Chapter II

Markets and the Price System

A fundamental tool of economic analysis is the supply-and-demand model of price and quantity determination. The supply-and-demand model can be used to analyze many real-world events. In a free market, consumers' demands for products and producers' ability to supply the products interact to determine a market price and quantity. Consumers and businesses make numerous decisions on the basis of the information contained within the market price. This interaction between buyers and sellers in the market has been formalized by economists in the Laws of Supply and Demand.

Both "Laws" state empirically verified relationships between the price and quantity of a good. The law of demand states that there is an inverse relationship between price and the quantity of goods that consumers are willing and able to purchase. As price rises, the quantity demanded decreases; as price falls, the quantity demanded increases. The law of supply states that there is a positive relationship between price and the quantity that producers are willing and able to supply. As price rises, the quantity supplied increases; as price falls, the quantity supplied decreases. When market prices change, producers and consumers simultaneously adjust their production and consumption decisions until the quantity supplied equals the quantity demanded. Many powerful insights into the effects of various changes in market conditions can be made by applying this abstract analysis to complicated situations.

Section A introduces the law of demand in more detail, while Section B discusses the law of supply. Section C examines the meaning of market price and quantity in a dynamic market setting. It also explores the idea of individual preferences relative to market prices and considers the ways in which the subjective valuations of individuals may be protected. In Section D, the gains from trade (consumer surplus and producer surplus) as well as the limits of mutually beneficial exchange are analyzed. Section E considers changes in demand and supply—that is, the impact of changes in non-price variables on market price and quantity. In Section F, the effects of artificial controls on market prices are demonstrated. In Section G, the supply-and-demand model is used to analyze the responsiveness of both consumers and suppliers to price changes. Finally, the role of prices in coordinating economic activity in a market system is examined in Section H.

A. The Law of Demand

The **law of demand** states that, other things being equal, an inverse relationship exists between price and quantity demanded. Thus, the **quantity demanded** of a good or service—the amount that buyers are willing and able to purchase—increases as the price of the good or service declines. In general, this holds for individuals (as explained by the theory of consumer choice) and markets (where market demand is an aggregation of individual demand).

1. Consumer Choice

The assumptions regarding individual behavior introduced in Chapter I—that consumers are resourceful, evaluative maximizers—are consistent with the law of demand. Why is it that an individual is willing to purchase more of a particular good or service as price decreases? One answer to this question can be found in the theory of consumer choice and the law of diminishing marginal utility.

Individuals desire to consume goods and services because they perceive a benefit in doing so. Economists define the benefit that individuals derive from consumption activities as **utility**. In relation to our understanding of human behavior developed in Chapter I, we can say that REMMs seek to maximize their utility. However, the ability of individuals to consume those goods and services that provide them with the greatest amount of utility faces an important constraint—individuals must choose those items that provide the highest level of utility attainable within their given **income constraint**. How does the consumer decide to allocate scarce income resources among the goods and services that provide the most utility? An economic proposition that helps guide this analysis is the law of diminishing marginal utility.

The **law of diminishing marginal utility** states that as greater quantities of any good or service are consumed, the utility derived from each additional (or marginal) unit consumed will decrease—holding all else constant. For example, consider your desire for pizza when you go to lunch. At first, you are very hungry and the satisfaction derived from the first piece of pizza consumed is very high. As additional pieces are consumed, however, the utility derived from each additional piece declines. In other words, the second piece does not provide as much satisfaction as the first, and the thought of eating a tenth piece may make you sick. In trying to maximize **total utility**, an individual consumer will consider the **marginal utility** of purchasing each additional unit of any good or service. To the extent that an individual consumer has more than one item that can be consumed next, a rational individual will choose to spend their next dollar on the item which offers the highest marginal utility per dollar spent. A consumer's total utility is maximized when the utility derived from the last dollar spent on each item is equal. Intuitively, this makes sense. If the utility derived from the last dollar spent on each item is equal, then the consumer would have no rational reason to adjust his or her consumption pattern. When no alterations to the consumption pattern can make the consumer better off within given income constraints, then total utility has been maximized. This utility maximizing situation is known as **consumer equilibrium**.

Consider the relationship between the law of diminishing marginal utility and the law of demand. What happens to an individual in consumer equilibrium if the price of good x changes? If the price of good x decreases, then the per dollar cost of a marginal unit of utility derived from x becomes relatively less expensive, thus upsetting the consumer equi-

librium. In other words, the marginal utility per dollar spent on x increases as the price of x falls relative to other goods or services. Thus, as the price of a good decreases relative to the prices of other goods, consumers tend to buy more of the lower priced good. This tendency is known as the **substitution effect**. A decrease in the price of good x, holding income and the prices of other goods constant, will also increase the real purchasing power of the consumer. This **income effect** allows the consumer to purchase more goods and services overall. In sum, a change in the quantity demanded is composed of a substitution effect and an income effect, both of which are rational responses formulated under the law of diminishing marginal utility.

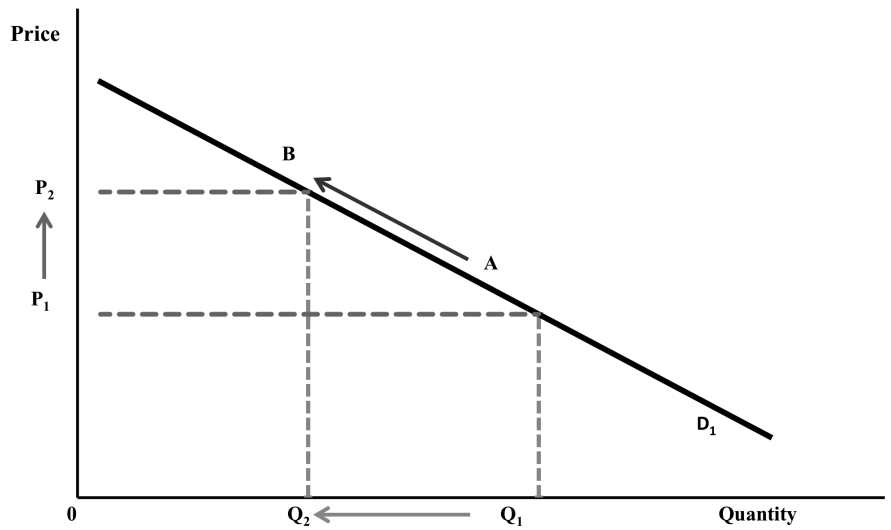
2. Market Demand

In addition to the individual consumer choice and law of diminishing marginal utility explanations of individual demand, economists are interested in understanding the consumption behavior of a large set of individuals—**market demand**. Market demand is simply the aggregation of each individual consumer's demand. Regardless of the level of analysis, both individual and market demand reflect the same basic properties—an inverse relationship between price and quantity demanded.

In discussing the law of demand, the only variables are the price and the quantity demanded. All other things that might have an effect on the price or quantity demanded—such as income, tastes and preferences, laws and regulations, and the prices of other goods—are held constant. This "holding constant" assumption is what economists mean when they say *ceteris paribus*. The assumption *ceteris paribus* is used in order to clarify and isolate the relationship between price and quantity demanded in the determination of market price.

For most analytical purposes, demand curves can be drawn to illustrate the inverse relationship between price and quantity demanded. A **market demand curve** represents the quantities of a good or service that consumers are willing and able to purchase at different prices. Figure II-1 demonstrates how the demand curve D_1 reflects the law of

Figure II-1. The Law of Demand



demand. It is important to understand that a change in price causes a movement along a stationary demand curve—that is, a change in price causes a change in quantity demanded. For example, an increase in price from P_1 to P_2 causes a decrease in quantity demanded from Q_1 to Q_2—a movement from point A to point B along the demand curve. A change in price does not cause a change in the position of the curve.

B. The Law of Supply

The supply side of any market represents the willingness of individuals controlling certain resources to transfer those resources to other parties for a price. Obviously, a supplier will not be willing to part with its goods unless the compensation received is greater than the value of the goods in the supplier's control. In other words, in order for a good to be supplied, the good's value in exchange (price) must exceed its value in use (opportunity cost).

The **law of supply** states that, other things being equal, there is a positive relationship between price and the quantity supplied. Thus, owners of resources are willing and able to sell greater quantities of a good or service as the price of that good or service rises. The law of supply can be explained in two related ways—one is based on demand theory and opportunity cost; the other is based on the technical characteristics of the costs of production. As with the law of demand, our analysis of the incentives to supply goods and services begins with the *individual's* supply curve. Then, we will consider the *market* supply curve, which is simply the aggregation of all individual supply curves in the market.

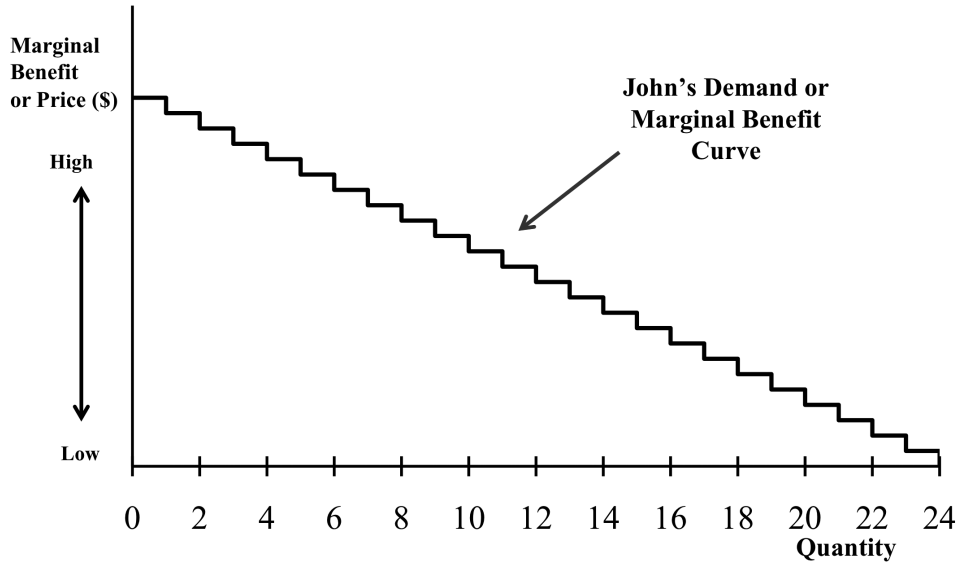
1. The Opportunity Costs of Supply

The positive relationship underlying the law of supply is merely a reflection of the law of demand, as illustrated by the following almost true story. Imagine a beautiful, deserted, Caribbean island. John Marshall is dropped off by a dinghy from a cruise ship. He is by himself, looking forward to a day of relaxation on the beach. Fortunately, John has lugged along a cooler containing twenty-four cans of ice-cold beer and an abundant quantity of ice. John asserts that beer and salt water are complementary goods—their use together increases their value. After a short swim, John is ready to drink and the perceived marginal benefit from that first can of beer is extremely high. We can imagine that the marginal benefit John derives from consuming the beer would look something like Figure II-2. For convenience, we use price as a proxy for utility and John's marginal benefit curve becomes a demand curve.

The marginal benefit from the first beer is extremely high as John has been planning this day on the island for years. But as he continues to drink the perceived marginal benefit from each additional beer consumed decreases—remember the law of diminishing marginal utility.

Now imagine that a clone of John is dropped off by a dinghy from another cruise ship. It's Mohn Jarshall! John says, "Hey Mohn!" These two are the same in every way, including their preference for beer consumption. However, there is one difference between John and Mohn—the only thing that Mohn has with him is cash (remember that all John has is beer). Mohn is incredibly thirsty, and he is very disappointed when he realizes that there are no thatched roof tiki bars on the island. Normally, John would have just given Mohn a beer, but John really wanted to be alone. However, John might be willing to sell some beer to Mohn. Consider the process of exchange that might develop.

Figure II-2. John's Demand for Beer



The threshold question is which of his twenty-four beers will John sell first? Obviously, he will part with the one worth the least to him. The twenty-fourth beer that John could consume will be the one that he chooses to sell first, because it has the lowest perceived benefit. Mohn wants to buy this twenty-fourth beer because he really wants a beer. Mohn's marginal utility from his first beer is sure to be very high — in fact, as we know, it is the same as John's marginal utility from his first beer. Moreover, Mohn's marginal utility of his first beer is greater than John's marginal utility of his twenty-fourth beer. Obviously, Mohn and John can make each other better off by exchanging dollars for beer. We cannot determine the exact price at which the exchange would take place. Nonetheless, a large amount of gains from trade exist at the twenty-fourth beer and an exchange will occur.

What if Mohn wants to buy a second beer? Or a third? Figure II-3 demonstrates that the process of exchange will continue in the same manner as above. John will be willing to sell the unit that represents the lowest perceived benefit — opportunity cost — to him at that point in time. Thus, John will supply his 23rd and 22nd beers, respectively. Every additional unit sold will follow this same pattern — as Mohn buys more beer from John, he will move up John's demand curve. Thus, John's supply curve is the mirror image of his demand curve. Equilibrium will occur at 12 units under the assumption that their preferences are the same.

How many beers will John sell? The answer to this supply question is found in a surprising place — John's demand curve. To see this graphically, simply consider the mirror image of Figure II-3. By taking the mirror image of the demand curve, as in Figure II-4, it should become clear that John's supply curve is simply a reflection of his demand curve. Thus, the law of supply is merely a reflection of the law of demand.

It is important to observe that both John and Mohn were made better off by the process of exchange that developed on the island. John was better off because he valued cash more highly than beers 13 to 24 and Mohn was better off because he valued those same 12 beers more highly than the cash he paid to John. The physical property of the beer

Figure II-3. Which Beer Would John Sell First?

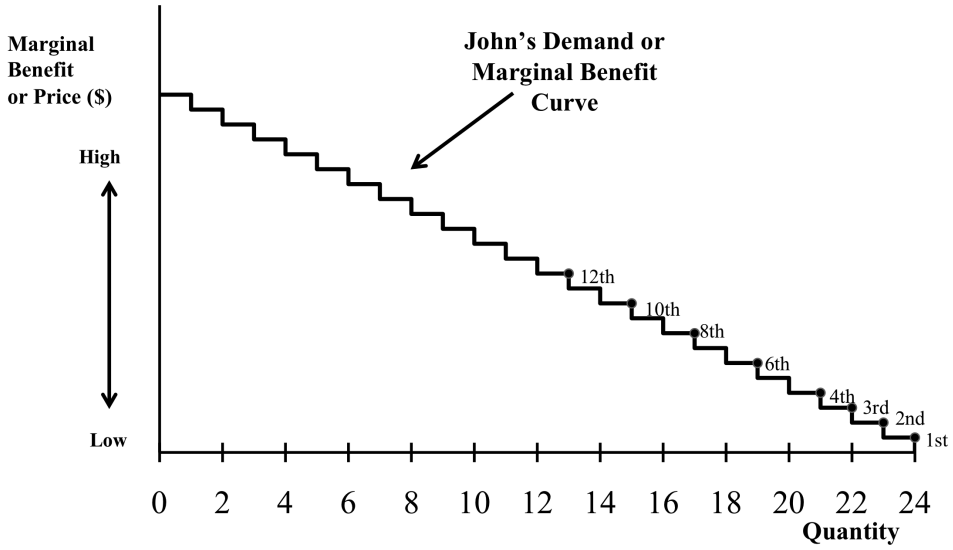
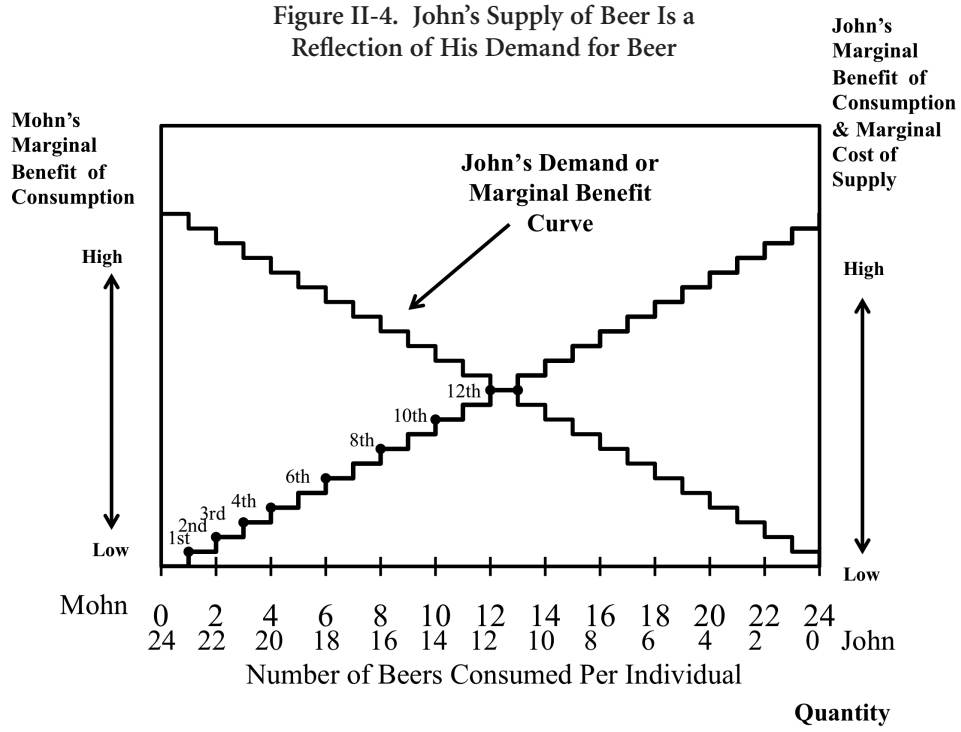


Figure II-4. John's Supply of Beer Is a Reflection of His Demand for Beer



was the same in Mohn's possession as in John's. Likewise, the absolute dollar value of the cash Mohn paid is the same in both Mohn and John's possession. However, a process of exchange arose because of a difference in the subjective value that each of these individuals

placed upon the twenty-fourth beer and the first dollar paid. In other words, John and Mohn *disagreed* about the value of those 12 beers—the beer that John values the least, Mohn values the most; and the dollar that Mohn values the least, John values the most. Moreover, note that no coercive force compelled John to exchange with Mohn; no overriding humanitarian goal drove John to share his beer. Instead, because of a difference in the subjective value that each of these individuals placed upon a particular set of beers, a process of mutually beneficial exchange arose in which both parties were made better off by following their own self-interest.

2. Supply and Costs of Production

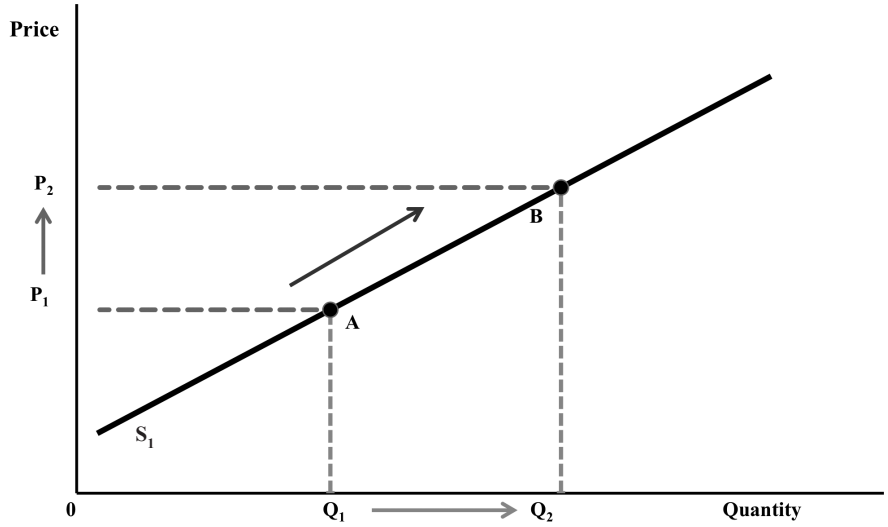
The Mohn Jarshall example considers the exchange of goods already in existence. However, the law of supply also deals with the incentives to produce goods and services. Remember that the law of supply states that firms are *willing* and *able* to supply more of any good or service as price increases. When relative price increases, it is a signal that more of a particular good or service is desired in the market place. If the market price of any good or service increases relative to the rest of the market, firms have an incentive to shift factors of production into the relatively higher priced good or service because they can capture some of that price increase in the form of increased profits. In this way, price acts as a signal to existing and potential suppliers about the relative rewards for producing various goods. This process helps to explain why producers are *willing* to move factors of production to their highest valued use.

Higher prices also increase the *ability* of firms to supply more of any good or service. Because of scarcity, as the output of any particular good or service increases, resources are drawn away from the production of other goods and services. The increased demand for these various factors of production causes the price of these inputs to rise. Thus, for each additional unit of output, the marginal costs rise. In order for firms to increase output, price must increase so that the firm can afford to purchase additional factors of production away from alternative uses. **Factors of production** may be placed into several different classifications. **Natural resources** include land, air, and water. **Human resources** consist of labor and entrepreneurship. **Capital resources** are machinery and buildings. Remember that economics deals with the allocation of resources in the face of varying levels of scarcity. Because of scarcity, our choices regarding resource usage always involve opportunity costs. The factors of production mentioned above are scarce resources and thus, determining their appropriate allocation is important. As noted above, the law of supply plays both a signaling and incentive role in the allocation process. A more detailed analysis of the costs of production is presented in Chapter IX.

Like the law of demand, the law of supply can also be depicted in a graph. A **supply curve** shows the quantities of any good or service that a firm is willing and able to supply at any given price at a particular point in time, *ceteris paribus*. As was the case with the law of demand, the *ceteris paribus* qualification is invoked in order to clarify and isolate the relationship between price and quantity supplied. In Figure II-5, the positively-sloped supply curve S_1 represents the direct relationship between price and quantity supplied. For example, as price increases from P_1 to P_2, the quantity supplied increases from Q_1 to Q_2—a movement from point A to point B along the supply curve.

An important element in combining factors of production and supplying finished goods to the market is the entrepreneur. An appreciation of entrepreneurship provides many valuable insights into economic behavior. An **entrepreneur** is an individual who believes that he or she sees profit opportunities that others do not. These profit opportunities

Figure II-5. The Law of Supply



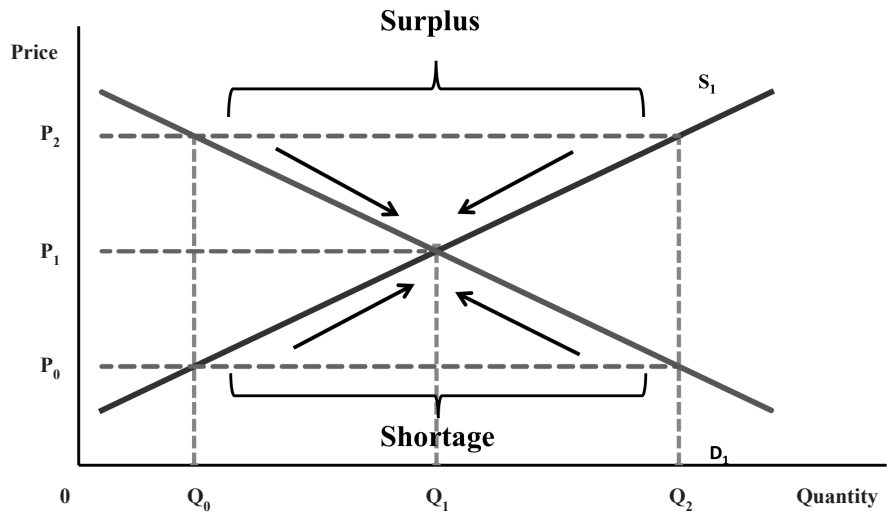
come from combining scarce resources in a new way. In other words, the entrepreneur believes he can obtain a profit because the market has not fully reflected the price of resources in a new, unanticipated, higher valued use. By taking the initiative to combine scarce resources in a new way, the entrepreneur assumes a risk. The primary risk borne by the entrepreneur is that the market will not value this new combination of scarce resources higher than the cost of acquiring them. Beyond identifying new ways to combine scarce resources and organizing the production of this new combination, entrepreneurs also inform other market participants of the availability of the new good or service. A successful entrepreneur is rewarded by earning an economic profit.

C. Equilibrium: Market Price and Quantity

A market exists when the continuous interactions of buyers and sellers force price toward the level where quantity demanded equals quantity supplied. When the quantity demanded is equal to the quantity supplied, the market is said to be in **equilibrium**. The price that prevails at equilibrium is called the **market price**. Thus, the market process forces prices to adjust until the plans of buyers and sellers coincide. This spontaneous coordination occurs because of the voluntary interaction of resourceful, evaluative, maximizing individuals.

The interaction of supply and demand can be illustrated by combining supply and demand curves on a single graph, as in Figure II-6. If the price is P_2, then the quantity supplied, Q_2, is greater than the quantity demanded, Q_0. This excess supply is called a **surplus** and is indicated by the quantity Q_0 to Q_2. The excess of quantity supplied over quantity demanded means that suppliers will have to lower their prices in order to sell their goods. The lower price will encourage additional consumption—that is, cause the quantity demanded to increase—and discourage production—that is, cause the quantity supplied to decrease. As a result of the change in price, the quantity demanded converges

Figure II-6. Equilibrium: Market Price & Quantity



towards the quantity supplied. When quantity demanded equals quantity supplied, the market clears. The equilibrium or market clearing price in Figure II-6 is P_1, where quantity demanded equals the quantity supplied.

If the price is below P_1, then the quantity demanded is greater than the quantity supplied. This excess demand is known as a **shortage**. Through a similar adjustment process, the excess demand will cause the market price to rise, which in turn discourages consumption and encourages additional production. The price adjusts to correct a temporary disequilibrium in the market.

1. Market Price and Quantity

In the theoretical supply-and-demand model, market price and quantity are determined by the intersection of supply and demand. In reality, dynamic markets often make it difficult to determine market prices because different sellers might be selling the same product at different prices because they have different opinions about where the market price is headed. The competitive process rewards the sellers and buyers who are best at interpreting market conditions. The following case illustrates that manufacturers and their retailers sometimes underestimate demand and are surprised by the market price for their products.

Sedmak v. Charlie's Chevrolet, Inc.

Missouri Court of Appeals
622 S.W. 2d 694 (1981)

Satz, J.

In their petition, plaintiffs, Dr. and Mrs. Sedmak (Sedmaks), alleged they entered into a contract with defendant, Charlie's Chevrolet, Inc. (Charlie's), to purchase a Corvette automobile for approximately $15,000. The Corvette was one of a limited number manufactured to commemorate the selection of the Corvette as the Pace Car for the Indianapolis

500. Charlie's breached the contract, the Sedmaks alleged, when, after the automobile was delivered, an agent for Charlie's told the Sedmaks they could not purchase the automobile for $15,000 but would have to bid on it.

The trial court found the parties entered into an oral contract and also found the contract was excepted from the Statute of Frauds. The court then ordered Charlie's to make the automobile "available for delivery" to the Sedmaks.

Charlie's raises three points on appeal: (1) the existence of an oral contract is not supported by the credible evidence; (2) if an oral contract exists, it is unenforceable because of the Statute of Frauds; and (3) specific performance is an improper remedy because the Sedmaks did not show their legal remedies were inadequate.

… [T]he record reflects the Sedmaks to be automobile enthusiasts, who, at the time of trial, owned six Corvettes. In July, 1977, "Vette Vues," a Corvette fancier's magazine to which Dr. Sedmak subscribed, published an article announcing Chevrolet's tentative plans to manufacture a limited edition of the Corvette. The limited edition of approximately 6,000 automobiles was to commemorate the selection of the Corvette as the Indianapolis 500 Pace Car. The Sedmaks were interested in acquiring one of these Pace Cars to add to their Corvette collection. In November, 1977, the Sedmaks asked Tom Kells, sales manager at Charlie's Chevrolet, about the availability of the Pace Car. Mr. Kells said he did not have any information on the car but would find out about it. Kells also said if Charlie's were to receive a Pace Car, the Sedmaks could purchase it.

On January 9, 1978, Dr. Sedmak telephoned Kells to ask him if a Pace Car could be ordered. Kells indicated that he would require a deposit on the car, so Mrs. Sedmak went to Charlie's and gave Kells a check for $500. She was given a receipt for that amount bearing the names of Kells and Charlie's Chevrolet, Inc. At that time, Kells had a pre-order form listing both standard equipment and options available on the Pace Car. Prior to tendering the deposit, Mrs. Sedmak asked Kells if she and Dr. Sedmak were "definitely going to be the owners." Kells replied, "yes." After the deposit had been paid, Mrs. Sedmak stated if the car was going to be theirs, her husband wanted some changes made to the stock model. She asked Kells to order the car equipped with an L82 engine, four speed standard transmission and AM/FM radio with tape deck. Kells said that he would try to arrange with the manufacturer for these changes. Kells was able to make the changes, and, when the car arrived, it was equipped as the Sedmaks had requested.

Kells informed Mrs. Sedmak that the price of the Pace Car would be the manufacturer's retail price, approximately $15,000. The dollar figure could not be quoted more precisely because Kells was not sure what the ordered changes would cost, nor was he sure what the "appearance package"—decals, a special paint job—would cost. Kells also told Mrs. Sedmak that, after the changes had been made, a "contract"—a retail dealer's order form—would be mailed to them. However, no form or written contract was mailed to the Sedmaks by Charlie's.

On January 25, 1978, the Sedmaks visited Charlie's to take delivery on another Corvette. At that time, the Sedmaks asked Kells whether he knew anything further about the arrival date of the Pace Car. Kells replied he had no further information but he would let the Sedmaks know when the car arrived. Kells also requested that Charlie's be allowed to keep the car in their showroom for promotional purposes until after the Indianapolis 500 Race. The Sedmaks agreed to this arrangement.

On April 3, 1978, the Sedmaks were notified by Kells that the Pace Car had arrived. Kells told the Sedmaks they could not purchase the car for the manufacturer's retail price because demand for the car had inflated its value beyond the suggested price. Kells also

told the Sedmaks they could bid on the car. The Sedmaks did not submit a bid. They filed this suit for specific performance.

[The court held that the contract was enforceable, and then turned to the specific performance issue.]

* * *

Finally, Charlie's contends the Sedmaks failed to show they were entitled to specific performance of the contract. We disagree. Although it has been stated that the determination whether to order specific performance lies within the discretion of the trial court, this discretion is, in fact, quite narrow. When the relevant equitable principles have been met and the contract is fair and plain, "specific performance goes as a matter of right." Here, the trial court ordered specific performance because it concluded the Sedmaks "have no adequate remedy at law for the reason that they cannot go upon the open market and purchase an automobile of this kind with the same mileage, condition, ownership and appearance as the automobile involved in this case, except, if at all, with considerable expense, trouble, loss, great delay and inconvenience." Contrary to defendant's complaint, this is a correct expression of the relevant law and it is supported by the evidence.

Under the [Uniform Commercial] Code, the court may decree specific performance as a buyer's remedy for breach of contract to sell goods "where the goods are unique or in other proper circumstances." [§ 2-716(1).] The general term "in other proper circumstances" expresses the drafters' intent to "further a more liberal attitude than some courts have shown in connection with the specific performance of contracts of sale." [§ 2-716] Comment 1. This Comment was not directed to the courts of this state, for long before the Code, we, in Missouri, took a practical approach in determining whether specific performance would lie for the breach of contract for the sale of goods and did not limit this relief only to the sale of "unique" goods. . . .

The Pace Car . . . was not unique in the traditional legal sense. It was not an heirloom or, arguably, not one of a kind. However, its "mileage, condition, ownership and appearance" did make it difficult, if not impossible, to obtain its replication without considerable expense, delay and inconvenience. Admittedly, 6,000 Pace Cars were produced by Chevrolet. However, as the record reflects, this is limited production. In addition, only one of these cars was available to each dealer, and only a limited number of these were equipped with the specific options ordered by plaintiffs. Charlie's had not received a car like the Pace Car in the previous two years. The sticker price for the car was $14,284.21. Yet Charlie's received offers from individuals in Hawaii and Florida to buy the Pace Car for $24,000 and $28,000 respectively. As sensibly inferred by the trial court, the location and size of these offers demonstrated this limited edition was in short supply and great demand. We agree with the trial court. This case was a "proper circumstance" for ordering specific performance.

Judgment affirmed.

Notes and Questions

1. Knowledge of Market Conditions: The dealership refused to sell the car at the manufacturer's suggested retail price because "demand for the car had inflated its value beyond the suggested price." In other words, because quantity demanded exceeded quantity supplied, a market shortage existed at the manufacturer's suggested price. A market shortage places upward pressure on price, discourages consumption, and encourages additional production. In this case, however, the Corvette Pace Car was to be a special

edition and therefore its supply was fixed. Because supply was fixed, the market price ended up higher than the manufacturer's suggested retail price. If the Chevrolet manufacturer had known the strength of demand for Corvette Pace Cars, it might have responded by increasing the suggested retail price or increasing the quantity supplied. Alternatively, the "shortage" may have been created as a marketing strategy to generate interest in the Corvette model—not just the Pace Car.

2. Least-Cost Avoider of Changing Market Conditions: In *Sedmak*, an interesting question arises that is salient throughout the study of the law: who should bear the costs or benefits of a change in market conditions? When answering this question, it is important to understand the ex ante concerns discussed in Chapter I. For instance, if sellers of special edition Corvettes are allowed to refuse to sell at previously agreed-to prices, how will this change prospective buyers' incentives to make bids on future Corvettes? Another way of framing the question is to ask who is the least-cost risk avoider? Who, at the margin, will economize more efficiently on new information so that value and resource allocation will be maximized?

3. Who Draws These Graphs Anyway?: How did Charlie's Chevrolet know that the market price was significantly higher than the manufacturer's suggested retail price? Did Mr. Kells think through the supply and demand model? Did he draw a supply and demand graph? In practice, most consumers and businesses do not draw graphs to illustrate what is happening in the market. Consumers and businesses, at the margin, respond to changes in their individual circumstances. If a business notices that its inventory of a particular good has fallen below its usual level, then the business may rationally respond by raising the price of the good while at the same time ordering more of the good from the producer. Such spontaneous price adjustments bring order to the market.

4. Assumptions about the Supply and Demand Model: Relative Prices, Constant Quality, and Flows: Price theory is concerned with how prices are determined and how they affect peoples' behavior. Microeconomic theory suggests that individuals respond to changes in relative prices. Responding to **relative prices** means that an individual's behavior is guided by the price of a product stated in terms of what other goods could be purchased for the same amount of money—the opportunity cost of a product. Consumers respond to changes in the prices of goods relative to one another, rather than the absolute dollar price of something. Consider, for example, a period of inflation during which the price of all goods and services increases by 10%. In other words, the absolute dollar price of all goods and services increases by the same percentage amount. Therefore, the ratio of the price of one good in terms of another would not change. What effect would this have on an individual's purchasing decisions? Under the assumption that personal income also increases by 10%, individuals are not expected to alter their purchasing decisions. This result stems from the fact that there has been no change in the relative price of goods and services. Thus, individuals are not expected to alter their purchasing decisions if the opportunity cost of purchasing a product has not changed.

In addition to focusing on relative prices, a distinction must be drawn between the money price and the full price of a product or service. Stating the obvious, the **money price** is the actual dollar amount required by the seller to consummate the exchange. The **full price** includes the money price plus the opportunity costs of a particular purchase. For example, consider the cost of getting the oil changed in your car. Suppose that the auto mechanic charges $30 for an oil change. Does $30 adequately represent the cost of having your oil changed? What about the time you spend driving to the auto garage, sitting in the waiting room, waiting in line to pay, and driving home? You could have done something else with your time—your next best alternative or opportunity cost. These are real costs and must always be considered in any economic analysis. Thus, the

supply-and-demand model is concerned with the full price of any good or service. Any time that the term price is used in economic analysis, it is assumed to be the full price.

Microeconomic analysis typically relies on the simplifying assumption that the *quality* of a particular economic good or service is held constant. For example, in a discussion involving the market price and quantity for shoes, it is assumed that there is no difference in the quality of any particular pair of shoes relative to others, regardless of its source. "Price" should be understood to mean the relative price of a quantity of any particular unit without regard to the quality. Unless otherwise indicated, economic analysis is conducted as if all units are identical and, therefore, of **constant quality**.

Finally, microeconomic theory is interested in the flow of goods and services. A **flow** is a quantity received, used, or spent at a particular rate over a specified time period. In contrast, a **stock** is a quantity of something that exists at a moment in time. Price theory is concerned with the relative price of constant quality units received, used, or spent over a given time period. For example, microeconomists might analyze the quantity of shoes sold per year at a given relative price. They are not particularly concerned with the total quantity of shoes in existence on a given date.

5. Why Specific Performance? The Market for Substitutes: Specific performance is valuable when there is not a well-developed market for substitute goods. If there is a well-developed market for substitutes, then either the buyer or seller could purchase a replacement product for roughly the same price, and there is no need to require the seller to do anything other than pay compensatory damages for the breach of contract. Was there a well-developed market for substitute Corvette Pace Cars? Could the Sedmaks have gone out and purchased a different Corvette Pace Car for the manufacturer's suggested retail price?

6. Tiger Woods, Alex Rodriguez, Maria Sharapova, LeBron James, and Many Professional Athletes: Why do professional athletes get paid so much when their "value" to society is not as great as, say, an elementary school teacher? Is this simply supply and demand? How is value reflected in the market?

7. Cost-Price Illusion: It is often difficult to determine why market prices have changed. In many instances, the retailer of a particular product will blame price increases on the higher prices charged by the retailer's suppliers (which represent the retailer's costs). However, the important issue in determining why the retailer's prices changed is to identify why the supplier's prices were raised. For example, an increase in the demand for computer processing chips would, other things equal, cause the price of such chips to increase. Consumers might notice this price increase when they go to purchase a new computer. In other words, the increased cost of processing chips would be reflected in higher prices for computers. When consumers ask the computer maker about the higher prices for computers, the computer maker may simply respond by noting that the cost of computer processing chips has gone up. This answer focuses on the cost of production—the supply side of the market—and ignores the fact that the price increase was a result of increased demand. In general, one should be skeptical of explanations for price increases that concentrate on only one side of the market—the cost-price illusion.

2. Market Prices and Subjective Value

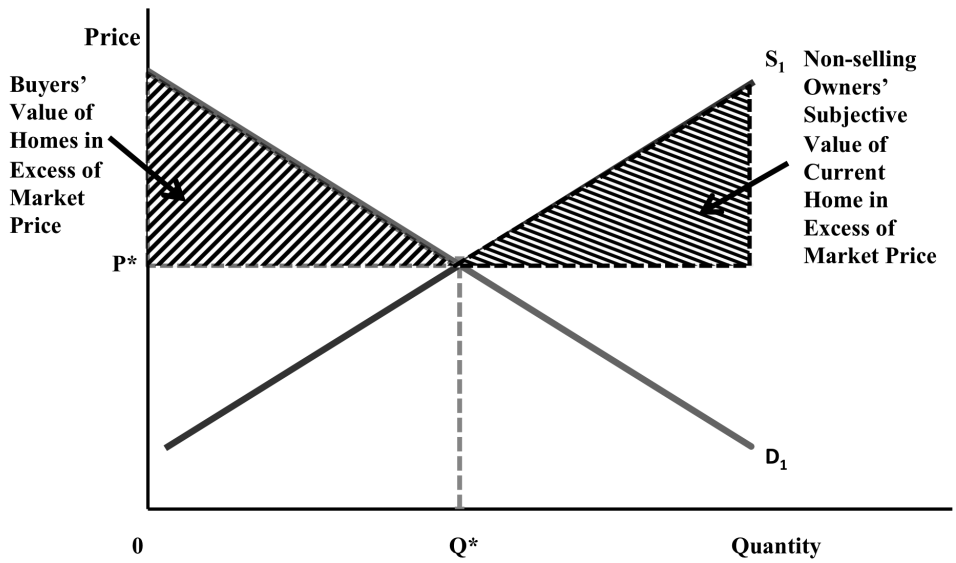
Market prices represent an objective measure of the value of the products or services exchanged in a particular market. Market prices often do not reveal much information about individuals' personal subjective valuations of the products or services. Recall that mutually beneficial exchange occurs so long as the buyer values the product more than the

seller. A market price can be viewed as determining the division of the gains from trade. The subjective valuations of the marginal buyers and sellers—that is, the last transaction to occur—are close to each other and determine the market price. At the margin, the gains from trade are small. The inframarginal subjective valuations are not revealed by market prices. All that is learned from the market price is that the buyers valued the product more than market price and the sellers valued it less than the market price.

Families often value their home substantially more than the market price—that is, their subjective value is greater than the market's objective valuation. Their subjective value is revealed by their decision to not sell their home at the market price. Figure II-7 represents a market for existing, constant-quality, single-family homes sold in a year. The supply curve reflects the number of homeowners who are willing to sell their homes at the different prices. The homes are already built, thus, the supply curve reflects different valuations by individuals, not the cost of building a new home. The number of transactions that actually occur in this market is represented by Q*. Actual buyers of homes, represented by the transactions that actually occur—those to the left of Q*—value their homes more than the market price, as indicated by the shaded area to the left of Q*. Thus, transactions move the homes from a lower to a higher valued use. Potential suppliers of homes to the right of the market clearing quantity, Q*, value their homes more than the market price as indicated by the shaded area to the right of Q*. The existence of subjective value is revealed by market behavior—however, the precise amount is inherently subjective and cannot be objectively determined by simply observing market behavior.

In many instances, our legal system has great difficulty in dealing with subjective value because, well, it is subjective. Consider two examples. First, although the Takings Clause of the Fifth Amendment requires "just compensation" for governmental takings of private property for public use, the Supreme Court has interpreted "just compensation" to mean market value. See, *e.g.,* United States v. Miller, 317 U.S. 369, 374 (1943). Some homeowners who have their homes taken for a public purpose are not compensated for their lost

Figure II-7. Market for Existing Single-Family Homes



subjective value. In Figure II-7, this is represented by homeowners to the right of Q* on supply curve S_1. Second, most property insurance contracts do not cover lost subjective value because of concerns that compensation for such losses would encourage the insured party to overstate their subjective value and then not exercise appropriate care in protecting the property because loss of the property would result in a windfall for the insured. ("Items that are overinsured tend to catch on fire or disappear.") The latter behavior is referred to as a **moral hazard**.

In other instances, however, a contract could provide for the recognition of subjective value. Freedom of contract is a fundamental principle of the common law. As long as the parties to the contract have legal capacity and the performance of the contract does not violate public policy, the general rule is that parties may structure their contractual relations in any manner they desire, and the courts will enforce the terms of their contract. One advantage of this principle is that it allows individuals to protect assets that are more valuable to them personally than they are valued in the market. In general, freedom of contract allows the idiosyncratic, subjective preferences of individuals to be protected—but not always.

Peevyhouse v. Garland Coal & Mining Co.

Supreme Court of Oklahoma
382 P.2d 109 (1962)

JACKSON, J.

In the trial court, plaintiffs Willie and Lucille Peevyhouse sued the defendant, Garland Coal and Mining Company, for damages for breach of contract. Judgment was for plaintiffs in an amount considerably less than was sued for. Plaintiffs appeal and defendant cross-appeals.

In the briefs on appeal, the parties present their arguments and contentions under several propositions; however, they all stem from the basic question of whether the trial court properly instructed the jury on the measure of damages.

Briefly stated, the facts are as follows: plaintiffs owned a farm containing coal deposits, and in November, 1954, leased the premises to defendant for a period of five years for coal mining purposes. A "strip-mining" operation was contemplated in which the coal would be taken from pits on the surface of the ground, instead of from underground mine shafts. In addition to the usual covenants found in a coal mining lease, defendant specifically agreed to perform certain restorative and remedial work at the end of the lease period. It is unnecessary to set out the details of the work to be done, other than to say that it would involve the moving of many thousands of cubic yards of dirt, at a cost estimated by expert witnesses at about $29,000. However, plaintiffs sued for only $25,000.

During the trial, it was stipulated that all covenants and agreements in the lease contract had been fully carried out by both parties, except the remedial work mentioned above; defendant conceded that this work had not been done.

Plaintiffs introduced expert testimony as to the amount and nature of the work to be done, and its estimated cost. Over plaintiffs' objections, defendant thereafter introduced expert testimony as to the "diminution in value" of plaintiffs' farm resulting from the failure of defendant to render performance as agreed in the contract—that is, the difference between the present value of the farm, and what its value would have been if defendant had done what it agreed to do.

At the conclusion of the trial, the court instructed the jury that it must return a verdict for plaintiffs, and left the amount of damages for jury determination. On the measure of damages, the court instructed the jury that it might consider the cost of performance of the work defendant agreed to do, "together with all of the evidence offered on behalf of either party."

It thus appears that the jury was at liberty to consider the "diminution in value" of plaintiffs' farm as well as the cost of "repair work" in determining the amount of damages.

It returned a verdict for plaintiffs for $5000 — only a fraction of the "cost of performance," *but more than the total value of the farm even after the remedial work is done.*

On appeal, the issue is sharply drawn. Plaintiffs contend that the true measure of damages in this case is what it will cost plaintiffs to obtain performance of the work that was not done because of defendant's default. Defendant argues that the measure of damages is the cost of performance "limited, however, to the total difference in the market value before and after the work was performed."

* * *

. . . [T]he authorities are not in agreement as to the factors to be considered in determining whether the cost of performance rule or the value rule should be applied. The American Law Institute's Restatement of the Law, Contracts, Volume 1, Sections 346(1)(a)(i) and (ii) submits the proposition that the cost of performance is the proper measure of damages "if this is possible and does not involve *unreasonable economic waste*"; and that the diminution in value caused by the breach is the proper measure "if construction and completion in accordance with the contract would involve *unreasonable economic waste.*" (Emphasis supplied). In an explanatory comment immediately following the text, the Restatement makes it clear that the "economic waste" referred to consists of the destruction of a substantially completed building or other structure. Of course no such destruction is involved in the case now before us.

On the other hand, in McCormick, Damages, Section 168, it is said with regard to building and construction contracts that ". . . in cases where the defect is one that can be repaired or cured without *undue expense*" the cost of performance is the proper measure of damages, but where ". . . the defect in material or construction is one that cannot be remedied without *an expenditure for reconstruction disproportionate to the end to be attained*" (emphasis supplied) the value rule should be followed. The same idea was expressed in Jacob & Youngs, Inc. v. Kent, 230 N.Y. 239, as follows:

> "The owner is entitled to the money which will permit him to complete, unless the cost of completion is grossly and unfairly out of proportion to the good to be attained. When that is true, the measure is the difference in value."

It thus appears that the prime consideration in the Restatement was "economic waste"; and that the prime consideration in McCormick, Damages, and in Jacob & Youngs, Inc. v. Kent, supra, was the relationship between the expense involved and the "end to be attained" — in other words, the "relative economic benefit."

* * *

We therefore hold that where, in a coal mining lease, lessee agrees to perform certain remedial work on the premises concerned at the end of the lease period, and thereafter the contract is fully performed by both parties except that the remedial work is not done, the measure of damages in an action by lessor against lessee for damages for breach of contract is ordinarily the reasonable cost of performance of the work; however, where the contract provision breached was merely incidental to the main purpose in view, and

where the economic benefit which would result to lessor by full performance of the work is grossly disproportionate to the cost of performance, the damages which lessor may recover are limited to the diminution in value resulting to the premises because of the non-performance.

* * *

Under the most liberal view of the evidence herein, the diminution in value resulting to the premises because of non-performance of the remedial work was $300.00. After a careful search of the record, we have found no evidence of a higher figure, and plaintiffs do not argue in their briefs that a greater diminution in value was sustained. It thus appears that the judgment was clearly excessive, and that the amount for which judgment should have been rendered is definitely and satisfactorily shown by the record. . . .

We are of the opinion that the judgment of the trial court for plaintiffs should be, and it is hereby, modified and reduced to the sum of $300.00, and as so modified it is affirmed.

IRWIN, J. (dissenting).

* * *

Although the contract speaks for itself, there were several negotiations between the plaintiffs and defendant before the contract was executed. Defendant admitted in the trial of the action, that plaintiffs insisted that the above provisions be included in the contract and that they would not agree to the coal mining lease unless the above provisions were included.

In consideration for the lease contract, plaintiffs were to receive a certain amount as royalty for the coal produced and marketed and in addition thereto their land was to be restored as provided in the contract.

Defendant received as consideration for the contract, its proportionate share of the coal produced and marketed and in addition thereto, the *right to use* plaintiffs' land in the furtherance of its mining operations.

The cost for performing the contract in question could have been reasonably approximated when the contract was negotiated and executed and there are no conditions now existing which could not have been reasonably anticipated by the parties. Therefore, defendant had knowledge, when it prevailed upon the plaintiffs to execute the lease, that the cost of performance might be disproportionate to the value or benefits received by plaintiff for the performance.

Defendant has received its benefits under the contract and now urges, in substance, that plaintiffs' measure of damages for its failure to perform should be the economic value of performance to the plaintiffs and not the cost of performance.

If a peculiar set of facts should exist where the above rule should be applied as the proper measure of damages, (and in my judgment those facts do not exist in the instant case) before such rule should be applied, consideration should be given to the benefits received or contracted for by the party who asserts the application of the rule.

Defendant did not have the right to mine plaintiffs' coal or to use plaintiffs' property for its mining operations without the consent of plaintiffs. Defendant had knowledge of the benefits that it would receive under the contract and the approximate cost of performing the contract. With this knowledge, it must be presumed that defendant thought that it would be to its economic advantage to enter into the contract with plaintiffs and that it would reap benefits from the contract, or it would have not entered into the contract.

Therefore, if the value of the performance of a contract should be considered in determining the measure of damages for breach of a contract, the value of the benefits received under the contract by a party who breaches a contract should also be considered. However, in my judgment, to give consideration to either in the instant action, completely rescinds and holds for naught the solemnity of the contract before us and makes an entirely new contract for the parties.…

I therefore respectfully dissent to the opinion promulgated by a majority of my associates.

* * *

Notes and Questions

1. Bargaining for Subjective Value: The court seems to treat the plaintiffs' claimed damages as unreasonable in light of the very large expenditure necessary to restore the property relative to the very small increase in market value. For example, the court accepts the defendant's contention that "damages should be limited to [diminution in value] because that is all that plaintiffs have lost." An alternative interpretation is that the plaintiffs accepted a lower royalty rate in order to get the defendant to agree to restore the land. Under this view, the plaintiffs have already paid for the restoration. Why would the plaintiffs be willing to pay so much for work that has an objective market value of only $300? Perhaps the plaintiffs' actions revealed that their subjective valuation of the restoration is at least $29,000. In this case, should the remedy be cost of completion ($29,000) or diminution in value ($300)? What happened to freedom of contract?

2. Efficient Breach: If contingencies occur that make it unprofitable for a promisor to perform as promised, the promisor may refuse to perform the contract and pay damages to the non-breaching party. If damages are measured properly, then the non-breaching party is as well-off as he would have been if the contract had been performed, and the breaching party is better off because he bought his way out of an unprofitable situation by paying damages. This scenario would seem to satisfy the criteria for Pareto efficiency: one party is made better off without harming another party. For this reason, this situation is often referred to as one of "efficient breach." Is the preceding case an example of an efficient breach? What contingencies occurred to make performance unprofitable? Were damages measured properly?

3. Bargaining During Performance: Assume that the plaintiffs initially valued restoration at $29,000 and that the terms of the contract reflected the cost to the defendant of restoration. Also, assume that there is no doubt that the court will award damages based on cost of completion. Now, assume that the plaintiffs have a change of heart and no longer value the restoration more than its impact on market value ($300). Because the plaintiffs still have the right to a remedy that will cost the defendant $29,000, there is a clear opportunity for gain through settlement at an amount somewhere between $300 and $29,000. Obviously, the plaintiffs would prefer to collect $29,000 in cash from the defendant, but the defendant can thwart that opportunity by spending (or threatening to spend) the $29,000 restoring the land—thereby providing the plaintiffs with only the $300 increase in market value. Does the potential for this type of strategic bargaining provide an argument for the doctrine of economic waste?

4. There Is More Than One Way to Skin a Cat: The plaintiffs' desire for restoration could be realized through a clause requiring specific performance or a clause requiring damages to be measured by the cost of completion. However, uncertainty over judicial

enforcement of a cost-of-completion clause—that is, the possibility that the court will order diminution in value damages instead of cost of completion—means that contracting parties will often prefer a clause with specific performance as a remedy. The particular legal rule governing these types of transactions does not affect the ultimate allocation of resources because the parties can contract around the rules, provided transaction costs are low. If the remedies of cost of completion and specific performance are not available (because of judicial concerns about "economic waste"), the landowners can still receive the desired result by charging a higher royalty rate to reflect the cost of restoration and then using the additional funds to hire an additional contractor to do the restoration. Is it "efficient" to require the landowners to go through this two-step process?

D. Gains From Trade: Consumer Surplus and Producer Surplus

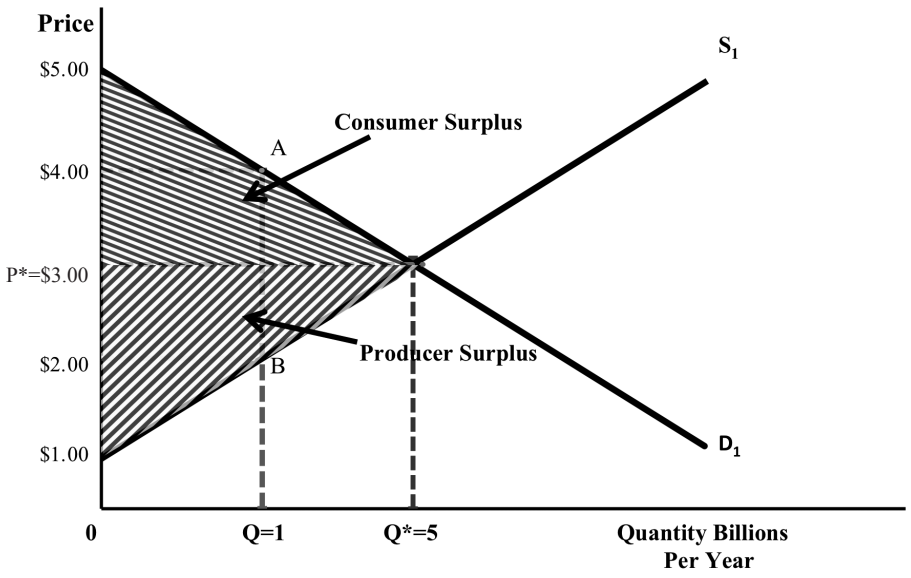
Individuals and firms engage in exchange when the benefits of doing so are greater than the costs. This means that for any particular transaction, both the buyer and the seller perceive the exchange as being in their best interest. In other words, voluntary transactions are mutually beneficial exchanges—observed market transactions are win-win situations. Economists call the buyer's winnings a consumer surplus and the seller's winnings a producer surplus. **Consumer surplus** is the difference between the maximum amount a buyer would have been willing to pay for a good or service and the actual purchase price that she paid. **Producer surplus** is the difference between the minimum amount a supplier would have been willing to sell a particular quantity of some good or service for and its actual selling price. Together, consumer and producer surplus represent the total **gains from trade**.

The idea of consumer and producer surplus can best be illustrated graphically. Figure II-8 represents a market for cheeseburgers that is in equilibrium at $P^* = \$3.00$ and $Q^* = 5$. The demand curve represents the quantity of cheeseburgers that individuals are willing and able to purchase at a particular price. In our example, some individuals are willing to pay \$4.00 for one cheeseburger—indicated by point A. Despite the fact that some individuals are willing to consume one cheeseburger for four dollars, the equilibrium market price is \$3.00. This means that some consumers are willing to pay \$4.00, but only have to pay \$3.00. The difference between their individual valuation and the purchase price (\$4.00 – \$3.00 = \$1.00) represents consumer surplus. In fact, the entire area under the demand curve and to the left of Q^* represents the consumer utility derived from the cheeseburgers actually purchased. The area under the demand curve, to the left of Q^* and above the market price P^* (\$3.00), represents the total consumer surplus in this market.

A similar reasoning process applies for producer surplus. The supply curve represents the quantity of a given good or service that suppliers are willing and able to supply at a particular price. Thus, in our cheeseburger market, some suppliers are apparently willing and able to sell one cheeseburger for \$2.00—indicated by point B. Despite this, all cheeseburgers sell at the market price of \$3.00. The difference between the minimum amount the seller is willing to accept and the market price represents producer surplus. Graphically, producer surplus is equal to the area above the supply curve, to the left of the equilibrium quantity Q^* and below the market price P^* (\$3.00).

The sum of consumer surplus and producer surplus represents the gains available from trade. All gains from trade are realized at the market clearing price and quantity.

Figure II-8. Gains from Trade: Consumer Surplus & Producer Surplus



That is, when the market is in equilibrium, the sum of consumer and producer surplus is maximized.

1. Mutually Beneficial Exchange

A key point in understanding the operation of markets is to appreciate the significance of the observation that market exchanges are voluntary. Individuals engage in transactions because they expect to receive more than they give up. An exchange results in reciprocal net benefits. In very real terms, mutually beneficial exchange increases the wealth of both parties. For example, assume that Taylor is willing to sell her car for $10,000 and Andy is willing to pay $12,000 for it. If Taylor sells the car to Andy for $11,000, then both Taylor and Andy are $1,000 better off than before the transaction. The $2,000 in gains from trade represents the increase in wealth created by the transaction. This simple mutually beneficial exchange illustrates how wealth is created simply by transferring the same physical good from one individual to another. Mutually beneficial exchanges not only create wealth (and, for many individuals, happiness), but they also allocate resources to their most highly valued use—e.g., the car is worth more to Andy than to Taylor. Moreover, when all possible mutually beneficial exchanges are realized, then resources are allocated to their most highly valued uses and society's wealth is maximized. In sum, voluntary exchange means that wealth is created.

In the preceding example, the gains from trade arose from differences in preferences. The buyer and seller simply placed different values on the item of trade. Another important source of gains from trade is that the seller may be able to produce the item at a lower cost than the buyer and thus may have a **comparative advantage** in its production. Even if a lawyer is able to type faster than her secretary (that is, the lawyer has an absolute

advantage over her secretary), it still makes sense for the secretary to handle the typing because the opportunity cost of the lawyer's time is probably much higher than the secretary's foregone opportunity. Thus, the secretary has a comparative advantage over the lawyer in the sense that she can produce typed pages more cheaply than the lawyer. (Or as economist Gregory Mankiw puts it, New England Patriot's quarterback Tom Brady should not mow his own lawn, even if his athletic skills make him an incredibly fast lawn mower, because Brady has much more valuable alternative uses of his time than the employee of the local lawn service does.)

In advanced economies, individuals specialize in producing goods and services where they have a comparative advantage and make trades to acquire other goods. Specialization greatly enhances the standard of living in a society. It also enhances the productivity of economic organizations, such as law firms. Moreover, specialization often lowers the opportunity cost of production. The concept of comparative advantage also teaches us that following the maxim "if you want it done right, do it yourself" can be very expensive.

Despite the simplicity of the comparative advantage argument, we often see laws and regulations that ignore this principle. Consider, for example, the many tariffs and quotas placed on goods traded internationally. The law of comparative advantage is often used to explain the benefits of international trade. Resources are used most effectively when they are moved to their most highly valued use. By definition, this means putting resources in their lowest marginal opportunity cost use relative to other resources available for production. Countries that ignore this logic by enacting tariffs and quotas will become overly self-sufficient and therefore waste resources. The more mutually beneficial transactions that a society undertakes, the more wealth it creates. International trade is based on mutually beneficial exchange. Tariffs and quotas increase the costs of international trade and, thus, decrease the quantity of mutually beneficial transactions and deter wealth creating transactions.

2. Individual Self-Interest, Free Markets, and Social Welfare: The Invisible Hand

An important economic principle about market allocation of resources is that resources tend to flow towards their most highly valued uses if voluntary exchange is permitted. For example, producers of digital cameras and computers compete with each other for skilled labor and materials to produce their final products. The reason some entrepreneurs are willing to pay more for particular resources is that they think that the final output produced by the combination of resources will be worth more to consumers than any other product that could be produced from those same resources. This activity causes the value of resources ("costs") to be determined by the prices consumers are willing to pay for final products.

The process of voluntary exchange facilitates the allocation of resources to those uses in which the value to consumers, as measured by their willingness and ability to pay, is highest. This allocation of resources has traditionally been considered to be efficient. This point was best made in 1776 by Adam Smith, the father of economic analysis of the free-market system.

An Inquiry into the Nature and Causes of the Wealth of Nations

Adam Smith
(1776; reprint, Edwin Cannan, ed.,
New York: Modern Library, 1937, p. 423)

[E]very 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, and he is in this, as in many other cases, led by an invisible hand to promote an end which was in no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually 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. It is an affectation, indeed, not very common among merchants, and very few words need to be employed in dissuading them from it.

What is the species of domestic industry which his capital can employ, and of which the produce is likely to be of the greatest value, every individual, it is evident, can, in his local situation, judge much better than any statesman or lawgiver can do for him. The statesman, who should attempt to direct private people in what manner they ought to employ their capitals, would not only load himself with a most unnecessary attention, but assume an authority which could safely be trusted, not only to no single person, but to no council or senate whatever, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it.

As the following essay illustrates, this "invisible hand" coordinates the actions of millions of people from around the world into a productive whole without any overarching plan. F. A. Hayek called such unplanned but harmonious coordination "spontaneous order."

I, Pencil: My Family Tree as Told to Leonard E. Read

Leonard E. Read (Dec. 1958)

I am a lead pencil—the ordinary wooden pencil familiar to all boys and girls and adults who can read and write.

* * *

I have a profound lesson to teach. And I can teach this lesson better than can an automobile or an airplane or a mechanical dishwasher because—well, because I am seemingly so simple.

Simple? Yet, *not a single person on the face of this earth knows how to make me.* This sounds fantastic, doesn't it? Especially when it is realized that there are about one and one-half billion of my kind produced in the U.S.A. each year.

Pick me up and look me over. What do you see? Not much meets the eye—there's some wood, lacquer, the printed labeling, graphite lead, a bit of metal, and an eraser.

* * *

My family tree begins with what in fact is a tree, a cedar of straight grain that grows in Northern California and Oregon. Now contemplate all the saws and trucks and rope and the countless other gear used in harvesting and carting the cedar logs to the railroad siding. Think of all the persons and the numberless skills that went into their fabrication: the mining of ore, the making of steel and its refinement into saws, axes, motors; the growing of hemp and bringing it through all the stages to heavy and strong rope; the logging camps with their beds and mess halls, the cookery and the raising of all the foods. Why, untold thousands of persons had a hand in every cup of coffee the loggers drink!

The logs are shipped to a mill in San Leandro, California. Can you imagine the individuals who make flat cars and rails and railroad engines and who construct and install the communication systems incidental thereto? These legions are among my antecedents.

Consider the millwork in San Leandro. The cedar logs are cut into small, pencil-length slats less than one-fourth of an inch in thickness. These are kiln dried and then tinted for the same reason women put rouge on their faces. People prefer that I look pretty, not a pallid white. The slats are waxed and kiln dried again. How many skills went into the making of the tint and the kilns, into supplying the heat, the light and power, the belts, motors, and all the other things a mill requires? Sweepers in the mill among my ancestors? Yes, and included are the men who poured the concrete for the dam of a Pacific Gas & Electric Company hydroplant which supplies the mill's power!

Don't overlook the ancestors present and distant who have a hand in transporting sixty carloads of slats across the nation.

Once in the pencil factory—$4,000,000 in machinery and building, all capital accumulated by thrifty and saving parents of mine—each slat is given eight grooves by a complex machine, after which another machine lays leads in every other slat, applies glue, and places another slat atop—a lead sandwich, so to speak. Seven brothers and I are mechanically carved from this "wood-clinched" sandwich.

My "lead" itself—it contains no lead at all—is complex. The graphite is mined in Ceylon. Consider these miners and those who make their many tools and the makers of the paper sacks in which the graphite is shipped and those who make the string that ties the sacks and those who put them aboard ships and those who make the ships. Even the lighthouse keepers along the way assisted in my birth—and the harbor pilots.

The graphite is mixed with clay from Mississippi in which ammonium hydroxide is used in the refining process. Then wetting agents are added such as sulfonated tallow—animal fats chemically reacted with sulfuric acid. After passing through numerous machines, the mixture finally appears as endless extrusions—as from a sausage grinder—cut to size, dried, and baked for several hours at 1,850 degrees Fahrenheit. To increase their strength and smoothness the leads are then treated with a hot mixture which includes candelilla wax from Mexico, paraffin wax, and hydrogenated natural fats.

My cedar receives six coats of lacquer. Do you know all the ingredients of lacquer? Who would think that the growers of castor beans and the refiners of castor oil are a part of it? They are. Why, even the processes by which the lacquer is made a beautiful yellow involve the skills of more persons than one can enumerate!

Observe the labeling. That's a film formed by applying heat to carbon black mixed with resins. How do you make resins and what, pray, is carbon black?

My bit of metal—the ferrule—is brass. Think of all the persons who mine zinc and copper and those who have the skills to make shiny sheet brass from these products of nature. Those black rings on my ferrule are black nickel. What is black nickel and how is

it applied? The complete story of why the center of my ferrule has no black nickel on it would take pages to explain.

Then there's my crowning glory, inelegantly referred to in the trade as "the plug," the part man uses to erase the errors he makes with me. An ingredient called "factice" is what does the erasing. It is a rubber-like product made by reacting rape-seed oil from the Dutch East Indies with sulfur chloride. Rubber, contrary to the common notion, is only for binding purposes. Then, too, there are numerous vulcanizing and accelerating agents. The pumice comes from Italy; and the pigment which gives "the plug" its color is cadmium sulfide.

* * *

Does anyone wish to challenge my earlier assertion that no single person on the face of this earth knows how to make me?

Actually, millions of human beings have had a hand in my creation, no one of whom even knows more than a very few of the others. Now, you may say that I go too far in relating the picker of a coffee berry in far off Brazil and food growers elsewhere to my creation; that this is an extreme position. I shall stand by my claim. There isn't a single person in all these millions, including the president of the pencil company, who contributes more than a tiny, infinitesimal bit of know-how. From the standpoint of know-how the only difference between the miner of graphite in Ceylon and the logger in Oregon is in the *type* of know-how. Neither the miner nor the logger can be dispensed with, any more than can the chemist at the factory or the worker in the oil field—paraffin being a by-product of petroleum.

Here is an astounding fact: Neither the worker in the oil field nor the chemist nor the digger of graphite or clay nor any who mans or makes the ships or trains or trucks nor the one who runs the machine that does the knurling on my bit of metal nor the president of the company performs his singular task because he wants me. Each one wants me less, perhaps, than does a child in the first grade. Indeed, there are some among this vast multitude who never saw a pencil nor would they know how to use one. Their motivation is other than me. Perhaps it is something like this: Each of these millions sees that he can thus exchange his tiny know-how for the goods and services he needs or wants. I may or may not be among these items.

* * *

There is a fact still more astounding: the absence of a master mind, of anyone dictating or forcibly directing these countless actions which bring me into being. No trace of such a person can be found. Instead, we find the Invisible Hand at work. This is the mystery to which I earlier referred.

* * *

I, Pencil, am a complex combination of miracles: a tree, zinc, copper, graphite, and so on. But to these miracles which manifest themselves in Nature an even more extraordinary miracle has been added: the configuration of creative human energies—millions of tiny know-hows configurating naturally and spontaneously in response to human necessity and desire and *in the absence of any human master-minding!*

* * *

Notes and Questions

1. Individual Wealth Maximization and Social Welfare: According to Smith, a baker does not bake bread because he or she is benevolent or has the interests of society at heart.

The baker bakes bread to earn a profit, and it is this self-interest, or "invisible hand," that causes the baker to do something for others. As a result, consumers are freed from the task of baking their own bread and can use their time in a more efficient manner. Although Smith's reasoning (as well as his insightful critique of government intervention) has been refined considerably by economists over the years, his basic logic is still the cornerstone for the free market. Whether or not one agrees with the proposition that "wealth maximization" should be the goal of public policy, it has been demonstrated empirically that in an entrepreneurial competitive economy, the constant reallocation of resources by entrepreneurs to higher valued uses does maximize the "size of the economic pie."

2. Individual Judgment: One advantage of the market system is that individuals decide for themselves what is best for them and can pursue those activities that increase their own well-being. They are motivated by self-interest to get the highest price for their resources. These resources will be purchased by those (of the many competing users) who have the highest valued use, because it is those users who are willing to pay the highest price. The well-being of society is enhanced by each individual acting in this way, because each of society's resources is used in the most efficient manner possible to produce goods and services for which individuals are willing to pay. Society is protected against an inefficient use of resources because it costs users, in terms of lost profits, to use resources inefficiently.

3. Dynamic Market Adjustment Process: Another advantage of the market system is that it constantly adjusts to changes in consumers' tastes and desires because producers have a profit incentive to seek out information concerning what consumers want. The profit incentive also leads producers to develop and implement new technology which allows them to produce at a lower cost, and saves society's limited resources.

***4. Spontaneous Order and Market Coordination*:** Another advantage of the market system is the low cost manner through which it coordinates economic activity. As Leonard Read's classic essay illustrates, no one individual in the world knows everything about how to make something as simple as a pencil. Yet millions of them are produced every year. The market system provides incentives and rewards for individuals to engage in all of the activities necessary to produce pencils in the most efficient manner possible, and it also punishes those who fail.

5. Decentralized Decision-Making: Another advantage of the market system is that decision-making is decentralized. If a large number of people wanted the government to change one of its policies, it could take years for Congress to do so after much debate and consumption of resources. However, if a large number of people wanted a new product produced or even a different color of a current product, you can be sure that the self-interest of some producer would guide the producer to do so. Resources in the market system are allocated according to decisions made by millions of individuals and producers. Millions of households decide how their budgets will be spent according to their preferences, and thousands of businesses compete not only to give consumers what they desire, but to do so by the most efficient means possible, so they can offer such goods and services at lower prices than their competitors. While mistakes are often made by decision-makers, their impact is overwhelmed by the correct decisions made by the vast majority of others. This decentralized system should be strongly contrasted with the economic systems that existed in formerly Communist countries that relied on a centralized authority to allocate resources. When those with concentrated economic decision-making power made mistakes, their impact was felt throughout the entire economy, and there was no self-correcting mechanism to eliminate the mistakes. In a market economy, mistakes are eliminated through the demise of unprofitable enterprises.

3. Unequal Bargaining Power and the Limits of Mutually Beneficial Exchange

Economic analysis focuses on the voluntary, consensual, and reciprocal aspects of exchange. *Ex ante*, individuals would not agree to a contract unless it were in their interest to do so. In some instances, individuals agree to contracts that do not appear to be good deals from the perspective of a reasonable external observer. It is often alleged that such *ex ante* unfair contracts are the result of unequal bargaining power and that the courts should reform the contracts or specific terms of the contract. In the next two sub-sections, two categories of contracts that are often attacked as alleged manifestations of unequal bargaining power are examined: unconscionable contracts for consumer goods and opportunistic modifications to contracts during performance.

a. Unconscionability

Section 2-302 of the Uniform Commercial Code allows the courts to choose not to enforce "unconscionable" contracts. In general, an unconscionable contract may be said to be one that is so grossly unfair that it shocks the conscience of the court. This provision is designed to prevent oppression and unfair surprise. Thus, it is a form of consumer protection legislation. The principle is most frequently applied in retail sales to individuals who cannot read or do not understand the terms of a contract. The following case illustrates the type of situation where courts will refuse to enforce a contract because it is unconscionable.

Williams v. Walker Thomas Furniture Co.

District of Columbia Court of Appeals
198 A.2d 914 (1964)

QUINN, J.

Appellant, a person of limited education separated from her husband, is maintaining herself and her seven children by means of public assistance. During the period 1957–1962 she had a continuous course of dealings with appellee from which she purchased many household articles on the installment plan. These included sheets, curtains, rugs, chairs, a chest of drawers, beds, mattresses, a washing machine, and a stereo set. In 1963 appellee filed a complaint in replevin for possession of all the items purchased by appellant, alleging that her payments were in default and that it retained title to the goods according to the sales contracts. By the writ of replevin appellee obtained a bed, chest of drawers, washing machine, and the stereo set. After hearing testimony and examining the contracts, the trial court entered judgment for appellee.

Appellant's principal contentions on appeal are (1) there was a lack of meeting of the minds, and (2) the contracts were against public policy.

Appellant signed fourteen contracts in all. They were approximately six inches in length and each contained a long paragraph in extremely fine print. One of the sentences in this paragraph provided that payments, after the first purchase, were to be prorated on all purchases then outstanding. Mathematically, this had the effect of keeping a balance due on all items until the time balance was completely eliminated. It meant that title to the first purchase, remained in appellee until the fourteenth purchase, made some five years later, was fully paid.

At trial appellant testified that she understood the agreements to mean that when payments on the running account were sufficient to balance the amount due on an individual item, the item became hers. She testified that most of the purchases were made at her home; that the contracts were signed in blank; that she did not read the instruments; and that she was not provided with a copy. She admitted, however, that she did not ask anyone to read or explain the contracts to her.

* * *

A careful review of the record shows that appellant's assent was not obtained "by fraud or even misrepresentation falling short of fraud." This is not a case of mutual misunderstanding but a unilateral mistake. Under these circumstances, appellant's first contention is without merit.

Appellant's second argument presents a more serious question. The record reveals that prior to the last purchase appellant had reduced the balance in her account to $164. The last purchase, a stereo set, raised the balance due to $678. Significantly, at the time of this and the preceding purchases, appellee was aware of appellant's financial position. The reverse side of the stereo contract listed the name of appellant's social worker and her $218 monthly stipend from the government. Nevertheless, with full knowledge that appellant had to feed, clothe and support both herself and seven children on this amount, appellee sold her a $514 stereo set.

We cannot condemn too strongly appellee's conduct. It raises serious questions of sharp practice and irresponsible business dealings. A review of the legislation in the District of Columbia affecting retail sales and the pertinent decisions of the highest court in this jurisdiction disclose, however, no ground upon which this court can declare the contracts in question contrary to public policy. We note that were the Maryland Retail Installment Sales Act, Art. 83 §§ 128–153, or its equivalent, in force in the District of Columbia, we could grant appellant appropriate relief. We think Congress should consider corrective legislation to protect the public from such exploitive contracts as were utilized in the case at bar.

Affirmed.

Williams v. Walker Thomas Furniture Co. II

United States Court of Appeals for the District of Columbia Circuit
350 F.2d 445 (1965)

J. SKELLY WRIGHT, J.

* * *

Appellants' principal contention, rejected by both the trial and the appellate courts below, is that these contracts, or at least some of them, are unconscionable and, hence, not enforceable. . . .

* * *

We do not agree that the court lacked the power to refuse enforcement to contracts found to be unconscionable. In other jurisdictions, it has been held as a matter of common law that unconscionable contracts are not enforceable. . . . Since we have never adopted or rejected such a rule, the question here presented is actually one of first impression.

Congress has recently enacted the Uniform Commercial Code, which specifically provides that the court may refuse to enforce a contract which it finds to be unconscionable

at the time it was made. The enactment of this section, which occurred subsequent to the contracts here in suit, does not mean that the common law of the District of Columbia was otherwise at the time of enactment, nor does it preclude the court from adopting a similar rule in the exercise of its powers to develop the common law for the District of Columbia. In fact, in view of the absence of prior authority on the point, we consider the congressional adoption of § 2-302 persuasive authority for following the rationale of the cases from which the section is explicitly derived. Accordingly, we hold that where the element of unconscionability is present at the time a contract is made, the contract should not be enforced.

Unconscionability has generally been recognized to include an absence of meaningful choice on the part of one of the parties together with contract terms which are unreasonably favorable to the other party. Whether a meaningful choice is present in a particular case can only be determined by consideration of all the circumstances surrounding the transaction. In many cases the meaningfulness of the choice is negated by a gross inequality of bargaining power. The manner in which the contract was entered is also relevant to this consideration. Did each party to the contract, considering his obvious education or lack of it, have a reasonable opportunity to understand the terms of the contract, or were the important terms hidden in a maze of fine print and minimized by deceptive sales practices? Ordinarily, one who signs an agreement without full knowledge of its terms might be held to assume the risk that he has entered a one-sided bargain. But when a party of little bargaining power, and hence little real choice, signs a commercially unreasonable contract with little or no knowledge of its terms, it is hardly likely that his consent, or even an objective manifestation of his consent, was ever given to all the terms. In such a case the usual rule that the terms of the agreement are not to be questioned should be abandoned and the court should consider whether the terms of the contract are so unfair that enforcement should be withheld.

In determining reasonableness or fairness, the primary concern must be with the terms of the contract considered in light of the circumstances existing when the contract was made. The test is not simple, nor can it be mechanically applied. The terms are to be considered "in the light of the general commercial background and the commercial needs of the particular trade or case." Corbin suggests the test as being whether the terms are "so extreme as to appear unconscionable according to the mores and business practices of the time and place." We think this formulation correctly states the test to be applied in those cases where no meaningful choice was exercised upon entering the contract.

Because the trial court and the appellate court did not feel that enforcement could be refused, no findings were made on the possible unconscionability of the contracts in these cases. Since the record is not sufficient for our deciding the issue as a matter of law, the cases must be remanded to the trial court for further proceedings.

So ordered.

DANAHER, J. (dissenting):

The District of Columbia Court of Appeals obviously was as unhappy about the situation here presented as any of us can possibly be. Its opinion in the *Williams* case … concludes: "We think Congress should consider corrective legislation to protect the public from such exploitive contracts as were utilized in the case at bar."

My view is thus summed up by an able court which made no finding that there had actually been sharp practice. Rather the appellant seems to have known precisely where she stood.

There are many aspects of public policy here involved. What is a luxury to some may seem an outright necessity to others. Is public oversight to be required of the expenditures of relief funds? A washing machine, e.g., in the hands of a relief client might become a fruitful source of income. Many relief clients may well need credit, and certain business establishments will take long chances on the sale of items, expecting their pricing policies will afford a degree of protection commensurate with the risk. Perhaps a remedy when necessary will be found within the provisions of the "Loan Shark" law, D.C. Code §§ 26-601 *et seq.* (1961).

I mention such matters only to emphasize the desirability of a cautious approach to any such problem, particularly since the law for so long has allowed parties such great latitude in making their own contracts. I dare say there must annually be thousands upon thousands of installment credit transactions in this jurisdiction, and one can only speculate as to the effect the decision in these cases will have.

I join the District of Columbia Court of Appeals in its disposition of the issues.

Notes and Questions

1. Bargaining Power and Freedom of Choice: No one forced Williams to purchase the household goods. Indeed, some of the goods do not appear to be necessities. The court says Williams had "no meaningful choice." Williams had the freedom to choose not to purchase the products, but it is not clear that she had the opportunity to purchase the same items from a different seller. What does the court mean? Can you think of a plausible economic justification for the court's position?

2. Ex Ante Versus Ex Post Analysis of Terms: Assume the terms were fully and clearly explained to Williams and that she still accepted the contract. Would it still be unconscionable? Does the doctrine of unconscionability have any economic meaning?

3. ***Ex Post Versus Ex Ante Analysis of Cases:*** Are decisions like *Williams* good for consumers or bad for consumers? If the case had come out the other way, would it have been a "pro-business" decision? Professor Richard Epstein addresses the question, while commenting on criticisms of U.S. Supreme Court decisions as "pro-business":

> … [I]t is always critical to distinguish between the ex ante and ex post effects of decisions. Under the ex post perspective, the question of who wins is asked after the dice have been rolled; here, commentators find it easy to classify outcomes as pro- or anti-business.
>
> But that judgment is much more difficult to make when these cases are reexamined from the ex ante perspective, where the question is to figure out the overall social gains and losses that are likely to flow from the choice of any particular rule before any particular dispute arises. The stumbling block in the analysis is that any decision that benefits particular consumers, say, in the ex post state of the world, may well harm consumers as a broader class in the ex ante state of the world.
>
> To see why this is possible, recall that much litigation benefits only a small fraction of consumers as a whole and that the costs of the decision must be absorbed into the overall costs for the firm to stay in business. In the ex ante state of the world, it is often difficult for business to know which consumers will be in a position to sue and which will not. Accordingly, the increase in costs will be passed back, at least in part, to consumers who do not benefit from the favorable outcome in a particular case. Why favor litigious consumers over others?

Richard A. Epstein, *The Myth of a Pro-Business SCOTUS*, Defining Ideas: A Hoover Institution Journal (July 9, 2013).

4. Effect of Unconscionability on Availability of Credit: *Williams* is just one of many cases in which low-income households have used the doctrine of unconscionability to get the courts to rewrite their contracts. In many of the cases, the prices are very high because state usury laws — price ceilings on interest rates — prevent the sellers from charging an interest rate that reflects the true risk of lending to very low-income households. That is, the higher prices are really a way to get around the interest rate ceilings. For example, in *Jones v. Star Credit Corp.*, *infra* the plaintiffs were welfare recipients. They purchased a freezer which had a fair market value of approximately $300. They signed a sales contract agreeing to pay $1,439.69 for the freezer which included $900 for the purchase price with an additional amount for credit charges, credit life insurance, and so forth. The plaintiffs sued to reform the contract after paying $619.88 on the grounds that it was unconscionable under § 2-302 of the U.C.C. The court held that the contract was unconscionable as a matter of law. With respect to the interest rate charged on the installment sales contract, the court said:

> There is no question about the necessity and even the desirability of installment sales and the extension of credit. Indeed, there are many, including welfare recipients, who would be deprived of even the most basic conveniences without the use of these devices. Similarly, the retail merchant selling on installment or extending credit is expected to establish a pricing factor which will afford a degree of protection commensurate with the risk of selling to those who might be default prone. However, neither of these accepted premises can clothe the sale of the freezer with respectability.
>
> Having already paid more than $600 toward the purchase of this $300 freezer unit, it is apparent that the defendant had already been amply compensated. In accordance with the statute, the application of the payment provision should be limited to amounts already paid by the plaintiffs and the contract be reformed and amended by changing the payments called for therein to equal the amount of payment actually so paid by the plaintiffs.

If the courts do not allow merchants to "establish a pricing factor which will afford a degree of protection commensurate with the risk of selling to those who might be default prone," what do you think will happen to the availability of credit for the "default prone"? In the second paragraph, the court suggests that this "default prone" plaintiff had paid her fair share, but this analysis ignores the possibility that other "default prone" debtors may have defaulted before they paid even $100. In effect, the "default prone" debtors who pay off their debts are bearing the cost of the merchant's granting credit to similarly-situated debtors. Of course, ex ante, the merchant can't tell who is going to pay and who is going to default. If the merchant could tell, then some would get credit and some would not, and those who got it would get it at a lower interest rate. So, the bottom line is, will the availability of credit to welfare recipients increase or decrease as a result of decisions like *Jones* and *Williams*? Given the choice between being able to purchase a freezer on credit or having to go without a freezer, what choice do you think the Joneses would have taken?

5. Adhesion Contracts: Consider the facts of *Henningsen v. Bloomfield Motors*, 161 A.2d 69 (N.J. 1960). Plaintiffs Claus and Helen Henningsen purchased a Plymouth from the defendant, Bloomfield Motors. Mr. Henningsen signed a preprinted purchase order which contained various provisions setting out the rights and liabilities of each party to the contract. One of the provisions limited the liability of the manufacturer, Chrysler, and

the dealer, defendant Bloomfield Motors, to a 90-day warranty on "each new motor vehicle … chassis or parts manufactured by it to be free from defects in material or workmanship under normal use and service," with the remedy limited to repair or replacement of defective parts. Any other warranties, express or implied, made by any party, were expressly disavowed. Ten days and 468 miles after the purchase, the steering mechanism failed, causing Mrs. Henningsen to crash into a brick wall, totaling the car and seriously injuring her. Plaintiffs sued for breach of express and implied warranties, and negligence. Defendants relied on the signed purchase order as a defense to the allegations.

> It seems obvious in this instance that the motive was to avoid the warranty obligations which are normally incidental to such sales. The language gave little and withdrew much. In return for the delusive remedy of replacement of defective parts at the factory, the buyer is said to have accepted the exclusion of the maker's liability for personal injuries arising from the breach of the warranty, and to have agreed to the elimination of any other express or implied warranty. An instinctively felt sense of justice cries out against such a sharp bargain. But does the doctrine that a person is bound by his signed agreement, in the absence of fraud, stand in the way of any relief?
>
> * * *
>
> The warranty before us is a standardized form designed for mass use. It is imposed upon the automobile consumer. He takes it or leaves it, and he must take it to buy an automobile. No bargaining is engaged in with respect to it. In fact, the dealer through whom it comes to the buyer is without authority to alter it; his function is ministerial—simply to deliver it. The form warranty is not only standard with Chrysler but, as mentioned above, it is the uniform warranty of the American Automobile Manufacturers Association. Members of the Association are: General Motors, Inc., Ford, Chrysler, Studebaker-Packard, American Motors, (Rambler), Willis Motors, Checker Motors Corp., and International Harvester Company. Of these companies, the "Big Three" (General Motors, Ford, and Chrysler) represent 93.5% of the passenger-car production for 1958 and the independents 6.5%. And for the same year the "Big Three" had 86.72% of the total passenger vehicle registrations.
>
> The gross inequality of bargaining position occupied by the consumer in the automobile industry is thus apparent. There is no competition among the car makers in the area of the express warranty. Where can the buyer go to negotiate for better protection? Such control and limitation of his remedies are inimical to the public welfare and, at the very least, call for great care by the courts to avoid injustice through application of strict common-law principles of freedom of contract.…
>
> … The status of the automobile industry is unique. Manufacturers are few in number and strong in bargaining position. In the matter of warranties on the sale of their products, the Automotive Manufacturers Association has enabled them to present a united front. From the standpoint of the purchaser, there can be no arms length negotiating on the subject. Because his capacity for bargaining is so grossly unequal, the inexorable conclusion which follows is that he is not permitted to bargain at all. He must take or leave the automobile on the warranty terms dictated by the maker. He cannot turn to a competitor for better security.

Id. at 85, 87, 94. How does the doctrine of adhesion contracts affect the relative bargaining positions of the parties to a contract? Is the doctrine only applicable when parties have

grossly disparate bargaining power? Isn't the court doing exactly what the free market would do anyway? In the oligopoly-type situation, as described here, wouldn't it be profitable for a car manufacturer to have a contract which states that the manufacturers are liable for everything (at a price premium, of course)? Here, in effect, the court imposes the same contract terms on all manufacturers and all consumers by allowing some consumers to sue and recover. In sum, everyone pays for the ability to recover when their car fails instead of just those who would be willing to pay the premium. Is freedom of contract the solution? Modern warranties generally run for three years or 36,000 miles, and sometimes even longer. Domestic automobile manufacturers no longer enjoy the dominant position they held in 1958. (What does this tell you about the dynamic process of markets, in particular the market for automobiles?) How would a modern court analyze a situation similar to that in *Henningsen* with these additional facts? What cost do modern consumers face as a result of increased warranty coverage and length? Should consumers be allowed to waive liability claims against manufacturers in exchange for a lower price? See also the discussion of warranties and information asymmetries in Chapter V.

b. Modification and the Pre-Existing Duty Rule

Occasionally contingencies occur that make performance by one party a losing deal. Assume D is the party disadvantaged by the contingency, and A is the other party. After the contingency occurs, D is faced with three possible choices: (1) D can perform as promised and lose money; (2) D can breach the contract and pay damages (so-called efficient breach); or (3) D and A can renegotiate the terms of the contract in a way that makes them both better off than they would be under option (2). In general, each contracting party has incentives to engage in good faith modification if the total cost of performance can be minimized through cooperation. The courts will enforce modifications if they are supported by consideration.

Alaska Packers' Association v. Domenico

United States Court of Appeals for the Ninth Circuit
117 F. 99 (1902)

ROSS, J.

* * *

The evidence shows without conflict that on March 26, 1900, at the city and county of San Francisco, the libelants entered into a written contract with the appellant, whereby they agreed to go from San Francisco to Pyramid Harbor, Alaska, and return, on board such vessel as might be designated by the appellant, and to work for the appellant during the fishing season of 1900, at Pyramid Harbor, as sailors and fishermen, agreeing to do "regular ship's duty, both up and down, discharging and loading; and to do any other work whatsoever when requested to do so by the captain or agent of the Alaska Packers' Association." By the terms of this agreement, the appellant was to pay each of the libelants $50 for the season, and two cents for each red salmon in the catching of which he took part.... Under [this contract], the libelants sailed on board the Two Brothers for Pyramid Harbor, where the appellant had about $150,000 invested in a salmon cannery. The libelants arrived there early in April of the year mentioned, and began to unload the vessel and fit up the cannery. A few days thereafter, to wit, May 19th, they stopped work in a body, and demanded of the company's superintendent there in charge $100 for services in operating the vessel to and from Pyramid Harbor, instead of the sums stipulated for in and by the contracts; stating that unless they were paid this additional wage they would

stop work entirely, and return to San Francisco. The evidence showed, and the court below found, that it was impossible for the appellant to get other men to take the places of the libelants, the place being remote, the season short and just opening; so that, after endeavoring for several days without success to induce the libelants to proceed with their work in accordance with their contracts, the company's superintendent, on the 22d day of May, so far yielded to their demands as to instruct his clerk to copy the contracts executed in San Francisco, including the words "Alaska Packers' Association" at the end, substituting, for the $50 … payments … the sum of $100, which document, so prepared, was signed by the libelants before a shipping commissioner whom they had requested to be brought from Northeast Point; the superintendent, however, testifying that he at the time told the libelants that he was without authority to enter into any such contract, or to in any way alter the contracts made between them and the company in San Francisco. Upon the return of the libelants to San Francisco at the close of the fishing season, they demanded pay in accordance with the terms of the alleged contract of May 22d, when the company denied its validity, and refused to pay other than as provided for by the contracts of March 26th.…

* * *

The real questions in the case as brought here are questions of law, and, in the view that we take of the case, it will be necessary to consider but one of those. Assuming that the appellant's superintendent at Pyramid Harbor was authorized to make the alleged contract of May 22d, and that he executed it on behalf of the appellant, was it supported by a sufficient consideration? From the foregoing statement of the case, it will have been seen that the libelants agreed in writing, for certain stated compensation, to render their services to the appellant in remote waters where the season for conducting fishing operations is extremely short, and in which enterprise the appellant had a large amount of money invested; and, after having entered upon the discharge of their contract, and at a time when it was impossible for the appellant to secure other men in their places, the libelants, without any valid cause, absolutely refused to continue the services they were under contract to perform unless the appellant would consent to pay them more money. Consent to such a demand, under such circumstances, if given, was, in our opinion, without consideration, for the reason that it was based solely upon the libelants' agreement to render the exact services, and none other, that they were already under contract to render.…

* * *

It results from the views above expressed that the judgment must be reversed, and the cause remanded, with directions to the court below to enter judgment for the respondent, with costs. It is so ordered.

Notes and Questions

1. Cost Minimization or Opportunism?: A cost-minimization modification would take place after a contingency made it uneconomical for one party to perform, and this modification of the terms could make both parties better off. The key in *Alaska Packers* is that there was no triggering contingency. The workers merely noticed that the cannery owners were in a very vulnerable position — the workers could appropriate all of the cannery's expected net cash flow for that summer because it was too late for the cannery to hire replacement workers for the season — and engaged in an opportunistic modification of the contract. In other words, nothing had changed since the signing of the original contract, there was no incentive for joint cost minimization, and the workers gave nothing to the

cannery which would contribute to cost minimization—in fact, all the workers did was increase the cannery's costs.

2. Modification as Extortion: Richard Posner has addressed opportunistic contract modification in the following terms:

> In economic terms, the making of a contract may confer on the seller a monopoly vis-à-vis the buyer which the seller can exploit by threatening to terminate the contract unless the buyer agrees to pay a higher price than originally agreed upon.... This raises the question ... whether extortion can be given a meaningful definition in the modification setting. To answer this question, it is helpful to distinguish three situations in which modification might be sought:
>
> 1. Nothing has changed since the contract was made, but the promisor, realizing that the remedies for breach of contract would not fully compensate the promisee, gives the promisee the unhappy choice of either paying the promisor more to complete the contract or pursuing his legal remedies.
>
> 2. Something has changed since the contract signing: the promisee has given up alternative sources of supply or otherwise increased his dependence on the promisor. If modification is permitted the promisor can extract a monopoly rent from the promisee.
>
> 3. Something has changed since the contract signing: an unexpected event which ... prevents the (willing) promisor from completing the promised performance without a modification of the contract.
>
> The third case is the clearest for allowing modification. The inability of a willing promisor to complete performance removes the factor of strategic behavior that is present is cases one and two.... The first case might also seem one where modification should be allowed, ... the legal obligation is to perform or pay damages. If the promisee wants more—wants in effect specific performance—he must pay extra for it. That is all that *seems* to be involved in the first case but if we pause to ask why the promisee in the first case would ever agree to pay extra, we shall see that the first case is in reality a version of the second, the monopoly case. If the promisee in the first case has equally good alternative sources of supply, or at least no worse than he had when he made the original contract, he will have no incentive to pay a premium above the contract price for the promisor to perform as agreed; he will allow the promisor to breach and turn elsewhere. He will pay the premium only if his dependence on the promisor has increased since the signing of the contract, i.e., only if the contract gave the promisor a monopoly position vis-à-vis the promisee.

Richard A. Posner, *Gratuitous Promises in Economics and Law*, 6 Journal of Legal Studies 411, 422–23 (1977). How does *Alaska Packers* fit into this analysis? For further discussion of such opportunistic contract modifications, see Chapter V.

3. U.C.C. § 2-209: The Uniform Commercial Code modifies the common law preexisting duty rule to provide for contract enforcement so long as the modification is made in good faith. Charles J. Goetz and Robert E. Scott offer the following insights on the relative merits of the common law and U.C.C. rules:

> Contract rules policing contractual modification are another response to the heightened risk of extortion in specialized environments. For example, the common-law preexisting duty rule can be usefully contrasted with the more permissive regulation of contractual modification under the Uniform Commercial

> Code. The preexisting duty rule denies enforcement of a renegotiation or contractual modification where an obligor agrees merely to do that which he is already contractually obligated to do. The rule is primarily designed to reduce the incidence of extortionate modification in construction, employment, and other specialized contractual relationships.
>
> The preexisting duty rule, however, often fails accurately to mirror the underlying bad faith behavior. First, the rule discourages cost-reducing negotiations in addition to threats. Moreover, the obligor satisfies the rule by assuming *any* additional obligations whether or not the "additional" duties are themselves part of the strategic maneuver. The Code abandoned this ill-fitting rule of thumb and instead applies a general good faith standard.... Because this standard is substantially more difficult to enforce, however, the Code may not deter extortionate renegotiation as effectively as did the common law. Nonetheless, if parties generally execute contracts for the sale of goods in the context of a well-developed market for substitutes, the costs saved through legitimate renegotiations will exceed the increased enforcement costs of policing bad faith modification....
>
> Courts also express concern with bad faith extortion through the rules restraining economic duress. Such cases arise when the obligor has *performed* the modified contract, but the "injured party" seeks restitution of the value of his performance because economic duress forced his agreement to modified terms. The market for substitutes is the key variable in economic duress cases. Because a market for substitutes will effectively control a defendant's behavior with no need for legal rules, a prima facie claim of economic duress thus requires a plaintiff to show a specialized environment.
>
> It is difficult to police such bad faith behavior, however, because the distinction between legitimate requests for renegotiation and bad faith threats lies entirely in the honesty of a party's assertion that a readjustment contingency made *performance* less attractive than quasi-performance (breach with damages).

Goetz & Scott, *The Mitigation Principle: Toward a General Theory of Contractual Obligation*, 69 Virginia Law Review 967, 1007 n.106 (1983).

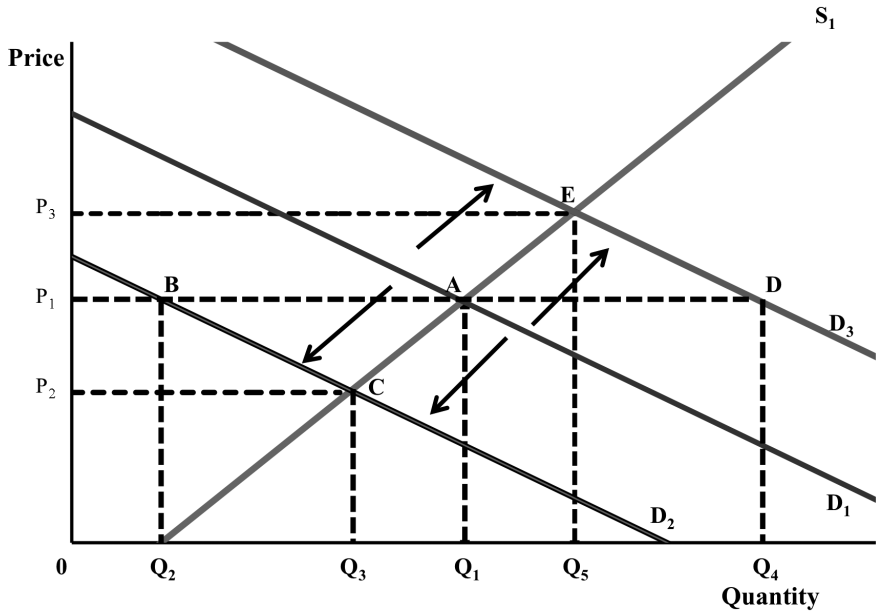
E. Changes in Demand and Supply

The discussion of the supply-and-demand model has focused on the manner in which price and quantity interact when everything else is held constant. The supply-and-demand model can also be used to investigate the impact of changes in non-price variables on market price and quantity. Those variables are the items which were held constant in the previous analysis. Understanding the dynamics of price change in response to market conditions enables one to think about the determination of market prices as a spontaneous and dynamic process. This section examines the impact on market price and quantity of changes in demand and supply.

1. Changes in Demand

Changes in non-price determinants of market demand—the other things that are normally held constant—can cause shifts in the entire demand curve. Only variables other

Figure II-9. Changes in Demand



than price can shift the position of the demand curve, and the shift can go left or right depending on the nature of the change. A shift to the left is called a **decrease in demand**, which indicates that consumers are no longer willing to purchase the same quantity at the initial price. The shift from D_1 to D_2 in Figure II-9 represents a decrease in demand. Note that the decrease in demand means that quantity demanded at P_1 has declined from Q_1 to Q_2—indicated by points A and B. As a result of the decrease in demand, the market is in disequilibrium—the quantity supplied, Q_1, is greater than quantity demanded, Q_2. Equilibrium is restored when the market clearing price declines from P_1 to P_2 and the equilibrium quantity declines from Q_1 to Q_3—indicated by point C.

An **increase in demand** is indicated by a shift to the right—for example, from D_1 to D_3 in Figure II-9. The increase in demand tells us that consumers are willing to purchase more at the same price than they were willing to purchase before the shift. Note that the increase in demand means that the quantity demanded at P_1 has increased from Q_1 to Q_4—indicated by points A and D. As a result, the equilibrium price moves from P_1 to P_3 and the equilibrium quantity increases from Q_1 to Q_5—indicated by point E.

The types of non-price developments that can cause shifts in demand include changes in (1) income, (2) prices of related goods, (3) expectations about the future prices or availability of the good, (4) tastes and preferences, (5) population, and (6) laws and regulations.

A change in income can affect both individual and firm demand for a particular good or service. Economists have categorized the effects of changes in income on demand for goods and services into two categories. **Normal goods** are those goods and services for which demand increases (decreases) as income increases (decreases). Consider for example, the demand for medical services. As income increases, most individuals will consult their doctors more often. In contrast, **inferior goods** are those goods and services for which an increase (decrease) in income causes a decrease (increase) in demand. An example of

an inferior good is public transportation. As their income increases, most individuals stop riding the city bus.

The demand for a particular good or service is affected by the prices of related goods. This relationship can take one of two forms—substitutes or complements. **Substitute goods** are goods that can replace the utility provided by another good. Butter and margarine are straightforward examples of substitutes. **Complementary goods** are goods used in conjunction with one another. Examples include bread and butter, tennis rackets and tennis balls, airplanes and airports, or, in the case of Mohn Jarshall, beer and salt water. Substitute and complementary goods are identified and distinguished in terms of how the change in the price of one commodity affects the demand for the other commodity. If there is a positive relationship between the changes, the goods are substitutes. If the relationship is negative, they are complements. For example, if an increase in the price of butter causes an increase in the demand for margarine (a shift to the right for the demand of margarine), the goods are said to be substitutes. The same increase in the price of butter could also decrease the demand for bread (shift to the left), which would indicate that bread and butter are complementary products.

Changes in expectations about future prices or the availability of goods in the future often have immediate effects on the demand for goods. For example, if the price of personal computers is expected to decline substantially within a few months, then some potential customers may alter their plans and decide to wait for the price decrease. Of course, if enough customers decide to wait, then the decline in market demand may cause the price to fall sooner than expected. Similarly, expectations of an impending "shortage" often create a real shortage in the short run as demand increases before merchants have a chance to raise prices.

It is clear that the demand for products is determined by the tastes and preferences of consumers. However, economists do not have a quantitative method for determining or predicting consumers' tastes and preferences. For example, the demand for hula hoops virtually disappeared—that is, the demand shifted to the left as consumers lost interest in the product—and then reappeared. Why consumers lose interest in any particular good has not yet been systematically quantified. Economists do study the economics of advertising and information. Advertising does have an impact on tastes and preferences of consumers, but the effect is often very difficult to quantify.

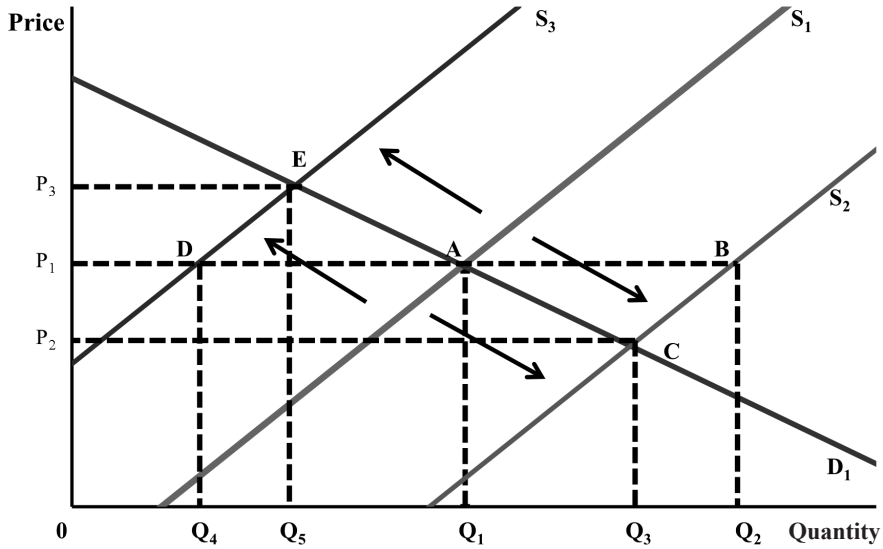
Similarly, laws and regulations can affect consumer demand by altering consumer preferences. For example, several states are currently considering laws that would require food manufacturers to label foods containing genetically modified ingredients. Consumer demand for genetically modified foods would likely decrease after the law change. The addition of the label might persuade consumers that they should be concerned about genetically modified foods, even if they were indifferent about these foods prior to the law change.

Finally, the population of a given market can obviously affect demand for a product as well. If the population of New York City suddenly doubled, there would clearly be more demand for housing in the city.

2. Changes in Supply

The supply curve shifts positions in response to changes in non-price variables in much the same manner as the demand curve. An increase in supply is represented by a shift of the supply curve to the right. An **increase in supply** indicates that suppliers are willing

Figure II-10. Changes in Supply



to sell a greater quantity at the initial price than they were previously. For example, in Figure II-10, a shift from S_1 to S_2 demonstrates an increase in supply. Note that the increase in supply means that the quantity supplied at P_1 has increased from Q_1 to Q_2—indicated by points A and B. The interaction of the increased supply with the demand curve indicates that the equilibrium price declines to P_2 while the equilibrium quantity increases to Q_3—indicated by point C. Thus, an increase in supply with no corresponding change in demand results in a decrease in market price and an increase in quantity. A **decrease in supply** means that the supply curve shifts to the left—for example, from S_1 to S_3. Such a shift indicates that suppliers are now only willing to supply Q_4 at P_1—indicated by point D. Hence, the market is in disequilibrium—the quantity demanded, Q_1 is greater than the quantity supplied, Q_4. Assuming no change in demand, a decrease in supply causes the new equilibrium quantity to decrease from Q_1 to Q_5, while the market price increases from P_1 to P_3—indicated by point E.

Changes in the supply curve can be caused by changes in the prices of inputs, improvements in technology, or certain international trade restrictions. For example, an increase in the costs of inputs causes the supply curve to shift to the left. However, improvements in technology lower the costs of production, thereby causing the supply curve to shift to the right. International trade restrictions—such as tariffs or quotas—reduce the number of suppliers to domestic markets. Such a reduction is a shift to the left of the supply curve—causing an increase in the market price and a decrease in quantity available.

Competitive Enterprise Institute v. National Highway Traffic Safety Admin.

United States Court of Appeals for the District of Columbia Circuit
956 F.2d 321 (1992)

Williams, J.

Choice means giving something up. In deciding whether to relax the previously established "corporate average fuel economy" ("CAFE") standard for model year 1990, the National Highway Traffic Safety Administration ("NHTSA") confronted a record suggesting that refusal to do so would exact some penalty in auto safety. Rather than affirmatively choosing extra energy savings over extra safety, however, NHTSA obscured the safety problem, and thus its need to choose. Because NHTSA failed to reason through to its decision … we remand the case for further consideration.

* * *

The Energy Policy and Conservation Act, Pub.L. No. 94-163, 89 Stat. 871, requires every major car maker to keep the average fuel economy of its fleet, in each model year, at or above a prescribed level. The Act holds manufacturers to a standard of 27.5 miles per gallon for model year 1985 and each model year thereafter, but authorizes NHTSA to modify the standard, up or down. Where the agency chooses to modify, it must set the replacement standard at the "maximum feasible average fuel economy level." In determining "feasibility," NHTSA has always taken passenger safety into account, and the agency maintains that safety concerns are relevant to whether the agency should adopt one CAFE standard over another.

In August 1988, at the behest of various parties, including several major car makers and petitioner Competitive Enterprise Institute ("CEI"), NHTSA initiated a rulemaking proceeding on whether to reduce the CAFE standards for model years 1989 and 1990. The agency quickly lowered the standard for model year 1989 to 26.5 mpg, but it continued to hear public comment on whether to reduce the 1990 standard as well. Then, in May 1989, NHTSA terminated its proceedings on that issue and left the statutory standard in place.

While the agency rejected a variety of attacks on that standard, we are concerned with only one of the defeated arguments: the contention that the standard will force car makers to produce smaller, less safe cars, thus making it more difficult and expensive for consumers to buy larger, safer cars. We find that the agency has not coherently addressed this concern.

* * *

We must remand this case to NHTSA if the agency has not adequately explained why one of the following is false: (1) adopting a 27.5 standard (as opposed to a lower standard) will have some constraining effect on car makers; (2) car makers will, as one consequence of the standard, decrease the average size of their cars below what it would have been absent the standard; (3) this decrease will make it more difficult for consumers to drive large cars; and (4) all other things being equal, a large car is safer than a small car. The agency actually admits the truth of the fourth proposition, and we can find no passage in the record where the agency has coherently explained the falsehood of any of the others.

Constraining Automakers.

As the agency conceded at oral argument, the 27.5 mpg standard obviously affects car makers' behavior—if not in model year 1990, at least in subsequent years. Under the statute, if a car maker exceeds the applicable CAFE standard in one year, it earns credits

that it may use to offset CAFE deficiencies over the next three years. See 15 U.S.C. § 2002(l). At the very least, keeping the 1990 standard at 27.5 mpg reduces the number of carry over credits that GM can use to blunt the effect of the CAFE standards for model years 1991–93.... In fact, NHTSA recently declared that it would be unlawful for it to set "CAFE standards deliberately low enough to be—nonconstraining.'" It seems obvious, then, that the 27.5 mpg standard is constraining in one way or another.

Automakers' Likely Choice to Downsize.

Second, the agency insisted at oral argument that even if the 27.5 standard constrains the behavior of car makers, it will not lead to smaller cars. Yet nowhere has the agency actually justified this claim or even purported to make such a finding....

* * *

The historical fact is, however, that car makers respond to CAFE standards by reducing the size of their fleets. NHTSA itself has explicitly acknowledged as much in the past, and we ourselves have insisted that "the evidence shows that manufacturers are likely to respond to lower CAFE standards by continuing or expanding production of larger, heavier vehicles." Even in the decision below the agency acknowledged this link, explaining that "Chrysler's CAFE has been higher than that of GM or Ford in recent years primarily because it does not compete, or compete as heavily, in all the market segments in which GM and Ford sell cars, particularly the large car market."

The agency now tries to obscure this reality by pointing out that "the average fuel economy of the new car fleet has improved steadily from 26.6 mpg in model year 1982 to 28.2 mpg in model year 1987, while the average weight of a new car increased two pounds during the same period." This argument misses the point. The appropriate comparison, which NHTSA must but did not address, is between the world with more stringent CAFE standards and the world with less stringent standards. The fact that weight has remained constant over time despite mileage improvements shows the effect of technological improvements, to be sure, but in no way undermines the natural inference that weight is lower than it would be absent CAFE regulation. Here we can be quite sure that it is lower, since, as NHTSA observed in this decision, economic recovery and declining gasoline prices sharply raised consumer demand for large cars over the relevant period. If consumers demanded substantially bigger cars, car makers—absent regulation—would have produced substantially bigger cars, not cars that remained, on average, within two pounds of the cars made when consumers favored smaller cars. Moreover, NHTSA has given us no reason to think that whatever technological innovations permitted automakers to meet CAFE requirements while keeping weight constant did not also cost consumers more, again pricing some consumers out of the market for new large cars.

Effect on Consumer Access to Large Cars.

NHTSA also argues that even if the 27.5 mpg standard will deplete the supply of large GM or Ford cars, a consumer looking for a big car "will buy a large car from another manufacturer, or will buy a minivan, or will keep his or her older, large car.... [A]ny one of those alternative consumer outcomes is far more likely than the possibility that the consumer will buy a smaller car than he or she wanted to buy." Nothing in the record suggests that any of these will give consumers large-car safety at the prices that would have prevailed if NHTSA had made a less stringent choice.

The reference to buying large cars from "another manufacturer" is somewhat in the spirit of Marie Antoinette's suggestion to "let them eat cake." By NHTSA's own hypothesis, the "other manufacturers" are Chrysler, which has essentially removed itself from the

large car market, and foreign manufacturers, which are subject to CAFE standards on their U.S. sales.... To the limited extent that foreign firms produce truly large cars at all, they are expensive ones....

In suggesting minivans (which are exempt from the 27.5 standard), the agency disingenuously obscures their dangers by citing safety figures only for vans in general. As NHTSA itself has amply documented, however, minivans are considerably less safe than vans generally, with a fatality rate per registered vehicle about 25–33% higher than that of large cars. Finally, NHTSA's notion that the consumer should "keep his or her older, large car" ignores both its own finding that new cars "appear to experience fewer accidents per mile traveled," and the plight of consumers seeking to buy a large car for the first time.

Impact on Safety.

By making it harder for consumers to buy large cars, the 27.5 mpg standard will increase traffic fatalities if, as a general matter, small cars are less safe than big ones. They are, as NHTSA itself acknowledges. The agency explains:

> Occupants of the smaller cars generally are at greater risk because: (a) the occupant's survival space is generally less in small cars (survival space, in simple terms, means enough room for the occupant to be held by the vehicle's occupant restraint system without being smashed into injurious surfaces, and enough room to prevent being crushed or hit by a collapsing surface); (b) smaller and lighter vehicles generally have less physical structure available to absorb and manage crash energy and forces; and (c) in most collisions between vehicles of different weight, the forces imposed on occupants of lighter cars are proportionately greater than the forces felt by occupants of heavier vehicles.

NHTSA, *Small Car Safety in the 1980's* at 64 (1980).[1]

The agency tries to skirt the obvious conclusion with two specious arguments. First, it essentially argues that the 27.5 mpg standard will have no effect on the availability of large cars (i.e., will accomplish nothing at all). This, we have seen, is simply untrue. Second, the agency observes that new cars now come with a variety of mandatory and optional safety features (airbags, anti-lock brakes, etc.) that will presumably compensate for a decline in size.

There are two things wrong with this latter argument. First, so far as we can tell, the agency nowhere claims that these safety innovations fully or even mostly compensate for the safety dangers associated with downsizing. More critically, as in the relation between fuel economy and downsizing, the relevant inquiry is whether stringent CAFE standards reduce auto safety below what it would be absent such standards. That new safety devices may be coming on the market is all well and good, but it is immaterial to our inquiry unless the implementation of those devices somehow depends on or is caused by more stringent CAFE standards; no one even hints at such a link. Whatever extra safety devices may contribute to either type, small cars remain more dangerous than large ones, *all other things being equal.*

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1. One might argue that the third factor indicates that if all cars were small, there would be fewer traffic fatalities. Any such inference appears quite doubtful. Cars can hit a variety of objects, including trucks, trees, and other cars; fatalities in car-to-car crashes do not account for even a majority of passenger-car occupant fatalities. Moreover, while the record is not clear on the matter, it appears that the chance of fatality in crashes involving two big cars is substantially lower than the chance of fatality in crashes involving two small ones.

* * *

Nothing in the record or in NHTSA's analysis appears to undermine the inference that the 27.5 mpg standard kills people, although, as we observed before, we cannot rule out the possibility that NHTSA might support a contrary finding. Assuming it cannot, the number of people sacrificed is uncertain. Forced to confront the issue, the agency might arrive at an estimate lower than that of two independent analysts who came up with an annual death rate running into the thousands (for the cars produced in any *one* model year). See Robert W. Crandall & John D. Graham, T*he Effect of Fuel Economy Standards on Automobile Safety,* 32 J.L. & Econ. 97 (April 1989). Yet the actual number is irrelevant for our purposes. Even if the 27.5 mpg standard for model year 1990 kills "only" several dozen people a year, NHTSA must exercise its discretion; that means conducting a serious analysis of the data and deciding whether the associated fuel savings are worth the lives lost.

When the government regulates in a way that prices many of its citizens out of access to large-car safety, it owes them reasonable candor. If it provides that, the affected citizens at least know that the government has faced up to the meaning of its choice. The requirement of reasoned decision making ensures this result and prevents officials from cowering behind bureaucratic mumbo-jumbo. Accordingly, we order NHTSA to reconsider the matter and provide a genuine explanation for whatever choice it ultimately makes.

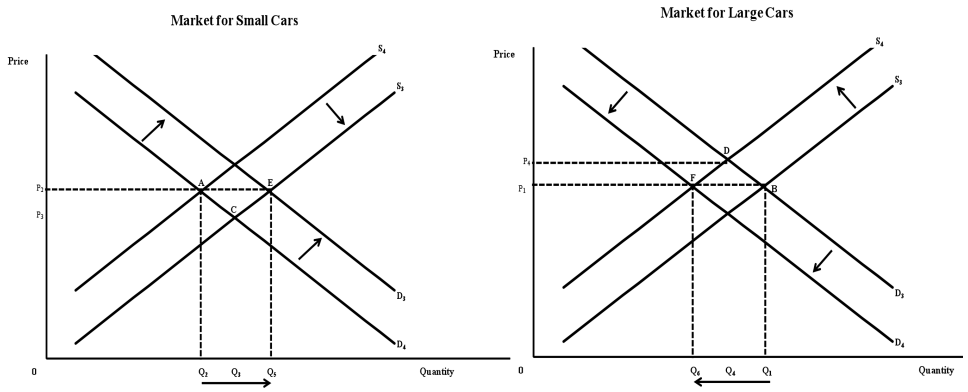
So ordered.

Notes and Questions

***1. Gasoline Prices and the Demand for Big Cars*:** The court, citing the NHTSA ruling, observes that "economic recovery and declining gasoline prices sharply raised consumer demand for large cars over the relevant period." The negative relationship between gasoline prices and consumer demand for large cars indicates that these two goods are complements.

2. First Order Effects: Impacts on Supply and Demand: Economics can be used to predict the effects of changes in constraints such as price, income, and regulations. CAFE requirements constrain manufacturers' choices regarding the possible combinations of fuel efficiency and safety in new cars. Thus, when the CAFE standard is changed, manufacturers must attempt to maximize profits subject to the new constraint. Let us assume that automobile manufacturers respond to the new constraint by shifting the productive capacity of their factories from large cars to small cars, because new technology is either too expensive or not currently available. Remember, however, that this substitution is at the margin. In other words, the manufacturers do not stop making large cars. The impact of these marginal changes on the markets for large and small cars can be seen by using supply and demand diagrams. Consider Figure II-11, which provides a diagrammatic representation of the large and small car markets prior to the imposition of higher CAFE standards. Note that before the standard is increased, the large car market is in equilibrium at price P_1 and quantity Q_1 and the small car market is in equilibrium at price P_2 and quantity Q_2. In order to increase the average fuel efficiency of their fleets, economic theory predicts that car manufacturers will respond by changing their production mix. That is, they shift their productive capacity from large cars to small, more fuel efficient, cars. This action is represented by an increase in supply for the small car market—a shift from S_1 to S_2—and a decrease in supply for large cars—a shift from S_3 to S_4. The effect of this action is to increase the quantity of small cars available—a move from Q_2 to Q_3—while

Figure II-11.



simultaneously decreasing the number of large cars available—a move from Q_1 to Q_4. Moreover, as the supply of small cars increases, the equilibrium price for small cars will fall to P_3 at Q_3. In the large car market, the decrease in supply leads to an increase in market price to P_4 at Q_4.

3. Second Order Effects: Impacts on Supply and Demand: The increase in the price of large cars and the decrease in the price of small cars, described as first order effects in note 2, will have an additional (or second order) effect on the market for cars. Among the other things that are usually held constant, the price of substitutes impacts the demand for products. The first order effects increase the price of large cars relative to small cars and decrease the price of small cars relative to large cars. These changes in relative prices should impact the demand for large and small cars. Specifically, we would expect a decrease in the demand for large cars and an increase in demand for small cars. In Figure II-11, this can be seen as an increase in demand from D_1 to D_2 in the small car market and a decrease in demand from D_3 to D_4 in the large car market. Both the first and second order effects cause the quantity of small cars to increase and the quantity of large cars to decrease. What is the ultimate impact on price?

4. Supply, Demand, and Changes in Technology: Assume that in order to meet the demand for large cars and also conform with more stringent CAFE standards, automakers could add a new fuel efficient technology to each new large car. This new technology can be added at a marginal cost of $5,000. With this added marginal cost, what would happen to the supply of large cars? An increase in the marginal cost of production causes the supply curve to shift to the left, indicating a decrease in supply. The effect of this change in supply is to decrease the quantity of large cars available and to increase the price of large cars. The end result is that fewer large cars are purchased and more small cars are purchased. Thus, regardless of whether manufacturers respond by changing the mix of small and large cars they produce (as in notes 2 and 3) or by adding new fuel efficient technology to new large cars, the effect in the new car market is an increase in the quantity of small cars and a decrease in the quantity of large cars. In other words, no matter how you want to look at it, the net effect of an increase in the CAFE standards is reduced automobile safety as small cars are substituted for large cars.

5. The Market for Used Cars: In general, older cars are less fuel efficient and emit more pollution than newer cars. Studies indicate that about 80% of automobile emission pollution is caused by about 20% of cars. An alternative to forgoing the purchase of a

new large car would be to hold on to your old large car or purchase a large used car. This seems to circumvent the intent of the Energy Policy and Conservation Act. Given that people are rational maximizers, it seems that the likely effects of more stringent CAFE standards are an increase in sales of small cars — resulting in a loss in safety — and a longer life for large old cars — resulting in higher gas consumption and pollution. A common source of error in economic policy analysis is to ignore the secondary effects of any action.

6. Judge Williams and the Margin: "The appropriate comparison, which NHTSA must but did not address, is between the world with more stringent CAFE standards and the world with less stringent standards." Marginal analysis concerns the costs and benefits caused by a change in the law, regulation or some other constraint.

7. Manufacturers' Opportunity Costs: If manufacturers could comply with a 27.5 standard, why should they be concerned about the increase from 26.5 to 27.5? Remember, whenever there is a choice, there is a cost.

*8. Consumers Substitute at the Margin***:** The increase in the price of large cars and the decrease in the price of small cars would lead some consumers to purchase small cars instead of large cars. Some consumers will shift to smaller cars and, in doing so, knowingly increase their risk of being killed in an automobile accident. For these marginal consumers, their "marginal cost" of the additional risk is less than the marginal benefit due to savings from buying a cheaper, smaller, more fuel efficient, and riskier car. People often claim that life is priceless, but consumers' behavior often indicates that they are willing to trade off the increased risk of being killed in order save money on the purchase of an automobile.

9. Infra-Marginal Consumers: Some consumers are not at the margin. For example, an increase in the relative price of a bigger car may not affect an individual's decision to purchase a big car. Such consumers are said to be **infra-marginal;** that is, the higher price for bigger cars does not affect their decision. This could be a reflection of their attitude toward the risk associated with getting killed in an automobile accident or it could be a reflection of their strong preference for bigger cars. Can you think of products where a price change would not affect your behavior?

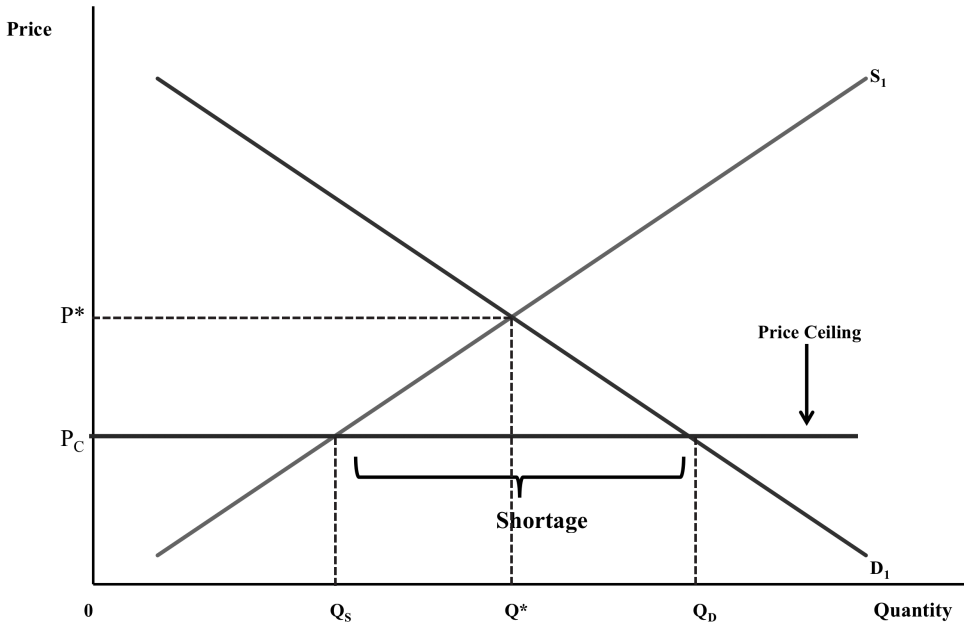
F. Price Controls

In general, the interaction of supply and demand results in a market clearing price where the quantity demanded equals the quantity supplied. Occasionally, however, artificial (non-market) restraints on the ability of the market price to adjust to disequilibria between the quantity demanded and quantity supplied are imposed. The most common types of **price controls** are price ceilings and price floors.

1. Price Ceilings

A **price ceiling** is a restraint on the maximum price that may be charged for a particular good or service. In order to have an impact on market behavior, the price ceiling must be set below the market clearing price. The impact of a price ceiling is demonstrated in Figure II-12, where P^* and Q^* represent the market clearing price and quantity. P_C represents the price ceiling. At P_C, the quantity demanded, Q_D, is greater than the quantity supplied, Q_S. When the quantity demanded is greater than the quantity supplied, a

Figure II-12. Price Controls: A Price Ceiling



shortage or **excess demand** exists. However, the price control prevents the market from adjusting to correct this disequilibrium.

In general, as illustrated by the next two cases, the existence of a shortage usually results in the allocation of supply through less efficient means such as waiting in line, bribes, or the requirement that the buyer also purchase other goods from the seller.

M. Kraus & Bros., Inc. v. United States

Supreme Court of the United States
327 U.S. 614 (1945)

Justice Murphy announced the conclusion and judgment of the Court.

The problem here is whether the petitioner corporation was properly convicted of a crime under the Emergency Price Control Act of 1942.

The petitioner is engaged in the wholesale meat and poultry business in New York City. Poultry is a commodity subject to the provisions of Revised Maximum Price Regulation No. 269, promulgated by the Price Administrator pursuant to § 2(a) of the Emergency Price Control Act of 1942.…

The theory of the Government is that [during Thanksgiving in November, 1943] the petitioner was guilty of an evasion of the price limitations set forth in this particular regulation if it required the purchase of chicken feet and skin as a necessary condition to obtaining the primary commodity, the poultry. This practice is commonly known as a "combination sale" or a "tying agreement." It is argued that the petitioner thereby received for the poultry the ceiling price plus the price of the secondary commodities, the chicken parts.

* * *

The jury acquitted petitioner's president but convicted the petitioner on nine counts. Petitioner was fined $2,500 on each count, a total of $22,500. The conviction was affirmed by the court below.... In our opinion, however, the conviction must be set aside.

* * *

The Price Administrator, pursuant to §2(a) [of the Emergency Price Control Act of 1942], issued Revised Maximum Price Regulation No. 269 on December 18, 1942, which regulation was in effect at the time the poultry sales in question were made. §1429.5 of this regulation ... is entitled "Evasion" and reads as follows: "Price limitations set forth in this Revised Maximum Price Regulation No. 269 shall not be evaded whether by direct or indirect methods, in connection with any offer, solicitation, agreement, sale, delivery, purchase or receipt of, or relating to, the commodities prices of which are herein regulated, alone or in conjunction with any other commodity, or by way of commission, service, transportation, or other charge, or discount, premium, or other privilege or other trade understanding or otherwise."

* * *

Th[e] delegation to the Price Administrator of the power to provide in detail against circumvention and evasion, as to which Congress has imposed criminal sanctions, creates a grave responsibility. In a very literal sense the liberties and fortunes of others may depend upon his definitions and specifications regarding evasion. Hence to these provisions must be applied the same strict rule of construction that is applied to statutes defining criminal action. In other words, the Administrator's provisions must be explicit and unambiguous in order to sustain a criminal prosecution; they must adequately inform those who are subject to their terms what conduct will be considered evasive so as to bring the criminal penalties of the Act into operation.

* * *

In light of these principles we are unable to sustain this conviction of the petitioner based upon §1429.5 of Revised Maximum Price Regulation No. 269. For purposes of this case we must assume that the Administrator legally could include tying agreements and combination sales involving the sale of valuable secondary commodities at their market value among the prohibited evasion devices.... The only issue bearing upon the regulation which is open in this criminal proceeding is whether the Administrator did in fact clearly and unmistakably prohibit tying agreements of this nature by virtue of the language he used in §1429.5. That issue we answer in the negative.

Section 1429.5, so far as here pertinent, provides that price limitations shall not be evaded by any method, direct or indirect, whether in connection with any offer or sale of a price-regulated commodity alone "or in conjunction with any other commodity," or by way of any trade understanding "or otherwise." No specific mention is made of tying agreements or combination sales.

* * *

The language of §1429.5 is appropriate to and consistent with a desire on the Administrator's part to prohibit only those tying agreements involving tied-in commodities that are worthless or that are sold at artificial prices. The Administrator may have thought that other tied-in sales did not constitute a sufficient threat to the price economy of the nation to warrant their outlawry, or that they were such an established trade custom that they should be recognized. But we are told that he had no such thought, that prohibition of all tying agreements is essential to prevent profiteering, and that this blanket prohibition

is the only policy consistent with the purposes of the Act. All of this may well be true. But these are administrative judgments with which the courts have no concern in a criminal proceeding. We must look solely to the language actually used in § 1429.5. And when we do we are unable to say that the Administrator has made his position in this respect self-evident from the language used.

* * *

The case must therefore be remanded for a new trial, allowing full opportunity for the introduction of evidence as to the value of the chicken parts and charging the jury in accordance with the proper interpretation of § 1429.5.

It is so ordered.

* * *

Black, J. dissenting.

We were at war in 1943. Scarcity of food had become an acute problem throughout the nation. To keep the public from being gouged the government had set ceiling prices.... When Thanksgiving Day approached there were not enough turkeys to supply the demand of the many American families who wanted to celebrate in customary style.

... This meat shortage was felt acutely during the Thanksgiving season, when petitioner instead of his usual 100 to 150 cars of turkeys received only one car. When the retail butchers and poultry market proprietors came clamoring for their share of the small supply (which the defendant rationed among them) they found that along with the turkeys which they wanted so badly petitioner gave and charged them for large amounts of chicken feet, skins and gizzards which they had not asked for at all and which for the most part they had never before sold as separate items. While the butchers paid in addition to the ceiling price charged for the turkeys the price charged for the chicken skins and feet, they did so only because they understood that unless they bought these unwanted items they could get no turkeys. Only one of the butchers sold all the chicken skins to his customers. He explained that he operated his store in a poor neighborhood where the food shortage had become so acute that people were willing to buy anything they could get. As to the rest of the butchers, some simply dumped the chicken skins and feet while others, after diligent efforts, sold a few pounds then gave the rest away either to their customers, or to charitable institutions. Certainly these particular butchers forced to buy these unwanted items for the first time were not the regular retail outlet for disjointed chicken feet and peeled chicken skins, if there ever was such an outlet on a voluntary basis. It is clear therefore that as a result of petitioner's forcing his customers to buy the feet and skins along with the turkeys, the retailers' cost price of the turkeys was in effect increased beyond the ceiling.

In my opinion petitioner's practice in forcing the butchers to buy unwanted chicken feet in order to get wanted turkeys amounted to a direct violation of the Price Control Act. It certainly was no less a violation of the Administrator's regulation against evasion. In promulgating this regulation the Administrator could not possibly foresee every ingenious scheme or artifice the business mind might contrive to shroud violations of the Price Control Act. The regulation does not specifically describe all manner of evasive device. The term "tying agreement" nowhere appears in it and a discussion of such agreements is irrelevant. We need not decide whether what a petitioner did would have violated every possible hypothetical regulation the Administrator might have promulgated. The regulation here involved prohibits every evasion of the Price Control Act....

* * *

When food is scarce and people are hungry it is a violation, both of the letter and spirit of the Price Control Laws, to require consumers or retail stores where they make their purchases, to buy things that they neither need nor want as a condition to obtaining articles which they must have. I dissent from the Court's disposition in this case.

Notes and Questions

1. The Value of Chicken Feet and Skin: In this case, the Court does not say anything regarding the merits of price control laws. Rather, the Court finds the regulation regarding evasion of the price control law to be defective. The defect identified by the Court is that the section lacks clarity regarding the types of behavior that would be regarded as evasive. Specifically, the regulatory language was consistent with a prohibition against tie-in sales involving only worthless commodities—it is possible that the chickens' feet and skin had a market value equal to the difference between the total price paid to petitioner and the market value of the turkey. Whether the chickens' feet and skin was a worthless commodity is a decision left to the finder of fact upon remand.

2. Punishing the Nature of Man?: The Court applies a "strict rule of construction" in defining the evasion provision. This is done because the price fixing regulation was enforced with criminal penalties. Why does the Court use a higher standard of interpretation when criminal penalties are involved? What implicit assumption regarding human behavior is the Court using to justify this standard?

3. Price Gouging or a Change in Demand?: We often hear political and social commentators accuse the business world of engaging in price gouging. It is supposed that price gouging occurs when the seller recognizes that supply will be short in the future and raises present prices in order capture a windfall. Does this allegation make any sense? What do you think happened to the demand for plywood after hurricane Katrina hit Louisiana and Mississippi during the 2005 hurricane season? Based on the tremendous amount of damage to housing, it is likely that the demand for plywood increased. As suppliers of plywood in Louisiana and Mississippi recognized that they did not have enough plywood in stock, we would expect profit maximizing individuals in the rest of the country to begin sending plywood to Louisiana and Mississippi. Thus, the price of plywood would be expected to increase in Louisiana and Mississippi and the remainder of the country due to the increase in demand for this commodity. In general, one should be very skeptical of accusations of price gouging.

4. Using the Market to Solve the Hurricane Problem: From the previous note, we know that as a result of the hurricanes, the demand for plywood in Louisiana and Mississippi increased causing the price of plywood across the country to rise. Consider the effect that a price increase would have on consumer behavior. Suppose Walt Williams, who lives in Virginia, is thinking about building his dog a house. As the price of plywood increases, Walt decides that it is getting too expensive to build a dog house and that his dog can just sleep in the rain. However, the people who have lost their homes in Louisiana and Mississippi value this same plywood very highly—they are pleased with Walt's decision. In fact, social welfare is maximized by having the people in Louisiana and Mississippi use the plywood to rebuild their homes, as opposed to Walt building a dog house. Was any law passed by Congress to get this result? Did the President need to issue an executive order commanding that plywood not be used to build dog houses? Was the fact that the hardware store in Walt's neighborhood raised its price for plywood—because people were willing to pay more in Louisiana and Mississippi—generally helpful or harmful to society? Did Walt forgo the use of wood because he is a humanitarian and felt sorry for the homeless people

in Louisiana and Mississippi? The answer to all of these questions is that the market works—it quickly and anonymously allocates resources to those who desire them the most. In times of natural disasters, so-called "price gouging" encourages suppliers to provide important goods, such as plywood, water, gasoline, etc., to the necessary markets.

5. Using Price Controls to Solve the Hurricane Problem: What would have happened in the hurricanes example if Congress had enacted an Emergency Plywood Price Control Act? Assume that the price control imposes a market price equal to the historical price level for plywood. What effect does this have on consumer behavior? What does Walt now think about building his dog a house? Because the price of plywood is now at its historical level, Walt decides to build a dog house. Thus, less plywood is available to rebuild homes in Louisiana and Mississippi—quantity demanded exceeds quantity supplied. In other words, we have a shortage in the plywood market. Prices kept artificially low discourage the extra effort among suppliers to bring important goods to market during times of natural disasters. Is the result achieved using the market or price controls more beneficial to society in general?

6. Laws Against Scarcity?: Justice Black observes that scarcity of food had become a nationwide problem and that "[t]o keep the public from being gouged"—that is, facing higher prices—"the government had set ceiling prices." Moreover, "[w]hen Thanksgiving Day approached there were not enough turkeys to supply the demand of many American families who wanted to celebrate in the customary style." It should be obvious by this point that Justice Black is misguided in his assessment that the public is being gouged—see note 3. However, what do you think about his statement regarding the supply of turkey? Justice Black observes that there will not be enough turkeys for many Americans to celebrate Thanksgiving in the "customary style." What is the point of this observation? The facts of the case seem to indicate that the same quantity of turkey will be available no matter what the method of distribution. That is, even if a price control were imposed and there was no evasion, people would still have to stand in a line in hopes of getting one of the few available turkeys. In fact, the same number of people who got a turkey with the evasion present will get one without it. The flip side of this is that, no matter what, the same number of Americans will be able to celebrate Thanksgiving in the "customary way."

Perhaps Justice Black is concerned with the "fairness" of the distribution method. The likely alternative if all evasion could be stopped would be a long line forming in front of the store. Is this the best use of our time and resources? Consider two possible results of full enforcement of price control laws. First, everyone takes off work to get in line, days ahead of time, in order to get a turkey. Would this have been a good result? Remember that during this time period, labor was in great demand—the opportunity cost of not working was high. Second, a more likely story is that people would not have taken off work because they could not afford to sacrifice that income for a turkey. Thus, only those families generating enough income to allow some family members not to work outside of the home, would be able to stand in the line to buy turkey. Was this the desired result? Even here we have an efficiency loss, because these individuals are no longer working at home if they are standing in line. If the market had been allowed to work (i.e., no price controls), families with greater incomes probably would have purchased the turkeys. The fact that turkeys would have sold for a higher price and would have been allocated to those who valued turkey the highest is further supported by a third possibility. Even if turkeys were somehow allocated in a random manner at the price controlled level, an incentive exists for a black market to develop. That is, individuals who get a turkey for the controlled price will turn around and sell it to someone else for a higher price—pre-

sumably, the market price. This analysis seems to indicate that through some way or another, turkeys will be allocated to those individuals willing to pay the *market* price. Then why opt for the less efficient distribution method?

7. Anti-Price Gouging Laws and the Black Market: Just as the price-ceiling discussed in the previous note would likely result in a black market for turkeys, there are numerous examples of black markets developing after governments enact anti-price gouging laws. For example, after Hurricane Sandy restricted gasoline supply in New Jersey in November of 2012, anti-price gouging laws were supposed to keep pump prices low. However, black markets immediately appeared: Twitter posted tweets offering to pay much higher prices than retailers could legally charge; on-line ads offered gasoline for $15 or $25 per gallon, and other ads even proposed a variety of personal services, instead of a cash payment, in exchange for gasoline.

8. The Chicken Skin Entrepreneur?: It is a fact of the case that not only is turkey scarce, but food in general is scarce. According to the testimony of one of the butchers, he was able to sell the chicken skin to his customers. That is, people who were not able to afford turkey or find other food now had food available to purchase. Thus, we can assume that to many consumers these skin and feet were worth something. In fact, those butchers who threw the skin away wasted a resource that some consumers value. Moreover, for Justice Black to assume that these commodities have a zero value adopts a static view of the market process. In other words, perhaps when turkey is widely available, chicken skin has zero value, but when turkey and food in general are more difficult to obtain, chicken skin is valuable to those who are hungry. When an individual sees a new use for a resource that is valued more highly than its opportunity cost, that individual is called an entrepreneur and is rewarded with economic profits. Why is the petitioner not seen in this light? Why is the petitioner not rewarded for his entrepreneurial behavior?

The next case, *Jones v. Star Credit Corp.,* involves the sale of a freezer for four times its retail value to a welfare recipient. At the time of sale, the state of New York had imposed usury laws which put a limit on the maximum interest rate that creditors could charge—a limit on the maximum price that can be charged for a loan. How would you expect the market to allocate credit under a usury, price ceiling scenario? While reading the case, consider how Star Credit Corp. attempts to circumvent the usury law. Furthermore, is this an efficient way to allocate credit?

Jones v. Star Credit Corp.

Supreme Court of New York
298 N.Y.S.2d 264 (1969)

Sol Wachtler, J.

On August 31, 1965 the plaintiffs, who are welfare recipients, agreed to purchase a home freezer unit for $900 as the result of a visit from a salesman representing Your Shop At Home Service, Inc. With the addition of the time credit charges, credit life insurance, credit property insurance, and sales tax, the purchase price totaled $1,234.80. Thus far the plaintiffs have paid $619.88 toward their purchase. The defendant claims that with various added credit charges paid for an extension of time there is a balance of $819.81 still due from the plaintiffs. The uncontroverted proof at the trial established that the freezer unit, when purchased, had a maximum retail value of approximately $300. The question is whether this transaction and the resulting contract could be considered unconscionable within the meaning of Section 2-302 of the Uniform Commercial Code. . . .

There was a time when the shield of "caveat emptor" would protect the most unscrupulous in the marketplace—a time when the law, in granting parties unbridled latitude to make their own contracts, allowed exploitive and callous practices which shocked the conscience of both legislative bodies and the courts.

The effort to eliminate these practices has continued to pose a difficult problem. On the one hand it is necessary to recognize the importance of preserving the integrity of agreements and the fundamental right of parties to deal, trade, bargain, and contract. On the other hand there is the concern for the uneducated and often illiterate individual who is the victim of gross inequality of bargaining power, usually the poorest members of the community.

Concern for the protection of these consumers against overreaching by the small but hardy breed of merchants who would prey on them is not novel. The dangers of inequality of bargaining power were vaguely recognized in the early English common law when Lord Hardwicke wrote of a fraud, which "may be apparent from the intrinsic nature and subject of the bargain itself; such as no man in his senses and not under delusion would make." . . .

The law is beginning to fight back against those who once took advantage of the poor and illiterate without risk of either exposure or interference. From the common law doctrine of intrinsic fraud we have, over the years, developed common and statutory law which tells not only the buyer but also the seller to beware. This body of laws recognizes the importance of a free enterprise system but at the same time will provide the legal armor to protect and safeguard the prospective victim from the harshness of an unconscionable contract.

* * *

Fraud, in the instant case, is not present; nor is it necessary under the statute. The question which presents itself is whether or not, under the circumstances of this case, the sale of a freezer unit having a retail value of $300 for $900 ($1,439.69 including credit charges and $18 sales tax) is unconscionable as a matter of law. The court believes it is.

Concededly, deciding the issue is substantially easier than explaining it. No doubt, the mathematical disparity between $300, which presumably includes a reasonable profit margin, and $900, which is exorbitant on its face, carries the greatest weight. Credit charges alone exceed by more than $100 the retail value of the freezer. These alone, may be sufficient to sustain the decision. Yet, a caveat is warranted lest we reduce the import of Section 2-302 solely to a mathematical ratio formula. It may, at times, be that; yet it may also be much more. The very limited financial resources of the purchaser, known to the sellers at the time of the sale, is entitled to weight in the balance. Indeed, the value disparity itself leads inevitably to the felt conclusion that knowing advantage was taken of the plaintiffs. In addition, the meaningfulness of choice essential to the making of a contract can be negated by a gross inequality of bargaining power. (Williams v. Walker-Thomas Furniture Co.)

There is no question about the necessity and even the desirability of installment sales and the extension of credit. Indeed, there are many, including welfare recipients, who would be deprived of even the most basic conveniences without the use of these devices. Similarly, the retail merchant selling on installment or extending credit is expected to establish a pricing factor which will afford a degree of protection commensurate with the risk of selling to those who might be default prone. However, neither of these accepted premises can clothe the sale of this freezer with respectability.

* * *

Having already paid more than $600 toward the purchase of this $300 freezer unit, it is apparent that the defendant has already been amply compensated. In accordance with the statute, the application of the payment provision should be limited to amounts already paid by the plaintiffs and the contract be reformed and amended by changing the payments called for therein to equal the amount of payment actually so paid by the plaintiffs.

Notes and Questions

1. Usury Laws: A Form of Price Control: A limit on the maximum interest rate that a lender can charge is called a usury law. To be effective, the maximum interest rate must be set at a level below the current market interest rate. A usury law is therefore simply a form of price ceiling—an interest rate is simply the price paid for financing. When the maximum legal rate is below the market rate, the quantity of credit demanded will exceed the quantity of credit supplied. However, because of the legal constraint, interest rates will not be allowed to adjust upward in order to eliminate the shortage. Thus, it appears as if a shortage will continue to exist. However, this is not the end of the story. Creditors and borrowers have an incentive to get around usury laws. In other words, loans will be allocated by a non-interest rate mechanism.

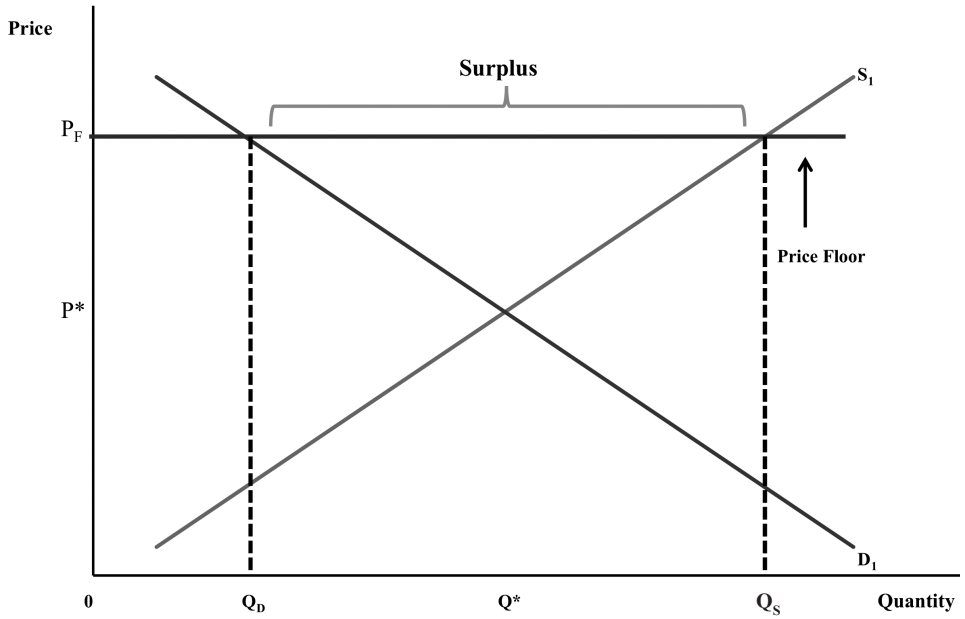
2. Interest Rates: In general, an interest rate has three components contributing to its sum. First, a portion of the interest rate reflects the opportunity cost of the principal in some other use. Second, an addition is made to reflect the expectation of inflation. Third, a premium is added to any interest rate based upon the risk of default. The riskier the investment, the higher the rate. This formulation of the interest rate suggests that a systematic bias will develop under usury laws. Namely, high risk individuals will not be able to obtain loans. The question then becomes: are these high risk individuals better off paying high interest rates for credit or not having the option of credit at all?

3. Circumventing Usury Laws: Some firms that extend credit to high risk individuals as a regular part of their business have found ways to circumvent usury laws. Consider the local appliance store that wishes to make a sale on credit to a high risk individual but cannot charge the market interest rate. Instead of forgoing the sale, store owners have developed resourceful methods for maximizing profits. For example, assume that the market price for the new appliance is $500. The customer, however, is considered to be a high risk for default. Thus, an interest rate in excess of the legal limit would be required to consummate the sale. One way around this is for the seller to charge the buyer a price in excess of the market price for the appliance. For example, the appliance store may charge $750 for the appliance despite its market price of $500. The seller has parted with a $500 appliance, but is charging interest on the principal of $750. Monthly payments to the store owner will include an amount based on the principal and interest on this fictional credit extension. The payments on the fictional credit of $250, paid back over the course of the loan at the legal interest rate, will be sufficient to compensate the store owner as if he had charged the high risk interest rate on the true market price of $500. By raising the price, and therefore the original principal, above the market price, the seller is compensated for the risk below market interest rate. The calculation of such numbers is covered in Chapter X, Principles of Valuation.

2. Price Floors

A **price floor** is a price control that prevents the sale of a product below a certain minimum level. A price floor must be set greater than the market clearing price in order

Figure II-13. Price Floor



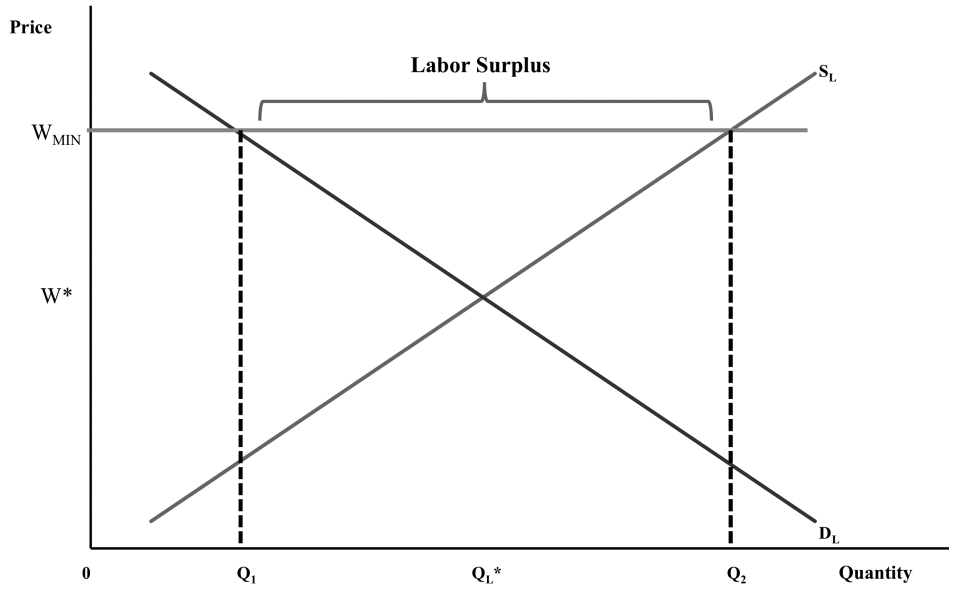
to have an impact on market behavior. In Figure II-13, the equilibrium price and quantity are indicated by P* and Q*, respectively. The price floor, P_F, causes quantity supplied, Q_S, to be greater than quantity demanded, Q_D. This disequilibrium condition is referred to as a **surplus** or **excess supply**. In order to sell their goods and services when the market is constrained by a price floor, the sellers must offer non-price incentives, such as better services, "free" gifts, and rebates.

A familiar example of a price floor is the minimum wage law enacted by the federal government, which is discussed in more detail in Chapter VIII. The intent of the minimum wage law is to provide workers with a "fair wage" for their work and to reduce the incidence of poverty. Using the supply and demand model, we can quickly determine whether minimum wage laws work and whether they have unintended consequences.

In order for the minimum wage to have an impact, it must be set at a rate above the market wage for those employees who are the intended beneficiaries of the law. In Figure II-14, the market wage is represented by W* and the mandated minimum wage is denoted by W_{MIN}. As we observed above, the result of mandating a price floor is to cause quantity supplied to exceed quantity demanded. At the higher wage, the quantity demanded decreases to Q_1 and the quantity supplied increases to Q_2. The excess supply, equal to $Q_2 - Q_1$, is a surplus of labor. However, because of the minimum wage law, price and quantity cannot adjust back to the market equilibrium. Under an effective minimum wage—that is, a minimum wage above the market clearing wage—some individuals keep their jobs and increase their earnings, some individuals lose their jobs, and some individuals enter the job market seeking the now higher wage.

Think about the result of minimum wage laws: the quantity of available jobs has decreased but those who do have jobs are paid a higher "fair wage." Moreover, the remaining jobs are allocated in a highly competitive process to those with the best potential or skill.

Figure II-14. Minimum Wage Law's Effect on the Labor Market



Those who cannot find jobs in the labor market are those with lower education or little work experience. Such laws seem to perpetuate the poverty of some while increasing the wages of others. Was this the intended consequence?

In July 2013, Wal-Mart announced that it would abandon plans to build three new stores in Washington, D.C., if the D.C. Council approved a proposal to require non-unionized "big box" stores to pay a "living wage"—$12.50 an hour, a 50 percent premium over the D.C. minimum wage. Is this an illustration of the predicted economic effects of a price floor or simply strategic bargaining by Wal-Mart?

3. The Quality of Products and Services in a Price-Controlled Market

An additional implication of price controls is interesting and relevant to understanding the competitive market process. We have assumed in the foregoing discussion that the quality of goods and services produced remains the same after price controls are established. However, this is generally not the case. Consider a price control example from the area of property law.

Rent controls are a form of price ceiling. Often the justification for such laws is the protection of low income individuals. Nonetheless, the long run effect of rent control seems to harm low income individuals the most. For example, one effect of rent control is the decay of the buildings. This is understandable because landlords' maintenance costs often exceed their rental income. Furthermore, what incentive for improvements exists when rental income is fixed? A second negative effect is the disincentive rent controls create for building new rental property. As populations grow, the demand for rental space begins to exceed supply. However, because of rent control there is little incentive to build new rental property. Thus, it is not unusual to find families living in very cramped quarters. Rent controls also create the incentive for a black market to develop. Those who were

lucky enough to be renting property at the controlled rate make a profit by subletting at very high prices. The market clears, but only with the help of illegal transactions.

Price ceilings such as rent control can also lead to discrimination. In a free market, prices adjust to eliminate shortages so that the buyers willing to pay the market price are typically able to purchase the good. However, shortages induced by price ceilings require suppliers to choose among the many buyers that are willing to purchase a good. According to Armen Alchian:

> [I]f the government imposes rent controls that keep the rent below the free-market level, the price the landlord pays to discriminate falls, possibly to zero. The rent control does not magically reduce the demand for apartments. Instead, it reduces every potential tenant's ability to compete by offering more money. The landlord, now unable to receive the full money price, will discriminate in favor of tenants whose personal characteristics — such as age, sex, ethnicity, and religion — he favors. Now the black woman seeking an apartment cannot offset the disadvantage of her skin color by offering to pay a higher rent.
>
> Competition for apartments is not eliminated by rent controls. What changes is the "coinage" of competition. The restriction on private property rights reduces competition based on monetary exchanges for goods and services and increases competition based on personal characteristics. More generally, weakening private property rights increases the role of personal characteristics in inducing sellers to discriminate among competing buyers and buyers to discriminate among sellers.

Armen A. Alchian, *Property Rights*, in The Concise Encyclopedia of Economics (2008).

G. Elasticity: The Responsiveness of Supply and Demand to a Price Change

The supply and demand framework is helpful in analyzing many real-world problems. Thus far, we have established the simple proposition that the quantity supplied or demanded will be responsive to changes in the market price. This proposition leads us to a second line of analysis — *how responsive* are quantity demanded and supplied to changes in price? Will a small change in price lead to a large change in the quantity demanded or only a relatively small change? Economists use the concept of elasticity to measure the relative responsiveness of the quantity demanded or supplied to changes in price. In general, **elasticity** is a measure of the relative responsiveness of a dependent variable to a change in an independent variable. As such, many different types of elasticity can be measured. In this section, we are only concerned with price elasticity. **Price elasticity** is a measure of the relative responsiveness of the quantity demanded or supplied to changes in price.

1. Elasticity of Demand

Elasticity of demand is a measure of consumer responsiveness to price changes. Specifically, the elasticity of demand is the percent change in quantity demanded divided by the percent change in price.[2] The elasticity of demand is often indicated by the demand

2. In actual calculation, the demand elasticity coefficient will always be negative, because of the law of demand. If price goes up, quantity demanded for a good or service goes down, and vice versa.

elasticity coefficient E_d—a numerical representation of the ratio of the percent change in quantity over the percent change in price.

Elasticity of Demand = % Change in Quantity Demanded ÷ % Change in Price

Elastic demand describes a situation in which the percent change in quantity demanded is greater than the percent change in price—thus, the demand elasticity coefficient is greater than 1. Elastic demand means buyers are very responsive to price changes. As the demand elasticity coefficient increases above 1, demand becomes more elastic. In contrast, **inelastic demand** describes a situation in which buyers are not very responsive to changes in price—the percent change in quantity demanded is less than the percent change in price. In this situation, the demand elasticity coefficient is less than 1. As the coefficient moves away from 1 and becomes infinitely closer to 0, demand is said to become more inelastic. **Unit elasticity of demand** is a situation in which the percent change in quantity demanded is the same as the percent change in price. Thus, the demand elasticity coefficient is equal to 1.

Figure II-15 illustrates the relationship between price and quantity demanded for the different categories of elasticity. Each panel shows the effect of a 25% price increase on the quantity demanded. Thus, the shifting of price along the vertical axis is the same in all three panels. In terms of impact on the quantity demanded, each of the panels shows a different horizontal shift. The varying results for quantity demanded are a result of differently sloped demand curves. In panel (a), quantity demanded falls by 10% which is less than the 25% change in price. Thus, panel (a) provides an example of an inelastic demand curve. Notice that inelastic demand curves have a relatively steeper slope—a slope with an absolute value greater than one. Price and quantity both change by 25% in panel (b) indicating the presence of unit elasticity. Demand curves exhibiting unit elasticity have a slope with an absolute value equal to one. Quantity demanded falls by 35% in panel (c) which exceeds the 25% change in price. The demand curve in panel (c) is therefore elastic as demonstrated by its relatively flat slope—a slope with an absolute value less than one.

Two extreme forms of the demand curve are helpful in analyzing many economic problems. Figure II-16(a) shows a demand curve that is totally elastic. When the demand curve is **totally elastic**, the quantity demanded is completely responsive to price changes—a small increase in price will cause the quantity demanded to disappear. Thus, the demand elasticity coefficient equals infinity. A totally elastic demand curve would occur in a perfectly competitive market. However, perfectly competitive markets are rare. Figure II-16(b) shows a demand curve that is **totally inelastic**—quantity demanded is unresponsive to changes in price. A totally inelastic demand curve has a demand elasticity coefficient of zero. It is often suggested that a heroin addict's demand for heroin is totally inelastic.

For ease of exposition, demand curves are usually drawn as straight lines. The elasticity of demand for such linear demand curves contains portions that are elastic, unit elastic, and inelastic. Thus, the elasticity coefficient will vary along demand curves. For example, consider the market demand for pizza graphed in Figure II-17. The slope of the curve is constant throughout, as indicated by the fact that the increase in quantity demanded in response to a price decrease of $1 is the same for every $1 price interval. Another way

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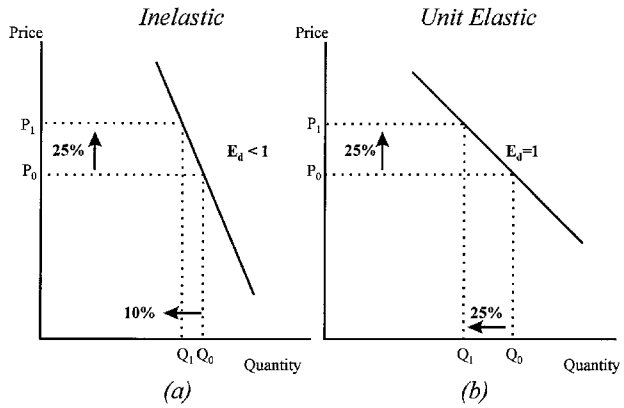
For purposes of our exposition, this point is irrelevant to the interpretation of elasticity. We will accordingly eliminate the use of a negative sign before the demand elasticity coefficient.

Figure II-15. Elasticities of Demand



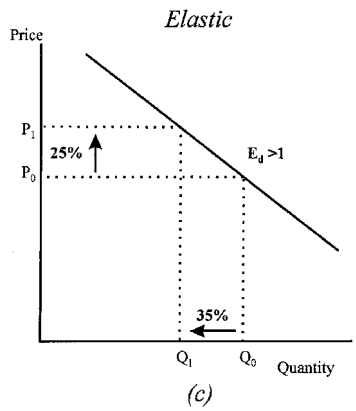


Figure II-16. Totally Elastic & Inelastic Demand Curves

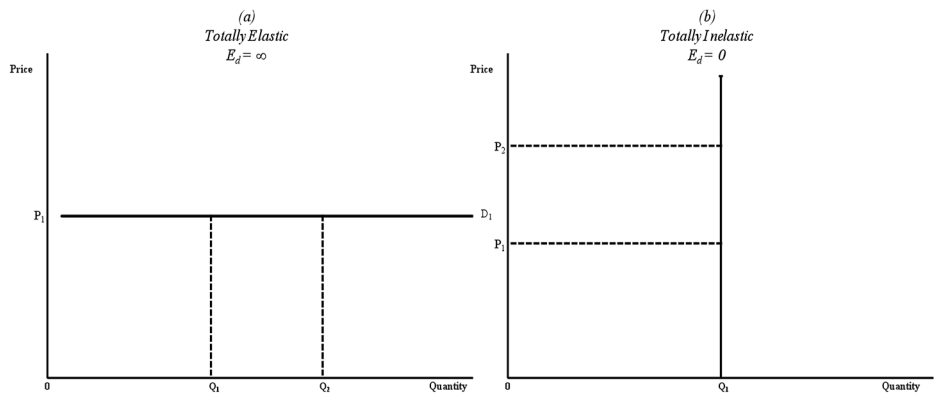
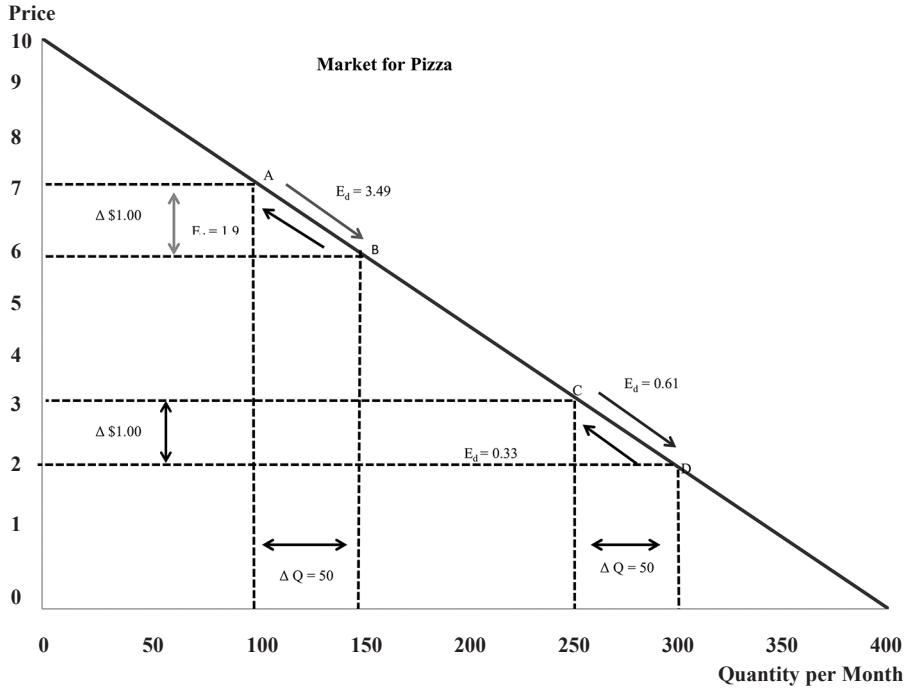


Figure II-17. Differing Elasticities along a Market Demand Curve

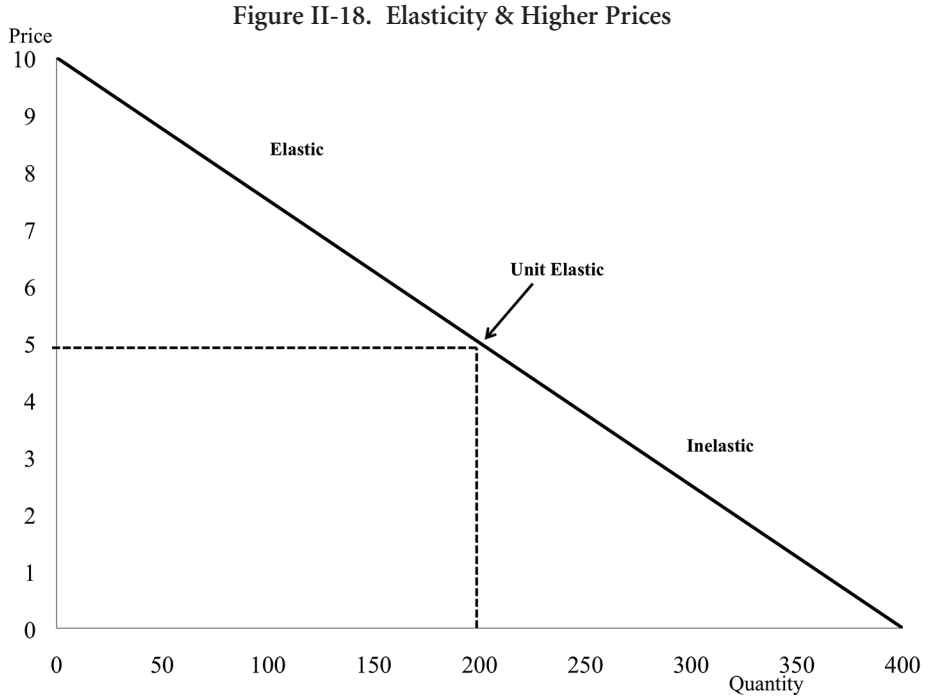


of stating this is to observe that a decline in price from $7 to $6 results in the same increase in the quantity demanded as does a decline from $3 to $2. Despite this, the elasticity of demand is greater at the higher prices. The move from A to B represents a 50% increase in quantity demanded and a 14.29% decrease in price—and this translates into an elasticity of demand of 3.49. Note that the move from B to A indicates elasticity of 1.9. The difference between the calculations illustrates that the relevant percentages change depending on the direction of the change in price. A $1 decline resulting in a move from C to D yields a relatively inelastic demand of 0.61—a 20% increase in quantity and a 33% decrease in price.

Two conclusions can be drawn from the analysis in Figure II-17. First, it does not make sense to refer to the demand for a particular good or service as being elastic or inelastic unless that reference is qualified by a price range. This is due to the fact that the elasticity of goods and services can change as prices change. Second, consumers are generally more responsive to price changes at higher prices than lower prices. Notice that the portion of the demand curve associated with higher prices is elastic and the portion associated with lower prices is inelastic. In Figure II-18, the point at which the curve goes from being elastic to inelastic is where there is unitary elasticity of demand.

The demand elasticity concept can also be utilized to analyze the effect of price changes on total revenue or total expenditures. First, it is necessary to point out that the terms total revenue and total expenditures describe two perspectives for the same money. **Total revenue** is the product of price times quantity. Total revenue represents the total amount of money that the supplier receives from the buyer. It is intuitive that a dollar spent by the consumer is the same dollar that the seller considers to be revenue. Thus, **total expenditures** can also be defined as the product of price and quantity. Total expenditures represent the total amount of money that the buyer gives to the supplier.

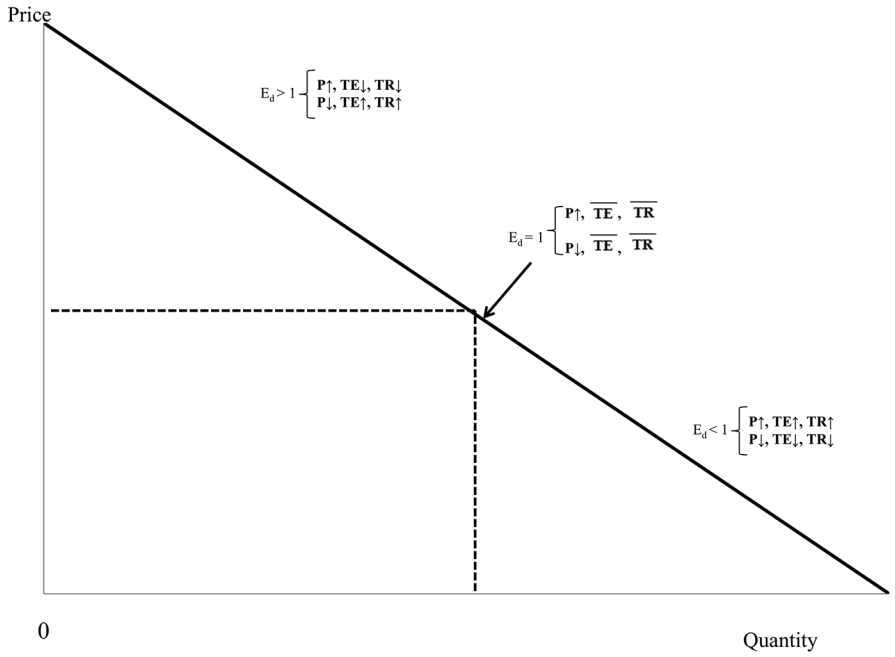
Figure II-18. Elasticity & Higher Prices



What happens to total revenue (total expenditures) when price decreases? According to the law of demand, if the price falls, the quantity demanded increases. The lower price means that revenue (expenditures) per unit decreases, which tends to decrease total revenue (total expenditures). However, the greater quantity demanded means that the number of units sold increases, and this tends to increase total revenue (total expenditures). The overall change in total revenue (total expenditures) resulting from a lower price is the net result of these opposite effects. When demand is elastic, the percentage increase in quantity demanded exceeds the percentage decrease in price, so a price decrease will increase total revenue (total expenditures). When demand is unit elastic, the percentage increase in quantity demanded is just equal to the percentage decrease in price, so a price decrease will not change total revenue (total expenditures). Finally, when demand is inelastic, the percentage increase in quantity demanded is less than the percentage decrease in price, so a price decrease will decrease total revenue (total expenditures). These relationships are illustrated in Figure II-19. Thus, the general rule is that if price and total revenue (total expenditures) move in the same direction, then demand is inelastic; if price and total revenue (total expenditures) move in opposite directions, then demand is elastic.

There are three major determinants of the elasticity of demand. First, and most important, the number, availability, and price of substitutes indicates the ability of buyers to purchase other products in response to a price increase. Second, in general, the size and importance of the product in the consumer's budget determines whether or to what extent the consumer will respond to a price change—the larger and more important the product to the budget, the more likely consumers will respond to a change in price. Third, the time period involved in the adjustment to a price change will affect the elasticity of demand. The effect of time will be discussed in more detail in a later section.

Figure II-19. Total Expenditures/Total Revenues & Demand



The law of demand states that, other things being equal, an inverse relationship exists between price and quantity demanded. The law of demand is an undefeated proposition in economics. Nonetheless, in analyzing individuals' demand curves for a product, we may occasionally be presented with a situation that appears not to support the law of demand. Consider the impact of a $0.25 increase in the price of a Big Mac. It is undoubtedly true that some individuals will not reduce their consumption of Big Macs in the face of the price increase, but that does not refute or even contradict the law of demand. Although some individuals do not react to the price increase, others will reduce their consumption. The individuals who reduce their consumption are referred to as the **marginal consumers**—the economic actors who are the first to respond to a change in relative prices. Another way to describe the marginal consumers is to say that their elasticity of demand for Big Macs is greater than the elasticity of the consumers who did not change their quantity demanded in the face of a price increase.

2. Elasticity of Supply

Elasticity of supply is a measure of producer responsiveness to changes in the market price for goods or services. Specifically, the elasticity of supply is the percent change in quantity supplied divided by the percent change in price. Thus, an elasticity of supply coefficient can be calculated for any type of supply curve.

Elasticity of Supply = % Change in Quantity Supplied ÷ % Change in Price

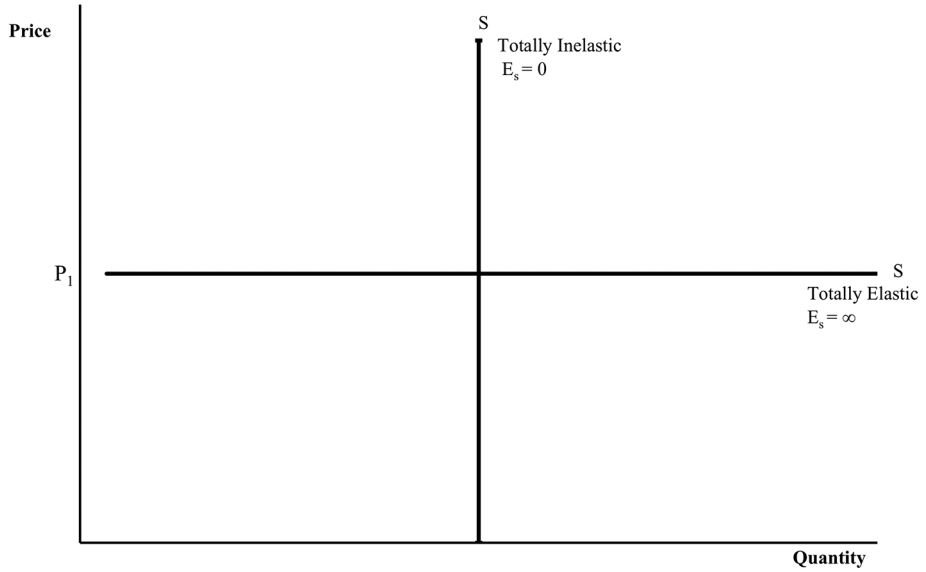
Elastic supply describes a situation in which the percent change in quantity supplied is greater than the percent change in price—the supply elasticity coefficient is greater than 1. Elastic supply means that suppliers are very responsive to price changes. The larger the

supply elasticity coefficient is above 1, the more elastic supply is said to be. In contrast, **inelastic supply** describes a situation in which suppliers are not very responsive to changes in price—the percent change in quantity supplied is less than the percentage change in price. In this situation, the supply elasticity coefficient is less than 1. As the coefficient moves away from 1 and becomes closer to 0, supply is said to be more inelastic.

As was the case with demand elasticity, study of the totally elastic and totally inelastic supply curves is helpful in analyzing many types of economic problems. **Totally elastic supply** is represented graphically by a horizontal supply curve—as in Figure II-20. At any price below P producers will supply a quantity of zero. As the price moves from just below P to P producers will supply an unlimited amount to the market—a totally elastic supply curve has an elasticity coefficient of infinity. In this case, the quantity actually supplied to the market depends upon the demand curve. At the other extreme is the case of the totally inelastic supply curve. **Totally inelastic supply** curves are vertical and represent a zero percentage change in the quantity supplied regardless of the percentage change in price. Figure II-20 shows the relationship between price and quantity supplied for the totally inelastic supply curve. Total inelasticity reflects a market with completely unresponsive suppliers and results in a supply elasticity coefficient of zero.

The responsiveness of the quantity supplied to an increase in price will depend on the supplier's willingness and ability to transfer resources to the production of that good. If it is perceived to be economically costly to transfer resources from other uses, then it will take a large price increase to obtain a given quantity increase, and supply will be relatively inelastic. On the other hand, if resources can be transferred at a relatively low economic cost, a smaller price increase will suffice to bring about a given increase in quantity, and supply will be relatively elastic.

Figure II-20. Totally Elastic & Inelastic Supply Curves



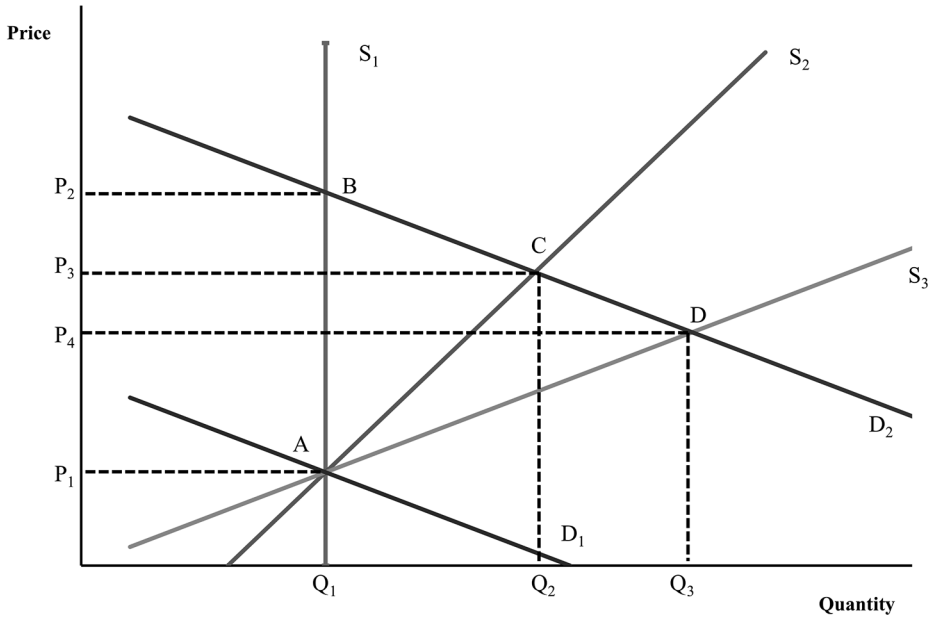
3. Time and Elasticity

Both supply and demand elasticity are affected by the time period allowed for adjustment. The more time that suppliers have to adjust to the price change, the more elastic supply will be. Likewise, elasticity of demand increases the longer consumers have to react to any given price change. To analyze the responsiveness of supply and demand over a period of time, economists have divided the time of adjustment into three periods: the market period, the short run, and the long run. The following example, in the supply elasticity context, demonstrates the effect of time on elasticity.

Assume that Congress passes, and the President signs, legislation that imposes sweeping new regulatory requirements on business. In order to comply with the regulations, businesses demand additional legal services. In Figure II-21, we show this as an increase in demand from D_1 to D_2. However, in the market period, the supply curve for legal services is perfectly inelastic — represented by S_1. Because resources cannot be shifted to new uses instantaneously, the supply of legal services is fixed. Thus, in the market period, supply is fixed in the face of increasing demand resulting in an increase in price from P_1 to P_2 — indicated by movement from point A to point B. Individuals providing legal services will notice that the price that can be charged has increased. The new higher price creates the incentive to shift resources into the provision of legal services. In the short run, lawyers will shift currently available resources into the provision of legal services. This may include spending more time at work and less time in leisure activities or more time on regulatory law than divorce law. The effect of this short run supply response is illustrated by S_2 and P_3 — indicated by movement from point B to point C.

If an economic profit is still being earned after all currently available resources have been moved into the provision of regulatory legal services, then an incentive exists to make further changes. In the long run, all possible adjustments can be made and resources that were not available in the short run can now be shifted into the provision of regulatory legal services. For example, law firms that were previously unsure of the permanency of the change will

Figure II-21. Time & Elasticity of Supply



now begin to provide regulatory legal services, persons with law degrees who are not practicing will take the bar, and college graduates seeking the higher incomes of lawyers relative to other professions will apply and graduate from law schools. The effect of these long run adjustments will be to shift the long run supply curve to S_3 and increase the quantity supplied to Q_3 — indicated by movement from point C to point D. Note that the effect of all of these responses is to increase the number of lawyers and reduce price towards the old level. Will price fall back to P_1? This depends upon factors specific to the industry. The main point to remember is that the elasticity of supply will tend to increase over time.

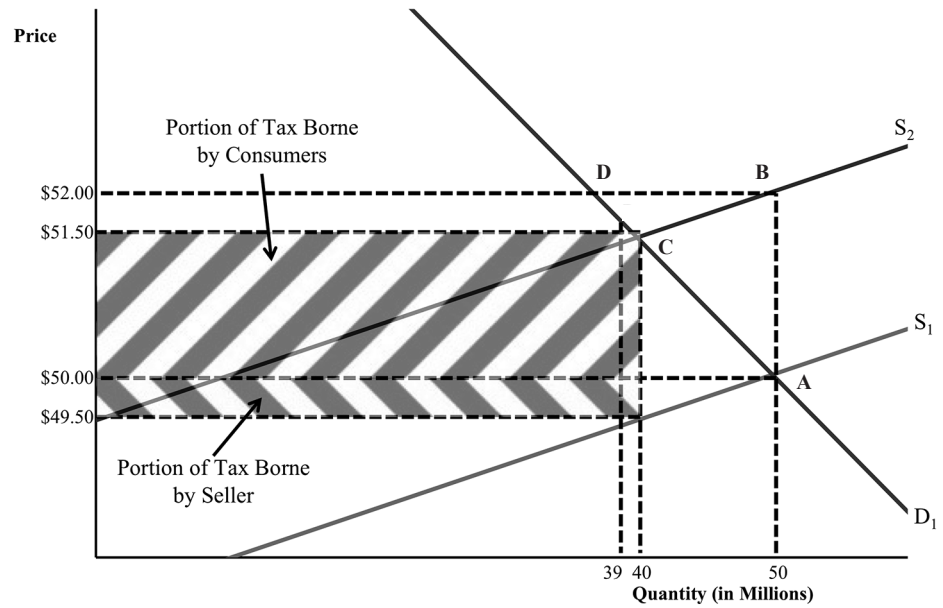
The same type of analysis applies to demand elasticity. As a general rule, the more time that both producers and consumers have to respond to a change in market price, the more elastic supply and demand will be.

4. Tax Incidence

A major source of revenue for governments is the excise tax. An **excise tax** is a per unit tax on the sale of a particular item. Well known examples of excise taxes are those levied on the sale of cigarettes, tires, and gasoline. Confusion often arises as to who pays an excise tax. Because the seller sends a check to the government, many people believe that the seller bears the burden of an excise tax. However, sellers might be capable of passing the burden of an excise tax on to consumers through increased prices. A study of **tax incidence** reveals whether consumers or sellers bear the burden of a particular tax. Analyzing tax incidence uses the supply and demand elasticity concepts introduced in the previous sections. A simple example will help explain the tax incidence concept.

Consider a $2.00 tax levied on every automobile tire sold. The tire tax is paid to the government by the tire manufacturer. Figure II-22 shows the supply and demand for tires prior to the $2.00 excise tax — represented by D_1 and S_1. Prior to the tax, the market was in equilibrium at 50 million tires produced for a price of $50.00 per tire — indicated by

Figure II-22. Elasticity & Tax Incidence: The Original Case

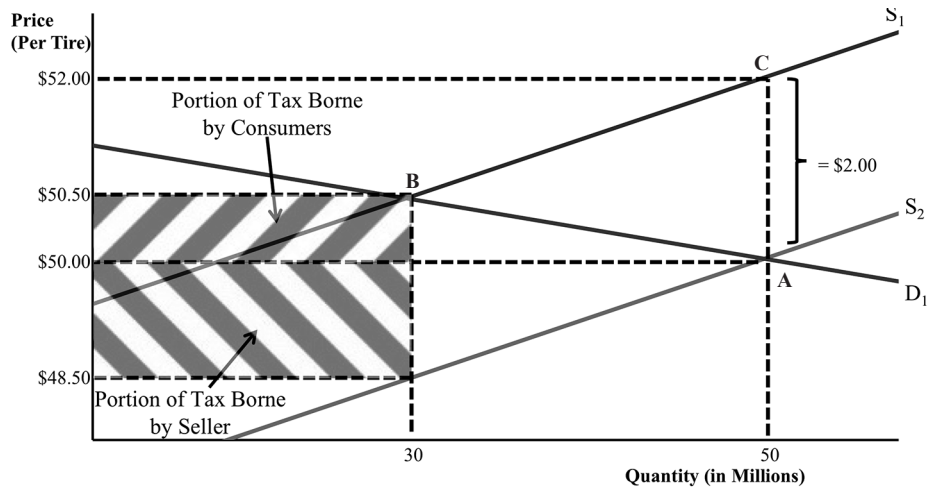


point A. What is the effect on market price and quantity of imposing a $2.00 per tire tax? Remember that the supply curve represents the amount that sellers are willing and able to supply at each price. Once the tax is imposed, suppliers' per unit costs will be $2.00 higher at each quantity level. Thus, the result of the excise tax is to shift the supply curve to the left—to S_2. The vertical distance between S_1 and S_2 is equal to the excise tax amount of $2.00. From Figure II-22 it is easy to see that one effect of the tax is to reduce the total quantity of tires sold. This is because the demand for tires is not totally inelastic. Despite the fact that the supply curve shifts to reflect the excise tax, the demand curve does not move because nothing has happened to change the demand for tires—only the quantity demanded will be affected.

As a result of the tax, sellers would be willing to supply the old equilibrium quantity of 50 million tires at a price of $52.00—indicated by point B. However, because the demand for tires is not totally inelastic, consumers are not willing to purchase 50 million tires at $52.00. At $52.00, consumers are only willing to purchase 39 million tires—indicated by point D. Therefore, at $52.00, a market surplus would develop putting downward pressure on price and quantity supplied. After the imposition of the tax we can see that the market moves to a new equilibrium price of $51.50 and quantity of 40 million—indicated by point C. The shaded area represents the tax revenue collected, which is equal to the quantity of tires sold multiplied by the $2.00 tax rate. In our example, the total tax revenue equals 40,000,000 × $2.00 = $80,000,000. Note that the old equilibrium price line indicates how both the seller and purchaser are affected by the excise tax. Prior to the tax, the equilibrium price was $50.00. The new equilibrium price is $51.50, so consumers must now pay $1.50 more for a tire. Thus, consumers bear 75% of the new $2.00 tax as indicated by the shaded area above the original equilibrium price. Although the price increases by $1.50, sellers must send $2.00 to the government for every tire sold. The remaining $0.50 must come from the seller. Thus, at a market price of $51.50, the sales price net of taxes is $49.50. This is $0.50 below the old equilibrium price of $50.00. The sellers' burden is reflected diagrammatically as the shaded portion below the old equilibrium price—the seller bears 25% of the tax burden.

Tax incidence changes with changes in the elasticity of demand. If demand is highly elastic, sellers tend to bear more of the burden. Figure II-23 shows the original tire market in equilibrium at 50 million tires for $50.00 per tire—indicated by point A. The only

Figure II-23. Elasticity & Tax Incidence: The Case of Greater Demand Elasticity



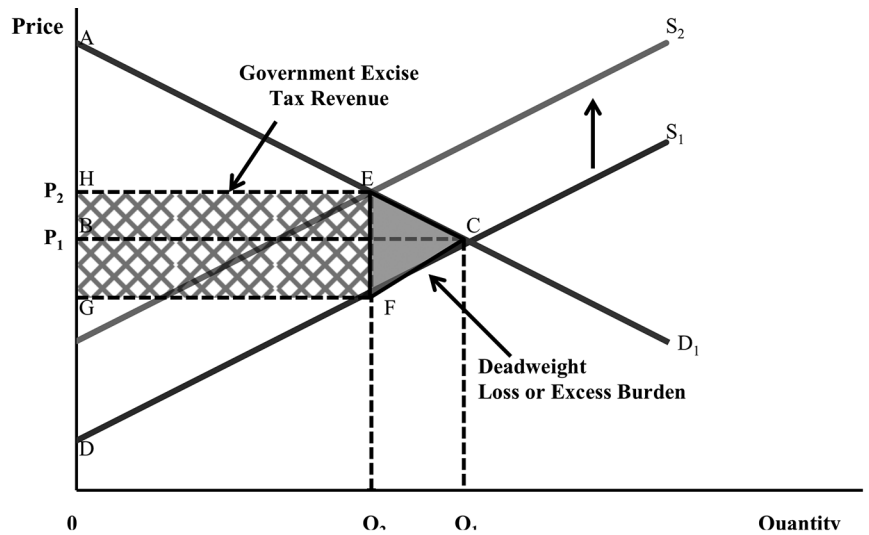
difference between this and the previous example is that the slope of the demand curve is flatter, representing more elastic demand. As in the previous example, a $2.00 tax is levied per tire causing the supply curve to shift to the left by an amount equal to $2.00 for each possible quantity. In this example, the new equilibrium price is only $50.50—indicated by point B. This is $0.50 above the old equilibrium price and thus consumers bear 25% of the $2.00 tax burden. The seller must still send $2.00 to the government and can only force the consumer to pay for $0.50 of the tax. Thus, the seller must deduct $1.50 from the old $50.00 selling price, meaning that the sales price net of taxes is $48.50. This means the seller now bears 75% of the tax burden.

A comparison of the examples in Figures II-22 and II-23 indicates that relatively elastic demand means that consumers bear less of the burden of an excise tax. Sellers cannot pass on as much of the tax when demand is relatively elastic. However, when demand is relatively inelastic, consumers bear more of the tax in the form of higher prices. In addition, note that when demand was more elastic, the total quantity demanded by the market fell by a greater amount than when demand was relatively inelastic. As a result, an excise tax is a more effective revenue source when the demand for the taxed good is relatively inelastic.

The elasticity of supply plays a similar role in the tax incidence question. In all instances, the supply curve shifts to the left by an amount equal to the per unit tax. However, the slope of the supply curve—its relative elasticity—will play a role in whether consumers or suppliers bear the tax burden. In general, the more elastic supply, the more a tax is passed on to consumers in the form of higher prices. The flip side of this is that the more inelastic supply, the more the tax burden is borne by the supplier.

In general, an excise tax increases the price that consumers must pay and decreases the price that sellers receive. Obviously, this is a cost to the particular individuals who engage in buying and selling the taxed good or service. It is a cost for these individuals because it represents a loss in their respective consumer or producer surpluses. This loss is demonstrated in Figure II-24, which shows the effect of an excise tax on tires. The area above the equilibrium market price and below the demand curve represents consumer surplus, and the area under the equilibrium market price and above the supply curve is

Figure II-24. Deadweight Loss or Excess Burden Due to a Government Excise Tax



producer surplus. Prior to the tax, consumer surplus was equal to the area ABC, and producer surplus was equal to the area BCD. After the imposition of the tax, the supply curve shifts to the left — indicated by movement from S_1 to S_2 — and market price moves from P_1 to P_2. The vertical distance between S_1 and S_2 is equal to the amount of the excise tax. Notice that as a result of the tax, consumer and producer surplus has been reduced by the area HECFG.

The entire reduction in consumer and producer surplus due to the excise tax should not be viewed as a loss borne by society. Remember that the government gains tax revenue in an amount equal to the area HEFG. The government revenue is spent either by purchasing goods and services directly or by giving the money to other citizens (e.g., welfare payments) for them to spend on goods and services. If the benefit to consumers and producers of government spending is equal to the area HEFG, then the remaining area of lost consumer and producer surplus is equal to ECF. This is the real cost of the tax. This area represents a reduction in the total output of the economy due to the tax that can *never* be regained. This loss, represented by the area ECF, is known as the **deadweight loss** of the tax or the **excess burden** of the tax.

H. The Role of Prices

An important attribute of the market allocation is that it reduces the amount of information consumers need to know in order to make rational decisions — that is, consumers do not need to know why relative prices change in order for the price system to work. In this regard, the allocation role of the decentralized price system may be viewed as a huge informational network through which the relative scarcity of different goods and services is transmitted by price changes. For example, a prolonged drought in the Midwest will decrease the supply of wheat available for making bread. However, this will not result in a shortage of bread. The decreased supply of wheat will result in the price of wheat being bid up, and part of that price increase will be passed on to consumers in the form of higher prices for bread and other bakery products. As a result of the higher price, some farms will not purchase grain for their livestock and some consumers will not purchase as much bread. There will not be a shortage of bread. The market clears, but more importantly, it allocates the scarce resources to their highest valued uses in a very low cost manner.

The Use of Knowledge in Society

Friedrich von Hayek
35 American Economic Review 519–30 (1945)

The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given resources." … It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know.… [I]t is a problem of the utilization of knowledge which is not given to anyone in its totality.

* * *

But a little reflection will show that there is beyond question a body of knowledge of the particular circumstances of time and place. It is with respect to this that practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made, but of which use can be made only if the decisions depending on it are left to him or are made with his active co-operation.

* * *

If we can agree that the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place, it would seem to follow that the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them.... We must solve it by some form of decentralization. But this answers only part of our problem. We need decentralization because only thus can we insure that the knowledge of the particular circumstances of time and place will be promptly used. But the "man on the spot" cannot decide solely on the basis of his limited but intimate knowledge of the facts of his immediate surroundings. There still remains the problem of communicating to him such further information as he needs to fit his decisions into the whole pattern of changes of the larger economic system.

* * *

There is hardly anything that happens anywhere in the world that *might* not have an effect on the decision he ought to make. But he need not know of these events as such, nor of *all* their effects.... All that is significant for him is how *much more or less* difficult to procure they have become compared with other things with which he is also concerned, or how much more or less urgently wanted are the alternative things he produces or uses. It is always a question of the relative importance of the particular things with which he is concerned, and the cases which alter their relative importance are of no interest to him beyond the effect on those concrete things of his own environment.

It is in this connection that what I have called the "economic calculus" (or the Pure Logic of Choice) helps us, at least by analogy, to see how this problem can be solved, and in fact is being solved, by the price system....

* * *

The whole acts as one market, not because any of its members surveys the whole field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all....

... The most significant fact about this system is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action. In abbreviated form, by a kind of symbol, only the most essential information is passed on and passed on only to those concerned.

* * *

But those who clamor for "conscious direction"—and who cannot believe that anything which has evolved without design (and even without our understanding it) should solve problems which we should not be able to solve consciously should remember this: The problem is precisely how to extend the span of our utilization of resources beyond the span of the control of any one mind; and, therefore, how to dispense with the need of conscious control and how to provide inducements which will make the individuals do the desirable things without anyone having to tell them what to do.

* * *

As Alfred Whitehead has said in another connection …"Civilizations advance by extending the number of important operations which we can perform without thinking about them."

Notes and Questions

1. Who Can Do Better Than the Market?: The discussion of the laws of supply and demand suggests several important societal roles for prices and the market process. The market price simultaneously fulfills at least two roles in solving the economic problem of limited resources and unlimited desires. First, price rations the supply of goods among consumers. Second, price provides an incentive to suppliers to produce the goods and services that society desires most. The efficiency of the market system as a means of allocating resources to their most highly valued uses is unparalleled. Interference with the functioning of the market, through policies such as price controls, carries a substantial cost in terms of reduced allocative efficiency.

2. Competition and Market Coordination: The American economic system is characterized by freely competitive markets. Competition tends to keep prices of goods and services at a reasonable level, usually the costs of production plus a reasonable profit for the sellers. When the number of buyers and sellers is large, no individual buyer or seller can affect the market price of a product or service. No single buyer purchases enough to affect market price, and no single seller can acquire enough power to alter the market for his or her gain. Crucial to the effects of large numbers is the condition that firms be free to enter and leave markets in response to profit opportunities or actual losses. New firms entering particular lines of business, bankruptcies, and business failures are expected consequences of a competitive system. Competition requires that entry and exit into business be free and unregulated. Businesses must be free to fail. Coordinating the billions of individual decisions involved in competition is an interconnected system of prices for inputs and outputs that is so complex that no individual or computer can fully comprehend it. Thus, an economy driven by central planning can *never* match the results of competitive economic markets. In other words, the wealth maximizing results of mutually beneficial exchange will not occur under central planning.

3. Experimental Data: In reviewing the results of a wide array of economic experiments on asset markets, Professor Shyam Sunder wrote the following:

> The Hayekian hypothesis about the importance of the informational role of prices in markets has received consistent support. Dissemination of information, from informed to the uninformed, and aggregation of individual traders' diverse bits of information through the market process alone have been shown to be concrete, verifiable phenomena, bringing abstract theory into empirical domain.

J.H. Kagel & A.E. Roth, Handbook of Experimental Economics (1995).

4. Orange Juice and Election: As one implication of the informational role of prices, various studies suggest that market predictions of events may be more accurate than predictions by experts. For example, one study concluded that changes in the market price of orange juice futures (contracts to buy and sell orange juice at some future date) better predicted the weather in Florida than did the National Weather Service. The same seems to be true for election results. Since 1988, the University of Iowa has run the Iowa Electronic Markets, in which individuals can buy and sell shares that pay off depending on who wins the United States presidential (and other) elections. Researchers have found that, on average, the price of shares in the election market more accurately predicted the percentage of popular vote received by the winner than did pre-election polls. A number of private

wagering services now maintain betting markets on any number of events — ranging from future terrorist attacks to the identity of the new Pope.

5. Predictive Markets and the National Defense: Several years ago, the U.S. Defense Department began developing what eventually became known as the Policy Analysis Market — a market for shares on various political events, including the possibility of future terrorist attacks. The goal explicitly was to tap into the informational function of prices for national defense purposes. Once the program became publicly known, however, a loud outcry followed, with politicians and others objecting to the idea of betting on terrorism (as well as possible "insider" trading by terrorists). Then-Senator Hilary Rodham Clinton, for example, described the Policy Analysis Market as "a market in death and destruction, and not in keeping with our values," while Senator Tom Daschle complained that "this program could provide an incentive actually to commit acts of terrorism." The project was cancelled on July 29, 2003.