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## ANTITRUST ECONOMICS: SOME BASICS<sup>1</sup>

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Minimal familiarity with certain basic economic concepts is helpful in understanding the content and rationale of antitrust law. It is generally accepted today that “the point of antitrust is promoting consumer welfare.”<sup>2</sup> It is also generally agreed that an antitrust offense has not occurred unless an adverse effect on competition has been produced or is threatened. The main purpose of this statement of the basics of antitrust economics is to explain the concepts of consumer welfare and adverse effect on competition.

Effective competition produces a competitive equilibrium, and price and output levels that prevail at that equilibrium. If a higher price than would prevail at competitive equilibrium is, in fact, prevailing, then an adverse effect on competition may have occurred and consumer welfare may have been harmed.<sup>3</sup> To understand competitive equilibrium, and the price and output that prevail at competitive equilibrium, requires some explanation. The story usually starts with the demand and supply curves.

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<sup>1</sup>This material borrows heavily from various sources, particularly from “Supplementary Materials” prepared by Prof. Steven C. Salop (which he kindly shared with me) for use in his Antitrust Law and Economics course at Georgetown University Law Center and from Ernest Gellhorn and William E. Kovacic, Antitrust Law and Economics (1994) (“Gellhorn and Kovacic”), also known as “The Nutshell.” Other sources relied upon are cited. Substantive and editorial suggestions from Christopher T. Shenk (UNC Law ‘99) are greatly appreciated.

<sup>2</sup>George A. Hay, Market Power in Antitrust, 60 Antitrust L.J. 807, 808 (1992).

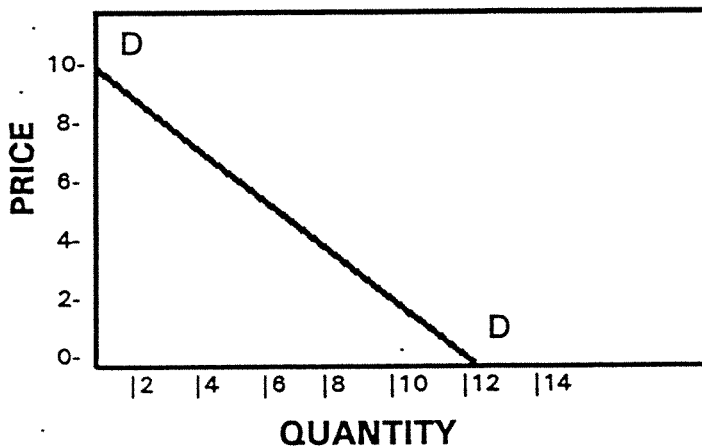
<sup>3</sup>The higher price may take the form either of a higher price literally or of lower product quality or inferior services. Speaking of a higher or lower price requires by definition that one be referring to quality adjusted price.

1. The Demand Curve

The "law of demand" holds that consumers will generally purchase fewer units of a product at a higher price and more units at a lower price. So there is an inverse relationship

between price and quantity, as illustrated in the downward sloping line in Figure 1.

FIGURE 1



The downward slope of the demand curve reflects the fact that the more one has of any good, the less value one associates with additional units of the same good. As the price increases, one will be content with fewer units of the good and will use the money saved to purchase other goods instead. There is

little mystery associated with the demand curve. It is simultaneously intuitive and empirical.<sup>4</sup>

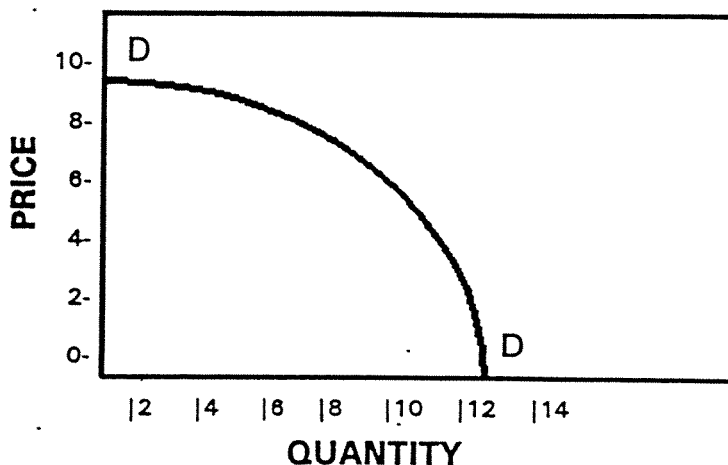
Although the demand curve is normally drawn as a straight line, in fact its slope may not be the same in all price ranges. In lower price ranges, the consumer may continue as the price increases to purchase a relatively large number of units but when the price increases to a certain point, the fall-off in units purchased with more price increases may be quite sharp. If so, for

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<sup>4</sup>There is a contrary theory applicable to certain goods. Giffen's Paradox holds that consumers will buy more of some goods as the price increases. The theory may be applicable to luxury or prestige goods such as fur coats or expensive homes, cars or yachts. Gellhorn and Kovacic at 47 n. 2. However, the consumer arguably is not really purchasing the good but is simply purchasing the opportunity to flaunt the fact that he or she paid a large amount of money for the good. If so, the price is necessarily high.

certain consumers and certain goods, the demand curve may actually be a curve, as shown by Figure 2.

FIGURE 2



This observation introduces us to the important concept of the elasticity of demand. Economists measure the ease of substitution by the price elasticity of demand ( $E_d$ ), which is defined as the percentage reduction in

demand ( $\Delta Q^d/Q^d$ ) caused by a given percentage increase in price ( $\Delta P/P$ ). Mathematically this can be written as

$$E_d = \frac{\frac{\Delta Q^d}{Q^d}}{\frac{\Delta P}{P}} \quad \text{or} \quad \frac{\% \Delta Q^d}{\% \Delta P}$$

Thus, if a 10% price increase (i.e., from \$10 to \$11) causes the consumer to reduce demand by 33% (i.e., from 3 to 2), the elasticity of demand equals 3.3 (i.e., 33/10).<sup>5</sup> The larger the elasticity of demand, the greater the responsiveness of quantity demanded to a change in price, and the greater the opportunity for substitution. Price elasticity of demand measures the percentage change in the quantity demanded or supplied in response to a given price change. When measuring the change in quantity demanded of a particular firm's product in response to

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<sup>5</sup>This method of calculation is referred to as "point elasticity." Economists also calculate the "arc elasticity" of demand. An explanation of this distinction and its significance appears in Salop, "Technical Analysis of Competition and Monopoly" (in Supplementary Materials) at 4 n. 2.

its price change, economists will refer to “own-price elasticity of demand” or simply to the “elasticity of demand.” However, in measuring the substitutability of product X for product Y (e.g., the extent to which aluminum is a substitute for steel), one may refer to the “cross elasticity of demand” and measure the percentage change in the quantity demanded of product X in

response to a price change in product Y.

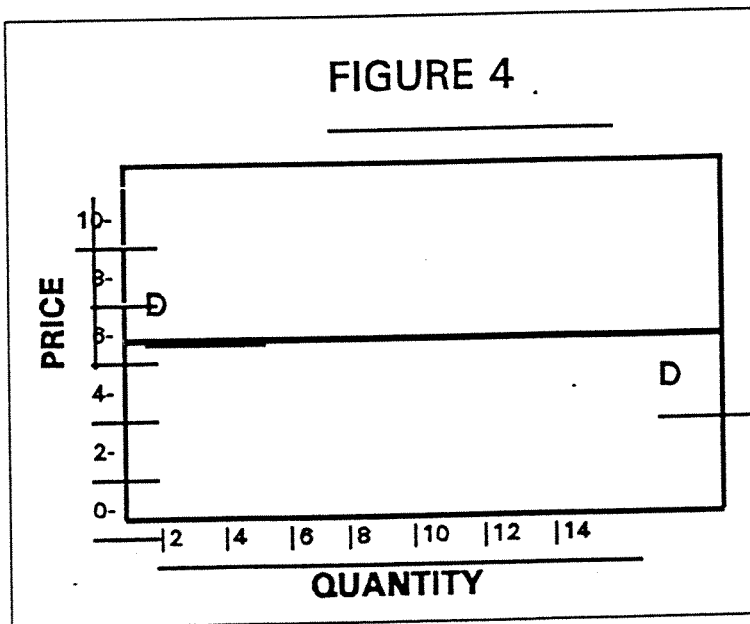
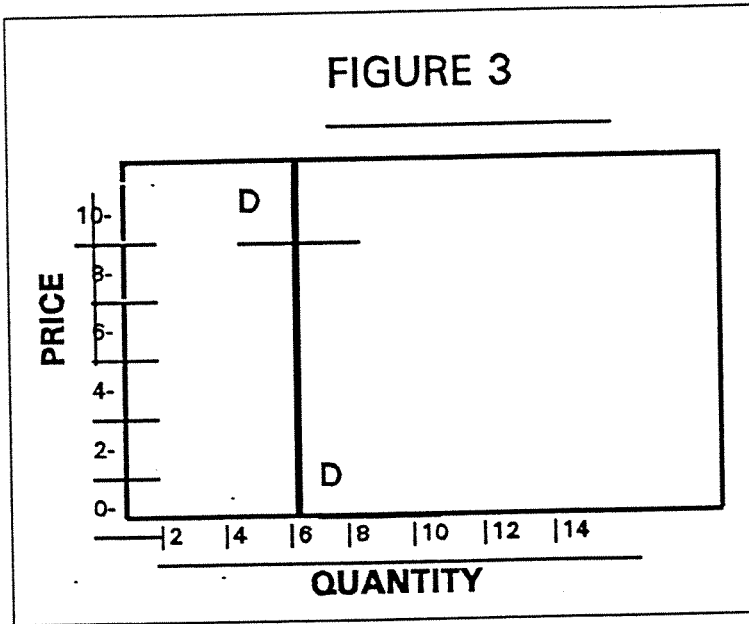
The formula is:

$$E_{XY} = \frac{\Delta Q_X^d}{\frac{\Delta P_Y}{P_Y}} \text{ or } \frac{\% \Delta Q_X}{\% \Delta P_Y}$$

If substitution is impossible as in Figure 3, the elasticity of demand equals zero (i.e., a 10% price increase would cause a 0% quantity decrease).

Economists refer to this case as perfectly inelastic demand. If complete substitution is possible, as in Figure 4, elasticity of demand approaches infinity, i.e., a minuscule price increase would produce a 100% decrease in quantity demanded. This is perfectly elastic demand.

Elasticity of demand has great significance for antitrust law. Where



demand is perfectly inelastic, which, for example, may be true with certain medicines, firms may charge any price they choose without losing customers. On the other hand, where demand is very elastic, which may be true of luxury goods or even of the branded goods of a particular supplier, firms will be unable to raise prices without losing customers completely or without losing them to competitors that produce close substitutes.

The more narrow the definition of a product, the greater the elasticity of demand for it. The elasticity of demand for a particular brand of gasoline is higher than the demand for "all gasoline," since there is a greater opportunity for substitution from a particular brand than there is for "all gasoline."

## 2. The Supply Curve

The supply curve is the inverse of the demand curve. Just as consumers are presumed to decrease the units they purchase as price increases, suppliers may increase the number of units they offer for sale as price increases. However, we can see right away that the equation for supply is somewhat more complicated than the equation for demand. That is because sellers will not respond directly to price but rather to profits. And profits are not necessarily a function of price but rather of the relationship between costs and revenues.

All costs are divided into two categories, fixed and variable. Fixed costs are costs that do not vary (at least, in the short run) with change in a firm's output. Accordingly, they have no bearing on the firm's decision (in the short run) of how much to produce. Variable costs, however, vary with the level of the firm's output and their role in output decisions is crucial.

A key, related concept is that of marginal cost. Marginal cost is the incremental cost of producing an additional unit of a commodity. For example, if total cost of producing 999 gallons of gasoline is \$100 and the total cost of producing 1,000 gallons equals \$102, then the marginal cost of the 1,000th gallon is \$2.

FIGURE 5

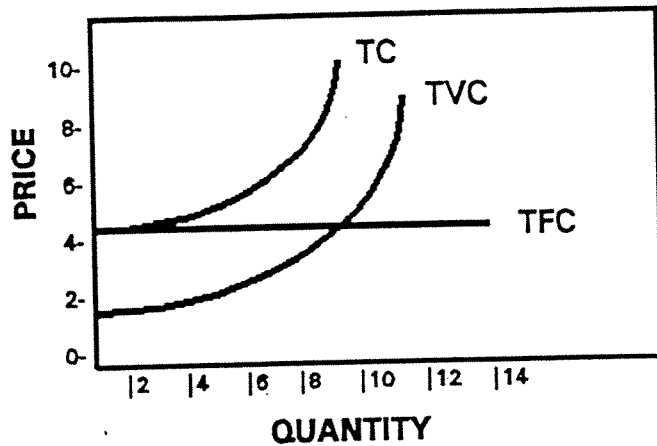
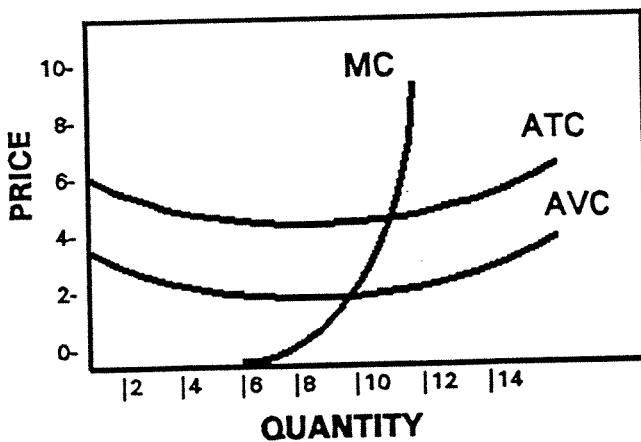


Figure 5 shows a possible relationship of total fixed costs ("TFC"), total variable costs ("TVC") and total costs ("TC").

FIGURE 6



We can also graph average variable costs, average total costs and marginal cost.<sup>6</sup> See Figure 6. Marginal cost is obviously the same whether it is calculated from total costs or from total variable costs. And as Figure 6 attempts to show, the marginal cost curve will intersect the ATC and AVC curves at their lowest point.<sup>7</sup>

<sup>6</sup> Average total cost ("ATC") and average variable cost ("AVC") are computed by dividing total costs and variable costs, respectively, by the number of units produced.

<sup>7</sup> It is also useful at this point to note the concept of "opportunity cost." Economists stress that costs include profits that are foregone by producing the product in question rather than

Since fixed costs do not vary with the level of output, the marginal cost of an additional unit is not determined by the level of fixed costs. To go back to the gasoline example, marginal cost would include the cost of the crude oil refined, but not the initial cost of the refinery. The concepts of total and marginal cost include a component for a competitive return on the firm's investment.<sup>8</sup>

The key role of marginal cost results from the presumption that firms will act to maximize profits. So long as the marginal cost of producing an additional unit is less than the price for which the unit can be sold, the firm will produce that additional unit. And it will continue producing additional units until the marginal cost rises to the price for which the unit can be sold.

Steve Salop has developed tables of hypothetical numbers that demonstrate these relationships. Table 1 presumes that the unit price is \$7. Consider first the total and marginal cost of production. The firm would maximize profits by producing 6 units, the output level at which marginal cost equals price. At that level of production, profits reach their maximum level

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another product. For example, if a firm must invest \$100 million in a refinery to produce gasoline, the firm's cost of production in an economic sense includes the interest that would have been earned had the firm placed the money in the bank instead of investing in the factory. The interest that would have been earned is the opportunity cost of the capital.

<sup>8</sup>To make matters more complicated, marginal costs may be either long-run or short-run. "[L]ong-run marginal costs are the costs of increasing output when you have time to make whatever adjustments (including expanding the size of the plant) you want. Short-run marginal costs are the costs of increasing output when you are constrained to work with existing plant. Hence, it will often be the case that short-run costs are higher than long-run costs, i.e., it is more costly to expand output on a temporary basis than it would be if the increased output were intended to be permanent." George A. Hay, Predatory Pricing, 58 Antitrust L.J. 913, 916 (1990).

of \$12.<sup>9</sup> These numbers illustrate the rule that in perfectly competitive markets, profits are maximized where price equals marginal cost.

TABLE 1								
Quantity	0	1	2	3	4	5	6	7
Total Revenue	0	7	14	21	28	35	42	49
Total Cost	3	5	8	12	17	23	30	38
Marginal Cost	[1]	2	3	4	5	6	7	8
Profit	-3	2	6	9	11	12	12	11

All of which brings us back to the seller supply curve. What we have said shows that the seller's supply curve for a firm in a competitive industry is, in fact, its marginal cost curve. The marginal cost curve initially shows the cost that will be required to produce each additional unit. But it also shows how many units will be produced at that particular level of marginal cost and, therefore, how many units will be produced at that price level.

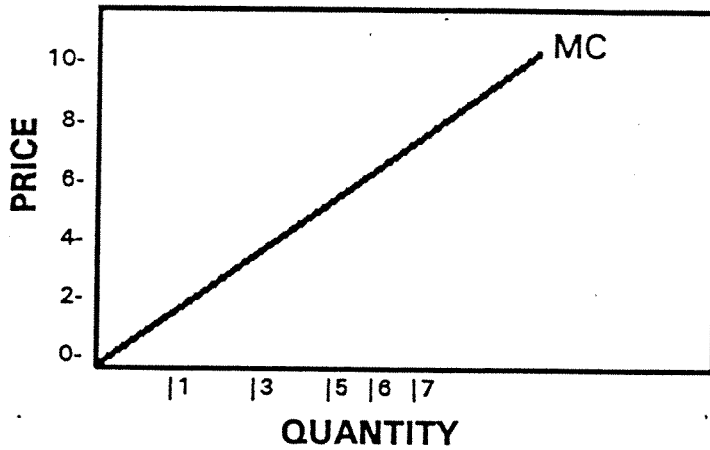
As Table 1 shows, the seller would supply one unit if the price equal \$2, two units if the price equal \$3, three units if the price equals \$4 and so on.<sup>10</sup> This is demonstrated by the marginal cost curve shown in Figure 7.

<sup>9</sup>As Salop notes, his numbers show that profits are the same for output levels 5 and 6. He presumes that output would be at 6 units because of the "economists' convention of assuming that, where profits are identical, the firm would be willing to supply that extra unit of output demanded by consumers." Salop at 8 n. 5.

<sup>10</sup>For purposes of this statement, ignore the "Total Revenue" column in Table 1, which assumes price is \$7. At a production level of one unit with a price of \$2, the seller is no better off than it is at zero production. Seller still incurs \$3 of uncompensated fixed costs. However, at the production level of 2 units, with a \$3 price, seller reduces unreimbursed costs to \$2 (2 units times \$3 = \$6 with a total cost of \$8). And at production level of 3 units with price of \$4, seller eliminates uncompensated costs. Seller really wants to produce 5 or 6 units to maximize profits at \$12.



FIGURE 7



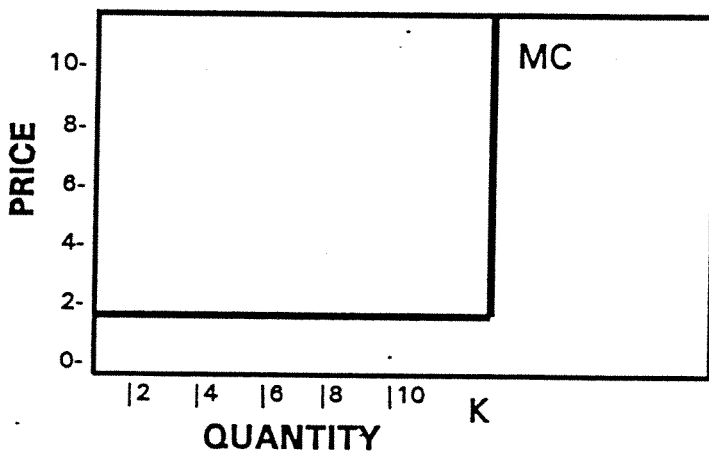
Just as there is elasticity of demand, so there is elasticity of supply. Price elasticity of supply ( $E_s$ ) is defined as the percentage increase in supply ( $\Delta Q^s/Q^s$ ) caused by a given percentage increase in the market price ( $\Delta P/P$ ) and is shown by the formula --

$$E_s = \frac{\frac{\Delta Q^s}{Q^s}}{\frac{\Delta P}{P}}$$

Thus, if a 20% price increase (from \$5 to \$6) brings forth a 25% increase in supply (from 4 units to 5 units), the price elasticity of supply equals 1.25. The larger the elasticity of supply, the more

expansion will occur in response to a particular increase in price. The

FIGURE 8



elasticity of supply ranges from zero (i.e., where a firm may have fixed capacity or no ability to expand supply in response to a price increase) to infinity (i.e., where a firm can expand supply indefinitely as indicated by a constant or flat marginal cost curve).

Figure 8 shows a constant marginal cost curve (an elasticity of infinity) up to the point where

production hits the level of K beyond which the firm cannot expand further -- so the price elasticity of supply at production point K is zero.

### 3. Competitive Equilibrium and Perfect Competition

With the information we have just assembled about demand and supply curves, we can now consider various economic models, first perfect competition. The perfect competition model is a hypothetical market which may describe at least some real world markets, e.g., the nation's wheat market. A perfectly competitive market is considered to be efficient "in the sense that no re-arrangement of production or distribution will improve the position of any consumer or seller without making someone else worse off." Gellhorn and Kovacic at 52. This is known as Pareto efficiency.<sup>11</sup> A perfectly competitive market is considered to have five characteristics:

1. Many firms. The number of firms is sufficiently large, and each individual firm is sufficiently small, that none can perceptibly affect market price by varying its output.
2. Homogeneous products. The products offered by firms are identical, not only in physical characteristics but also in the minds of consumers. That is, consumers have no preference whatever for the product of one seller over that of any other.
3. Free entry and exit. There are no unusual or artificial barriers that might deter firms from entering or leaving the market in the long run.
4. Perfect knowledge. No participants in the market can be exploited because of ignorance.
5. Independence. Firms make decisions individually, that is, without collusion.<sup>12</sup>

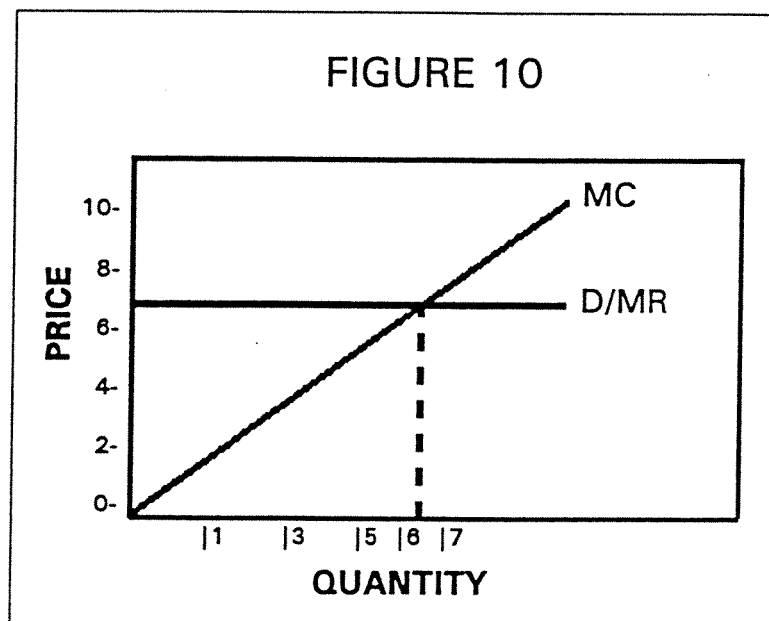
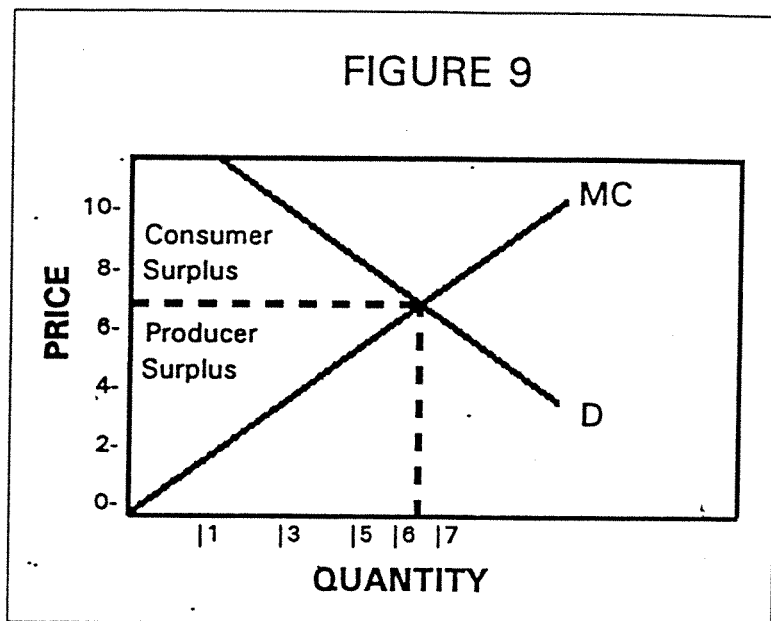
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<sup>11</sup>Named for its author, V. Pareto, Manual D' Economie Politique (1909).

<sup>12</sup>Peter Asch, Industrial Organization and Antitrust Policy ("Asch") at 9 (1983).

In a competitive market, supply is shown by the marginal cost curve, which is the same as the supply curve. Using the numbers we have used before in Figure 9, at a price of \$7, six units will be demanded. At this quantity, marginal cost also equals \$7. Thus, competitive equilibrium in the industry occurs where the price is \$7 and the quantity supplied and demanded is six units.

While Figure 9 shows the graph for the competitive industry, Figure 10 shows the same information from the perspective of any particular firm in the competitive industry.<sup>13</sup> Since there are many sellers in this market, no single firm can charge more for its product than the cost (including a reasonable investment return) of making and selling it. If a higher price were charged, buyers would simply obtain the product



<sup>13</sup> For the competitive industry of Figure 9, assume the price and quantity numbers stand for millions or billions, but for the firm shown in Figure 10, assume they stand for hundreds or thousands.

from another firm. They would have no disincentive to do so since the product is homogeneous.

There are so many sellers in this market that no single one of them can affect market price by varying its output. Each firm in the market can sell as little or as much as it wants so long as it charges the constant price it faces in the market. Each seller is a price-taker. Regardless of the amount it puts on the market, the price will be the same -- in our example, \$7. If any seller attempts to charge more than \$7, its sales will drop to zero.<sup>14</sup> Accordingly, it can be seen that the output of any particular firm in this market will be determined by its cost. "Since a price-taker can sell all, or as little as she wants at the market price, her marginal revenue curve -- the revenue she receives from the last unit sold -- is identical to the demand curve; with a horizontal individual demand curve, each unit sold by the seller adds the same amount to her revenue. But as the seller increases her sales, the marginal cost of production will rise as she tries to squeeze extra output from a limited facility, pays overtime, buys raw materials from a greater distance, etc."<sup>15</sup>

With the industry graph, Figure 9, the marginal cost curve is the sum of the marginal cost curves of all the individual sellers in the market. And it is the industry supply schedule. Unlike the horizontal demand curve faced by an individual seller, the demand curve for the industry slopes downward because there are at least some substitutes for the product of the industry. There are even some substitutes for wheat, e.g., corn, barley, etc. The demand curve faced by the individual seller in the market was flat since the wheat sold by all the other wheat farmers was a perfect substitute for that sold by any particular farmer. But since there are substitutes for

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<sup>14</sup>Gellhorn and Kovacic at 53-55.

<sup>15</sup>Gellhorn and Kovacic at 55.

wheat, albeit imperfect ones, the demand curve for the industry will show that as the price of wheat is increased, less quantity will be demanded.

We can also look at Figure 9 in connection with the concepts of consumer and producer surplus. "Consumer surplus is the value received by a consumer over and above the expenditure made in purchasing the product."<sup>16</sup> The consumer surplus indicated by Figure 9 results from the fact that the customer paid \$7 for each of the 6 units he purchased, but for the first 5 of those units, he would have been willing to pay even more. The consumer surplus shown by Figure 9 can be calculated since it is the upper triangle between the demand curve and the competitive price shown. At this competitive equilibrium, and using these numbers, total consumer surplus equals \$18.<sup>17</sup>

Sellers enjoy an analogous surplus which is called "producer surplus," and it can be calculated in the same way. "At the competitive equilibrium, seller's earn profits . . . equal to the difference between price and marginal cost for each unit produced."<sup>18</sup> Just as purchasers would have been willing to pay more for the first 5 units, sellers would have been willing to accept less. Since they received \$7 for each of the 6 units, they received more than they would have been willing to accept. The producer's surplus is shown by the lower triangle between the competitive price and the marginal cost curve and the calculation shows it also equals \$18.<sup>19</sup>

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<sup>16</sup>Salop at 11.

<sup>17</sup>The calculation simply computes the area of the upper triangle which is \$6 ( $\$13 - \$7$ ) x 6 units =  $36 \times 1/2 = \$18$ .

<sup>18</sup>Salop at 12.

<sup>19</sup>The calculation for the lower of the triangle shows \$6 ( $\$7 - \$1$ ) x 6 =  $36 \times 1/2 = \$18$ .

“The sum of consumer plus producer surplus represents the total benefit (in excess of production costs and the normal return on capital) created by the existence of this competitive market. These total benefits represent a measure of the ‘allocative efficiency’ of the market. Economic theory has demonstrated that perfect competition maximizes total surplus. It is in this sense that perfect competition is the ideal market structure.”<sup>20</sup>

#### 4. Monopoly<sup>21</sup>

Suppose that the market has been monopolized -- perhaps literally by a single seller -- or that it has fallen into the hands of a cartel.

As with the perfectly competitive industry, the monopolized industry has certain characteristics. But two things must be said. First, while monopoly literally means one seller, a single seller (even if it has monopoly power) may choose not to exercise it. Second, an industry can be monopolized -- the price and output effects of a monopoly can be created -- by several sellers acting together as a cartel. The market characteristics for both kinds of industry structure may be stated as follows:

1. Either one seller or a cartel occupies the entire market.
2. The product sold by the single seller or by the cartelists does not have close substitutes to which consumers can turn.
3. There are substantial barriers to entry to other firms into the industry, and exit is difficult.<sup>22</sup>

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<sup>20</sup>Salop at 12-13.

<sup>21</sup>This section draws heavily from Salop pages 13-15.

<sup>22</sup>Gellhorn and Kovacic at 58.

The matter of entry barriers can be appreciated quite readily. If firms not in the industry faced no barriers to entering it, the monopolist or the cartel could not survive. New firms would simply come in and defeat any effort by the monopolist or the cartel to charge a monopoly price. It is hard to generalize about entry barriers. They may not deter all entry, or they may not deter entry for all time. On the other hand, they may operate to deter new entry as well as to deter the expansion of small firms already in the market.<sup>23</sup>

Areeda and Kaplow say that entry barriers arise from 4 main sources:

1. Blocked access: This can arise from legal barriers that prevent entry (e.g., one must pass the bar exam), unavailability of essential raw materials, existence of patents, restrictive distribution channels or other factors blocking access;
2. Scale economies: "The minimum size of an efficient firm may be so large with respect to total consumer demand that entry at efficient scale would depress prices so severely as to be unprofitable."<sup>24</sup>
3. Capital requirements: The greater the capital required for entry, the more likely the cost of capital might bar a new entrant because its capital costs would so substantially exceed the capital costs of existing firms.
4. Product differentiation: This concept refers to the extent to which firms in a market through advertising or otherwise create brand loyalty and the perception by consumers that a particular brand has higher quality attributes for which they are willing to pay more. The

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<sup>23</sup>Phillip Areeda and Louis Kaplow, *Antitrust Analysis: Problems, Text, Cases* ("Areeda and Kaplow") at 18 (5th ed. 1997).

<sup>24</sup>Areeda and Kaplow at 19.

greater product differentiation exists in the industry, the harder it will be for the new entrant with an unknown brand to persuade consumers to buy its product. Many economists believe that product differentiation may be a substantial barrier to entry in many industries.

If a monopoly or cartel were to take over the industry, we can see (using the same numbers as above) that it would be profitable for the monopolist or for the cartelists to restrict output below the competitive equilibrium to 4 units and to raise the price above the competitive level to \$9. This result can be demonstrated by calculating the total revenue, cost and profit for different prices, as set out in Table 2.

Price	Quantity Demanded	Total Revenue	Total Cost	Marginal Revenue	Marginal Cost	Profit
13	0	0	3		[1]	-3
12	1	12	5	12	2	7
11	2	22	8	10	3	14
10	3	30	12	8	4	18
9	4	36	17	6	5	19
8	5	40	23	4	6	17
7	6	42	30	2	7	12
6	7	42	38	0	8	4

While Table 2 shows that the monopolist/cartel achieves the highest level of profit when it sells 4 units, it also shows that 4 units is the point at which marginal costs (MC) and marginal revenue (MR) are almost identical. If the monopolist/cartel produces a 5th unit, its MR for producing that unit is only \$4 while its MC for that unit is \$6. Hence, production of that 5th unit by the monopolist is unprofitable -- the monopolist will lose \$2. As this analysis shows, the



monopolist is just like the firm in a competitive market to the extent that it is governed by the old formula that it will produce up to the point where MC equals MR (or, at least, to the point where MC does not exceed MR).

These figures show how consumers are harmed by the monopoly or cartel. When the monopoly/cartel raises the price from the competitive price of \$7 to the monopoly price of \$9, consumption falls from 6 units to 4 units. The “monopoly overcharge” equals \$2 per unit on each of the 4 units consumers are still willing to purchase at the monopoly price. The \$2 overcharge on each of these 4 units produces a “wealth transfer” totalling \$8. At least one school of thought holds, however, that this monopoly overcharge or wealth transfer does not represent a true loss to society. While it is a loss to consumers, it is a gain to the shareholders of the monopoly firm or of the firms in the cartel.<sup>25</sup>

According to this theory, in order to calculate the true loss to society we must focus on the so-called “deadweight loss.” Economists calculate the “deadweight loss” of consumer surplus and producer surplus as follows: note that since the units purchased have fallen from 6 to

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<sup>25</sup>Criticizing aspects of the Chicago School antitrust revolution, Eleanor M. Fox and Lawrence A. Sullivan say that “[C]onsumer welfare’ . . . is not consumer welfare at all. Consumer welfare is defined as the sum of producer and consumer welfare. According to the Chicagoans, if consumers lose but producers win more than consumers lose, ‘consumer welfare’ has been increased.” Fox and Sullivan, “Antitrust—Retrospective and Prospective: Where Are We Coming From? Where Are We Going?” 62 New York Univ. L. Rev. 936, 946-47 (1987) (emphasis in original). Also advocating that antitrust should be concerned about wealth transfers from consumers to producers, see “Robert H. Lande, “Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged,” 34 Hastings L.J. 65 (1982). Lande says: “The prevailing view is that Congress intended the antitrust laws only to increase economic efficiency. Others, however, contend that Congress was largely motivated by a number of social, moral and political concerns. This Article presents a third view . . . that Congress . . . was concerned principally with preventing ‘unfair’ transfers of wealth from consumers to firms with market power.” 34 Hastings L.J. at 68.

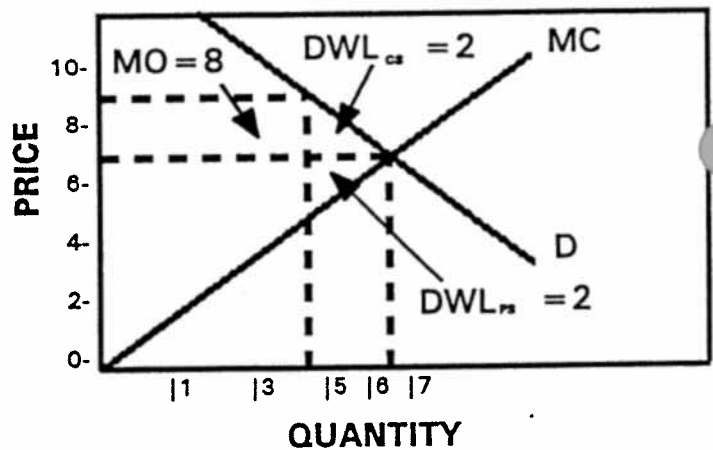
4, consumers have lost the consumer surplus that was associated with their purchase of the 5th and 6th units. At the now-prevailing monopoly price, they no longer want these units.

The consumer surplus area is shown on Figure 11 as the upper triangle labeled “DWL<sub>ca</sub>.” The consumer surplus area equals \$2.<sup>26</sup> The total loss to consumers from the cartel equals the sum of the \$8 monopoly overcharge plus the \$2 deadweight loss for a total loss of \$10.

The reduction in producer surplus can be calculated in the same way. It is shown as the lower triangle in Figure 11, which is labeled “DWL<sub>ps</sub>” and it also equals \$2.<sup>27</sup> However, the big difference between the impact of the

monopoly or cartel on consumers and producers is that, while the monopolist or cartelists lose the producer surplus, they gain the monopoly overcharge of \$8. So the monopolist/cartelists gain a net of \$6 -- the \$8 monopoly overcharge minus the \$2 loss of producer surplus.

FIGURE 11



The “net net” computation here shows a consumer net loss of \$10 and a cartel/monopoly net gain of \$6. The \$4 difference represents the total deadweight loss. That \$4 is a net loss in social wealth and it represents the

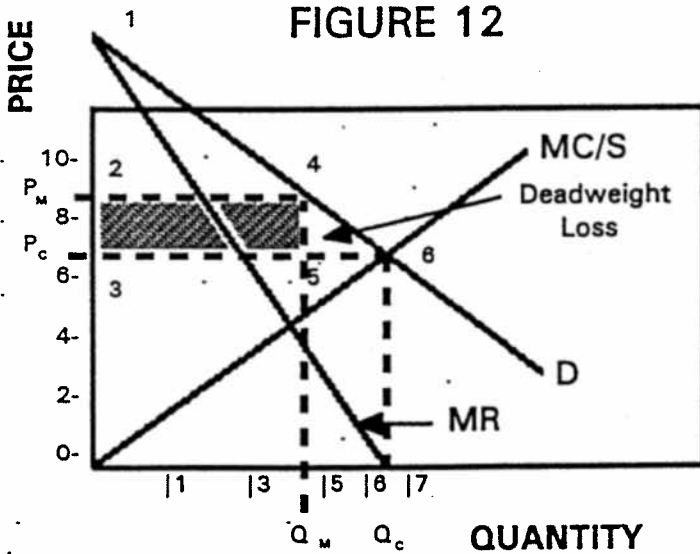
<sup>26</sup>Again, the calculation is simply the area of the triangle which computes:  $1/2 \times (9 - 7) \times (6 - 4)$ .

<sup>27</sup>The producer surplus triangle is calculated as  $1/2 \times (7 - 5) \times (6 - 4)$ .

“fundamental economic inefficiency of cartelization.”<sup>28</sup> As Steve Salop puts it, “[I]n the process of extracting monopoly profits from consumers, the cartel creates social waste.”<sup>29</sup>

While Figure 11 shows quite clearly the difference between the production and price levels of the competitive industry as opposed to the monopolized or cartelized industry, the more typical method of showing this difference is illustrated by Areeda and Kaplow’s Figure 1 (p. 15) or by Gellhorn and Kovacic’s Figure 7 (p. 67, the “Nutshell”). Figure 12 here is an illustration

of this approach. The principal difference between Figures 12 and 11 is that Figure 12 shows the MR curve. Figure 12 shows that the competitive industry produces output at the level  $Q_c$  where the supply and the demand curves intersect. As Figure 12 indicates, the supply curve is really the MC curve in any industry and, as we have learned -- as is shown by Figure 7 -- the demand curve is also the



MR curve in a competitive industry. But, as we have learned, the monopolist/cartel will also produce to the point where  $MC = MR$  -- or, in Figure 12, to the point  $Q_m$ .

Accordingly, Figure 12 shows that the competitive industry will produce a larger output than the monopolized industry and the price in the competitive industry will be lower. The

<sup>28</sup>Salop at 15.

<sup>29</sup>Salop at 15.

shaded rectangle in Figure 12 represents the wealth transfer we learned about earlier -- the amount obtained by multiplying the higher per unit cost charged by the monopolist/cartel times the number of units consumers are still willing to purchase at the higher price. But, again, arguably the wealth transfer does not represent any loss to society since those funds are merely being "transferred" from consumers to the shareholders of the monopolist. The clear loss to society is represented by the "deadweight loss" triangle, which represents that portion of consumer surplus lost by monopolization or cartelization of the industry. That triangle represents a benefit that consumers lose but that neither producers nor anyone else gains. So it is an outright societal loss.<sup>30</sup>

Two questions you might ask about Figure 12 are (1) why the MR curve for the monopolized industry falls off faster than the demand curve and (2) if it does fall off faster for the monopolized industry, why it doesn't also fall off faster for the competitive industry. Perhaps the easiest answer to the first question is mathematical/geometric -- so long as the demand curve is downward sloping, which means that as quantity increases price declines, the MR -- i.e., the incremental amount obtained from the last unit sold -- must of necessity decline faster than the price level. When the price drops as additional units are sold, the incremental

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<sup>30</sup>Why doesn't the typical Areeda/Kaplow or Gellhorn/Kovacic style graph point to Salop's producer surplus as another loss to society? Producer surplus is represented by the triangle in Figure 12 that lies just below the deadweight loss triangle. And remember we noted in connection with our discussion of Figure 11 that it is lost when monopolization or cartelization occurs? While true that it is "lost," the fact is that, unlike consumers, producers are not left less well off. They lose some portion of the producer surplus, but they more than make up for that loss with their wealth transfer gain. As we noted in connection with Figure 11, the amount of the producer surplus loss was \$2 but the amount of the wealth transfer to producers was \$8, leaving them net gainers by \$6. So the amount of the producer surplus lost is not a loss to society.

amount of total revenue declines even faster -- ergo, the MR declines faster than the price level. This can be seen from the numbers stated in Table 2.

As for the second question, one must remember that firms in a competitive industry receive the same price for each unit of output regardless of the number of units sold. So, when such a firm sells an additional unit of output, the price charged and the marginal revenue received are identical. As a result, each firm in the industry produces where its MC curve intersects the demand curve it faces, which as we have seen in Figure 10 is flat (perfectly elastic) and is identical to the MR curve. And the firms in a competitive industry collectively produce to the point where their collective MC curves intersect the demand curve.

#### 5. Dynamic Adjustment and Efficiency

Since "allocative efficiency" has been mentioned, a brief word is in order. First, there is the closely related "dynamic adjustment process,"<sup>31</sup> which may also be thought of as an allocative efficiency process. This mechanism will allocate resources to the production of goods (and services) as they are demanded by consumers in a competitive economy. The theory is that in a perfectly competitive economy (if one were to exist), profit rates (adjusted for risk) would be equal. If consumers decided they wanted more of good X, they would buy more of it, which would increase prices and profits for the producers of X. In response to higher profits in industry X, producers in industry Y would abandon production of Y in favor of X. After interim disruption, equilibrium would be restored and profit rates in the production of X, Y and all other goods would, once again, be equal. As can easily be seen, while this adjustment process serves consumer interests well in a competitive economy, it can produce a misallocation of resources if

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<sup>31</sup>See Areeda and Kaplow at 7-8.

factors other than consumer desires trigger higher or lower profit rates in a particular industry than otherwise would prevail. Thus, if a monopolist or cartel involved in producing X were able to charge prices higher than marginal cost, obtain higher profits and blockade entry into the production of X, consumers probably would buy less of X and they might shift and buy more of Y and other products. That would cause fewer resources of the economy to be involved in the production of X and more resources involved in the production of Y than competitive conditions would produce.

Allocative efficiency is explained by Prof. Hovenkamp in a slightly different way.<sup>32</sup> He notes first that there are two different kinds of efficiency, productive and allocative. Productive efficiency refers to the cost incurred in the production of a good. Firm A that produces the good for less cost is more efficient than higher cost producer B. More technically, “[a] firm that produces a product valued at \$100 and requires inputs valued at \$80 is more efficient than a firm that produces a product valued at \$100 but requires inputs valued at \$90.”<sup>33</sup>

Allocative efficiency, under a variation of the Pareto principles, occurs “if the gainers from [a] change gain enough so that they can fully compensate all losers out of their gains -- that is, if the total value placed on the gains exceeds the total value placed on the losses.”<sup>34</sup> One can see from reference to Figure 12 how the adoption of a rule against monopolization or price fixing is efficient by this standard. As we have seen, the monopolist or cartel will reduce output to  $Q_m$  and raise price to  $P_m$ . By doing so, consumer surplus will be reduced to triangle 1-2-4 and the

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<sup>32</sup>Herbert Hovenkamp, Federal Antitrust Policy (“Hovenkamp”) at 74-77 (1994).

<sup>33</sup>Hovenkamp at 74.

<sup>34</sup>Hovenkamp at 75.

loss to consumers is represented by 2-3-6-4. The monopolist or cartel gains 2-3-5-4 and the deadweight loss is represented by 4-5-6. Thus, the monopolist/cartel gainers cannot compensate consumer losers out of their gains. The monopoly gain, 2-3-5-4, is insufficient to compensate the consumer loss, 2-3-6-4. So, the rule against monopolies and cartel is efficient.

Finally, note a couple of points. First, the word "efficiency" is widely used in antitrust commentary and cases without a precise definition. Frequently, it is simply used to mean a reduction in costs. A challenged practice may be defended "on the grounds of efficiency," by which practitioners will usually mean that the practice lowers production costs.

Second, as Hovenkamp explains, while some economists when gathered alone will speak of the ultimate antitrust test as being allocative efficiency, the test usually used by those who have the same thought is "consumer welfare." This raises the question of who are consumers. Arguably they are, and some clearly believe they are -- everyone. But an antitrust test that asks whether everyone is better or worse off, is not very helpful. In practice, this frequently reduces to the question whether the challenged practice reduces output and/or lowers prices in the relevant market.<sup>35</sup>

## 6. Oligopoly

The term oligopoly is used generally to refer to an industry consisting of a few sellers. The principal characteristic of an oligopoly that sets it apart from a pure competitive or monopolistic industry is that any firm must take the actions of all firms in the industry into account in deciding its marketing strategy. As we have learned, a firm in a pure competitive industry has no concerns about what other firms are doing. It produces until its marginal costs

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<sup>35</sup>Hovenkamp at 76-77.

rise to the industry price level, and there it stops. Similarly, the monopolist has no or little concern for other firms. By definition, its product faces no close substitutes. So it proceeds to charge its monopoly prices and collect its monopoly rents.

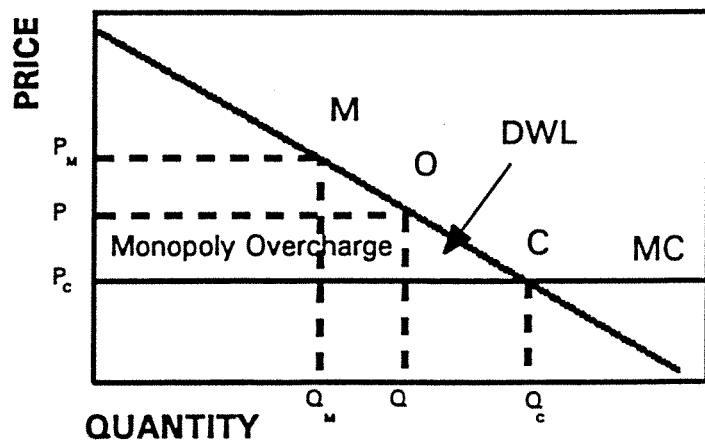
But firms in an oligopoly are mutually interdependent. "What is unique to the oligopolist is that the options of rival firms both affect and are affected by it. The situation is thus circular. The optimal pricing policy for an oligopolistic firm A cannot be defined until it is known . . . what rival oligopolist B will do. A's best policy depends upon B. But by precisely the same token, B's best moves cannot be defined without knowledge of A's policy."<sup>36</sup> This wormy situation has invited dozens of theories and models that attempt to explain how an oligopolistic industry behaves.

But before taking a brief look at these theories, notice Steve Salop's chart, Figure 13, which shows the price set by an oligopoly,  $P$ , to be higher than the price set by a competitive industry,  $P_c$ , but lower than the price set by a monopolist,  $P_m$ .

As Figure 13 indicates, Salop labels the rectangle, "Monopoly

Overcharge," using the same terminology we would use in describing a pure monopoly. He also uses "DWL" to indicate deadweight loss, just as in the case of a monopoly.

FIGURE 13



<sup>36</sup>Asch at 39.



Figure 13 represents a standard assumption about the relationships between competitive, monopolistic and oligopolistic industries. Like a monopoly, the oligopoly will produce a lower output and sell at a higher price than will the competitive industry. Many economists believe that many industries are oligopolistic industries. Are all these industries in fact charging non-competitively high prices? Obviously, that is a very important question. Robert Bork supplies his answer very clearly: "I doubt that there is any significant output restriction problem arising from the concentration of any industry."<sup>37</sup>

Several different approaches have been used in attempts to explain oligopoly behavior. The earlier approaches produced a series of models that had such simplistic assumptions about competitive response that the usefulness of the models was limited. For example, in the "Macy's-Gimbels" model, it was assumed (a) that Macy's would match Gimbels price and (b) that Gimbels would undercut Macy's price by 10%. Thus, this model presupposes absurd reactions and produces the result that both Macy's and Gimbels charge zero. The Cournot model, published by Augustin Cournot in 1938, hypothesized two sellers in the market with each believing that the other would continue to produce at the output level at which it had been producing. Indeed, after a series of adjustments, this two-seller oligopoly (duopoly) will produce at an output level that is less than that of the competitive industry but higher than that of the monopoly. Asch at 44-45. There are also the Bertrand, the Edgeworth and the Hotelling models. In the Edgeworth model, prices fall to zero through a series of steps but then rise back to a monopoly level and fall again. Asch at 46-50.

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<sup>37</sup>Robert Bork, The Antitrust Paradox at 178 (1978).

Another “explanation” of why oligopolies may exhibit substantial price stability is demonstrated by the “kinked demand curve,” shown in Figure 14. The kinked demand curve is based on the assumption that a firm in an oligopoly market has different expectations of how its rivals will react to its attempt to raise prices as opposed to their reaction to its lowering of prices.

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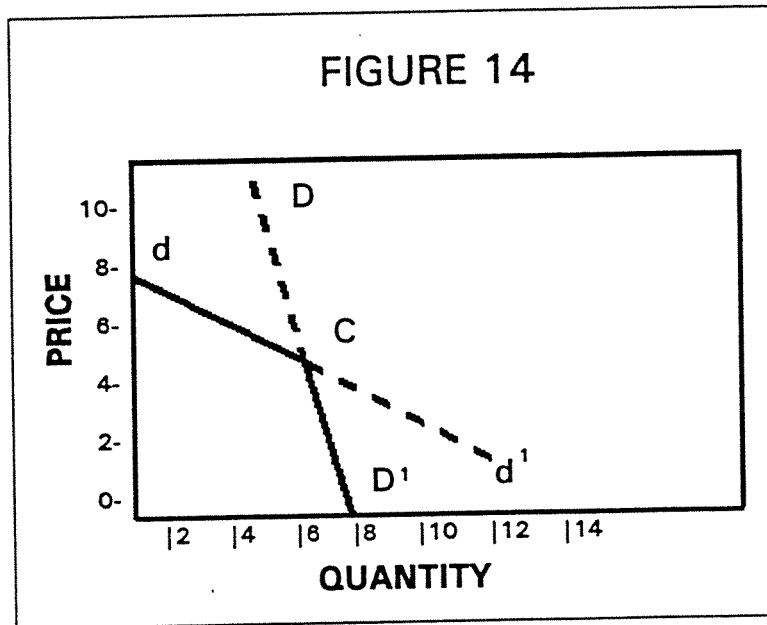
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volume of sales, while if it should lower its prices, it would not lose as much. This results from the fact that rivals will not go along with the price increase but will go along with a price decrease. On the basis of these assumptions, it may appear to the oligopoly firm that neither a price increase nor a price decrease is a very attractive option.

The game theory approach to the explanation of oligopoly behavior was prompted originally by the publication of The Theory of Games and Economic Behavior (1947) by J. von Neumann and O. Morganstern. With two-person, zero-sum games, it is possible to construct hypothetical strategies and payoff matrices that will show the advantages of different strategies

for each firm. Asch at 53-56. Unfortunately, oligopolies do not fit the zero-sum formula so these games are not very helpful in explaining oligopoly behavior.

A non-zero-sum game that game theorists love to talk about and that has more relevance to oligopoly behavior is the famous Prisoners' Dilemma. The model is constructed by assuming that two prisoners who cannot communicate are told that if they both confess they will be penalized appropriately; that if neither one of them confesses they will both go free; but that if one of them confesses while the other does not, then the confessing prisoner will go free and receive a reward while the non-confessing prisoner will receive a particularly severe penalty. The payoff matrix shows that the best strategy for each prisoner is to confess since that will leave each prisoner better off no matter what the other one does.<sup>38</sup> Asch at 57. So, both prisoners will confess even though they would have both been better off if each had not confessed.

The relevance of the story to oligopoly theory is its demonstration that before acting, any participant in an interdependent group must carefully consider the possible actions or responses of others. A failure to consider such responses by the prisoner might prompt uncritical individual optimizing in the form of a refusal to confess and, in the oligopoly, of a price cut by

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<sup>38</sup> Prisoner's Dilemma: Payoff Matrix for A, B (B= shaded)

		<u>B's Strategy</u>	
		<u>Confess</u>	<u>Don't Confess</u>
<u>A's Strategy</u>	<u>Confess</u>	-1, <del>-1</del>	+2, <del>2</del>
	<u>Don't Confess</u>	-2, <del>2</del>	+1, <del>1</del>

the oligopolist. But, in the prisoners' case, if the other prisoner were to confess, the non-confessing prisoner would receive a "particularly severe penalty." And, the price cutting oligopolist might find that he had prompted a matching price cut by all his competitors (as the kinked demand curve discussion shows) producing lower profits for him and for the entire industry.<sup>39</sup>

Several other writers about oligopoly presume that oligopolists will act cooperatively, if not collusively. They presume that such cooperation will avoid the price warfare of the sort presupposed by the Macy's-Gimbels, Bertrand and Edgeworth models. One of the first of these was Edward H. Chamberlin, author of The Theory of Monopolistic Competition, first published in 1933. Chamberlin theorized that the Cournot duopolists would size up their situation rationally and adjust the output levels to the level of a monopoly. Asch at 59. Weiss has proposed that the Chamberlin theory be amended to reflect that different firms in an oligopoly have different costs, capacities and perceived elasticities of demand with the result that their cooperation will produce a price lower than the monopoly price.<sup>40</sup>

George Stigler's article, "A Theory of Oligopoly,"<sup>41</sup> hypothesized that oligopolists would tend to engage in outright collusion. He examined the conditions necessary for effective cartels and concluded that detection of secret price cutting by any member was essential to the effective functioning of the cartel. He noted that fewness of sellers and disparity of size among them

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<sup>39</sup> Of course, if all firms cut prices, they will all lose. L.W. Weiss, "The Concentration-Profits Relationship and Antitrust," in Milton Handler, Harlem M. Blake, Robert Pitofsky and Harvey J. Goldschmid, Trade Regulation ("Handler/Pitofsky") at 492 (3rd ed. 1990).

<sup>40</sup>Weiss in Handler/Pitofsky at 491.

<sup>41</sup>72 Journal of Political Economy 44-61 (February 1964).

makes it easier to detect secret price cutting. His theory indicated that prices would rise as concentration increased.<sup>42</sup>

J.S. Bain conducted an empirical study of the profit rates of 42 industries for the period 1936-1940 and found that average profits were considerably higher where the eight largest firms in the market accounted for 70% or more of the market.<sup>43</sup> “Bain’s survey suggested that oligopolistic . . . industries acted interdependently to restrict output and raise prices above average cost and thus to earn supranormal returns.”<sup>44</sup>

Although Bain’s findings were confirmed by some subsequent studies, troubling questions were also asked about them.<sup>45</sup> However, by 1960 the evidence collected by Bain and others “indicated a weak but generally positive correlation between concentration and profit rates.”<sup>46</sup> These findings gave rise to the “structuralist” school of antitrust philosophy, “which argued that an industry’s structure largely determined its conduct and performance.” Gelhorn and Kovacic at 77. As a result of the structuralist ascendancy in the 1960s, many felt that concentration in American industry should be actively challenged and there were legislative proposals to deal with perceived high levels of concentration.<sup>47</sup>

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<sup>42</sup>Weiss in Handler/Pitofsky at 493.

<sup>43</sup>J.S. Bain, Relation of Profit Rates to Industry Concentration: American Manufacturing, 1936-40, 65 Q.J. Econ. 293 (1951). Cited in Gelhorn and Kovacic at 77.

<sup>44</sup>Gelhorn and Kovacic at 77.

<sup>45</sup>E.g., H. Demsetz, Two Systems of Belief About Monopoly, in Handler/Pitofsky at 494-97.

<sup>46</sup>Demsetz in Handler/Pitofsky at 496.

<sup>47</sup>Id. at 78. A 1968 White House task force on antitrust policy recommended passage of a Concentrated Industries Act to bring about reduction of industrial concentration in part through

## 7. The Chicago School and Thereafter

In the 1960s, Demsetz and others associated with the "Chicago School," raised substantial questions about the market concentration/profits correlation. Demsetz questioned how markets could remain concentrated unless they were protected by the government. He noted several studies indicating that government regulations raised entry barriers that protected concentrated industries.<sup>48</sup> And he theorized that certain industries might be highly concentrated simply because the competitive struggle produced a small number of "winners."<sup>49</sup> Demsetz pointed to an article by Stanley Ornstein<sup>50</sup> as "undermining . . . the evidence favoring the market concentration doctrine."<sup>51</sup> "Ornstein found profit rates to be related significantly to industry and firm growth rates, and to the minimum efficient scale of production, but not to market concentration."<sup>52</sup> Demsetz also pointed to other studies that "have revealed a high degree of temporal instability in correlations between profits rates and market concentration, and some of these correlations are negative."<sup>53</sup> He concluded:

These new studies constitute a fundamental challenge to the empirical work underlying the market concentration doctrine. Doubts have been raised as to

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litigation on an industry-by-industry basis. Handler/Pitofsky at 569.

<sup>48</sup>Demsetz in Handler/Pitofsky at 496-97.

<sup>49</sup>Gelhorn and Kovacic at 78.

<sup>50</sup>Concentration and Profits, 45 J. Bus. 519 (1972).

<sup>51</sup>Demsetz in Handler/Pitofsky at 497.

<sup>52</sup>Demsetz in Handler/Pitofsky at 497 [emphasis in original].

<sup>53</sup>Id.

whether there exists a positive correlation between profit rates and concentration.<sup>54</sup>

The impact of the Chicago School in the 1970s was not limited to severe questioning of the traditional concentration/profits correlation that extended across the range of practices traditionally thought to be anticompetitive. Aaron Director, one of the original Chicago School scholars, raised serious questions about whether vertical restraints threatened consumer welfare. Lester Telser questioned whether vertical price fixing posed a harm to competition. Other Chicago School thinkers -- Richard Posner, Robert Bork and Frank Easterbrook -- questioned the traditional antitrust approach to many other practices. Indeed, Easterbrook said that the Chicago School came to favor an antitrust policy that consisted of "little other than prosecuting plain vanilla cartels and mergers to monopoly."<sup>55</sup>

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<sup>54</sup>Id.

<sup>55</sup>Frank H. Easterbrook, "Workable Antitrust Policy," 84 Mich. L. Rev. 1696-1701 (1986). Two Chicago School critics, Fox and Sullivan, claim that members of the Chicago School "hold the following beliefs:

- (1) Efficiency should be the exclusive goal of all commercial law, and virtually all law other than constitutional law.
- (2) Efficiency should be measured only in a negative sense; that is, the law should reprehend only that which is inefficient. Output restraint is the inefficiency to be prevented.
- (3) The market punishes inefficiency faster and better than the machinery of the law.
- (4) There is no margin between the efficient and the inefficient. Therefore . . . , activity that does not restrain output is efficient, and legal regulation of such activity will suppress the freedom of producers to serve consumers in ways that consumers desire.
- (5) Law is economics . . . . Efficiency is justice.

Fox and Sullivan, supra note 25 at 957-58.

Current writings about economics and antitrust assume that we have moved to the "post-Chicago" era. Interestingly, it seems fair to say that the post-Chicago era is not characterized by return to an earlier era of populism or to an era in which non-economic antitrust goals are in the ascendancy. That might well have happened since there have always been many respected scholars and judges who urged that the antitrust laws had valid social, political and other non-economic goals to serve.<sup>56</sup> But, if anything, the commitment to the economics of an efficiency-based antitrust policy in the post-Chicago era appears to be quite strong. One writer has said that as a result of "the influence of the Chicago School, economics has become the essence of antitrust."<sup>57</sup> The task now appears to be the identification of those economic studies and principles that will form the basis for new antitrust policy.

There are several economic themes that have emerged in the post-Chicago era. One of these is the ongoing interest of many scholars in the application of game theory to antitrust, particularly to oligopoly behavior. Another important line of analysis, in the wake of the severe Chicago school criticism of the traditional approach to predatory pricing, indicates that predatory pricing may have a previously unnoticed objective that makes it a more viable strategy. The theory is that the predator is not simply aiming at his target of the moment but is also engaged in establishing his reputation for predation. The result is that potential targets moderate the vigor

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<sup>56</sup>E.g., Robert Pitofsky, "The Political Content of Antitrust," 127 U. Pa. L. Rev. 1051 (1979); Eleanor M. Fox, "The Modernization of Antitrust: A New Equilibrium," 66 Cornell L. Rev. 1140 (1981).

<sup>57</sup>Jonathan B. Baker, "Recent Developments in Economics that Challenge Chicago School Views," ("Baker") 58 Antitrust L.J. 645, 646 (1989). Baker adds: "[W]e need not reject the value of economic efficiency in order to question the Chicago School." Id.



of their competitive efforts with the result that market prices rise and consumers pay the higher price.<sup>58</sup>

Steve Salop and Thomas Krattenmaker have developed a major new theme in antitrust which urges that the various different rules and approaches that the courts have taken to a variety of commercial practices should be evaluated as exercises in exclusion by “raising rivals’ costs.” The analysis can be applied to exclusive dealing arrangements, tie-ins, vertical restraints and integration and certain monopolization practices. Generally it involves consideration of the extent to which competitors may impose higher costs on rivals or deny them essential inputs or distributions channels, or frustrate their entry or expansion in the market.<sup>59</sup> The theory affords a particularly useful response to Chicago School debunking of theories of nonprice vertical restraints.<sup>60</sup>

Another line of post-Chicago analysis focuses on the extent to which market imperfections, including information gaps, can produce adverse economic effects on at least portions of the consumers in the market. The Supreme Court in its decision in Eastman Kodak Co. v. Image Technical Services, Inc., 112 S. Ct. 2072 (1992), referenced this research “to support its conclusion that information imperfections could reduce the ability of durable equipment users to protect themselves from overreaching by original equipment suppliers in the aftermarket for parts and service.”<sup>61</sup> This decision allowed for the possibility, contrary to

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<sup>58</sup>Baker explains the theory and credits its authors at 58 Antitrust L.J. 648-49, 649 n. 18.

<sup>59</sup>The key article is Thomas G. Krattenmaker and Steven C. Salop, “Anticompetitive Exclusion: Raising Rivals’ Costs to Achieve Power over Price,” 96 Yale L.J. 209 (1986).

<sup>60</sup>See Baker at 647.

<sup>61</sup>Gelhorn and Kovacic at 83.

Chicago precepts, that original equipment manufacturers notwithstanding effective competition in the equipment markets, could nevertheless impose anticompetitive price increases or quality reductions on some consumers in their downstream parts and service markets. Steve Salop's research has also been central to this line of analysis.<sup>62</sup> In particular, Salop's "installed base opportunism" model demonstrates that original equipment sellers may be able to impose higher parts or service prices on customers having installed bases of their equipment and, at the same time, avoid losing sales to new purchasers by "immunizing" such new purchasers from such price increases. Given certain assumptions, such a strategy on the part of an original equipment manufacturer can be profitable.

Still another line of post-Chicago research seeks to show that an important purpose of many different activities -- joint ventures, vertical integration and restrictive distribution contracts -- may be to lower costs. The point of this research would be to suggest that such enterprises promote rather than threaten consumer welfare.<sup>63</sup> Gelhorn and Kovacic suggest that the Supreme Court's decision in Broadcast Music, Inc. v. Columbia Broadcasting System, Inc., 441 U.S.1 (1979), reflects an application of these ideas.<sup>64</sup>

Finally, a very important book by William J. Baumol, John C. Panzar and Robert D. Willig, Contestable Markets and the Theory of Industry Structure (revised edition 1988), holds

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<sup>62</sup>Steven C. Salop, "Exclusionary Vertical Restraints Law: Has Economics Mattered?", 83 Am. Econ. Rev. 168 (1993); "Kodak as Post-Chicago Law and Economics," (Charles River Associates brochure 1993).

<sup>63</sup>Gelhorn and Kovacic at 83-84; Paul L. Jaskow, "The Role of Transaction Cost Economics in Antitrust and Public Utility Regulatory Policies," 7 J.L. Econ. & Org 53, 55-66 (1991).

<sup>64</sup>Gellhorn and Kovacic at 84.

that in some highly concentrated markets entry and exit may be sufficiently easy that the markets will function in a reasonably competitive fashion:

In a perfectly contestable market, firms are constantly vulnerable to hit and run and entry and exit and therefore are induced to perform efficiently and charge competitive prices. For markets to be perfectly contestable, firms need not be small and numerous, nor is it essential that they produce homogenous goods. . . . Where the vital assumption of frictionless entry and exit holds true, even the largest firm cannot raise prices much above a competitive level without risking a substantial loss of sales at the hands of a new entrant. Few, if any, industries are perfectly contestable, but contestability theories suggest that markets containing a small number of large firms may be highly contestable and highly competitive.<sup>65</sup>

This analytical approach underscores the long-recognized importance of entry/exit conditions.<sup>66</sup>

The bottom line is that in the post-Chicago era, the dominant view is that antitrust enforcement should be informed by economic learning and should not seek directly to promote social, political or other objectives. That is not to say there is a consensus on this point since there are vigorous and articulate proponents for the proposition that the base of antitrust is not so limited.<sup>67</sup> And, “[t]ransactions cost economics and contestability theory have undermined the

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<sup>65</sup>Gelhorn and Kovacic at 84-85.

<sup>66</sup>Baker discusses other post-Chicago economic developments. One deals with industry studies indicating that industry collusion may be interrupted by unexpected drops in industry demand. The conspirators may not be able to determine whether price dropped because of an unexplained drop in demand or because one or more of their number cheated on the cartel. But the cartel may still pull itself together after a “competitive episode.” Baker at 649-50. Another theory is based on studies showing that conglomerate firms that compete in unrelated markets may moderate their competitive striving out of fear that retaliation for vigorous competition in one market may occur in a separate market. To the extent that “multimarket contact induces the firms to cooperate rather than compete,” concern about conglomerate mergers – a concern killed by the Chicago School in the 1980’s – may be reawakened. Baker at 650-51. Finally, new studies show how existing firms, contrary to Chicago School teaching, may deter new entry by expanding capacity and otherwise convincing any would-be new entrant that post-entry prices would be so low it would be unable to recover its irreversible or “sunk” costs. Baker at 651-52.

<sup>67</sup> See Pitofsky and Fox, supra note 56.

presumption that any deviation from the model of perfect competition is anticompetitive and harmful." Gelhorn and Kovacic at 85. It may be fair to assume that it is no longer taken as a given that a highly concentrated industry will necessarily behave anticompetitively. As a result, there is not a current clamor for legislation that would deconcentrate industries generally, as occurred in the 1960s. At the same time, the research of Steve Salop and others shows that injuries to consumer welfare can be perpetrated in various industry structure contexts and with practices that the Chicago School had declared were inevitably benign.

## Summary of Main Economic Points

- Where price exceeds marginal cost, an adverse effect on competition indicated
  - Indeed, “[m]arket power is a firm’s ability to deviate profitably from marginal cost pricing.” Hovenkamp at 80.
  - The Lerner Index is the relevant equation:  $(P - MC) / P$
  - In perfect competition where  $P = MC$ , the index is zero
  - Where the firm can price at twice its MC level, the index is .5
  - As P approaches infinity or MC approaches zero, the index approaches 1.0
- But because MC and price elasticity are hard to measure, market share is frequently resorted to as a measure of market power
  - This puts a premium on market definition
- Output of the monopolist or oligopolist is lower and prices are higher than with the competitive industry (see Fig. 13)
  - As we look at particular antitrust practices, will inquire about their effect on industry output and prices (to gauge effect on competition)
- This emphasizes the important role of efficiencies, i.e., cost reductions
  - We can see (Fig. 12) that even the monopolist will increase output and reduce prices if its costs are reduced
  - True, those gains may not be passed along to consumers
  - We will look at the predatory strategy of “raising rivals costs” as a method of reducing the effectiveness of a rival’s price competition
- Can see how the firm in a competitive industry has no market power
  - Faces perfectly elastic demand curve
  - But how firms in oligopolistic industries, and monopolists, may have at least some degree of market power
    - Face downward sloping demand curves
    - Can increase prices without losing all sales
- We can see how the oligopolistic industry may not compete effectively --
  - And how the interdependence of oligopolists may promote price rigidity at a noncompetitive level (kinked demand curve)
- Can see how increased levels of industry concentration are thought to lead to lower output and higher prices --- Figure 13 illustrates
  - This draws the basis for the structuralist school of antitrust
  - Which underlies the current concentration-based Merger Guidelines
- This leads to an observation about the importance of high/low entry barriers
  - High prices will invite new entry
  - Which will create procompetitive outcome if barriers don’t block entry

