company chose to produce 7 homes. Each home cost an average of \$182,857 (take the total cost of building 7 homes and divide by 7). We can assume that this is the lowest possible cost per home of producing 7 homes. *Companies in perfect competition have a financial incentive to produce as efficiently as possible. Any inefficiencies are reflected in reduced profits for the owners of the companies.* Since in the long-run, these profits equal zero, inefficiencies would cause economic profits to fall below zero. Companies would either have to find more efficient ways of producing or be driven out of business.

### (3) Improvements over Time

As we have seen with so many products, **companies with a large amount of competition have a strong incentive to find new ways of producing that will lower production costs.** This strong incentive explains why products that were once very expensive ---computers, VCRs, televisions, contact lenses, and so forth --- are now so much cheaper. The incentive is actually twofold. *On the one hand, there is the positive reward of increased economic profits in the short-run if a company can find a way of producing at a lower cost. On the other hand, there is the fear that competitors of the company will find a way of producing at a lower cost before it does.* If they do so, they will be able to charge a lower price. Our company will not be able to earn satisfactory profits at this lower price. It risks being forced out of business.

Remember the definition of monopolistic competition. This industry structure has all of the characteristics of perfect competition except that the products are differentiated. In that case, we shall see that there are strong incentives not only to find ways to lower production costs but also **to find ways to "improve" the product.** The incentives are the same in both cases --- the increased economic profits in the short-run and the fear of a competitor doing so first. What exactly is an "improvement"? *The answer, in a market economy, is that a product has been improved if consumers desire it more and are more likely to buy it.* Consumers decide when a given change in a product is actually an improvement. The strong incentives to "improve" products are easily seen in the continual improving of computer hardware and software, in the competition between the programs shown on television stations, in competition in fashion

design, in competition between automobile companies, and in many other examples. To take just one example for illustration, let us consider the coffee maker. Prior to 1970, people who drank coffee drank instant coffee, had coffee brewed in a coffee percolator, or used a pyrex container. The pyrex container was much cheaper than the percolator. One would heat water in the container, put the coffee into a filter, put the filter into a plastic cone, and then pour the boiling water through the cone back into the container. In the early 1970s, Vince Marotta decided to develop a product that worked in the same way except that one poured cold water into a container and a heater boiled the water. The boiling water then ran through the coffee that had been placed in a plastic cone and into the pyrex container. He called this invention “Mr. Coffee”. He advertised it heavily, with Joe DiMaggio as the spokesperson. It was a huge hit and Marotta was soon making large economic profits. In a competitive industry, what should happen? Of course, others should start producing similar products. And so they did. As the supply rose, the economic profits fell. To maintain them, Marotta changed the design of the container to allow “Brew for Two”. This too was a huge hit and economic profits rose. Others, of course, soon copied. Then, Marotta combined his coffee maker with an alarm clock. Now instead of making a sound, the alarm would turn on the coffee maker. Another huge hit. Again it was soon copied. As time has gone on, we have seen space saver coffee makers, coffee for one, designer coffee makers, and so on. Some products have been very successful. Some have not. Since product improvements are easily copied by other companies, eliminating the economic profits, why bother developing the improvements at all? The answer, of course, is the economic profits in the short-run. Even if they don’t last very long, the huge profits made for awhile were enough so that Mr. Marotta need have no financial worries for the rest of his life.

*In summary, in perfect competition in the long-run, companies will earn zero economic profits, will produce that quantity for which cost per unit is the lowest possible (productive efficiency), and will have strong incentives to find ways to lower costs of production and to "improve" their products.* No wonder people believe that a market economy with perfect competition is so desirable.

## 2. Monopoly

We have examined perfect competition. Now we turn to its polar opposite: pure monopoly. As noted in Class 8, there are three main characteristics of pure monopoly. First, there is **only one seller** of the product ("mono" means "one"). Second, there are **few good substitutes** available for buyers. And third, there are high barriers to entry; if economic profits are being earned, it will be very **difficult for new sellers to enter** the industry.

There are many reasons for the existence of **high barriers to entry**. For example, until a few years ago, it was **illegal** to compete with San Diego Gas and Electric Co. (We will examine the reasons for this later.) DeBeers has maintained its monopoly on diamond production through **control over the natural resource**. Virtually all of the diamond in the world has come into the control of this company, owned by the Oppenheimer family of South Africa. IBM maintained close to a literal monopoly on mainframe computers through its **copyrighting** of computer languages. Xerox and Polaroid maintained near monopolies by **patenting** their processes. Automobiles had high barriers to entry because of the **very high costs of capital goods that were necessary**. Some industries had high barriers to entry because of **government**

**regulations.** For example, until the early 1980s, the Civil Aeronautics Board acted to prevent airlines from serving certain markets. And, until the mid-1970s, the Federal Communications Commission acted to prevent access to the airwaves to any new television network. In some industries, **economies of scale** make it very difficult for new companies to enter. Because the existing larger companies can produce at a lower cost per unit, a new company that starts with a small number of buyers would not be able to compete on the basis of cost. We call these industries **"natural monopolies"** and will discuss them in detail later. In some industries, **vertical integration** can provide a barrier to entry. **"Vertical integration" means that the same company controls many phases of the production process.** Companies that refine oil into gasoline also own the oil wells and the tankers. They control the gasoline stations through a franchise agreement. Any company trying to compete would have to find its own oil, develop its own tankers for shipping, and create its own stations to sell the gasoline. General Motors also was vertically integrated. General Motors owned the companies that made automobile bodies, batteries and sparkplugs, glass, and so forth. And Microsoft produces both computer operating systems and software programs. Is it any wonder that the operating system Windows was made purposely incompatible with Lotus1-2-3, the most popular spreadsheet in the world. (Microsoft produces a competing product --- Excel) Finally, **continual innovation** can act as a barrier to entry. Both IBM and AT&T were able to maintain near monopoly positions for many years by always being first with new ideas. Microsoft has carried on in this manner. In the early 1980s, IBM lost its barrier to entry. The hierarchical management of IBM was too slow to keep up with the need for innovation. Other companies came up with new and better products, causing IBM to lose almost half of its market share. Something similar occurred for AT&T.

In perfect competition, there were two demand curves to consider. One was the demand for the product. The other was the demand as seen by one typical seller of the product (perfectly elastic). In pure monopoly, the typical seller is the only seller. Therefore, the **demand as seen by one seller is the demand for the product.** Let us assume that the construction industry now sells as a pure monopoly. The demand for homes was given in Classes 3 and 10. Like any producer whose goal is to maximize profits, **a monopolist will produce that quantity at which the marginal revenue equals the marginal cost.** The marginal cost has not changed. But **the marginal revenue is different.** In the following table, **we calculate the marginal revenue as the change in total revenue if there is a given change in quantity (change in total revenue divided by change in quantity).** **We calculate the total revenue as the price times the quantity.**

<u>Price</u>	<u>Quantity</u>	<u>Total Revenue</u>	<u>Marginal Revenue</u>	<u>Marginal Cost</u>
\$340,000	0	0		
320,000	1,000	\$320 Million	\$320,000	\$160,000
300,000	2,000	600 "	280,000	140,000
280,000	3,000	840 "	240,000	120,000
260,000	4,000	1,040 "	200,000	140,000
240,000	5,000	1,200 "	160,000	160,000
220,000	6,000	1,320 "	120,000	180,000
200,000	7,000	1,400 "	80,000	200,000
180,000	8,000	1,440 "	40,000	220,000
160,000	9,000	1,440 "	0	240,000
140,000	10,000	1,400 "	-40,000	260,000
120,000	11,000	1,320 "	-80,000	280,000

Notice that this is different from the case of perfect competition. In perfect competition, the price and the marginal revenue are equal. *In monopoly, the price is greater than the marginal revenue.* This is a major difference. Why is the price greater than the marginal revenue? If the price of houses is \$320,000, you sell 1,000 houses; the marginal revenue is \$320,000 per house. But to sell 2,000 houses, you must lower the price to \$300,000. You do not sell the first 1,000 houses at \$320,000 and the second 1,000 houses at \$300,000. You sell all 2,000 houses at \$300,000. Each of the second 1,000 houses (from 1,001 to 2,000) adds \$300,000 to total revenue. But to sell them, the price on the first 1,000 houses must be lowered by \$20,000 (from \$320,000 to \$300,000). Therefore, the addition to total revenue (the marginal revenue) for each of the second 1,000 houses is \$280,000 (\$300,000 minus \$20,000). Let's try this for the next 1,000 houses (from 2,001 to 3,000). To sell them, the price must be lowered to \$280,000. Each of these houses therefore adds \$280,000 to total revenue. But to sell them, the price on the other 2,000 houses must be lowered by \$20,000 (from \$300,000 to \$280,000). Thus, the addition to revenue (the marginal revenue) is only \$240,000.

### Test Your Understanding

Explain why if we sell 4,000 houses, the price to sell them is \$260,000 but the marginal revenue is only \$200,000.

How many units will this profit-maximizing monopolist produce? Since the monopolist will produce that **quantity** at which the marginal revenue equals the marginal cost, the answer is 5,000 houses. What **price** will be charged? To sell 5,000 houses, the monopolist charges a price of \$240,000. Notice that **even a monopolist cannot charge any price that is desired.** The monopolist is free to raise the price; however, if this is done, buyers will buy less. The loss in total revenue would exceed the saving in total cost and economic profits would fall. Finally, what **economic profit** will be earned? Take the total revenue from the table (\$1,200 million) and subtract the total cost of making 5,000 homes from the previous chapters (\$900 million) and the economic profit is \$300 million. And with high barriers to entry, no one will enter the industry to compete the profits away. *There is no long-run. Notice that we have not changed any of the numbers from the previous class. With the same demand and the same costs, a monopolist will produce a smaller quantity, charge a higher price, and earn greater economic profits.*

### Test Your Understanding

Return to the case of the orange grove from previous chapters. Assume that all groves sell their oranges through one cooperative. **This cooperative acts as a pure monopoly.** Assume that, at a price of \$1.50 per pound, the monopoly cooperative will sell 10,000 pounds of oranges. Every time the price is lowered by 5 cents per pound, another 10,000 pounds will be sold. This is shown below. Fill in the table. The total cost and the marginal cost are repeated from the previous assignments.

Quantity	Price	Total Revenue	Marginal Revenue	Average Total Cost	Marginal Cost
10,000	\$1.50			\$4.80	\$1.20
20,000	1.45				
30,000	1.40				
40,000	1.35			1.50	0.40
50,000	1.30				
60,000	1.25				
70,000	1.20				
80,000	1.15				
90,000	1.10			0.80	0.24
100,000	1.05				
110,000	1.00				
120,000	0.95				
130,000	0.90			0.65	0.30
140,000	0.85				
150,000	0.80				
160,000	0.75			0.60	0.40
170,000	0.70				
180,000	0.65			0.60	0.60
190,000	0.60				
200,000	0.55			0.72	6.00

The **quantity** that the monopolist will choose in order to maximize profits is \_\_\_\_\_.

**Explain the reason that this quantity will be produced.**

The **price** that this monopolist will charge is \$\_\_\_\_\_.

The **economic profits** that this monopolist will earn will equal \$\_\_\_\_\_. (You need to look up the total cost from the previous assignments on this orange grove.)

### 3. Summary: The Social Problems of Monopoly

Earlier in this chapter, we considered the benefits to society from perfect competition. We can use these to evaluate why monopoly is bad for society as a whole. First, in perfect competition, companies could earn economic profits in the short-run but not in the long-run. ***In pure monopoly, because of the high barriers to entry, economic profits can be earned in the long-run as well.*** Indeed, as we will see in a later chapter, much of the wealth of the super rich has come from owning companies that were able to earn economic profits for a long time. Second, in perfect competition, companies would produce the quantity being produced as efficiently as possible in the short-run. This is also true for a monopoly, as any waste reduces the company's profits. **However, monopolies do not have as strong of an incentive to be efficient as there is no competitor who could drive them out of business.** Evidence tends to show that monopolies are less efficient than companies with considerable competition. **A monopoly company probably will produce at a higher cost per unit than would be found in a**

**competitive company.** Third, in perfect competition, companies also had incentives to find ways to lower costs over time and to find ways to “improve” the products they sell. This is also true for monopolies. **Both lower costs and “better” products will increase the profits of the monopoly.** Indeed, several of the most innovative companies in America have been near monopolies. This would include Bell Labs (part of AT&T until 1996) and IBM. For AT&T, being innovative acted as a strong barrier to entry. This monopoly company was always the first to discover a new technology. New companies were unable to compete with the monopoly by finding new products first.

### Practice Quiz for Class 13

- Companies in perfectly competitive industries:
  - Make zero economic profits in the long-run
  - have incentives to improve products and produce more efficiently over time
  - achieve productive efficiency
  - all of the above
- For a monopoly, the demand curve facing the seller is
  - perfectly elastic
  - the marginal cost curve
  - the demand for the product
  - the marginal revenue curve
- For a **monopolist**, price is:
  - greater than marginal revenue
  - less than marginal revenue
  - equal to marginal revenue
  - sometimes greater and sometimes less than marginal revenue
- A monopoly company:
  - produces where the marginal revenue equals the marginal cost
  - can charge any price that it wants
  - must earn an economic profit of zero in the long-run
  - all of the above

Quantity	Price	Total Cost
1	\$100	\$ 80
2	95	170
3	90	270
4	85	380
5	80	500

This monopolist should produce:

- 1
  - 2
  - 3
  - 4
  - 5
6. From the numbers in question 5, the **economic profits** of the monopolist equal:
- \$20
  - \$40
  - \$60
  - \$100
  - 0

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