

# Economics Review

## Circular Flow

### Market System

The basic coordinating mechanism of a capitalist economy is a market (and the price system). Capitalism is a market economy. Decisions are made by buyers and sellers of products (in the product market) and resources are turned into products via the exchange of resources (in the factor market). In our problem, the product market is the market in which shoes are bought and sold and the (primary) factor market is the market in which labor is hired and paid wages.

The preferences of sellers and buyers are registered on the supply and demand sides of the markets. The outcome of these choices is a system of product (e.g. shoes) and resource (e.g. labor) prices. These prices provide households (as resource owners and consumers) and firms (as resource purchasers and producers) with information to make and revise decisions in furthering their self interests.

The market system is an elaborate communication system through which innumerable individual choices are recorded, summarized, and weighted against each other. Prices are the means of communication. Firms and households who pay attention to the market's signals (i.e. prices) are rewarded while those who ignore the market's signals are penalized. Through the price communication system and individual responses to it, society decides what the economy should produce, how production is organized, and how rewards and penalties are distributed. That is, the market system is the mechanism through which society decides how to allocate resources and distribute output as well as the system through which these decisions are carried out. In societies that are not grounded in capitalism, these decisions are made through non-market mechanisms (e.g. government, tradition).

### Operation of a Market-Based Economy

In a free market, money-based economy, households, as resource owners, sell their resources to firms for money income. As consumers, households spend their money income buying goods and services. Firms must spend money in order to buy the resources used to produce goods and services. Their finished products are then sold to households in exchange for money. The net result is a counter clockwise real flow of economic resources and finished goods and services and a clockwise money flow of income and consumption expenditures (see diagram in Appendix IV). These flows are simultaneous and repetitive.

The Circular Flow diagram illustrates the flow of real resources and money in a market-based economy. In this economy, there are two groups of decision makers—households and firms.

The coordinating mechanism that brings the decisions of households and firms into alignment with one another is the market system.

## Factor Market

The bottom half of the diagram shows the Factor Market. In this market consumers (households), who directly or indirectly (through their ownership of business corporations) own all economic resources, supply resources to producers (firms). Producers, of course, demand resources because they are the means by which goods and services are produced. [Note: the interaction of demand and supply for resources in the factor market establishes the price of each resource]. The payments that firms make in obtaining resources are their costs, but simultaneously constitute flows of wages, rent, interest, and profit income to the households supplying these resources.

Labor is used as the primary example of a resource in this problem but renting or buying the robotics is also an example. Resource scarcity in this market can best be illustrated by the fact that firms must pay for resources. If resources were unlimited (e.g. air), firms would not have to pay to obtain them. Anthony Beckett is the most dramatic example of a scarce resource. Because there are limits to the number of individuals with his skills, shoe companies bid up the price to pay for his endorsement. In contrast, air, because it is virtually unlimited, carries no price and would be costless as a resource in the production of shoes.

 **Potential Hurdle:** Students often have difficulty seeing that households supply resources other than labor to the factor market. It is fairly easy for students to see that labor is paid wages to enter the “factor market.” Students can also be shown that households get interest on monies they loan to firms for purchase of capital that is used in the factor market, rent on land that is used in the factor market, and profit to savvy entrepreneurs.

## Product Market

The top half of the diagram shows the Product Market. The money income received by households from the sale of resources does not, as such, have real value for them. Consumers cannot eat or wear coins and paper money. Hence, through the expenditure of money income in the product market, households express their demand for a vast array of goods and services. Simultaneously, producers combine the resources that they have and supply goods and services in the same market. The interaction of these demand and supply decisions determines product prices. Note that the flow of consumer expenditures (money) on goods and services constitutes sales revenues for producers.

## Circular Flow of Resources

As the diagram implies, a complex, interrelated web of decision making and economic activity exists within a market economy. Both consumers and producers participate in both markets, but on different sides of each. Producers are on the buying (demand) side of the factor markets, and consumers (as resource owners) are on the supply side. In the product market, these positions are reversed. Households, as consumers, are on the buying (demand) side of product markets and firms, as producers, are on the selling side.

## Scarcity

Scarcity underlies all of the transactions portrayed in this diagram. Because households have only limited amounts of resources to supply to firms (e.g. limited time, abilities), the

household's money income is limited. This means that each consumer's income will go only so far in the purchasing of goods and services. A limited number of dollars clearly will not permit the consumer to buy all of the goods and services desired. Similarly because resources are scarce, there are limits to the number of goods and services that can be produced. Scarcity and choice should permeate the entire discussion of the flow of resources.

## **Money**

Although money performs many functions in an economy, its most important function is that of a medium of exchange. Consumers must trade or exchange their labor (for example) for goods and services desired. Because consumers want a wide variety of products, they would have to provide their resources to diverse types of firms to obtain variety in goods consumed unless money is used to facilitate exchange. For example, without money if a person wanted only food, clothes and shelter, s/he would have to provide labor for a farmer, cloth maker, and construction contractor to obtain these goods in payment. This would be quite inconvenient. Instead, the consumer can provide labor to any firm and be paid in money that can be used to purchase a wide variety of goods and services.

## The curriculum was designed to teach the following concepts:

Concepts in **boldface** are defined below. Concepts in *italics* are defined elsewhere in the definition list.

**Competing Needs:** Because resources are *scarce*, the redistribution of goods often means that one group (or individual) often gains only at another's expense. That is, to make someone better off, someone else must be made worse off because individuals are competing for the same resources.

**Costs:** (of production): The measure of what has to be given up in order to achieve or produce something. Total costs include both *opportunity costs*, or the cost of alternative uses of resources, and *direct costs*, or total money outlays.

**Demand:** Purchases of a good or service that people are actually able and willing to make, given price and choices available to them. The "**law of demand**" states that there is a negative (or inverse) relationship between price and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Consumers' demand is determined by their tastes, income, and price of other goods. The **demand schedule** is a table showing the quantities of a good that will be purchased at various prices. The **demand curve** is a curve that relates the price of a product and the quantity of the product that individuals are able and willing to purchase. **Aggregate Demand** is the total demand for goods and services in the economy by households (for consumer goods), by firms and government (for investment goods), and by other countries (exports).

**Economic Profit:** A firm's *total revenue* (price times number of items sold) minus the total *cost* of production, which includes both *direct* and *opportunity costs*. Negative *economic profits* are called losses. Economic profits indicate that a firm is generating revenue above and beyond the next best use of its productive resources.

**Equilibrium Price:** The price at which the quantity of the product that buyers are able and willing to purchase exactly equals the quantity of the product that sellers will sell.

**Equilibrium Quantity:** The quantity at which the amount that buyers are able and willing to purchase exactly equals the amount of the product that sellers will sell. This occurs at the *equilibrium price*.

**Opportunity Costs:** The real sacrifice involved in achieving something. The value of the next best opportunity that would have to be foregone in order to achieve a particular thing.

**Profit:** *Total revenues* minus total *direct costs*. This is distinguished from **economic profit** which is the residual of *total revenue* minus *total costs* when a normal rate of return on investment is included as a part of cost.

**Scarcity:** A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

**Total Cost:** The sum of *fixed cost* and *variable cost*.

**Total Revenue:** The total amount of money brought in by a firm. This is computed by multiplying the unit price of the product times the number of units purchased.

**Tradeoff:** An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

### Teachers can also demonstrate the following concepts using this lesson:

**Direct Costs:** The accountant's definition of cost. The total money expenditure or outlays necessary to achieve a resource or good/service.

**Elasticity:** The measure of responsiveness of one variable to changes in another. For example, the **price elasticity of demand** is the change in the quantity demanded of a good as a result of a change in its price.

**Fixed Costs:** *Costs* to the firm that do not vary with output. These *costs* are borne even though no output is produced and are often referred to as "overhead."

**Indirect Costs:** See *Opportunity Cost*.

**Supply:** The amount of a good or service that firms are prepared to sell at a given price. The firm determines how much to supply using its marginal cost curve. **Industry supply** is the summation of an individual firm's marginal cost curves (in a constant cost industry). The **supply schedule** is a table showing the amount of a product that will be produced at a given price. The **supply curve** relates the quantity of a good supplied by a firm (or market) at each price. The **law of supply** dictates that the curve is upsloping, indicating that more will be produced as the price of the good increases. **Aggregate Supply** is the total amount of goods and services available for consumption and consists of both domestically produced goods and services and imports.

**Variable Costs:** *Costs* that vary with the amount of production.

## COSTS AND SUPPLY

### *Costs*

The data on quantity sold at each price (Table 1) are combined with the per unit costs of each firm's production to derive a firm's total cost curve. Just as a firm's total revenue is associated with the demand curve, the firm's total cost is associated with the supply curve.

In the short run, costs are either fixed or variable. Because **fixed costs** do not vary with output, they are associated with the very existence of the firm and must be paid even when the firm is not producing. In our example, the firm must pay the rental to the Food Court and for the equipment (because of lease agreements) and these costs will not vary with production. Other examples include interest on a firm's bonded indebtedness, insurance premiums, and the salaries of top management and key personnel. Fixed costs cannot be avoided (in the short run) or controlled by the firm.

**Variable costs**, which change with production, increase with each one-unit increase in production. Thus, such costs continue to rise as output increases. In our example, variable costs include labor and ingredient costs. It is fairly clear that as one sells more food one must buy more ingredients and hire more labor (to cook it and serve it). Other examples of variable costs may include fuel, power, transportation, and other services. Variable costs are those that can be controlled by the firm by controlling the amount produced.

A firm's **total cost** of producing is the summation of its fixed and variable costs.

### *Supply*

Because the market, and not the firm, determines revenue in the competitive market, the amount produced at each price (its supply) is determined by each firm's cost of production. This is an important relationship for students to recognize. Thus, the firm's "supply" curve is simply its (marginal) cost curve. Assuming factor costs do not vary with the number of firms in an industry (constant cost industry), the market supply curve is simply the summation of each firm's supply curve. The cost factors that determine a firm's "supply" curve, also determine the industry supply curve.

## PROFIT

Given how much will be sold at each price (i.e. demand for a firm's product), the firm is faced with three related questions: 1) Should it produce? 2) If so, how much of a product should be produced (and at what price, unless the firm is in a *perfectly* competitive market)? and, 3) What profit or loss will be realized?

1. A firm should produce if it makes a profit. This is obvious. However, if it is not making a profit, it should still operate in the short run as long as its loss is less than its fixed costs. In this case, it loses less money by operating because firms must pay fixed costs even if they shut down. In our example, firms also might operate at a loss because of noneconomic motives (e.g. Tanya Stravinsky). Alternatively, firms might operate at a loss today because they expect to gain customers in the future (i.e. long-run profit maximization). For example, Fleur de Lys might be willing to operate at a loss in the Food Court because it expects to capture young customers, who will develop a taste for Fleur de Lys' food.
2. A firm will set price at the amount where profit is greatest. For example, Veggie Vittles will price at \$3.00, the Home Economics Kitchen will price at \$1.00, and Taco Villa will price at \$1.50. [Note: the maximum profits (or minimum losses) that each restaurant can make are in bold face on Table 5 in Appendix IV]. The quantity sold at the profit maximizing price is determined from Table 1 in Appendix IV (Demand for Entrees), which shows how much students will purchase at the profit maximizing price. At \$3.00, Veggie Vittles will sell 15 veggie sandwiches, the Home Economics Kitchen will sell 25 meat and potato meals, and Taco Villa will sell 150 tacos.
3. Profit or loss realized at each price is shown on Table 5 in Appendix IV, which can be used to illustrate how profits or losses will vary with changes in price, total revenue (Table 3, in Appendix IV), and total costs (Table 4, in Appendix IV).

## GRAPHS AND THEIR MEANINGS

A graph is a visual representation of the relationship between two variables. The table below illustrates the relationship between price and quantity demanded for tacos at Taco Villa. Although this information is obtained from Table 1 in Appendix IV (and hence is merely a different representation of the same information), the graphic representation of price and quantity demanded illustrates the concept of a demand curve. That is, it shows visually or graphically how consumption varies with price of the good. In the graph below, we illustrate a linear (straight line) and nonlinear (changing slope) approximation of the demand curve for tacos that is depicted in tabular form in Table 1 in Appendix IV.

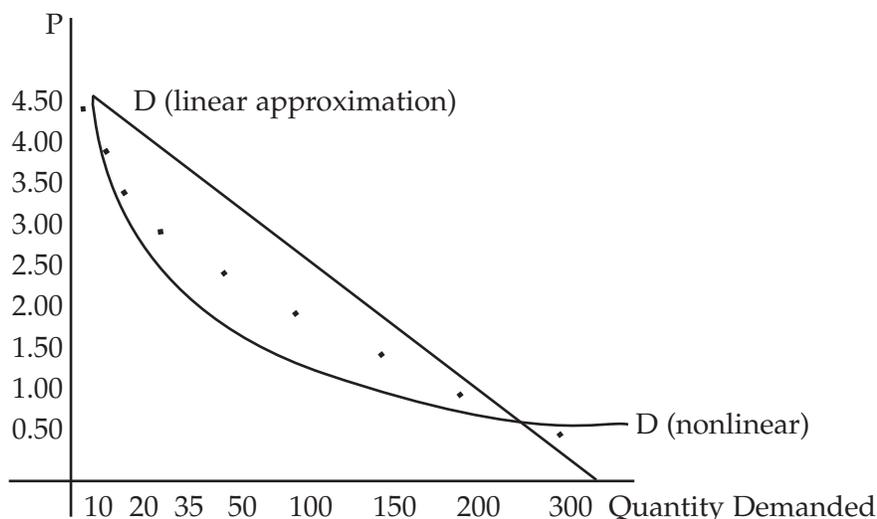
In the graph below, price is presented on the vertical axis and is the determining factor or independent variable. Consumption (quantity demanded) depends on price and is represented on the horizontal axis. (Actually, the demand curve differs from the traditional graphic portrayal of relationships, which typically show the independent variable on the horizontal axis and the dependent variable on the vertical axis.)

We first arrange the vertical and horizontal scales of the graph to reflect the range of values on price and consumption, as well as mark the steps in convenient increments. We then locate the various points that reflect the information on quantity demanded at a particular price that is provided in Table 1 in Appendix IV. Each of the points illustrated in Table 1 can be used to plot a demand curve for a particular restaurant. For example, at a price of \$4.50, no tacos will be purchased; at \$4.00, 10 tacos will be purchased; at \$3.50, 20 tacos will be purchased.

The downsloping demand curve illustrates the negative or inverse relationship between the two variables (price and quantity demanded). These two variables move in opposite directions. As price goes up, demand goes down. The supply or (marginal) cost curve illustrates a positive or direct relationship between cost and quantity produced. Should cost information be plotted on a graph, an upsloping curve would result because cost and production move in the same direction.

The simple two-variable graph ignores many other factors that might affect the amount of tacos purchased. These other factors (e.g. income, tastes and preferences, price of other goods and services, number of people in the market) are illustrated by shifting the curve. For example, should Oak Grove High School double in size, the demand curve would shift to the right, demand would increase, indicating that at every price more tacos would be purchased.

**Demand Curve for Tacos from Taco Villa**



## Economics Review

### Unfettered Markets: An Intuitive Approach

*This introductory section provides background information and an intuitive approach to free markets. The benchmark lessons that follow offer a more graphical analysis of market operations.*

Economists tend to praise competitive markets because the rational and self-interested forces that characterize economic behavior lead not to a permanent state of chaos but to a harmony of interests. Adam Smith articulated this insight in 1776 in his book, *An Inquiry into the Nature and Causes of the Wealth of Nations*:

Every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, as he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of society more effectively than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. (page 423)

Smith felt that the tendency of individuals to act in their own self-interest is a natural law and a natural right that precedes the existence of government. Exercising individual rights in a competitive market creates the greatest good for the greatest number in society. Smith's view, although regarded as a mainstream perspective on capitalism, has been amended to accommodate government provisions of goods when the market fails to provide them in sufficient quantities.

#### How does this work?

While nobody blames the thermostat (a measure of temperature) for a low temperature, prices (a measure of scarcity) are often blamed when people are not able to obtain a scarce resource. Scarcity is a relationship between desirability and availability—between demand and supply. In a society in which diamonds are highly desired but not available, diamonds are relatively scarce. In a society in which diamonds are not desired and also not available, they are still scarce. A good is scarce whenever people cannot obtain as much of it as they would like without being required to sacrifice something else of value.

If goods are scarce, they must be rationed. Some kind of criterion must be established for discriminating among the claimants as to who gets how much of the good. The criterion could be physical prowess, public esteem, age, willingness to pay money, or anything else. Under capitalism and a market-based economy, willingness to pay money usually determines who gets the good...but not always.

- Harvard University has many more applicants than it can take as freshmen, so it must ration its admissions. The university discriminates on the basis of high school grades, test scores, recommendations, etc.
- Although many individuals want to be President of the United States, only one person can serve at a given time. We have developed an elaborate election process to discriminate who becomes President.
- Physically attractive women frequently have several men clamoring for their attention. They must, therefore, ration their attentions. They could use athleticism, intelligence, looks, manners, or something else to discriminate between suitors.

Competition is the result of discriminating among the individuals vying for a good. For example, once Harvard announces its criteria for discriminating among applicants, individuals compete for admission to Harvard based on these criteria. *Competition results from scarcity*, and it can be eliminated only with the elimination of scarcity. It is not confined to capitalist societies or to societies that use money.

Whenever scarcity exists, rationing allocates the good according to some criteria for discrimination. Competition is merely what occurs when people strive to meet the criteria used to ration scarce goods.

Nonetheless, the criteria matter. If a society rations on the basis of physical strength, individuals will do strength-enhancing exercises. If a society rations on the basis of *willingness to pay money*, individuals will work to earn that money, and those that are able and willing to pay the price will get the good. Poor people will get less than rich people, which many consider to be unfair. However, with nonprice rationing (distributing goods by means other than price), businesses may sell to customers on the basis of age, sexual preference, personal habits, family size, letters of reference, pet ownership, race or ethnicity, etc. These allocations also may not seem fair, and it is hard to tell who will get goods without price as the rationing device.

Let's look at price as a distributional mechanism. What happens when a good, like gasoline, becomes more scarce? In an unfettered market (i.e., one without interferences), consumers will compete for the remaining gasoline by bidding up its price. If prices are not allowed to rise, rationing criteria other than price will be used. Potential purchasers of gasoline will attempt to discover the new criteria for discriminating among buyers, and they will compete against one another in trying to satisfy the new criteria. Their competition will raise the total price—monetary plus nonmonetary—and will continue raising it until the quantity demanded no longer exceeds the quantity supplied.

It is almost always in the interest of suppliers (i.e., producers) to raise the monetary price rather than use another rationing device. The owner of a gasoline station, for example, gains nothing if customers have to wait in line 20 minutes to buy gas. Thus, the increased costs to purchasers from nonprice rationing often are not benefits to the seller.

If suppliers cannot raise prices in the face of increasing shortages, they will look for alternative ways to turn the situation to their advantage. For example, gasoline retailers

may reduce their daily hours of operation, since they can probably sell all of their supply in a shorter period of time. This may further increase the price—monetary plus nonmonetary costs—of gasoline to buyers. Gasoline retailers may also sell gasoline in an illegal (black) market, in which they can sell it at a higher price.

Price, therefore, serves as an important rationing device in market economies. This is not to say that it is the perfect means of coordinating the production and distribution of goods. Under some conditions monetary prices may not reflect people's preferences adequately. Ignorance, market power, collusive arrangements, disagreements about property rights, and inequalities in society all interfere with the "ideal" operation of the price system and can drive a wedge between price and people's preferences.

Consider other rationing mechanisms and their potential difficulties.

- *Need.* The idea of rationing according to need may be intuitively appealing, but the definition of need is vague, subjective, arbitrary, relative, uncertain, and subject to abuse.
- *First come, first served.* Standing in line increases the nonmonetary price paid for the good. This rationing device is appealing to those who have a relatively low opportunity cost of time, such as low-wage workers and retirees.
- *Lottery, or equal shares for all.* While this rationing scheme takes some of the arbitrariness out of rationing, it ignores the differences in individual needs for a good. Does everyone have an equal right to gasoline—even those who do not own a car, or those who are too young to drive?
- *Merit.* Rationing can be based on providing the good to those who deserve it. The problem arises in defining who deserves it. Should a prize be awarded to the person who tries the hardest to obtain it, or to the one who has performed the best?

Nonprice rationing mechanisms also ignore the problem of supply incentives. People produce goods because they want to be rewarded for their efforts. A system for rationing scarce goods that does not provide appropriate rewards for those who make the goods eventually will fail because most goods simply would not be produced if the producer were not compensated.

Finally, prices serve as a signal for economizing. Because people can use money to purchase a wide variety of goods and services, a rising price creates an incentive to economize on that good's consumption so other goods and services can be purchased. For example, the rising price of gasoline, in the face of increasing scarcity, signals individuals to economize. They begin looking for ways to reduce usage—through carpools, walking, public transportation, more efficient cars, etc. If the price of gasoline is kept low, say with price ceilings, individuals do not have an incentive to economize, and they will continue to use gasoline at levels consistent with less scarcity.

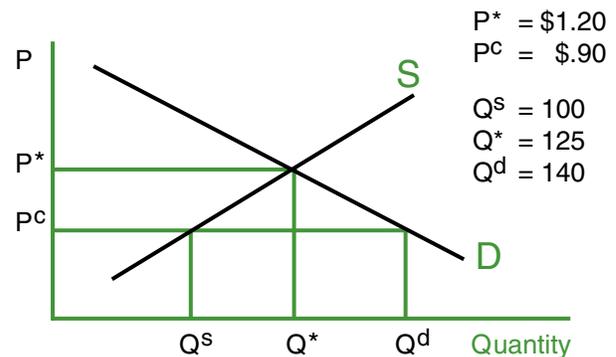
## Price Controls: Price Ceilings and Floors

Sometimes the general public and/or governments feel that the forces of supply and demand result in prices that are either unfairly high to buyers or unfairly low to sellers. In such cases, government may intervene by legally limiting how high or low the price may go.

### A Price-Controlled Market: Price Ceilings

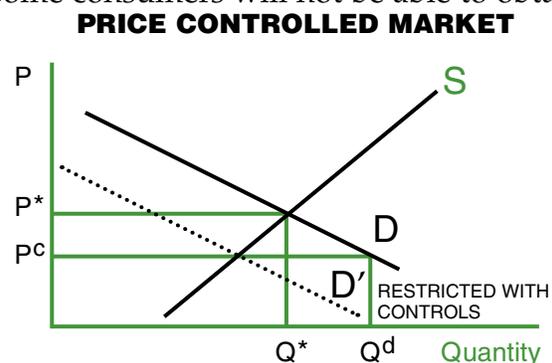
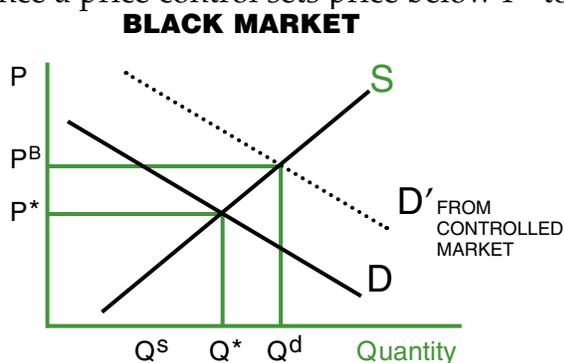
A price ceiling is the maximum legal price a seller can charge for a good or service. The rationale for ceiling prices is that they enable consumers to obtain some “essential” good or service that they could not afford at the equilibrium price. (Examples are provided in the Case Studies benchmark lesson). The figure at right illustrates the effect of one type of price control, price ceilings, on the market.

Let’s say the market starts in equilibrium.  $P^*$  is the equilibrium price and  $Q^*$  is the equilibrium quantity. At  $P^*$  (\$1.20), the quantity demanded by consumers is exactly the same as that supplied by firms, and 125 units will be bought and sold. If price controls establish a ceiling below \$1.20 (say \$.90), a shortage will ensue. At a price of \$.90, firms will only supply 100 units of the good, but consumers will be able and willing to pay for 140 units. The government will be faced with the problem of rationing the 100 units among 140 consumers (assuming one consumer per good). As long as price remains below  $P^*$ , the shortages will continue.



What if a black market exists in which the price of the good is allowed to rise? The consumers who are able and willing to pay a higher price for the good and do not obtain it in the legal market will move into the black market, thereby increasing demand for the good and its price in that market, as the figure below shows. This move may exacerbate shortages in the legal market if producers can capture the price increase in the black market by moving some of the supply from the lower-price legal market to the higher-price black market. The figure below illustrates the effect of a black market on demand.

Once a price control sets price below  $P^*$  to  $P^c$ , some consumers will not be able to obtain

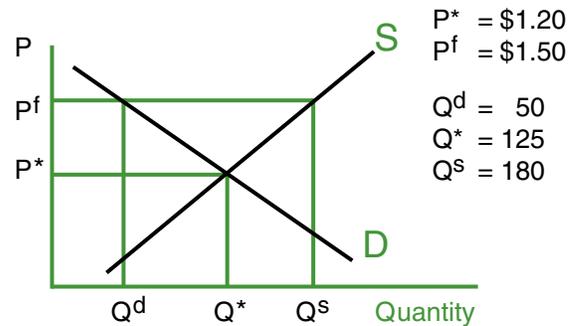


the good, effectively reducing demand in the price-controlled market to  $D'$ . These individuals will move into the black market (assuming no additional costs are borne with this move), increasing demand for gasoline to  $D'$  in this market—which will increase price to  $P^B$  above the originally set price of  $P^*$ .

### A Price-Controlled Market: Price Floors

A price floor is a minimum price established by the government that is above equilibrium price. Price floors generally have been invoked when society has felt that the free-functioning market is not providing a sufficient price for the good. Minimum wage legislation and price supports for agricultural products are examples. The figure at right illustrates the effect of price floors on the market.

Let's say the market starts in equilibrium.  $P^*$  is the established price and  $Q^*$  is the established quantity. At  $P^*$  (\$1.20), the quantity demanded by consumers is exactly the same as that supplied by firms, and 125 units will be bought and sold. If a price floor is established above \$1.20 (say \$1.50), a surplus will ensue. At a price of \$1.50, firms will supply 180 units of the good, but consumers will only be able and willing to pay for 50 units. The government will be faced with the problem of getting rid of 130 units. As long as price remains above  $P^*$ , the surpluses will continue. In the labor market, prices are wages and quantities are laborers and 130 workers would be able and willing to work, but employers would not hire them at the legally set wage.



it is constrained in setting a price by the downsloping demand curve for its product. Economies of scale and technological or legal barriers (for example) must completely block entry into the industry for monopoly power to exist. Although a monopolist faces no competition from other firms, it still could have an interest in advertising to stimulate demand for its product (e.g., diamonds).

## Pricing and Output in Markets

General principles of market operation apply in determining equilibrium price and quantity in all markets. In developing these general principles, we assume that firms maximize profits and that entry into and exit from a market is relatively easy.

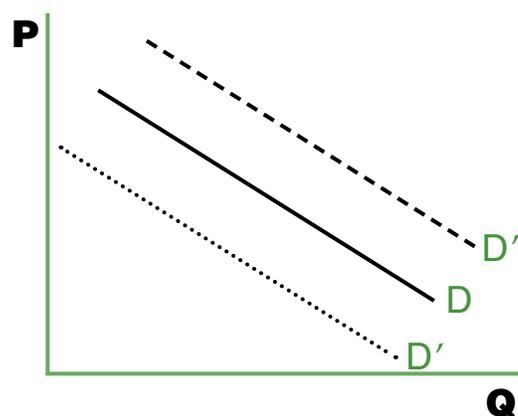
A market is an institution or mechanism that brings together “buyers” (those who want the good) and “sellers” (those who make the good). Markets come in all forms. A farmer’s roadside stand, retail stores, and the New York Stock Exchange are all examples of firms operating in different markets. In fact, any situation that links potential buyers and sellers constitutes a market. Markets can be local, national, or international. Some markets are highly personal while others are highly impersonal.

One of the most important activities in markets is setting the price of goods. To understand the determination of prices, we must understand the mechanics underlying the decisions of consumers (demand) and producers (supply).

### Demand

A demand schedule shows the various amounts of a product that consumers are *willing and able* to purchase at each price (in a series of possible prices) during a specified period of time. We usually look at demand from the vantage point of price because we are interested in how much individuals are able and willing to purchase at a given price. Remember that a demand schedule does not tell us which price will actually exist. For that, we must combine information from the demand schedule with information from the supply schedule.

The fundamental characteristic of demand is summarized in the law of demand: All else equal, as price falls, the quantity demanded rises (or all else equal, as the price rises, the quantity demanded falls). This law is shown in the demand curve (D) illustrated on the graph at right, in which Price (P) is plotted with Quantity (Q).



What “all else” must be “equal” in order to graph the demand curve plotted here? Basically, there are five determinants of demand, or factors that can shift the demand curve plotted here (i.e., the “equals”). Notice that when demand is shifted outward by one of these factors (D’), more will be sold at each price. When demand is shifted inward (D’), less will be sold at each price. Factors that determine demand are:

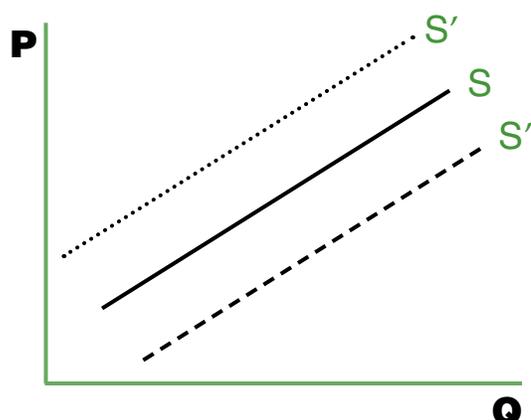
1. **Change in buyer tastes.** A favorable change in how buyers perceive the product will increase demand (i.e., shift curve out). A negative change will reduce demand (i.e., shift curve inward).
2. **Change in number of buyers.** An increase in the number of buyers in the market (say people move into an area) will increase demand, while a decrease in the number of buyers will decrease demand.
3. **Change in income.** The impact of income on demand is not straightforward. If a positive relationship between income and demand exists, income increases lead to demand increases. Goods exhibiting these characteristics are called normal goods, and we buy more of them when our income goes up and less of them when our income goes down. Some goods have an inverse relationship between income and demand. These are called inferior goods. As income goes up, demand goes down—and as income goes down, demand goes up. Examples include such things as used clothing, which people often buy only when their income is low.
4. **Change in prices of related goods.** Whether a change in the price of another good increases or decreases a product's demand depends on whether the related good is a substitute or complement. A substitute good is used in place of another good, and a complement good is used in conjunction with it. When goods are substitutes, as the price of one good rises (falls), demand for the other good rises (falls) because people switch from the good with the higher price to the one with the lower price. Air travel on different airlines, and things like butter and margarine, are often viewed as substitutes. Conversely, when goods are complements, as the price of one good rises (falls), demand for the other good falls (rises) because people cut back on consumption of both (complementary) goods with price changes. Peanut butter and jelly, tennis balls and tennis racquets, and CD players and CDs are often viewed as complementary goods.
5. **Change in expectations.** Consumer expectations about future prices, product availability, and future income can shift demand. Expectations of higher prices may prompt them to buy now to "beat" the anticipated price increases, or an expected rise of income may induce consumers to be freer in their current spending. Conversely, expectations of lower prices or income may cause consumers to curtail spending in the current period.

## Supply

A supply schedule shows the amount firms are *able and willing* to produce (in a series of possible prices) during a specified period of time. We usually look at supply from the vantage point of price because we are interested in how much firms are able and willing to produce at a given price. A positive relationship between price and quantity produced arises because firms are willing to produce more at higher prices than lower prices. They must receive higher prices to produce more because marginal costs generally increase with more produced. [Note: This contrasts to the behavior of consumers, for which price serves as a deterrent to purchasing the good.] All else equal, a firm will make more of a good at a higher price because profits will be greater as the price rises.

Remember, a supply schedule does not tell us which price will actually exist. For that we must combine information from the supply schedule with information from the demand schedule.

A fundamental characteristic of supply can be summarized in the law of supply: All else equal, as price rises, the quantity supplied rises (or all else equal, as the price falls, the quantity supplied falls). This law is illustrated in the supply curve (S) illustrated on the graph at right, in which Price (P) is plotted with Quantity (Q).



What “all else” must be “equal” in order to graph the supply curve plotted above? Basically, there are six determinants of supply, or factors that can shift the supply curve plotted above (i.e., the “equals”). Notice that when supply is shifted outward by one of these factors ( $S''$ ), more will be produced at each price. When supply is shifted inward ( $S'$ ), less will be produced at each price. Factors that determine supply are:

1. **Resource prices.** A firm’s supply curve is based on its production costs. It follows that a fall in resource prices will lower production costs and increase supply, and that a rise in resource prices will increase production costs and decrease supply.
2. **Technology.** A technological improvement generally means that fewer resources are needed to produce a given quantity. As a result, production costs decrease and supply increases with technological advances.
3. **Taxes and subsidies.** Firms treat most taxes as costs and most subsidies as revenues. An increase in taxes, therefore, will increase production costs and lower supply, and conversely. An increase in subsidies will lower production costs and increase supply, and conversely.
4. **Prices of other goods.** Changes in the price of other goods can also shift the supply curve if the two products are related in production. For example, if the price of wheat increases, farmers may plant wheat instead of corn. In this case, the products are production substitutes.
5. **Expectations.** The future price of a product can affect a firm’s current willingness to supply that product. If price is expected to rise in the future, firms may withhold some of the product to take advantage of expected higher prices, and conversely.
6. **Number of sellers.** The larger the number of suppliers, the greater the amount of the good supplied in the market.

## Glossary

*The curriculum is designed to teach the following concepts:*

**Black market:** A market in which sellers illegally sell to buyers at higher than legal prices.

**Demand:** Purchases of a good or service that consumers are able and willing to make, given its price and the choices available to them. The law of demand states that a negative (or inverse) relationship exists between price and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Demand is determined by consumer tastes and income and by the price of other goods. The demand schedule is a table showing the quantities of a good that will be purchased at various prices. The demand curve relates the price of a good and the quantity of the good that individuals are able and willing to purchase. Aggregate demand is the total demand for goods and services in the economy, including households (for consumer goods), firms and government (for investment goods), and other countries (for exports).

**Equilibrium price:** The price where the quantity demanded and the quantity supplied are equal. The price where neither shortages nor surpluses exist and no incentive exists for prices to rise or fall.

**Equilibrium quantity:** The quantity at which the amount that buyers are able and willing to purchase exactly equals the amount of the product that sellers will sell. This occurs at equilibrium price.

**Market:** An arrangement that allows buyers and sellers to exchange things. A buyer exchanges money for a product, while a seller exchanges a product for money.

**Market Economy:** An economic system (method of organization) in which only the private decisions of consumers, resource suppliers, and producers determine how resources are allocated.

**Nonprice rationing:** Controlled distribution of scarce resources, goods, and services by means other than price. Examples include resources or goods being distributed on a particular day or at a particular time through queues (standing in line; coupons; first come, first served; lottery etc.). Nonprice rationing stands in contrast to price rationing, which means that those with the most money or assets and who want the good the most get it.

**Opportunity Costs:** The real sacrifice involved in achieving something. The value of the next best opportunity that would have to be foregone in order to achieve a particular thing.

**Price:** The quantity of money (or other goods and services) paid and received for a unit of a good or service. The nominal price of a good is its dollar or other unit) value. The real price of a good is how many other goods must be foregone for its purchase.

**Price ceiling:** A legally established maximum price for a good or service.

**Price control:** Any legally set price for a good or service.

**Scarcity:** A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

**Shortage:** The amount by which the quantity demanded of a good or service exceeds the quantity supplied at a given (below equilibrium) price.

**Supply:** The amount of a good or service that a firm is prepared to sell at a given price. The firm determines how to supply using its marginal cost curve. Industry supply is a generally the summation of an individual firm's marginal cost curves (in a constant cost industry). The supply schedule is a table showing the amount of a good that will be produced at a given price. The supply curve relates the quantity of a good supplied by a firm (or market) at each price. The law of supply dictates that the curve is upsloping, indicating the more will be produced as the price of the good increases. Aggregate supply is the total amount of the good available for consumption, consisting of both domestically produced goods and services and imports.

**Tradeoff:** An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

**Unfettered market:** A market in which buyers and sellers are permitted to carry out transactions based solely on mutual agreement, without intervention from government, except for the simple protection of property rights and enforcement of contracts.

*Teachers can also demonstrate the following concepts using this lesson:*

**Command Economy:** An economic system (method of organization) in which property resources are publicly owned and central economic planning is used to direct and coordinate economic activities.

**Price floor:** A legally determined price that is above equilibrium price.

**Surplus:** The amount by which the quantity supplied exceeds the quantity demanded at a given (above equilibrium) price.



# United States Department of Energy

Office of the Secretary

Telephone: 202.555.1212

Fax: 202.555.1213

## MEMORANDUM

To: Policy Group  
Office of Secretary Les Singer

From: Les Singer, Secretary, DOE

Subject: Price Control Problems?

There seems to be a lot of concern about price controls. A group of reporters stopped me today to ask about J.R.'s Op-Ed piece in the oil industry's rag. They asked me if I knew how markets operated and if DOE would intentionally set prices so low that it would cause shortages in the gasoline market. I was able to make light of their questioning with a joke, but I must be prepared immediately for answering their questions.

I need a detailed memo that explains why J.R. would say that price ceilings "prevent the laws of supply and demand from operating." I need to understand what is so efficient about letting the market set the price of gasoline and why price ceilings might produce shortages and hurt some people.

Feel free to use some of those graphs you like if you want, but I also need you to explain the effects of markets and price controls in plain English

I can't leave the building until I am armed with this information. Actually, you can't leave either, seeing as there are six reporters sitting in our lobby. Please get the memo to me by the end of the day.

Attachment

# OIL EXPRESS

A TRADE PAPER OF THE OIL, GAS, AND PETROLEUM INDUSTRY

## OPINION

The U.S. Department of Energy—headed by none other than that puppet-of-the-President, Les Singer—is now deciding how to implement price control legislation just passed by Congress and signed by the President. Implementing this legislation in the wrong way will destroy the capitalistic spirit in this country by preventing the laws of supply and demand from operating.

It is true that price controls would lower the price of gasoline. But they would also eliminate production of 90 percent of the world's gasoline. Consider how they resulted in rationing of goods during World War II and gas shortages in the 1970s.

What Mr. Singer may not realize is that price reflects the cost of getting gas to consumers. If oil producers do not get paid enough to cover their costs of production, they will not pump oil and no one will have gas.

Mr. Singer has talked about setting the price of gas at the alarmingly low rate of \$1.50 a gallon. At this price, oil producers will not engage in horizontal drilling or inject carbon dioxide into the subsurface for additional oil production.

Although these techniques can cost twice as much as traditional wells, they produce far more oil. Without the use of these newer technologies, oil production will be cut back by about 35 percent.

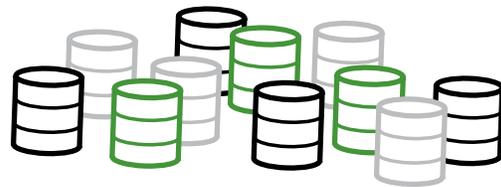
Our economy works because prices tell us what to buy and produce. In 1776, Adam Smith described how this mechanism produced *The Wealth of Nations*:

*It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest... (Man is) led by an invisible hand to promote an end which was no part of his intention.*

Smith is saying that if you want to have gas in your car, you have to pay a price that will compensate the producer's efforts.

Only free markets can determine that price. Government bureaucrats cannot.

*J.R. Ewing is President and CEO of Ewing Oil and Gas.*



**TRANSCRIPT OF FINAL VOICE MAIL FROM LES SINGER**

(Total running time 2:15 minutes)

*Voice of Secretary Les Singer*

Bill, Les here. Thanks for your group's background work on markets. That really helped me sort through some issues about free markets and price-controlled markets. I guess price controls may be fair, but free markets are efficient. The old tradeoff between equity and efficiency is a real dilemma.

Anyway, now we've got to announce, quickly, our policy on price controls and allocating gas. I suggest that your group make this your number-one priority. We plan on explaining our policy to the general public in an Op-Ed piece, which will appear in several major newspapers and wire services next week, so please write it in that form.

Since the legislation only says that we must set a price ceiling on gas and determine the rules for its allocation, we have some leeway in what we can do. So you will need to decide whether we will have a policy that sets the price ceiling below market or above market level—and then decide how to determine who gets gas. That was sharp thinking when you pointed out to me that a price ceiling set above equilibrium lets the market determine price. I would not have thought of that!

Once the public sees the Op-Ed piece and accepts our decision, the DOE Implementation Group will determine the exact price and set the allocation plan into motion. Remember, we must gain public support with our Op-Ed piece, and this can only be done by showing that our policy is grounded in a clear understanding of how both unfettered and price-controlled markets work.

So, to sum things up, your job is to use the Op-Ed piece to persuade the public of the wisdom of our policy—regardless of whether we set the price of gasoline above or below equilibrium. You'll need to justify our policy decision, outline the plans for allocating gas, and identify winners and losers.

Because the President knows that I do not have a strong background in economics, he has requested that the Council of Economic Advisors approve the piece before it goes to print. Given this extra step in getting our policy out to the public, I will need to see your piece in two days. Just so you know, my head is on the block here, and if the Op-Ed piece does not convince the Council of our price control policy, I will have to take some of my staff down with me.