# AN INTRODUCTION TO ANTITRUST ECONOMICS[†]

### ERNEST GELLHORN[*]

The objective of antitrust law is to assure a competitive economy,[1] based upon the belief that through competition consumer wants will be satisfied at the lowest price with the sacrifice of the least amount of scarce resources. To express this in economic terms, competition maximizes both allocative efficiency (making what the consumer wants) and productive efficiency (using the least amount of re-sources).

In seeking to create or preserve a climate conducive to a competitive economy, the antitrust laws rely upon the operation of the "market" system (free enterprise) to decide what shall be produced, how scarce resources shall be allocated among the various factors of production, and, most importantly, to whom the various products will be distributed. The market system advances the propositions that the consumer (through his willingness or refusal to buy) will decide what and how much shall be produced and that competition among producers (with the production of the highest quality product at the lowest price) will determine who will manufacture it.

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1. "The history of the Sherman Act as contained in the legislative proceedings is emphatic in its support for the conclusion that 'business competition' was the problem considered and that the act was designed to prevent restraints of trade which had a significant effect on such competition." Apex Hosiery Co. v. Leader, 310 U.S. 469, 493 n.15 (1940). *See also* Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J. LAW & ECON. 7 (1966).

Yet, the economic case for a free and open market does not neces-sarily infer that the market will continue to function properly when con-fronted by efforts to substitute private rule (*e.g.*, agreements among competitors to fix prices above the competitive price) for the more or less automatic mechanisms of adjustment provided by competition. The antitrust laws are a legislative acknowledgement of an imperfect system—in reality competitive markets often do not exist. Their pur-pose is to make certain that the gap between the ideal of competition and the reality of private rule does not become dangerously wide. Choices other than reliance on a competitive economy to protect con-sumer welfare are, of course, possible. Before the development of an industrial society (and particularly in feudal times), status or tradition governed production, resource allocation, and distribution. Today, in many sectors of our economy and in large areas of the world, these eco-nomic decisions are resolved through central planning—which usually stems from governmental direction and control. Central planning sub-stitutes the political and governmental process for that of the free mar-ket. However, the same questions of who produces and consumes what goods and in what manner must still be resolved.

Moreover, the antitrust laws are not applicable to the entire econ-omy; they address themselves to only a segment of it. Antitrust's pri-mary concern is with the manufacturing and service sectors of our in-dustrialized economy.[2] Nevertheless, the size and strategic importance of manufacturing and service industries—generating over 70% of the national income—assure that antitrust is central to the entire economy. Even where its enforcement has not been particularly effective, anti-trust law and the potential threat of its application are significant in de-termining the standard of living available to all, the purchasing choices open to all, and the allocation of productive resources affecting all of us.[3]

Because antitrust cases involve basic economic issues, the great disputes that set trends and establish primary principles revolve around inferences drawn from economic analysis. Microeconomics—the study of the behavior of individual economic units (the consumer, firm, and industry)—therefore falls within the antitrust lawyer's province. The hiring of an expert economic consultant or witness will not dis-

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2. The antitrust laws generally do not apply to labor unions, agricultural and fish-erman organizations, governmental units, or to many activities of regulated industries (*e.g.*, banks, public utilities). *See* P. AREEDA, ANTITRUST ANALYSIS 102-20 (2d ed. 1974).

3. *See* F. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 464 (1970).

charge this responsibility; the specialist in antitrust law must possess an understanding of basic price theory. Consequently, this Article focuses on those basic principles of economic theory which bear directly on antitrust policy. It seeks to introduce the antitrust lawyer, judge, and student to the central ideas; it is not a substitute for the study of economics.[4]

## I. SOME BASIC EXPLANATIONS AND BEHAVIORAL ASSUMPTIONS

### A. Scarcity

If there were a plentiful supply of goods so that everyone could fully satisfy his wants, no matter how insatiable his desire, there would be no economic theories—or for that matter, ideologies of laissez faire or communism, or industrial firms, or probably law firms and law schools. The price of gas or home heating oil would be zero and we could all drive Cadillacs.

The starting point for economic analysis, then, is the concept of *scarcity*. All societies, however organized, must face the fact that there are not enough resources available to produce all the goods and services that they could consume. All societies, therefore, must develop social arrangements to deal with the production and distribution of scarce goods and resources. Because of scarcity it is constantly necessary to choose between what to produce and what not to produce, allocating resources among various production possibilities.

### B. The Market or Price System

In a market system, such as ours, this choice or allocation is not the decision of a central planner but the net result of millions of decisions made independently by consumers and producers, all acting through the market (the price system). Prices are the coordinating mechanism for the millions of decentralized production and consumption units. They limit the amount that consumers will purchase and that manufacturers will produce. In the absence of government regulation, prices will determine how much gasoline an oil company will supply and how much gas will be purchased. In a market system, prices prevailing in the market generally determine what kinds and quantities of goods and services shall be produced and how they shall be distributed. If, for example, the price of wheat initially rises because of a

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4. Economics is a discipline which has more than its share of contending schools of thought. This Article, however, avoids taking sides and confines itself to microeconomic concepts, an area of general agreement. The disagreements lie essentially in the application of theory and in the interpretation of empirical evidence.

foreign drought (and purchases), American farmers will be encouraged by the lure of increased profits to shift more of their productive assets (land, equipment, etc.) into growing wheat. As the price rises, the consumer, on the other hand, has the incentive to search for less costly substitutes. As he diverts his demand away from wheat, the price is likely to fall back, discouraging further production. Finally, a mutually acceptable balance is struck between the utility of wheat to consumers (and, therefore, the amount they buy) and the utility to farmers of the resources they are willing to sacrifice to produce it (or, the amount they will sell).

Several basic points, elaborated upon later when principles of supply and demand are explained, have already emerged from the preceding example and deserve immediate emphasis. First, the market mechanism works without anyone—the producer, the consumer, or the government—having power to change the price level by his own individual action. Second, the price system and its adaptation to shifts in consumer demands or producer supplies is the result of uncoordinated and separate decisions by large numbers of sellers and buyers, each responsive to a desire for private gain, and all reacting to changes in prices. Third, in the free market prices are determined by demand and supply. The price mechanism gives sovereignty to two groups, consumers and producers, and the decisions of both groups determine the allocation of resources. Fourth, the market system framework is based upon each individual economic unit—that is, each firm and each consumer—seeking to maximize its own welfare. The consumer is expected to attempt to maximize his total satisfaction (or "utility"); the business firm to maximize its total profit.

## C. *Theories of Consumer Behavior*

This general explanation of the operation of the price system ultimately rests on the behavior of markets, which are composed of individual consumers[5] and business firms. Economic postulates and experience confirm that the behavior of each—consumers and firms—*always* conforms to certain basic preferences. These are preferences substantiated by observed behavior and apply to each of us, whether we are greedy or indifferent, wasteful or frugal. These preferences are important to an understanding of the problems of resource allocation.

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5. In economic theory, the household rather than the individual consumer is considered to be the basic economic unit that establishes demand priorities and thus decides what is to be produced. For convenience, individual consumers have been substituted here as a descriptive term.

First, each person desires numerous economic goods. An economic (or desired) entity is anything one prefers to have in greater amount than he now has. Note that this first principle does not assert that everyone is motivated solely or even primarily by the desire to become wealthy—economic goods include leisure, power, prestige, self-respect, community esteem, etc. Its primary application, however, is to the purchase of goods or services in market transactions.

Second, for each person some goods are scarce. This behavioral principle, which probably applies to all living things, applies the concept of scarcity to each of us. It means each of us has less of something than he would like to have if it cost nothing to buy. In more ordinary terms, it recognizes that the desire for increased amounts of goods always exceeds known bounds of productive capacity.

Third, there is the postulate of substitutability. This means a person is willing to sacrifice some of any (or all) of his goods in order to obtain more of other goods. There is no fixed order of priority of goods or goals; rather, before one obtains close to *all* one could want of one good, such as food, he will sacrifice the opportunity to obtain more of it in preference for another good, such as shelter or clothing.[6] Now the measure of substitutability of one good for another is the value attached to the first in terms of the other good. This value, however, is not the total value of food or shelter, but rather the worth (to the purchaser) of each incremental or marginal unit after he has acquired the basic level necessary for existence. Water, although a necessity of life, generally has value to a consumer not according to its total worth in sustaining life but according to the usefulness of drinking an extra glass. Real choices are seldom dependent on total utilities; it is the marginal utilities or marginal rate of substitution (the value of the last item purchased) which is determinative in making consumption choices.

This leads to the important fourth behavioral theory—which will be employed shortly to support the significant prediction that a demand curve for any product is downward sloping—called the law of diminishing value or diminishing marginal utility. Simply stated, this holds that the more one has of any good, the lower the personal substitution value it possesses for him. The value which a consumer will attach to successive units of a particular commodity diminishes as his total consumption

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6. Wants should be considered in terms of quality as well as quantity. Thus, a person could come close to eating *all* the food that he wanted, but perhaps he would be eating rice and beans rather than filet mignon and caviar. The consumer in this case would be considering the marginal utility of improving the quality of his diet rather than the quantity.

of that commodity increases (the consumption of all other commodities being held constant). For example, even the most ice cream-addicted child will begin to experience diminishing marginal utility after his fifth chocolate soda in an afternoon. And this reasoning applies to all economic goods.

Finally, despite the fact that everyone's nature conforms to these four behavioral patterns, economic theory assumes that no two or more persons have identical characteristics but that all have differing preference patterns. This postulate—along with the others, particularly the law of diminishing value—helps explain the operation of the market place, why exchange occurs, why the decentralized market place leads to the maximum satisfaction of consumer wants, and why competition results in resources being put to their highest valued use. But these concepts will become clear only after we explore (briefly) the theory of the firm and the operation of various types of markets.

## D. *The Theory of the Firm*

The theory of the business firm is equally simple. It assumes that each firm has but one primary goal, namely, to make as much money as possible. The firm will seek to maximize its profits. It follows, then, that a firm's ultimate objectives will not be influenced by who in the firm manages it (makes decisions) or the type of firm involved; the motive of generating profits is pervasive in all firms, whether they be corporate giants or individual proprietorships.[7] On this theory are based further predictions about the firm's behavior. For example, in making production decisions, the firm will adhere to the principle of substitution—that for a given set of technical possibilities, efficient (profit-maximizing) production will substitute cheaper factors (of labor, land, or capital) for more expensive ones. It also follows that a firm's methods of production will tend to change with shifts in the relative prices of factors involved. Therefore, if labor costs increase relatively (or if material costs decline), a firm will become capital intensive (and vice versa). The theory of the firm *suggests* that in order to achieve its goal of profit maximization the firm will seek to organize its factors of production efficiently and to put its resources to their most valuable (highest valued) use. It only suggests this result, however; whether this result is likely to be attained (or, perhaps, is even inevita-

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7. Of course, taxes, legal restraints on corporate control, etc., may distort the methods by which this objective is achieved by the firm. But in making policy choices governing firm conduct, it is necessary first to understand the basic aim and operation of the firm where such conditions are not controlling.

ble) depends on the operation of the market in which the firm operates.

## E.  *The Equilibrium Price*

Prices are determined by supply and demand.  This statement is both obvious and true, but it tells us very little about how prices are in fact set.  The real question becomes, "What determines supply and demand?"

### (1)  *The Demand Schedule*

When economists refer to "demand" or "the demand function," they are identifying a *demand schedule*—a statement of the different quantities of a particular good or service that a consumer would purchase at each of several different (alternative) price levels.  Because the amount of an item that a person will purchase cannot be determined without also considering its price, demand cannot be identified as a set, specific quantity.  Rather, it is a *range* of alternative quantities which constitutes the demand for a particular product.  It is this relationship between the prices and the quantities demanded at these prices that constitutes the demand schedule.

This abstract explanation is readily understood by considering my willingness to purchase gasoline.  Assume that I would use ten gallons of gas per week if the price were $.10 per gallon.  Further assume that as its price is increased I would reduce my consumption (and therefore my purchases) of gas one gallon for every $.10 per gallon price increase—so that when gasoline costs $1.00 per gallon I would ride the bus and use only one gallon per week for emergencies.  A table of my demand schedule would then look like this:

TABLE 1:  DEMAND SCHEDULE OF GASOLINE

| Price Per Gallon | Gallons Demanded Per Week |
|---|---|
| $1.00 | 1 |
| .90 | 2 |
| .80 | 3 |
| .70 | 4 |
| .60 | 5 |
| .50 | 6 |
| .40 | 7 |
| .30 | 8 |
| .20 | 9 |
| .10 | 10 |

My gasoline demand schedule or demand curve[8] could also be illustrated on a simple, two-dimensional price/quantity graph as follows:
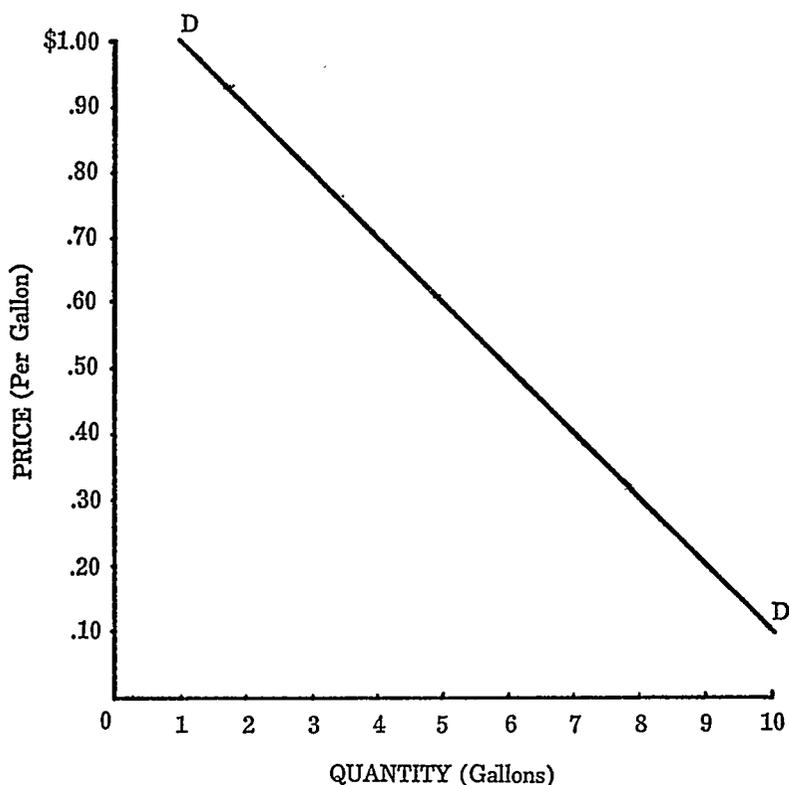


FIGURE 1: DEMAND CURVE

Line *DD* reflects my demand for gasoline. Using this demand schedule, one can predict that if the price of gas is set at $.50 per gallon, I will demand six gallons of gas per week (Point *A*, Figure 2). That is, a single point on the demand curve indicates a single price/quantity combination.

The whole demand curve, however, represents the complete functional relationship between quantity demanded and price. Thus, if the price of gas is raised, the *amount demanded*[9] by me will change, and

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8. For simplicity, they are called curves even when the locus points are in a straight line, as in the illustrations used throughout this Article.

9. Note, as further explained in Figure 6 and accompanying text *infra*, this is not a shift in demand or in the demand schedule, but rather a change in the *amount* demanded.

I will desire less gas. Or to continue our previous example, if the price is increased to $.70 per gallon, my consumption will decline to four gallons per week (Point *B,* Figure 2). Again, this change can be marked on the graph:
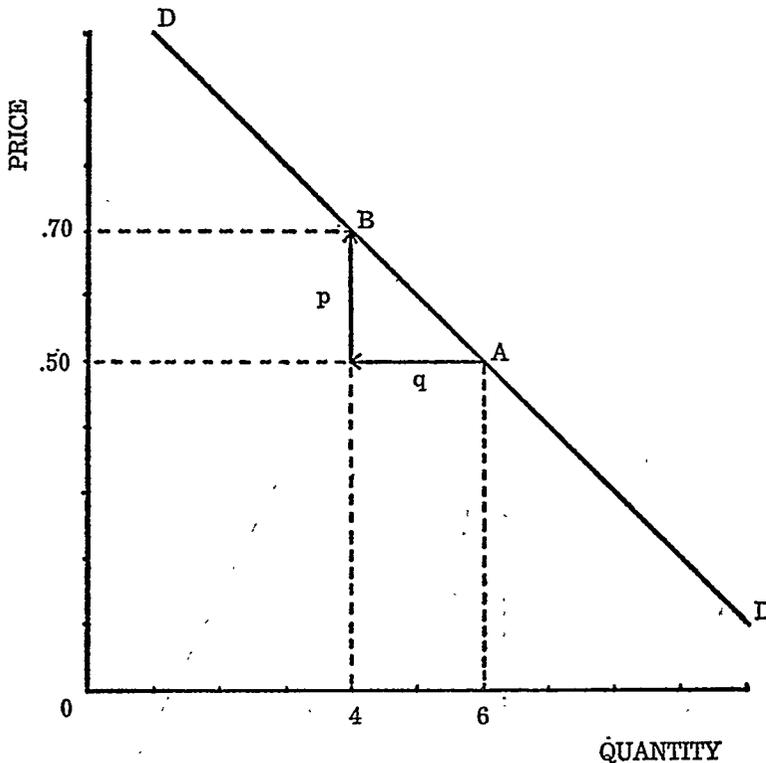


FIGURE 2:  CHANGE IN AMOUNT DEMANDED

A movement from one point to another on the same demand curve, as from point *A* to point *B* in Figure 2, measures the change in the amount demanded (here a decrease in quantity as indicated by line *q* from six to four gallons per week) as price is raised (here an increase as indicated by line *p* from $.50 to $.70 per gallon). Note the demand schedule itself (line *DD*) has remained constant; that is, all the underlying determinants of demand such as income, prices of other goods, etc., are unchanged.[10] The change in the amount demanded reflects, purely, my reaction to the increase in the price of gasoline.

Other things can be noted about the demand schedule. To speak

10. Where all other things remain unchanged—*e.g.,* all independent variables except price are constant—the economist identifies that situation with the short-hand Latin term *ceteris paribus.*

of it in terms of my purchases of gas would be incorrect. The demand schedule does not identify actual purchases, but rather the consumer's desires or wishes to purchase. Whether I will actually make a purchase may depend on whether gas is available and whether it is priced at a level I am willing to pay. (And this depends, as noted below, on the supply schedule.) Moreover, most demand schedules do not relate to individual consumer demands; instead, they are aggregate or market demand schedules showing the total amount of an item that all consumers would buy from all sellers. A *market* demand schedule is the addition—the horizontal aggregate—of various individual consumer demand schedules. Figure 3 illustrates how three individual demand schedules ($D_1$, $D_2$, and $D_3$), each of which reflect the specific quantity which would be demanded by the particular consumer at a given price, are added together horizontally to represent the market demand schedule $D_m$:

FIGURE 3: INDIVIDUAL AND MARKET DEMAND CURVES

Market

P

$D_m$

0                    Q
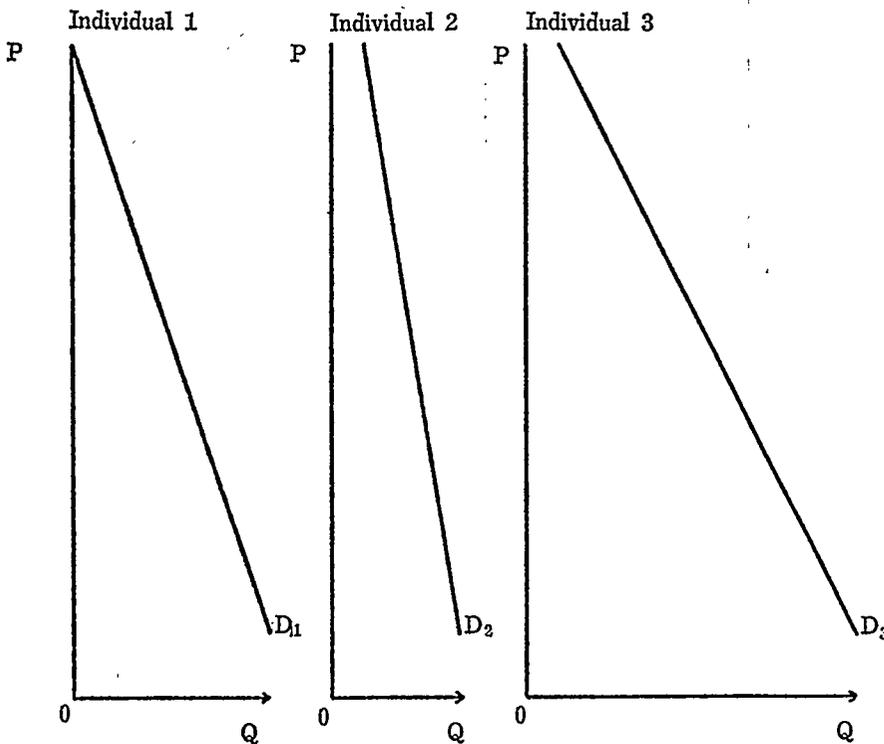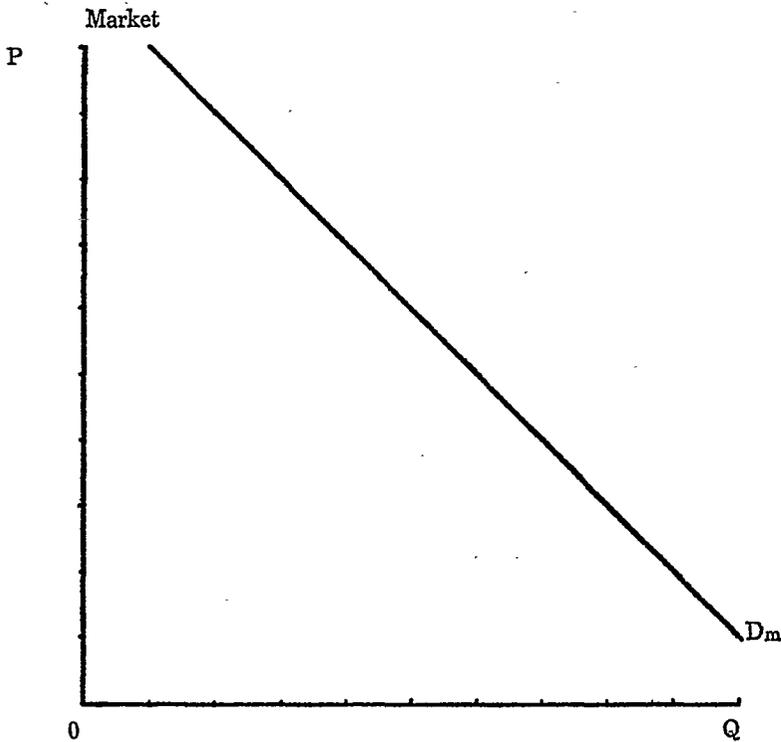
*(2)  The Fundamental Law of Demand*

As a reflection of consumer desires, the demand schedule is a function of consumer tastes or preferences, their individual income levels as well as the distribution of income among all of them, the size of the population, the price of the commodity, and finally the prices of all other goods. If all of these factors (except, of course, the price of the commodity whose demand schedule is being drawn) remain constant, the higher the relative price for the good, the lower its rate of consumption. This simple statement that one will seek to buy less gas as the price is raised (or more as the price is lowered) is a key economic theory central to an understanding of basic price theory and analysis of the antitrust laws. It can be stated many ways: technically— the quantity demanded varies inversely with price; graphically—the demand curve is negatively or downwardly sloped (since as the price falls the quantity demanded increases, as shown by my willingness to buy six gallons of gas rather than four gallons when the price per gallon declines by twenty cents). It matters not whether one remembers this fundamental law of demand on the basis that the demand curve for all commodities is negatively sloped or that the rate of consumption will increase as price falls, as long as the central point is understood.

The basic theory is substantiated by observed behavior; it is a law of demand because it describes a general truth about consumers' desires and about market behavior.[11]   In recent years, for example, consumption of beef has shifted drastically in response to beef price changes, and long-established automobile purchasing habits have been radically modified because of (at least in part) increased gasoline prices. A price decline increases the rate of consumption because more of the item will be consumed in current uses, because new uses will develop (which are valued too low to have justified paying the former, higher rate), and because new users will appear from among consumers whose marginal utilities or incomes were too low.   The reverse, of course, holds true for the case of higher prices.   All of these factors explain why a change in the price of a commodity causes a change in the amount demanded.

### (3)   The Supply Schedule

Supply, or the supply schedule, is in many ways merely the obverse of our description of demand.   A supply schedule is a statement of what a business firm (or all firms selling the same good, if a market supply schedule is being identified) is willing to offer for sale at various prices during a time period.   Like the demand schedule, it expresses a price/quantity relationship and can be presented in tabular or graphic form.   For example, a supply schedule which posited that ten gallons of gas would be offered for sale each week if the price were $.90 per gallon and that for each reduction of $.10 per gallon one gallon less would be available until only two gallons would be supplied at a price of $.10 per gallon would be described graphically as follows:

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11. Sometimes it is argued that consumer behavior defies this proposition, that consumers in fact occasionally buy more of some goods when the price rises.  Three examples are usually offered:  where the good is bought for speculative purposes; where the demand is for prestige goods; and where price is an index of quality.  For a cogent explanation of why these examples further support or at least do not detract from the theory, see A. ALCHIAN & W. ALLEN, UNIVERSITY ECONOMICS 67-68 (3d ed. 1972).
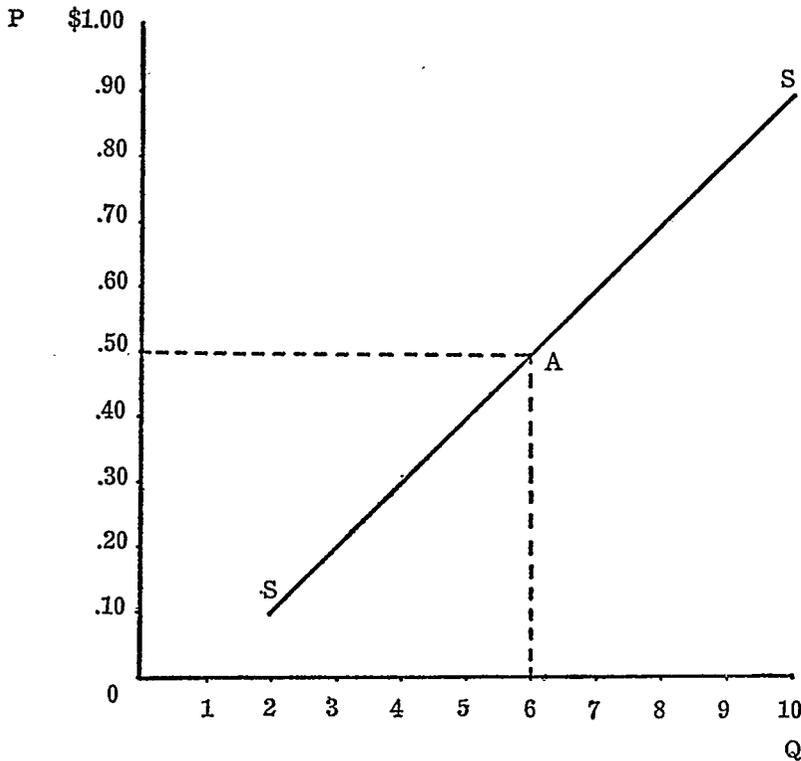
FIGURE 4: SUPPLY CURVE

Line *SS* reflects the supply schedule for gasoline. Using this supply schedule, one can predict that if the price of gas is set at $.50 per gallon, six gallons of gas will be offered for sale each week (Point *A*, Figure 4).

Here again there are a number of concepts that should be noted. The supply schedule refers to what firms desire to sell, not necessarily to what they will succeed in selling. In addition, the supply is a flow; the quantity supplied is stated as so much per period of time—in the example above, per week. Movement from one particular point to another on the supply curve results in a change in the amount supplied (in response to a change in price). Further, the quantity supplied depends upon the strategies of many firms (*i.e.*, how they perceive that profits can be maximized), the state of technology, the cost of factors of production, and the relative price of a commodity (*i.e.*, the price of that commodity compared with the prices of other commodities). Finally, except in the case of a monopoly, supply schedules for a market are—as in the case of demand schedules—the horizontal aggregate of individual firm supply schedules.

### *(4) The Principle of Supply*

The primary difference between supply and demand schedules is that supply schedules are positive or upward sloping, since there is a positive or direct price/quantity relationship for supply. That relationship for demand is generally negative or downward sloping. The point is that the higher the price, the greater the amount which will be supplied. Since higher prices per unit are also likely to attract additional resources (thereby increasing supplies), the positive slope of the supply curve has a common sense as well as theoretical appeal. But because there are exceptions to this principle—in particular, the backward bending supply case[12]—the principle of supply is only a hypothesis, fitting most, but not all, cases.

### *(5) The Determination of Price*

Few concepts are so central to an understanding of economics as the concept of the market equilibrium price. This is the price determined by the interaction of supply and demand on the same commodity within a market.[13] Superimposing the previous examples of gasoline demand and supply schedules, one can determine the price at which gas sellers will make supplies available and at which consumers will buy. This equilibrium is illustrated by Figure 5, which is a rough composite of two earlier Figures, 3 and 4. Figure 5 is illustrated on page 15.

As this graph demonstrates, there is one price—and only one price—that will exactly equate the amount demanded to the amount offered; it is the price determined by the intersection (Point $A$, Figure 5) of the supply curve $(S)$ and the demand curve $(D_m)$, or the price ($.50) on the vertical coordinate. The equilibrium price is the one toward which the actual market price will gravitate and the one that will persist once established. All other prices are unstable and will not persist. At prices below the equilibrium, there will be shortages ("excess demand") such as occurred during the 1973-74 Arab oil embargo; at prices above the equilibrium, there will be surpluses ("excess supply") and prices will fall as sellers seek to dispose of their surplus. This equilibrium is, in other words, a market-clearing price.

The critical point in this analysis is that the market equilibrium price is established by internal, self-adjusting economic forces. It does not depend on government supervision or on the intervention of outside

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12. For further explanation of the backward-bending supply case where an increase in price reduces supply, see P. SAMUELSON, ECONOMICS 577-78 (9th ed. 1973).

13. "The price at which the quantity demanded equals the quantity supplied is called the equilibrium price." R. LIPSEY & P. STEINER, ECONOMICS 76 (3d ed. 1972).
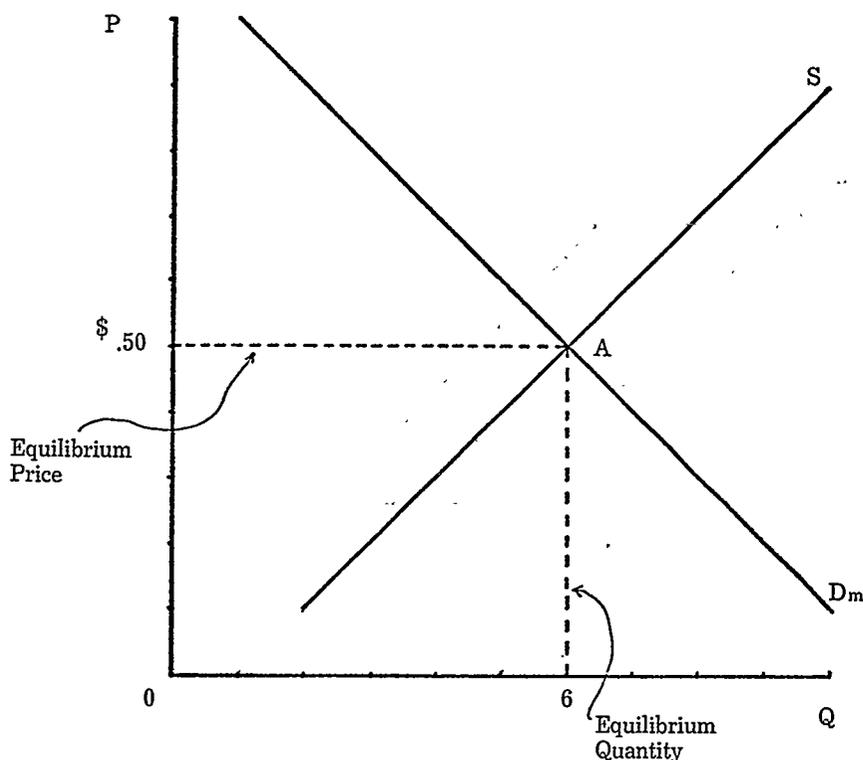
FIGURE 5: MARKET EQUILIBRIUM PRICE

forces. The market price, however, does govern thousands of individual consumer and business firm decisions as to what and how much each will purchase or produce. This interplay between quantities supplied and demanded is important, not simply because it establishes a price, but because in the process it reveals relative subjective values and enables buyers and sellers to exchange so that each realizes a preferred combination of goods.

*(6)   Shifts in Demand and Supply*

In order to understand changes in the equilibrium price, movement along a demand curve must be clearly differentiated from shifts in the position of the whole curve. Movement along the demand curve indicates a change in the amount demanded, because as the price increases consumers will substitute cheaper goods, consume less, etc. The movement occurs as a result of the price change. Only a change in *factors other than price*—such as changes in income or consumer tastes, in prices of substitute products, in income distribution and population, etc.—will alter demand so as to shift the entire demand curve.

This distinction between a shift in the demand curve and a change in the amount demanded is illustrated by a graph of two different hypothetical demand curves for coal—one drawn before the 1973-74 Arab oil embargo, and one after.
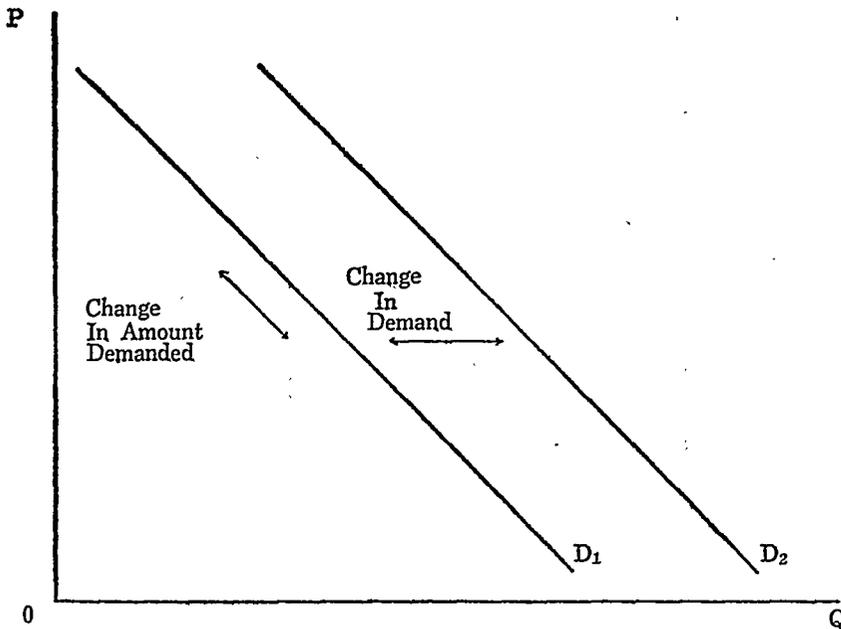


FIGURE 6: SHIFTS IN THE DEMAND CURVE

After the embargo the demand for coal increased markedly. The price of oil (the chief substitute source of fuel) was then relatively much higher making coal more attractive; also coal was valued as a more politically secure source of energy. Without actually studying market demands, it seems likely that the demand for coal shifted to the right from $D_1$ to $D_2$.

This shift in demand for coal (from $D_1$ to $D_2$) will automatically have a dramatic effect on the price of coal if the supply remains unchanged. This change is readily seen in Figure 7 which merely adds a supply curve to the prior graph:
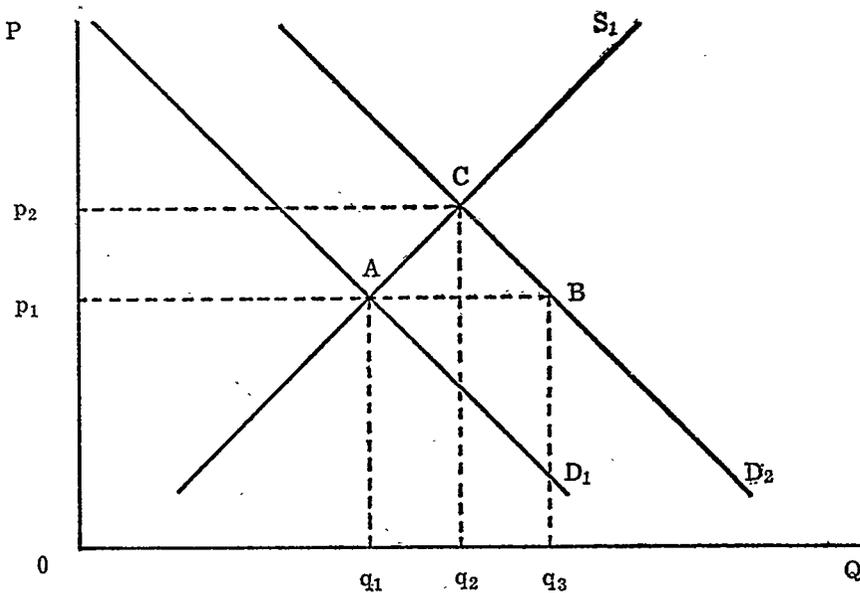
FIGURE 7: THE EFFECT OF SHIFTS IN THE DEMAND CURVE

The original equilibrium price was set on the horizontal axis ($p_1$) where the initial demand and supply curves intersect (Point $A$, Figure 7). When the demand curve shifts to the right, excess demand develops at the original price (of $p_1$) because the quantity demanded increases from $q_1$ to $q_8$ (Point $B$, Figure 7). In order to restore market equilibrium, therefore, the price of coal will be bid up toward the new equilibrium price of $p_2$ where the amount demanded equals the quantity supplied, or $q_2$ (Point $C$, Figure 7). The net effect is that consumers are buying more coal ($q_2$ is greater than $q_1$) but are paying a higher price per ton. This is the first law of supply and demand in a competitive market: a rise in demand for a good from a change in factors other than its price (*i.e.*, a shift in the demand curve to the right, $D_1$ to $D_2$) causes an increase in both the equilibrium price and the equilibrium quantity bought and sold. The second law is merely the obverse; here assume that the demand curve has fallen or shifted to the left from $D_2$ to $D_1$. Thus: a shift toward less demand for a good causes a decrease in both the equilibrium price and the equilibrium quantity bought and sold.

Supply curves also are not necessarily constant. One recent example is pocket electronic calculators. As manufacturers have realized economies of scale in mass production and have invented less costly designs, the supply curve for the calculators has shifted to the right, as illustrated in Figure 8. For the same price, manufacturers would

be willing to produce far more, but to sell the increased production they must lower their prices.
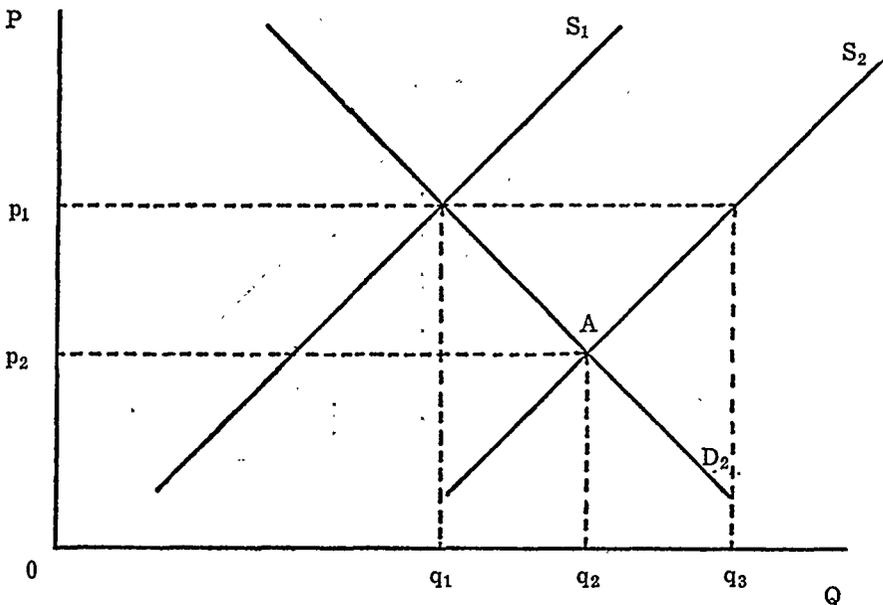


FIGURE 8: THE EFFECT OF SHIFTS IN THE SUPPLY CURVE

As a consequence, the new equilibrium price for calculators became $p_2$, where the demand curve intersected the supply curve at the new quantity of $q_2$ (Point $A$, Figure 8). Thus, we have the third law of supply and demand, namely, that an increase in the supply of a good causes a decrease in the equilibrium price and an increase in the equilibrium quantity bought and sold. To complete the description, the fourth law merely describes what occurs when supply decreases—if the original supply curve were $S_2$ (for example, gas available before the 1973-74 oil embargo) and fell to $S_1$: a reduction in the supply of a good (*i.e.*, a leftward shift in the supply curve) causes an increase in the equilibrium price and a decrease in the equilibrium quantity.

This, then, is the theory of the determination of price by supply and demand. It is a simple, yet powerful analysis of how the market and price system works to allocate goods and services.[14] While stated

14. More precisely, the laws of supply and demand explain how markets enable consumers to revise their consumption patterns to suit their tastes (and how to do it more cheaply), show how inter-consumer competition for existing goods is resolved peacefully in the market place, demonstrate how price adjustments and negotiations assist in the reallocation of goods, and show how markets and the price *system* economize on search activities that consumers would otherwise engage in at much greater costs.

as a series of laws, the theory is in fact only a prediction or hypothesis. Although it accurately predicts price behavior in competitive or open markets, it does not fully apply to all markets. (The most common example where it does not apply is where government intervenes in pricing practices, such as through price-control programs.) This does not mean, however, that the laws of supply and demand are not useful. On the contrary, they are central to the theoretical case supporting antitrust theory, and they also accurately describe the behavior of many markets.

## F.    *Price Elasticity of Demand*

So far our analysis has concentrated on the direction of price or quantity changes (*i.e.*, will prices rise or fall, quantities increase or decrease) following shifts in demand or supply. It is also important, particularly to a seller, to know how much quantity will change in response to a fall or rise in price (assuming the demand curve stays unchanged). Price elasticity of demand measures the degree of responsiveness of the quantity demanded to changes in price. Figures 9A and 9B show how different *demand* curves reflect consumer responsiveness to price changes caused by shifts in supply:
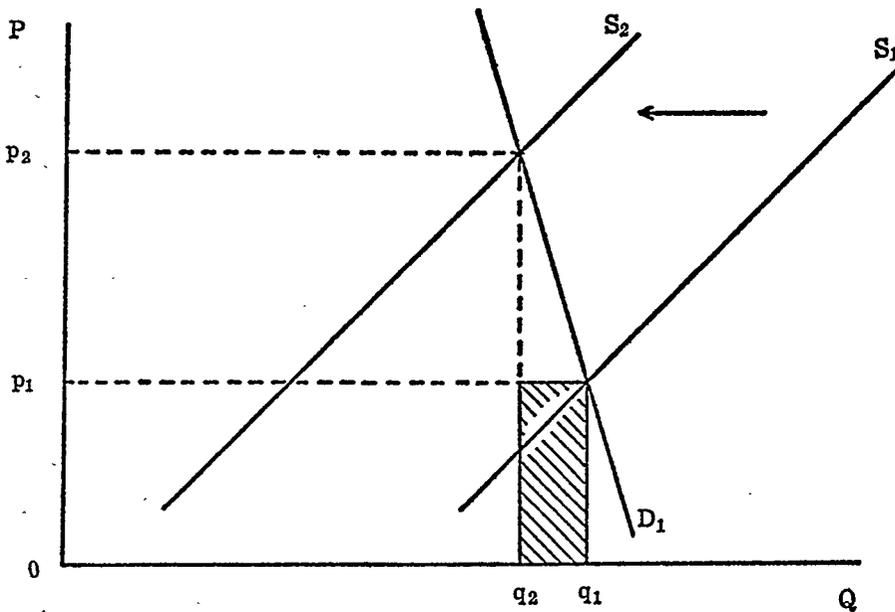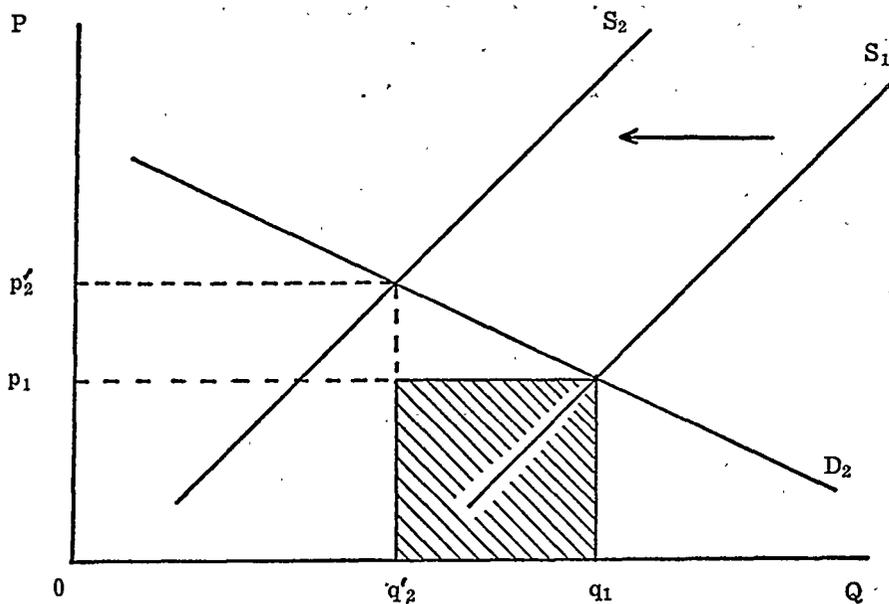


FIGURE 9A: INELASTIC DEMAND

FIGURE 9B:  ELASTIC DEMAND

In both illustrations the original price. ($p_1$) and quantity ($q_1$) are identical; in both the shift in supply (to the left from $S_1$ to $S_2$) is the same.   However, because the slope of the demand curve differs (i.e., $D_1$ is much steeper than $D_2$), the new equilibrium price is much higher and the drop in quantity demanded is slight where demand is relatively inelastic (Figure 9A), and, conversely, the same shift in supply results in a much larger change in the amount bought and sold where the demand curve is elastic (Figure 9B).  This difference is readily seen by comparing the shaded areas on each graph; it is also grasped by noting that the distance between the original quantity demanded and the equilibrium quantity is much greater when the demand curve is elastic ($q_1$ to $q'_2$) than when inelastic ($q_1$ to $q_2$).   Since the supply curves are identical, the difference stems from the way consumers will respond to price changes.

In the first (inelastic demand) situation, the quantity demanded is relatively insensitive to price changes, and price equilibrium is restored only when the price rise is large enough to diminish demand for a product that many consumers believe is relatively essential.   There may, for example, not be very many substitute goods which buyers can use as prices rise.   Insulin in the days before chemical substitutes were invented and cigarettes today are examples of products with relatively inelastic demand curves.   In the second (elastic demand) example, there

is a pronounced variance in the quantity demanded with changes in price. A small price rise rapidly restores equilibrium by quickly discouraging purchases. Consumers may, for example, simply be willing to decrease purchases when prices rise. Relatively undifferentiated producer goods (cotton or cocoa) are examples of products with elastic demand curves.

As these illustrations suggest, price elasticity varies greatly among different types of goods and services. Two basic factors apparently determine this difference: the first, and more important, is the availability of substitute products; the second is the proportion of consumer income that is spent on the good. The impact of the availability of substitutes seems obvious. If there are no (or only a few) substitutes, buyers have little or no chance to make alternative purchases, and therefore price changes will have relatively little effect on the quantity demanded. One could predict that the opposite situation will exist where substitutes (at similar prices) are readily available. The proportion of income spent on the good is of more subtle significance. If only a relatively small proportion of consumer income is spent on a particular product, then price elasticity of demand depends almost wholly upon the availability of substitutes. A usual illustration of this point is table salt, which consumes but a small fraction of the consumer's purchasing dollar. There are no ready substitutes for it and its consumption patterns for domestic use therefore are unaffected by price changes of even large percentages. On the other hand, when a relatively large proportion of consumer income is spent on a particular good, then price elasticity depends on whether the good is one a consumer wants more of as his income increases. If it is, then as price falls and he has more free income, he will buy more, and demand will be elastic. If he wants less of the good as his income rises and he can afford more expensive substitutes, then the reverse will be true: as price falls, he will buy less, and demand will tend to be inelastic.

Technically, and more accurately, a demand schedule is "elastic" where the percentage change in the quantity demanded is numerically greater than the corresponding percentage change in the price. And it is inelastic where the percentage change in quantity is less.[15] Price elasticity has been an important consideration in defining the market within which the seller operates and in determining his market power. On the other hand, the extent of price elasticity depends to a consider-

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15. This relationship is expressed in the following formula:

$$\text{elasticity of demand} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

able degree on how widely or narrowly a good is defined.[16]

## II.  BASIC MARKET MODELS

The purpose of setting forth in some detail the primary elements of pricing is to explain the process by which a market or equilibrium price is established—as between buyers and sellers. The market price is important because, in theory at least, it is the price for each good at which every buyer can purchase as much as he chooses—and every seller can dispose of all he wishes. Carried through to its logical conclusion, then, demand would be satisfied and supply exhausted; there would be neither shortages nor surpluses, unwanted inventories nor lines of waiting buyers.

On the other hand, this description is inaccurate if it is understood as describing the real world or all possible conditions because price (and quality, service, or credit) is not determined simply by the shapes of the buyers' demand and the sellers' supply curves. Although demand and supply curves are basic elements in determining prices, they are not in themselves sufficient since they do not explain how these elements interact and come together within a market. In other words, the analysis of equilibrium price demonstrates how prices emerge from the marketplace, but it does not describe a basic condition for the formation of these prices or the role of competition. Knowing market demand and supply curves does not reveal the demand conditions facing individual sellers. The discussion in this section, therefore, considers the role of competition as the regulator that supervises the orderly working of the market. That supervision is a continuing process involving not only the previously discussed accommodations of buyers and sellers, but also the struggles *among* sellers (and sometimes, among buyers). Having considered the seller-buyer relationship, the focus now shifts to the seller-seller (or buyer-buyer) contest and examines the price and other effects of competition among producers.

One word of caution, however. This description of market conditions facing sellers—which quickly leads to an analysis of the theories of perfect competition and monopoly (as well as of monopolistic competition and oligopoly)—is presented as an analytic model, not as a description of the real world. Actual markets are in fact invariably located somewhere between these polar extremes. Nevertheless, an understanding of these models is vital because they assist not only in understanding how markets operate but also in interpreting Supreme

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16. *Compare* United States v. E.I. duPont de Nemours & Co., 351 U.S. 377 (1956), *with* United States v. Grinnell Corp., 384 U.S. 563 (1966).

Court decisions under the antitrust laws as well as in evaluating the Court's performance. Supreme Court opinions, with increasing frequency, rely on these economic concepts.[17]

## A.   *Profit-Maximizing Behavior by Firms*

Earlier we noted, in considering the theory of the firm, that sellers would seek to maximize their profits by organizing the factors of production in the most efficient method possible. Efficient production generally means lower costs and, if prices remain stable, increased profits. This same principle suggests that a firm will continue to produce a product or will increase production of it as long as the last unit (*i.e.,* the "marginal" unit) of production increases the firm's profits. And this occurs if the marginal, or last, unit adds more to revenue than it does to costs—namely, as long as the marginal revenue exceeds marginal costs. If the firm finds that greater production increases profit, it will expand output; if greater production decreases profit, output will be reduced. This rule of profit-maximizing behavior is readily illustrated as follows:
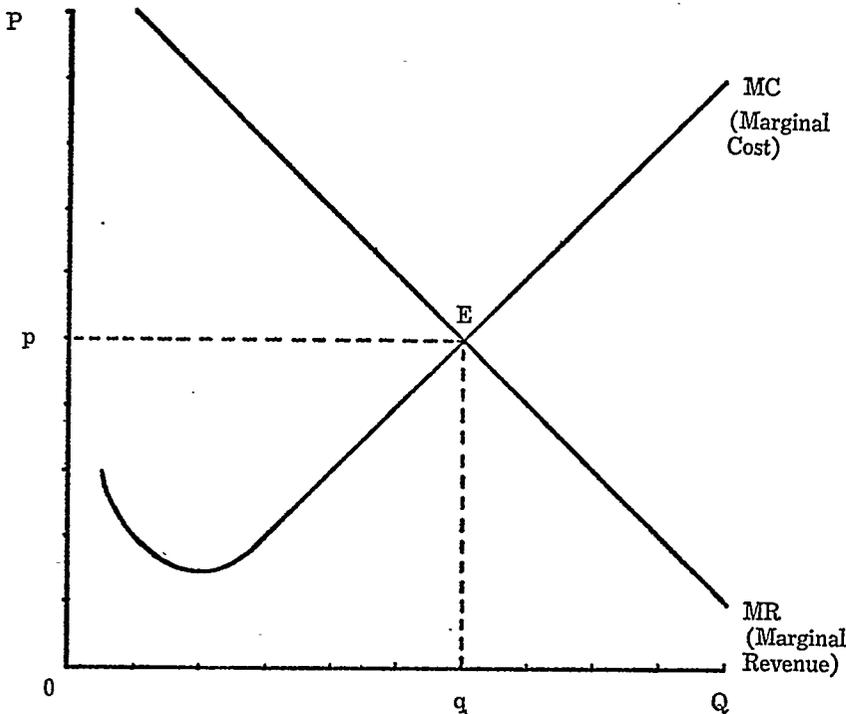


FIGURE 10:  PROFIT MAXIMIZATION BY A FIRM

17. *See, e.g.,* United States v. Container Corp. of America, 393 U.S. 333 (1969) (exchange of price data impermissible in an oligopoly market).

Note, as will be explained later, the marginal revenue curve need not—at least in theory—be negatively sloped; if it is horizontal the market is defined as being perfectly competitive.

Thus, if it is profitable for a firm to produce at all, it will expand output whenever marginal revenue (*MR*) is greater than marginal cost (*MC*) and keep expanding output until marginal revenue equals marginal cost (or the intersection, of *MC* and *MR* at equilibrium point *E*).[18] The profit-maximizing price for this hypothetical firm, then, is *p* which equates with output *q* (and generates total revenues reflected by the square bounded by the lines drawn between points *p-E-q-O*, assuming a single price). Again, this technical explanation merely sets forth what common sense suggests. As a firm increases production, costs will first decline (the hook on *MC*), but as the firm's output reaches and then passes its most efficient production level, marginal costs will increase. And when these per unit costs exceed the amount received for the last item produced, the firm will not further increase its production.

## B. *Perfect or Pure Competition*

Markets are often distinguished by structural or functional factors. The following conditions are frequently said to define the existence of perfect competition:[19]

(1) There are large numbers of buyers and sellers.

(2) The quantity of the market's products bought by any buyer or sold by any seller is so small relative to the total quantity traded that changes in these quantities leave market price unaffected.

(3) The product is homogeneous; there is no reason for any buyer to prefer a particular seller and vice versa.

(4) All buyers and sellers have perfect information about the prices in the market and the nature of the goods sold.

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18. This analysis stops short of exploring long-run versus short-run factors which would require consideration of fixed and variable costs, average and total costs, and long- and short-run variations. Obviously these distinctions and concepts are important, but they are not explored here (except in connection with the theory of monopolistic competition, see text accompanying note 33 ff. *infra*) because examination of these additional factors would merely confirm the basic principles and is likely to confuse rather than clarify matters for law students and lawyers.

19. *See, e.g.,* P. AREEDA, *supra* note 2, at 6-7. *See also* R. HEILBRONER, THE ECONOMIC PROBLEM 542 (3d ed, 1972).

(5)  There is complete freedom of entry into the market.

But in reality such conditions are useful only in suggesting whether rivalrous behavior is likely, since markets having substantially different conditions also exhibit competitive behavior.  In other words, these conditions neither define perfect competition nor are a priori present where competitive rivalry is inevitable or necessary.

More accurately, perfect or pure competition relates to a *particular* demand condition faced by an *individual* seller (*not*, it should be carefully noted, to the *aggregate* demand condition facing sellers as a body in a particular market).  It describes a market where a single seller's sales would plummet if he raised his prices above that charged by another seller.  He sees in essence a horizontal demand for his products at the prevailing market price.  This phenomenon also applies to demand conditions facing a seller where he cannot increase his sales even though he lowers his price below the market level, or, alternatively, where market prices would be wholly unaffected if he withholds his products from the market.  A seller facing these demand conditions is called a "price-taker" because his actions have no immediate impact on price or production.  In a perfectly competitive market this seller must passively accept whatever price happens to prevail in the market.

Recalling our previous analysis of price elasticity, it is apparent that the individual seller in a perfectly competitive market faces an infinitely elastic demand curve; consumer demand, as the seller sees it, is totally unresponsive to any price changes which he attempts to implement—and such attempts are bound to fail.  The individual price-taking seller's view of market demand (as contrasted to the industry's view), is illustrated in Figure 11 on page 26.

The primary reason for the different views of demand conditions facing sellers in the same market is that the individual seller produces only a tiny fraction of total industry supply; each seller's production is insignificant.  Moreover, entry into the industry is probably easy and not subject to long delays so that buyers have ready alternatives.  Therefore, any firm's withdrawal of sales at prevailing market prices is quickly supplanted by offerings of others.

Perfectly competitive markets also have other characteristics. Goods are allocated in accordance with consumer preferences.  At the market-clearing price there are no unexploited opportunities for remaining exchanges in which a consumer could reach a more preferred position.  Resources are, in other words, being put to their most valu-
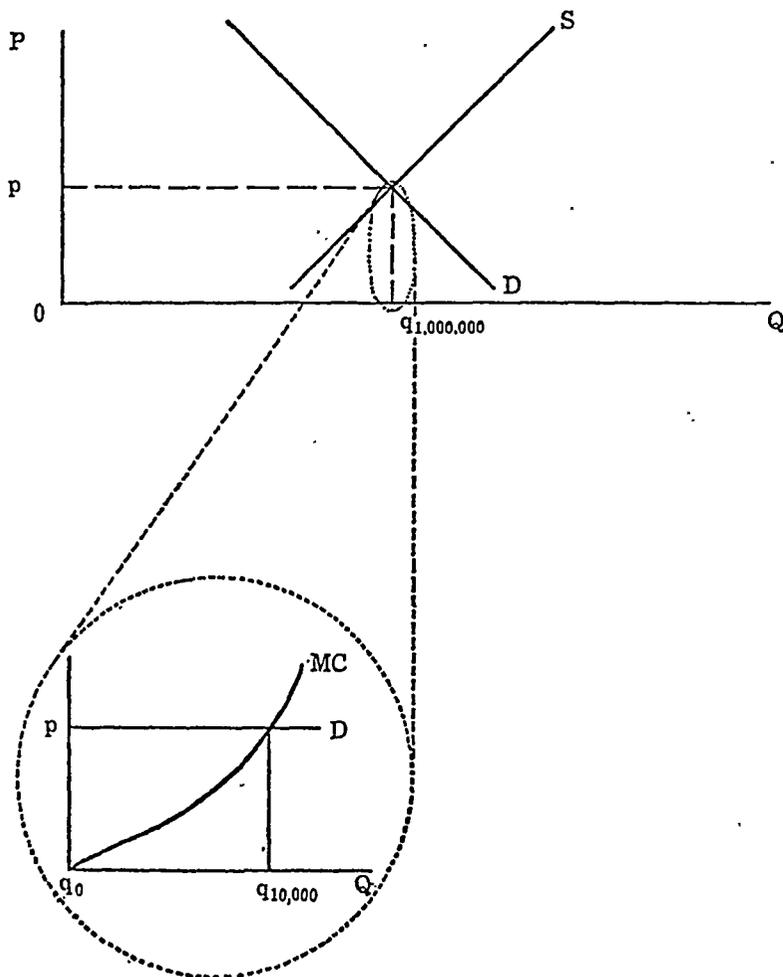
FIGURE 11: COMPETITIVE MARKET AS SEEN BY
INDUSTRY AND INDIVIDUAL FIRMS[20]

able (highest valued) use. In addition, as Figure 11 suggests, no individual seller has significant market power in terms of the price to be charged or output supplied. Each seller's output, rather, is determined by his costs. Since the price-taking seller can sell all, or as little as, he wants at the market price, his marginal revenue curve—the revenue he receives from the last unit sold—is identical to the demand curve (which is also called his average revenue curve); with an individual horizontal demand curve each unit sold by the seller adds the same amount of revenue because there is no reduction in receipts from other

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20. Source: A. ALCHIAN & W. ALLEN, *supra* note 11, at 112.

(previous) sales. But as the seller increases his sales the costs of production will rise, as he tries to squeeze extra production from a limited facility, pays overtime, buys raw materials from a greater distance, etc. This is reflected in the marginal cost curve in Figure 10. A seller's output in a perfectly competitive market, assuming he is a profit-maximizer, is determined by his marginal cost curve (*MC*) and the point where it intersects the demand line (*D*) (Point *A*, Figure 12), which is also his marginal revenue line (*MR*), as illustrated in the following diagram:
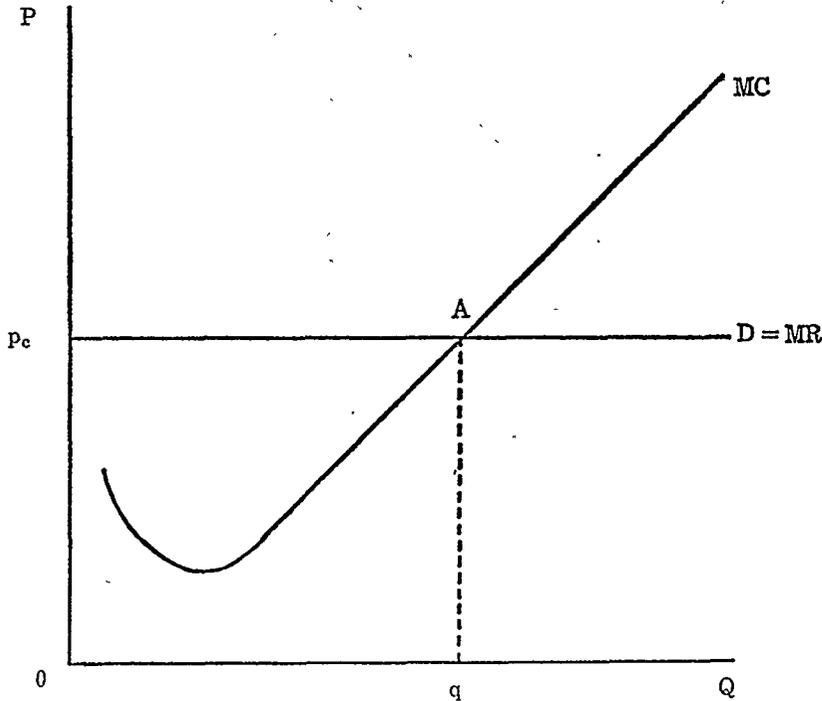


FIGURE 12: EQUILIBRIUM OF A COMPETITIVE FIRM

That is, as Figure 12 indicates, in short-run equilibrium, all firms produce the output that corresponds to the point where their marginal cost and marginal revenue curves cross. Note also that the supply curve of a competitive or price-taker's *market* is merely the horizontal sum of the marginal cost curves of the individual sellers, which when plotted on a graph showing consumer demand (which in fact is negatively sloped even though it appears horizontal—or close thereto—to the *individual* seller) also indicates price and output as follows:
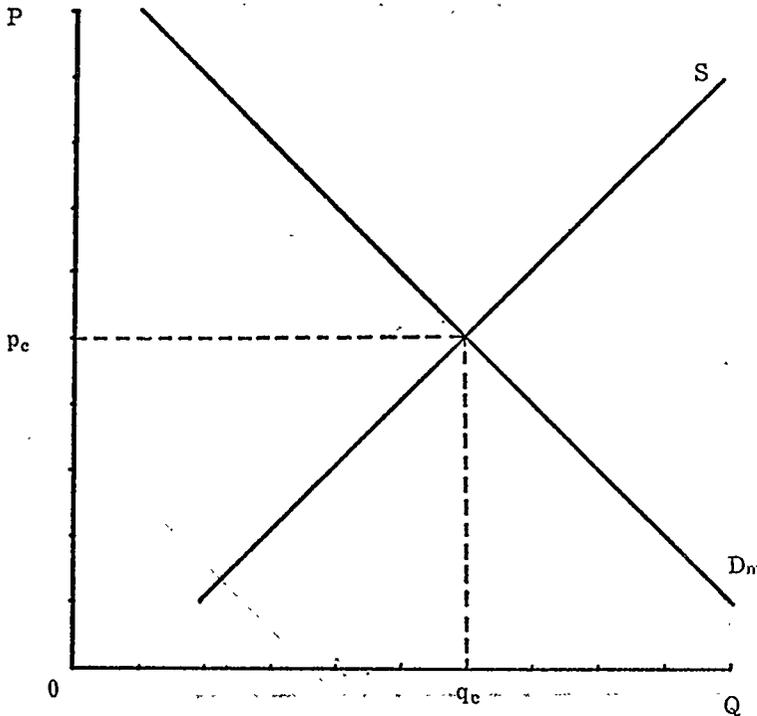
FIGURE 13: EQUILIBRIUM IN A COMPETITIVE MARKET

While each firm increases its output until marginal cost equals price, that does not mean the firm earns zero profits. "Cost," as used here (and by economists), includes a normal, competitive return on investment necessary to attract capital into the industry. Also, though profit is maximized by expanding output until marginal cost equals marginal revenue, the size of that maximized profit depends on the relationship between average cost and average revenue (not shown). Under perfect competition, average revenue will always equal average cost (defined to include a normal profit); that is, there will be no excess, monopolistic profits. If some firms reduce average costs through gains in efficiency, they will earn supra-normal profits since average revenue is, with price, fixed. In the longer run, however, those profits will attract new firms into the industry. Their production will shift the market supply curve to the right, lowering the market price. Average revenue will drop and the transient excess profit will be eliminated. Once again average revenue and average cost will be equal. In the long run, perfect competition eliminates supra-normal profits. Because this adjustment mechanism takes time, however, firms always have an incentive to cut costs and to utilize the most efficient means of production.

The essential points bear repetition so that they are not missed. In a perfectly competitive market the individual firm is merely a quantity adjuster. All firms sell at marginal cost and earn only a normal return on investment. Each firm takes price as given to it by the market; no firm can affect the price by adjusting output or adjust output by raising or lowering price. Each firm pursues the goal of maximizing profits by adjusting its output (either increasing or decreasing the quantity sold) until its marginal cost equals the prevailing market price. In this circumstance the consumer is sovereign in that changes in consumer preference will shift demand curves and thereby change market prices.[21] The firms in a competitive market respond to rather than dictate changes in the market prices. Finally, the free-market system coerces efficiency from individual firms, and no firm realizes monopoly profits.

## C. *Monopoly*

In general terms, private monopoly presents the other side of the theoretical coin of perfect competition. Monopoly markets are also often described by four structural and functional factors, namely:

(1) A single seller occupies the entire market.

(2) The product it sells is unique.

(3) Substantial barriers bar entry by other firms into the industry.

(4) Market knowledge in the industry is imperfect.

Again, however, such conditions are useful only in suggesting where monopoly pricing (and output) is likely since markets with substantially different conditions also exhibit monopoly practices. In other words, despite frequent suggestions to the contrary, these conditions do not define or determine whether monopoly effects will exist.[22]

By definition, monopoly describes the situation where one seller produces the output of an entire industry or market[23]—and the market demand curve is ipso facto identical with that seller's demand curve. Assuming for the sake of simplicity that the monopolist charges a single price for his product, he (as a consequence of the negatively sloped

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21. See Figure 7 *supra.*

22. As a practical matter, both lawyers and economists often define monopoly simply in terms of effects. That is, they suspect a market is monopolized if its firms consistently make supra-normal profits, if their costs are greater than costs at the most efficient scale of production, or if selling expenditures are excessive or technological progress is inadequate.

23. The word "monopoly" is derived from the Greek words "monos" and "polein" which mean "alone to sell."

demand curve facing him) takes price into account in determining his output. This is a distinct contrast with the situation facing the seller in a perfectly competitive market whose output decision has no impact on price and was dictated solely by the shape of his marginal cost curve.

Another and perhaps simpler way of describing the market in which the monopolist operates is to examine the demand conditions facing such sellers. In a monopoly market the seller is sufficiently large relative to the total amount demanded that he can set the market selling price higher (and sell less) or lower (and sell more); the price-taking firm in a competitive market does not have this option. Sellers in monopoly markets are also sometimes called price-searchers because they must search for the market price which will maximize their profits.

This description of the monopoly market can also be understood by reference to the demand for gasoline shown in Table 1 which was plotted as a demand curve in Figure 1 for the total market. The price-searcher has the same curve for his firm's demand. Knowing this demand, the seller can determine the price which would maximize his profits by determining his marginal revenue (*i.e.*, the revenue earned from the last gallon of gas sold). Assuming that gasoline were available to him at no cost (otherwise net revenues would have to be determined for each figure), the seller can determine first his total revenue from each price and then the marginal revenue from the last unit sold, as follows:

TABLE 2:   DEMAND SCHEDULE AND MARGINAL REVENUE

| Price | Amount Demanded | Total Revenue | Marginal Revenue |
|---|---|---|---|
| $1.00 | 1 | $1.00 | $1.00 |
| .90 | 2 | 1.80 | +.80 |
| .80 | 3 | 2.40 | +.60 |
| .70 | 4 | 2.80 | +.40 |
| .60 | 5 | 3.00 | +.20 |
| .50 | 6 | 3.00 | 0 |
| .40 | 7 | 2.80 | —.20 |
| .30 | 8 | 2.40 | —.40 |
| .20 | 9 | 1.80 | —.60 |
| .10 | 10 | 1.00 | —.80 |

As is obvious from this table, the seller's maximum total revenue at a single price is $3.00 which he can obtain by setting the price at $.50 and selling six gallons (or a price of $.60 and sell five gallons). At this price the seller maximizes his wealth because his marginal revenue (and therefore also his total revenue) would decline with each additional sale; the reason is simply that the monopolist faces a negatively

sloped demand curve. And since the monopolist does not know a priori what the demand schedule is, he must constantly probe and search for the most favorable profit-maximizing price. Hence the alternative name of price-searcher.

Another way of seeing why the monopolist exercises his pricing/output option in this way is to graph the monopolist's demand (or average revenue) and marginal revenue curves:
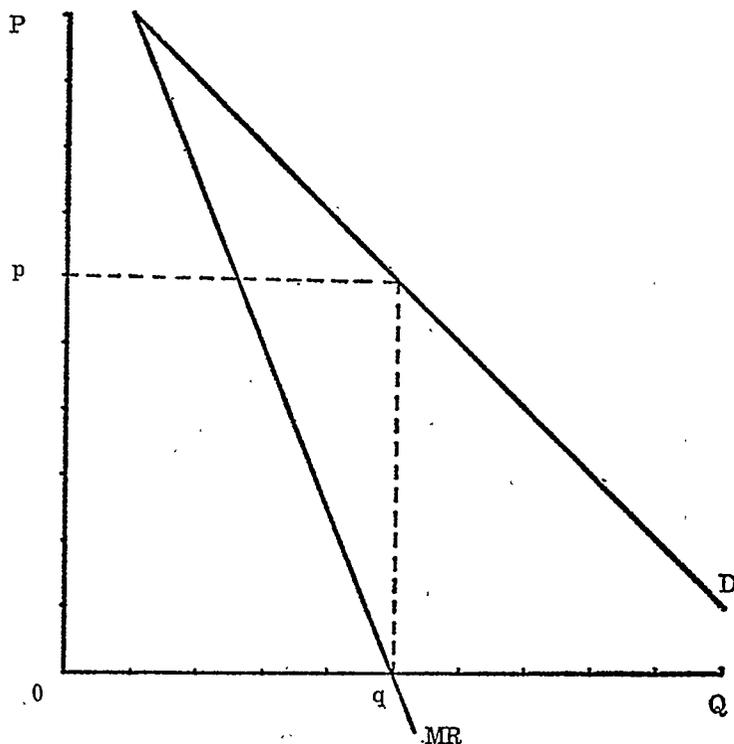


·FIGURE 14: MONOPOLIST'S DEMAND CURVE
AND MARGINAL REVENUE LINE

The marginal revenue line is always less than price because the monopolist has to lower his price in order to sell the extra (last, or marginal) unit. Mathematically, the marginal revenue curve (*MR*) is always twice as steep as the demand curve (*D*).[24]

To describe the profit-maximizing position of a monopolist, then, one need only add to the diagram the monopolist's marginal cost curve (just as each seller's marginal cost curve was added in a perfectly com-

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24. For a technical and mathematical explanation of not only why the *MR* curve slopes downward if the demand curve is a downward-sloping straight line, but also why it is twice as steep, see R. LIPSEY & P. STEINER, *supra* note 13, at 251-53.

petitive market to determine his output in Figure 12). The monopolist will maximize revenues by producing an output quantity where his marginal revenue equals marginal cost (Point *A*, Figure 15) (*i.e., q* will be drawn in, vertically, where *MR* intersects *MC*) and charge whatever price his demand curve reveals is necessary to sell that output (see Point *B*, Figure 15).[25]  This is shown by the following price/quantity graph:
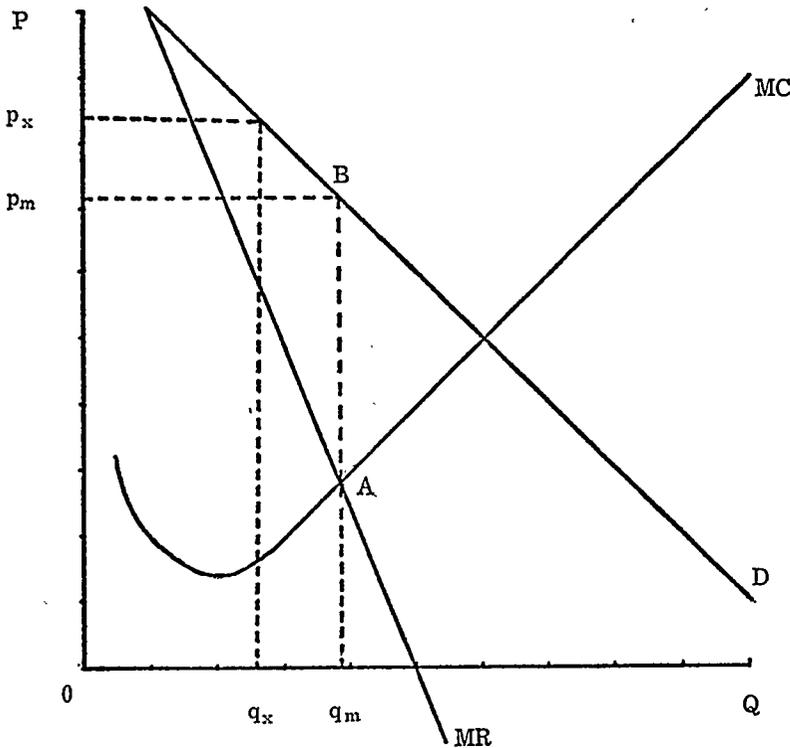


FIGURE 15:  PROFIT-MAXIMIZING MONOPOLIST

That is, the profit-maximizing monopolist who faces a negatively sloped demand curve will increase his output only as long as his profitability increases.[26]  The monopolist's total net revenue no longer increases when marginal cost (*MC*) exceeds marginal revenue (*MR*) for a unit

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25.  Where the marginal cost curve is assumed to be zero, it is shown by the horizontal axis of the graph, as in Figure 14 *supra,* and the monopolist's output will equal that amount revealed by the intersection of the marginal revenue line (*MR*) and the horizontal axis (*Q*). The output *q* will be sold at price *p*.

26.  For purposes of exposition, it is assumed that the monopolist's profit is his total revenue less his marginal cost. In fact, the monopolist's profit is determined by his average total cost curve. All that is in fact known when marginal cost equals marginal revenue is that the monopolist does *better* at this output level than at any other output, not whether his operation is particularly profitable.

because, by definition, the cost of producing and selling this last unit of sales then exceeds the revenue garnered by that sale. (It is sold at a loss.) And in order to maximize his profit, the monopolist sets the price $(p)$ at which the market demand curve intersects this quantity. If, for example, he sets price above this level, consumers would buy less than this ideal quantity $(q_x)$ and while unit prices $(p_x)$ and profit per unit would be higher, total profits would be reduced. Similarly, if prices were set below this level and quantity were unchanged, he would not be charging "all the market could bear."

In contrast to the description of perfect competition, no mention is made of the supply curve in a monopoly market. Several reasons can be given. In perfect competition, the supply curve is the horizontal sum of individual supply curves because individual sellers maximize profits, by equating marginal cost to price. In monopoly, however, the profit-maximizing firm equates marginal cost to marginal revenue and *marginal revenue does not equal price* (price is greater). (Compare Figures 12 and 15 or see Figure 16.)[27] Thus, in order to know the monopolist's output or industry supply it is necessary to know the shape and position of the market demand curve[28] as well as the monopolist's marginal cost curve. Thus, in the first example of monopoly where marginal cost is assumed to be zero (Figure 14), one can confidently predict that the profit-maximizing monopolist will set output at six (or five) gallons and price at $.50 (or $.60) per gallon. Monopoly is also distinguished by the fact that the price $(p_m$, Figure 15) and output $(q_m$, Figure 15) selected by the monopolist are the market price and quantity demanded at equilibrium; this is but another way of noting that the monopolist occupies the entire market. The theory of monopoly describes a seller who is insulated from the loss of customers by sellers of other identical or substitute products. Since all products face some substitutes for the services they provide, total monopoly power never exists. Monopoly power is, in other words, a variable or a matter of degree not an absolute; it is not the complete counterpart to perfect competition.

## D.  *Competition and Monopoly Compared*

The primary effects of monopoly, when compared to perfect com-

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27. It is arbitrarily assumed for illustrative purposes here that the monopolist's costs are the same as those of competitive (price-taking) firms. This highlights the welfare effect of monopoly, as seen in the next section. However, it should be noted that in reality a monopolist's marginal cost curve may vary substantially from the supply curve of a competitive industry.

28. The demand curve facing a seller in a competitive industry is infinitely elastic (*i.e.*, horizontal); that facing a monopolist is negatively sloped.

petition, are reduced output, higher prices, and transfer of income from consumers to producers.   In short, should a perfectly competitive industry become monopolized, and all cost curves remain unaffected, price will rise (from $p_c$ to $p_m$, Figure 16) and quantity produced will decline (from $q_c$ to $q_m$, Figure 16).   This is readily seen when the price/quantity graphs for the two markets are overlaid on one another:
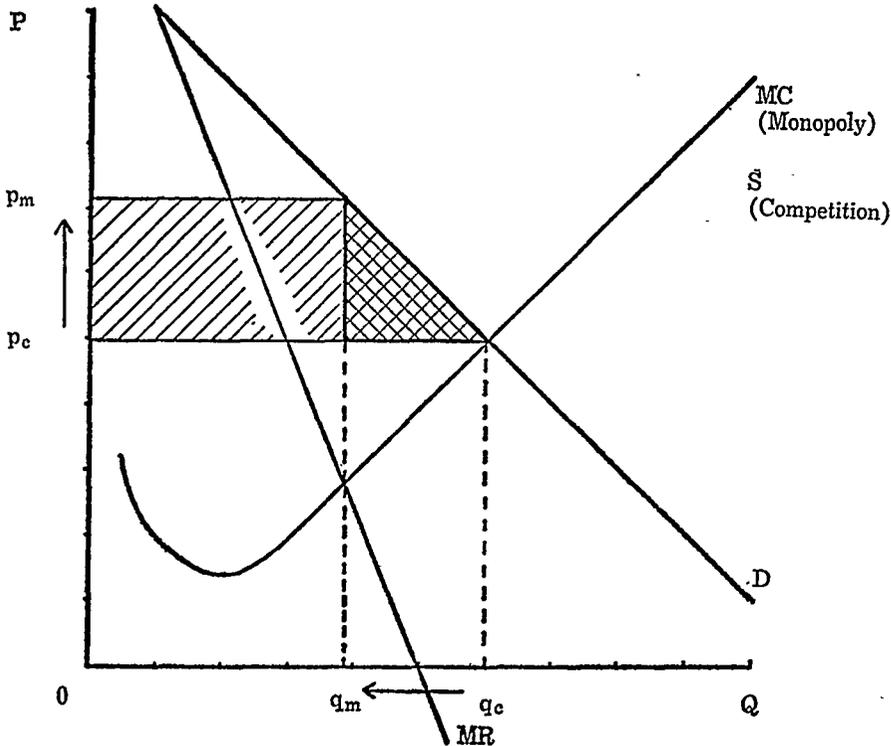


FIGURE 16: MONOPOLIZING A COMPETITIVE MARKET[29]

For example, when the market is competitive, price will be at $p_c$ and output at $q_c$.  (In this instance, industry supply is the equivalent of the horizontal sum of individual firm marginal cost curves.)   Should the industry become monopolized, output would be *reduced* to $q_m$ and price raised to $p_m$.   A transfer of income from consumers to producers would also occur which, if costs remain unchanged, will be reflected in increased profits for the monopolist as generally illustrated by the diagonally-lined rectangle.[30]

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29. This figure merely duplicates onto one graph Figures 13 and 15 *supra*.

30. Once again this description simplifies the analysis and makes no distinction between average and marginal costs.   The inclusion of average cost would alter the size and shape of the rectangle, but it would not dispute the basic point that income is being transferred from consumers to producers.

In addition, there is the dead-weight welfare loss attributable to monopoly pricing as defined by the cross-hatched triangular area. That is, the "sinister force" of monopoly causes part of the surplus (which would have been realized by consumers under competitive pricing) to vanish, being captured neither by consumers nor the monopolistic producer. The area of this dead-weight loss is an indicator of society's welfare loss due to monopolistic resource misallocation.[31]

While most emphasis is placed on the undesirable features of monopoly in comparison with competition, especially with respect to allocative and productive efficiency, it should be noted that monopoly is not universally condemned. Monopoly may, according to some theories, generate profits which support innovation; it may be inevitable and result in a reduction of price and increase of output where it alone would bring economies of large scale production. It may also provide the product variety which consumers desire and which perfect competition might preclude.[32]

## E.  *Monopolistic Competition*

Another theory of more recent vintage seeks to deal with the problem of price-making in imperfect markets.[33] Monopolistic competition seeks to reconcile the contending forces of perfect competition and monopoly, yet it is not necessarily the middle ground between the two. The important difference inherent in the theory of monopolistic competition lies in its recognition that each producer sells a somewhat differentiated product. That is, this theory treats market behavior where there are many sellers, yet each seller's product is distinct and distinguishable by brand or other means of identification from those sold by others in the industry. This contrasts sharply with both competitive and

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31. For a more complete explanation of this effect, see F. SCHERER, *supra* note 3, at 400-04. On the other hand, the dead-weight loss may be overstated. The loss is fully realized only when the conditions necessary to produce the optimal allocation provided by a competitive market exist simultaneously everywhere in the economy—that is, there are no monopolies or oligopolies. (Since that is unlikely, we are left with the theory of the "second best." *See* P. AREEDA, *supra* note 2, at 36-37.)

32. It should be noted, however, that by definition a monopoly profit is an unnecessary payment to a firm; it would have produced the same goods even at a competitive price. When it is necessary to allow a firm a market monopoly in order to realize economies of scale, a "natural monopoly" is said to exist. In such markets, government price regulation is frequently imposed to prevent the "natural monopolist" from pushing price above competitive levels.

33. The theory was first suggested in E. CHAMBERLIN, THE THEORY OF MONOPOLISTIC COMPETITION (1932). A distinct but related work is J. ROBINSON, THE ECONOMICS OF IMPERFECT COMPETITION (1933).

monopolistic retailing where distinctive product packaging, labeling, advertising, and similar selling techniques are absent because they would not increase either price or output in the case of competition or demand in monopoly. Where there are many sellers in an industry with differentiated products, this theoretical model predicts that the sellers will not engage in price competition but that they will compete vigorously in *nonprice competition,* namely in advertising, product quality, and sales techniques. It also forecasts that industry return on investment will reflect normal, competitive returns as sellers increase their selling costs (which are included in average costs) to maintain or increase market shares; prices, on the other hand, will reflect monopoly conditions in that price will exceed marginal cost, output will be less than with pure competition, and average costs will be higher.

Where consumer goods are sold, markets exhibiting some of the traits of monopolistic competition abound. They include sellers of aspirin, household bleach, and paper towels, as well as drug stores, grocery stores, and gas stations. In each instance, several (as opposed to "many" in monopolistic competition) firms sell virtually identical products or services which have been separately identified in the buyer's mind. The firms appear to obtain sales primarily from advertising and other aspects of nonprice competition. Monopolistic competition resembles monopoly in that sellers face a negatively sloped demand curve for their somewhat unique products; it also portrays aspects of competition, however, in that the uniqueness of each product discourages the seller from combining with others to restrict output and that the availability of similar products from many sellers gives buyers ready alternatives.

Graphically, the monopolistic competitor faces a market condition indistinguishable from the monopolist (see Figure 15) and has no incentive to cut prices; a unilateral price cut results in marginal revenue falling below marginal costs and reduces total profits. On the other hand, the supra-normal returns earned by the monopolistic competitor invite the entry of additional firms; they are "warded off" only by additional selling investments and product improvements—but the net result of such nonprice competition is to increase average total cost until profits are no longer supra-normal, as follows:
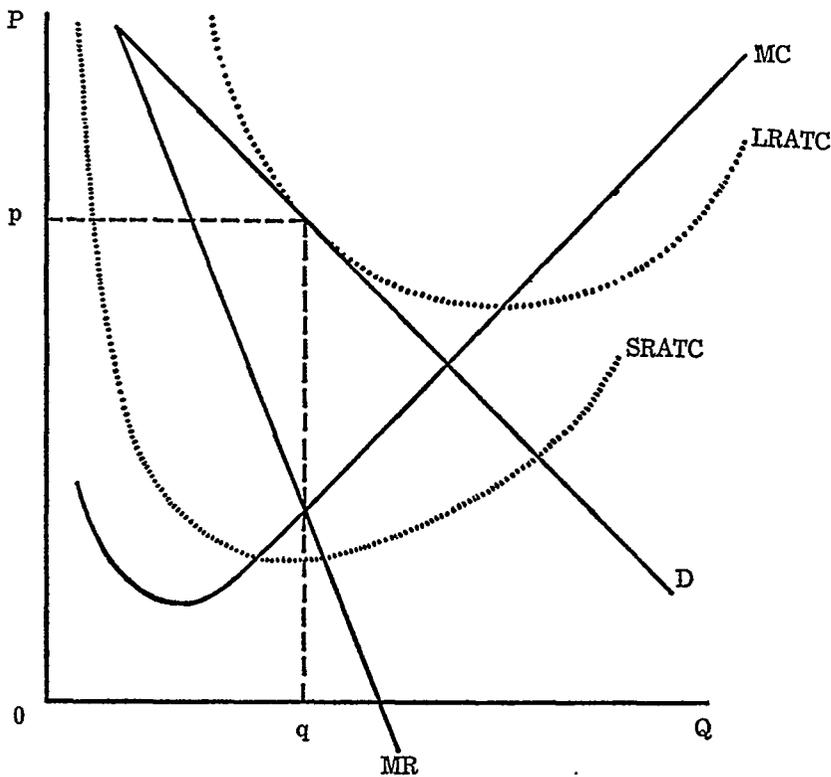
FIGURE 17: MONOPOLISTIC COMPETITION

LRATC = Long-Run Average Total Cost
SRATC = Short-Run Average Total Cost

(Average total cost (*ATC*) includes all costs incurred by the firm, fixed or variable. Advertising and other selling expenses are incurred without regard to particular output and hence are not included in marginal costs.) In other words, the resulting increase in long-run average total costs (*LRATC*) wipes out supra-normal profits which a monopolistic competitor would earn (as reflected by the difference between the price (*p*) and short-run average total cost (*SRATC*) ). The market is similar to monopoly in terms of output and price, but not in terms of predicted industry profits.

The theory of monopolistic competition is an important step in understanding monopolistic behavior. In particular, it demonstrates how monopolistic elements in an industry can lead to production at a point where output is restricted and costs are above those of the most efficient scale, even though the industry firms only earn "normal" profits. As a description of actual behavior, however, the theory is largely inad-

equate. Its assumption that all firms in an industry have identical cost curves is unrealistic. Also, it is substantiated by little empirical evidence. In the illustrative industries, for example, the number of independent firms is generally too small to fit within the theory. Moreover, there are alternative—but not necessarily mutually exclusive—explanations for nonprice competition. The most prominent of these is the theory of oligopoly, namely that sellers tacitly coordinate their price in order to earn supra-normal profits.

## F.  Oligopoly

Of even greater significance in antitrust today than the preceding market models has been the development and widespread administrative and judicial acceptance[34] of the theory of oligopoly. Although actually based on a variety of theories, the basic characteristic of each is the postulate that because there are only a few sellers in oligopoly markets,[35] all sellers recognize that they are to a substantial degree *interdependent*. Therefore, each seller takes into account the *reactions of rival sellers* when making output and pricing decisions. This means that firms in oligopoly markets will not reduce prices to increase sales because they expect that action to be fruitless. Any gains will be cancelled immediately when rival sellers retaliate with similar price reductions.

As a consequence, oligopoly sellers concentrate, according to theory, on coordination and anticipation. What competition exists is in the form of indirect competition—by disguised price cuts (through improved product quality, credit terms, delivery service, or secret selected price reductions) and nonprice competition such as advertising. Such competition is limited, however, so as not to invite retaliation or to increase average total costs (which would deny the oligopolist supra-normal profits).[36]

The primary theoretical difference, then, between oligopoly on the one hand and competition and monopoly (and even monopolistic competition) on the other hand is that in oligopoly markets, price and out-

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34. *See, e.g.,* FTC v. Cement Institute, 333 U.S. 683 (1948) (prohibition of basing point pricing).

35. The word oligopoly is, like the term monopoly, derived from the Greek, and means "few sellers." Oligopoly is consequently described as "competition among the few."

36. In monopolistic competition, by contrast, rivalry forces profits to normal levels because there are many sellers, each of whom seeks to increase his market share at the expense of his rivals; hence, such coordination is impossible.

put decisions are made while anticipating the reactions of the identified rivals. Neither the competitive firm nor the monopolist considers the reactions of others; the competitive seller has no impact on his rivals and the monopolist has no close rivals. On the other hand, coordination among oligopolists is unlikely to be perfect; cost curves may differ, and more efficient firms have a strong incentive to engage in disguised price cutting in order to capture additional sales above (or at) their marginal cost. Oligopoly theory does not assume that output and pricing decisions in oligopoly are identical to those in monopoly; the expectation rather is that each is somewhere between predicted competitive and monopoly levels.

Nor is the oligopolistic firm unique in its dependence on the actions of other firms since even a monopolist's demand curve is affected by the prices of substitute products. What is different about the oligopolist is that the actions of rival firms both affect him *and* are affected by him. Because the situation is circular it is unpredictable. Consider oligopoly seller Able. His optimal pricing/output decision cannot be defined until he knows or can make a reasonable assumption what rival oligopolists Baker and Charlie will do. Able's best (profit-maximizing) policy depends on Baker and Charlie. And by exactly the same analysis, of course, Baker's and Charlie's best policies cannot be assayed without knowing what Able's policy will be. Thus, in order to determine his policy, Able must not only estimate Baker's (and Charlie's) policy, but that estimate must also reflect Able's hunch on what Baker expects Able to do (as well as Charlie). If Able, Baker, and Charlie were left to their own devices, they could form a cartel (or to use the turn-of-the-century term, a "trust") and collectively act like a monopolist. Because such coordination would impose the costs of monopolization on the public, the government intervenes with antitrust laws to make them act more like competitors and less like a cartel.

Given such laws, oligopoly market strategy becomes a guessing game where the rewards go to the firms who outguess their opponents. A particular policy may be extremely profitable if it surprises one's rivals so that they cannot react immediately; but that same policy may be unprofitable if anticipated. To maximize profits, the oligopolist must do what any other firm facing a negatively sloped demand curve must do: produce to the point that marginal cost equals marginal revenue and charge the highest price that consumers (the market) will pay for that output. (See Figure 15.) The difficulty, however, is that the oligopolist's demand curve cannot be identified without knowing how his rivals will react.

Pricing and output decisions are not as indeterminate as is, perhaps, suggested by this description. Oligopoly markets reach equilibrium as price and output decisions are made. Moreover, problems of mutual interdependence are frequently encountered elsewhere, as in military strategies, poker games, and football tactics. In each, offensive and defensive maneuvers depend not only on the abilities of each side but also on how each side uses the resources available to it. Such decisions are not made without guidance; past performance, available resources, the possible returns, the desire to minimize possible losses as well as to maximize gains, are all familiar features.

Oligopoly theory has proceeded on two fronts in seeking to systematize such speculation. First, it has sought to develop a systemic analysis of possible alternatives facing the seller in an oligopoly market and to predict performance. The focus here is on rationalizing how a firm seeking to maximize profits would react when facing an oligopoly market. The initial attempt was made by Cournot almost 140 years ago when he developed the duopoly model which had each seller assume that his rival would not change his output.[37] The naivete of this basic assumption reflects the limits of this model. Intermediate theories, such as the kinked demand curve,[38] have sought to develop hypotheses which explain oligopoly behavior; this theory attempts to explain why rivals generally match price decreases but not increases, and hence why oligopoly prices persist. It does not, however, address the more basic question of how the price was initially established. More recently, the insights of sophisticated mathematicians were brought to bear on oligopoly theory in the introduction of the theory of games—the study of "rational" (optimizing) strategy in small group situations where the rivals are mutually dependent.[39] But the various game theories also have their limitations for oligopoly analysis. Some assume that a businessman's primary objective is to minimize losses (maximin-minimax); others focus only on a businessman's willingness to accept high risks (mixed strategies); none, however, advises which strategy is applicable to a particular situation. And, in any case, they have not been able to define specific outcomes.

37. A. COURNOT, RESEARCHES INTO MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH ch. 7 (1838) (2d ed. N. Bacon transl. 1927). *See also* W. FELLNER, COMPETITION AMONG THE FEW ch. 2 (1949); F. MACHLUP, THE ECONOMICS OF SELLERS COMPETITION 372-77 (1952).

38. Hall & Hitch, *Price Theory and Business Behavior*, in OXFORD ECON. PAPERS 12-15 (May 1939); Sweezy, *Demand Under Conditions of Oligopoly*, 47 J. POL. ECON. 568-73 (1939). *See also* F. SCHERER, *supra* note 3, at 145-49.

39. This approach was first introduced in J. VON NEUMAN & O. MORGENSTERN, THE THEORY OF GAMES AND ECONOMIC BEHAVIOR (1944). *See also* P. ASCH, ECONOMIC THEORY AND THE ANTITRUST DILEMMA 66-75 (1970).

The second, and perhaps more successful, process which has been used to understand oligopoly has been to observe the performance of firms in oligopoly markets and to measure the results. This approach was pioneered by Professor Joe S. Bain of Harvard who studied the profit rates of forty-two industries for the years 1936-40 and found that where the eight largest firms controlled seventy percent or more of the market, average profits were considerably higher than where markets were less concentrated.[40] The conclusion which this survey supported was that oligopolistically structured (*i.e.*, highly concentrated) industries were acting interdependently to restrict output and to raise prices above marginal cost and thus to earn a supra-normal return. The basic findings were confirmed in several subsequent studies.[41] But more recent analyses have argued that the Bain and subsequent studies are flawed.[42] The criticisms not only focus on numerous technical deficiencies in the studies correlating concentration with profits, but they also question the persistence of any such correlation over time. In fact, even accepting the statistical correlations as accurate reflections of industry profits, it is argued that they are explainable on the hypothesis that firms of superior efficiency will generally expand their market share.[43] Increasing concentration in an otherwise open market, then, is simply the result of competitive efficiency with the "winners" in the market struggle gaining a larger proportion of the sales. This questioning of the statistical evidence of oligopoly is currently the center of intense debate and further investigation.[44] Whether and when it will affect antitrust case law remains uncertain.[45]

## CONCLUSION

This introduction to basic economic concepts and theories is premised on the notions that the antitrust laws seek to maximize consumer welfare by controlling the misuse of private economic power and that

40. Bain, *Relation of Profit Rate to Industry Concentration: American Manufacturing, 1936-40*, 65 Q.J. ECON. 293 (1951).

41. *E.g.*, J. BAIN, BARRIERS TO NEW COMPETITION (1956); Hall & Weiss, *Firm Size and Profitability*, 49 REV. OF ECON. & STATISTICS 319-31 (1967).

42. *See, e.g.*, H. DEMSETZ, THE MARKET CONCENTRATION DOCTRINE 7 (1973).

43. *Id.* at 25-26.

44. *See* Weiss, *The Concentration-Profits Relationship*, in INDUSTRIAL CONCENTRATION: THE NEW LEARNING 184-233 (H. Goldshmid, H. Mann & J. Weston eds. 1974).

45. Although the Supreme Court has not disavowed its stance of relying on evidence that increasingly concentrated industries are likely to result in diminished competitive vigor, it has recently demonstrated a willingness to review statistical cases of "undue concentration" more rigorously. *Compare* United States v. Philadelphia Nat'l Bank, 374 U.S. 321 (1963), *with* United States v. General Dynamics Corp., 415 U.S. 486 (1974).

they apply where competition is the generally accepted method of social control. Obviously, then, the enforcement of the antitrust laws requires an understanding of the competitive market system, how it operates, its limitations, and why it seems worth preserving. Only from this foundation can the wisdom of a particular antitrust policy be assessed by measuring the costs and benefits of specific actions—or, alternatively, by considering whether business practices or enforcement efforts deviate from the competitive norm. In other words, complete familiarity with the ideas considered here is only a first step in understanding the antitrust laws or in evaluating their application.

The antitrust laws necessarily assume that competitive markets are not always self-policing, and the lucrative gains available from monopoly certainly suggest that the profit-maximizing firm will find it rewarding to destroy competition unless otherwise constrained. On the other hand, unless a firm or group of firms can create barriers to entry, unaided private efforts to maintain monopoly positions are doomed to failure. Still, the costs of short-term monopoly may be substantial; and barriers to entry may exist, especially where some other government policy supports them (*e.g.*, the patent laws).

It is also sometimes argued—and occasionally repeated in antitrust cases—that the antitrust laws have other social and political objectives.[46] Where such factors confirm economic goals, these additional arguments further support antitrust efforts to foster economic efficiency. Where they conflict with notions of efficiency, however, the soundness of this approach and the trade-offs involved must be carefully assessed. Should, for example, the exercise of monopoly power alone be condemned even though that power was acquired solely by competitive efforts which are otherwise applauded? To condemn monopoly in this circumstance may discourage vigorous competitive effort by large firms nearing monopoly size. To allow it may seem contrary to the spirit of the antitrust laws. This suggests what must be obvious by now—namely, that economics is not the end of antitrust analysis. To be sure, in many circumstances an understanding of the economic impact of a challenged business practice is also likely to suggest the appropriate judicial response. But not all—or, perhaps more accurately, not many—antitrust cases can be explained by so rigorous

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46. *E.g.*, Brown Shoe v. United States, 370 U.S. 294, 344 (1962) (protection of small, locally owned businesses); Northern Pac. Ry. v. United States, 356 U.S. 1, 4 (1958) (preservation of democratic, political, and social institutions); United States v. Aluminum Co. of America, 148 F.2d 416, 427 (2d Cir. 1945) (special three-judge panel under 28 U.S.C. § 2109 (1970)) (initiative, thrift, and energy in industrial progress).

an analysis.   The history of antitrust is often as important as the most lucid economic understanding.   This does not mean, however, that rational antitrust enforcement should or even can serve the ends of both economic efficiency and other political programs such as whipping inflation now, cleaning up the environment, or ending poverty in the foreseeable future.