CHAPTER 1

THE NATURE OF ECONOMIC REASONING

This book is written in the conviction that economics is a powerful tool for analyzing a vast range of legal questions but that most lawyers and law students—even very bright ones—have difficulty connecting economic principles to concrete legal problems. A student takes a course in price theory and learns what happens to the price of wheat when the price of corn falls and to the price of grazing land when the price of beef rises but does not understand what these things have to do with free speech or accidents or crime or the Rule Against Perpetuities or corporate indentures or gay marriage. This book's design is to anchor discussion of economic theory in concrete, numerous, and varied legal questions; the discussion of economic theory in the abstract is confined to this chapter.

§1.1 Fundamental Concepts

Many lawyers still think that economics is the forbiddingly mathematized study of inflation, unemployment, business cycles, and other macroeconomic phenomena remote from the day-to-day concerns of the legal system. Actually the domain of economics is much broader. As conceived in this book, economics is the science of rational choice in a world—our world—in which resources are limited in relation to human wants.¹ The task of economics, so defined, is to explore the implications of assuming that man² is a rational maximizer of his ends in life, his satisfactions—what we shall call his "self-interest." Rational maximization should not be confused with conscious calculation. Economics is not a theory about consciousness. Behavior is rational when it conforms to the model of rational choice, whatever the state of mind of the chooser. (Does this mean that animals are rational?) Nor is perfect rationality assumed; rational-choice theory allows us to assume that rationality is "bounded" because of human cognitive limitations, although another way to think of those limitations is as costs of absorbing and using information. Self-interest should not be confused with selfishness; the happiness (or for that matter the

². And woman too, of course. Throughout this book, the "masculine" pronouns are used in a generic rather than a gendered sense. The book devotes more space to issues of particular concern to women (see, e.g., Chapter 5) than is typical in economic analyses of law.
misery) of other people may be a part of one’s satisfactions. To avoid this confusion, economists prefer to speak of “utility” rather than of self-interest.

Central to this book is the further assumption that man is a rational utility maximizer in all areas of life, not just in his “economic” affairs, that is, not only when engaged in buying and selling in explicit markets. This idea goes back to Jeremy Bentham in the eighteenth and early nineteenth century, but received little attention from economists until the work of Gary Becker in the 1950s and 1960s.\(^3\)

The concept of man as a rational maximizer implies that people respond to incentives—that if a person’s surroundings change in such a way that he could increase his satisfactions by altering his behavior, he will do so. From this proposition derive the three fundamental principles of economics.

The first is the inverse relation between price charged and quantity demanded (the Law of Demand). If the price of steak rises by 10¢ a pound, and if other prices remain unchanged, a steak will now cost the consumer more, relatively, than it did before. Being rational and self-interested, the consumer will react by investigating the possibility of substituting goods that he preferred less when steak was at its old price but that are more attractive now because they are cheaper relative to steak. Many consumers will continue to buy as much steak as before; for them, other goods are poor substitutes even at somewhat lower relative prices (or the costs of searching for substitutes may exceed the benefits). But some purchasers will reduce their purchases of steak and substitute other meats (or other foods, or different products altogether), with the result that the total quantity demanded by purchasers, and hence the amount produced, will decline. This is shown in Figure 1.1. Dollars are plotted on the vertical axis, units of output on the horizontal. A rise in price from \(p_1\) to \(p_2\) results in a reduction in the quantity demanded from \(q_1\) to \(q_2\). Equally, we could imagine quantity supplied falling from \(q_1\) to \(q_2\) and observe that the effect was to raise the price of the good from \(p_1\) to \(p_2\). Can you see why the causality runs in both directions?

![Figure 1.1](image)

This analysis assumes that the only change occurring in the system is the change in relative price or in quantity. Yet if, for example, demand were increasing at the same time that price was rising, the quantity demanded and supplied might not fall; it might even rise. (Can you graph an increase in demand? If not, see Figure 9.5 in Chapter 9.)

The analysis also assumes away the possible impact of a change in relative price on incomes. Such a change might have a feedback effect on the quantity demanded. Suppose that a reduction in a person's income will cause him to buy more of some good. Then an increase in the price of that good will have two immediate effects on consumers: (1) Substitutes will become more attractive; (2) consumers' wealth will be reduced because the same income now buys fewer goods. The first effect reduces demand for the good, but the second (under the assumption that it is an inferior good) increases the demand for it and might conceivably, though improbably, outweigh the first. The wealth effects of a change in the price of a single good are unlikely to be so great as to have more than a negligible feedback effect on demand; in other words, the substitution effects of a price change ordinarily exceed the income or wealth effects. The latter can usually be ignored.

The Law of Demand doesn't operate just on goods with explicit prices. Unpopular teachers sometimes try to increase class enrollment by raising the average grade of the students in their courses, thereby reducing the price of the course to the student and so inducing students to substitute the unpopular teacher's class for another class. The convicted criminal who has served his sentence is said to have "paid his debt to society," and an economist would find the metaphor apt. Punishment is, from the criminal's standpoint (why not from society's, unless the punishment takes the form of a fine?), the price that society charges for a criminal offense. The economist predicts that an increase in either the severity of the punishment or the likelihood of its imposition will raise the price of crime and therefore reduce its incidence. The criminal will be encouraged to substitute other activity. Economists call nonpecuniary prices "shadow prices."

The consumers in our steak example—and the criminal—are assumed to be trying to maximize their utility (happiness, pleasure, satisfactions). The same is presumably true of the producers of beef, though in the case of sellers (apart from nonprofits and government agencies) one usually speaks of profit maximization rather than utility maximization. Sellers seek to maximize the difference between their costs and their sales revenues, but for the moment we are interested only in the lowest price that a rational self-interested seller would charge. That minimum is the price that the resources consumed in making (and selling) the seller's product would command in their next best use—the alternative price. It is what the economist means by the cost of a good, and suggests why (subject to some exceptions that need not trouble us here) a rational seller would not sell below cost. For example, the cost of making a lawn mower is the price the manufacturer must pay for the

4. If the price level is rising for all goods (i.e., if there is inflation), there is no quantity effect (why not?).
5. This would be what economists call an "inferior" good. Technically, a good is inferior if a reduction in the consumer's income will not have a proportionately negative effect on his purchase of the good.
6. A consumer is apt to change the composition of his diet in favor of potatoes and against caviar if his income falls, but, especially if his income falls a lot, he may not actually buy more potatoes than he did before. A "normal" good is one the demand for which is proportional to income; and a good is "superior" if a fall (rise) in income will cause a proportionately greater fall (rise) in the consumption of the good.
7. We shall examine the concept of utility more critically in the next section.
capital and labor consumed in making it. That price must exceed the price at which the resources could have been sold to the next highest bidder because if the manufacturer hadn’t been willing to beat that price, he would not have been the high bidder and would not have obtained the resources. The economic concept of cost (opportunity cost) is the second fundamental principle of economics.

A corollary of the notion of cost as alternative price is that a cost is incurred only when someone is denied the use of a resource. Since I can breathe as much air as I want without depriving anyone of any of the air he wants, no one will pay me to relinquish my air to him; therefore air is costless. So is a good with only one use. Can you see why?

Here are two more examples of opportunity cost: (1) The principal cost of higher education is not tuition; it is the forgone earnings that the student would have if he were working rather than attending school. (What about his living costs at college?) (2) Suppose the labor, capital, and materials costs of a barrel of oil are only $2, but because low-cost oil is being rapidly depleted, a barrel of oil is expected to cost $20 to produce in 10 years. The producer who holds on to his oil for that long will be able to sell it for $20 then. That $20 is an opportunity cost of selling the oil now—although not a net opportunity cost, because if the producer waits to sell his oil, he will lose the interest he would have earned by selling now and investing the proceeds. Suppose, however, that the current price of oil is only $4 a barrel, so that if the producer sells now, he will have a profit of only $2. If he invests the $2 it is unlikely to grow to $20 (minus the then cost of production) 10 years hence. So he is better off leaving the oil in the ground. The scarcer that oil is expected to be in the future, the higher the future price will be, and therefore the likelier the oil to be left in the ground, which (not incidentally) will avert a future shortage.

This discussion of cost may help dispel one of the most tenacious fallacies about economics—that it is about money. On the contrary, it is about resource use, money being merely a claim on resources. The economist distinguishes between transactions that affect the use of resources, whether or not money changes hands, and purely pecuniary transactions—transfer payments. Housework is an economic activity, even if the houseworker is a spouse who does not receive pecuniary compensation; it involves cost—primarily the opportunity cost of the houseworker’s time. Sex is an economic activity too. The search for a sexual partner takes time and thus imposes a cost measured by the value of that time in its next-best use. The risk of a sexually transmitted disease or of an unwanted pregnancy is also a cost of sex—a real, though not primarily a pecuniary, cost. In contrast, the transfer by taxation of $1,000 from me to a poor (or to a rich) person is costless in itself, that is, regardless of its secondary effects on his and my incentives, the (other) costs of implementing it, or any possible differences in the value of a dollar to us. It does not diminish the stock of resources. It diminishes my purchasing power, but it increases the recipient’s by the same amount. It is what economists call a private cost but not a social one. A social cost diminishes the wealth of society; a private cost rearranges that wealth.

8. That is not to say that clean air is costless. Cf. §3.7 infra.

9: Noneconomists attach more significance to money than economists do. One of Adam Smith’s great achievements in The Wealth of Nations was to demonstrate that mercantilism, the policy of trying to maximize a country’s gold reserves, would impoverish rather than enrich the country that followed it. Other common misconceptions about economics that this book will try to dispel is that it is primarily about business or explicit markets, that it is pro-business, that it is heartless, that it slight nonquantifiable costs and benefits, and that it is inherently conservative.
Fundamental Concepts

Competition is a rich source of "pecuniary" as distinct from "technological" externalities—that is, of wealth transfers from, as distinct from cost impositions on, unconsenting parties. Suppose A opens a gas station opposite B's gas station and as a result siphons revenues from B. Since B's loss is A's gain, there is no diminution in overall wealth and hence no social cost, even though B is harmed by A's competition and so incurs a private cost. It would be different if A to eliminate B's competition destroyed B's gasoline pumps. That would reduce the total stock of goods in the economy.

The distinction between opportunity costs and transfer payments, or in other words between economic and accounting costs, helps show that cost to an economist is a forward-looking concept. "Sunk" (incurred) costs do not affect a rational actor's decisions on price and quantity. Suppose that a life-sized porcelain white elephant cost $1,000 to build ($1,000 being the alternative price of the inputs that went into making it) but that the most anyone will pay for it now that it is built is $10. The fact that $1,000 was sunk in making it will not affect the price at which it is sold, provided the seller is rational. For if he takes the position that he must not sell it for less than it cost him to make it, the only result will be that instead of losing $990 he will lose $1,000.

This discussion of sunk costs should help explain the emphasis that economists place on the ex ante (before the fact) rather than ex post (after the fact) perspective. Rational people base their decisions on expectations of the future rather than on regrets about the past. They treat bygones as bygones. If regret is allowed to undo decisions, the ability of people to shape their destinies is impaired. If a party for whom a contract to which he freely agreed turns out badly is allowed to revise the terms of the contract ex post, few contracts will be made.

The most celebrated application of the concept of opportunity cost in the economic analysis of law is the Coase Theorem. The theorem, slightly oversimplified—for necessary qualifications, see §3.6 infra—is that if transactions are costless, the initial assignment of a property right will not affect the ultimate use of the property. Suppose the law entitles a farmer to compensation for the destruction of his crops by sparks from an adjacent railroad's locomotives. Assume that the crop is worth $100 to him, that the value to the railroad of unimpeded use of its right-of-way is greater, but that at a cost of $110 the railroad can install spark arresters that will eliminate the fire hazard. On these assumptions, the real value of the crop to the farmer is not $100 but somewhere between $100 and $110, since at any price below $110 the railroad would prefer to buy the farmer's property right than to install spark arresters. The farmer can realize the higher value of the crop only by selling his property right to the railroad; he will do this; and as a result his land will be shifted into some fire-insensitive use, just as if the railroad had owned it. Similarly, if the railroad initially has the right to the unimpeded use of its right-of-way, but the farmer's crop is worth more than the cost of spark arresters, the farmer will buy the right to use his land free of spark damage and so again the land will be put to its most productive use regardless of the initial assignment of rights.

The forces of competition tend to make opportunity cost the maximum as well as the minimum price. (Can you see why the farmer-railroad example is an

10. It is not the emotion of regret that is irrational, but acting on the emotion rather than letting bygones be bygones. Regret is a form of self-evaluation and is valuable in improving future conduct ("I won't do this again because I know I would regret it"). See §1.4 infra.
exception to this generalization?) A price above opportunity cost is a magnet drawing resources into the production of the good until, in accordance with the Law of Demand, the increase in output drives price down to cost (why will competition not drive price below opportunity cost?). This process is illustrated in Figure 1.2. \( D \) represents the demand schedule and \( S \) the opportunity cost of supplying a unit of output at various levels of output. Another name for \( S \) is the industry-marginal-cost curve. Marginal cost is the change in total costs brought about by a one-unit change in output; in other words, it is the cost that would be avoided by producing one unit less. (Marginal cost is explored further in Chapters 9 and 10.) This definition should help you see why the intersection of \( D \) and \( S \) is the equilibrium price and output under competition. "Equilibrium" means a stable point, that is, a point at which, unless the conditions of demand or supply change, there is no incentive for sellers to alter price or output. (Explain why any point to either the left or the right of the intersection represents a disequilibrium price-output level.)

Even in long-run competitive equilibrium, there is no assurance that all sales will take place at prices equal to the opportunity costs of the goods sold. This is implicit in the upward slope of the supply curve in Figure 1.2. The fact that the cost of producing the good rises with the quantity produced implies that its production requires some resource that is inherently very scarce in relation to the demand, such as fertile or well-located land. Suppose, for example, that the very best corn land can produce corn at a cost of $1 a bushel; with the cost consisting both of the direct costs of producing corn (labor, fertilizer, etc.) and the value of the land in its next best use, and that the market price of the corn produced on such land would be $10 a bushel were no other corn produced. Clearly there are incentives to expand production, and since the good land cannot be expanded, inferior land will be shifted into corn production—land that requires greater inputs of labor, fertilizer, and so on to produce the same quantity of corn. This process of reallocation will continue until price and marginal cost are equalized, as in Figure 1.2. At this point the market price will equal the cost of the marginal producer. Suppose that cost is $2.50.
All corn farmers will be selling corn at $2.50 a bushel, but those with the best land will be incurring a (social) opportunity cost of only $1.

The difference between the total revenues of the industry depicted in Figure 1.2 (that is, $p \times q$) and the total opportunity costs of production (the area under $S$ to the left of $q$) is called economic rent (not to be confused with rental). Rent for our purposes is a (positive) difference between total revenues and total opportunity costs. Who gets the rents in Figure 1.2? Not the producers of the corn, but the owners of the good land (of course, they may be the same people, but the roles of owner and producer are distinct). Competition between producers will eliminate any producer rents, leaving all the rents to be captured by the owners of the resource that generates them. If the quantity of the best land could be increased without cost, competition would eliminate the scarcity that generates the rents, and with it the rents themselves. Thus under competition rents are earned only by the owners of resources that cannot be augmented rapidly and at low cost to meet an increased demand for the goods they are used to produce.

The very high incomes earned by a few singers, athletes, and lawyers include economic rents that are due to the inherent scarcity of the resources that these persons control—a fine singing voice, athletic skill and determination, the analytical and forensic skills of the successful lawyer, or sheer luck (meaning what, in economic terms?). Their earnings may greatly exceed their highest potential earnings in an alternative occupation even if they sell their services in a fully competitive market. A different kind of economic rent, discussed in Chapter 9, is earned by the monopolist, who creates an artificial scarcity of his product.

Returning to the concept of an equilibrium, imagine that the government has placed a price ceiling on the good depicted in Figure 1.2, and the ceiling is below the equilibrium price (otherwise it would be ineffective), thus forcing down the dotted line $p$. As a result, $p$ will now intersect the supply curve to the left of the demand curve—meaning that supply will fall short of demand. The reason is that the lower price simultaneously reduces the incentive of producers to make the good and increases the desire of consumers to buy it. The result is a shortage. How is equilibrium restored? By using a nonprice method of allocating supply to demand. For example, consumers might be required to queue up for the product; the cost of their time will determine the length of the queue. Queues are common in markets in which prices are regulated, and we shall discuss examples in this book. The removal of price regulation invariably reduces, and usually eliminates, queues. (As an exercise, graph a glut caused by a price floor, and discuss its consequences.)

The third basic principle of economics is that resources tend to gravitate toward their most valuable uses if voluntary exchange—a market—is permitted. Why did the manufacturer of lawn mowers in an earlier example pay more for labor and materials than competing users of these resources? The answer is that he thought he could use them more profitably than could competing demanders. Why does farmer $A$ offer to buy $B$'s farm at a price higher than $B$'s minimum price for the property? Because the property is worth more to $A$ than to $B$, meaning that $A$ can use it to produce a more valuable output as measured by the prices consumers are willing to pay. By a process of voluntary exchange, resources are shifted to those uses in which the value to consumers, as measured by their willingness to pay, is highest. When resources are being used where their value is highest, or, equivalently, when no reallocation would increase their value, we say they are being employed efficiently.

A methodologically useful although unrealistic assumption is that there are no unexploited profit (in the sense of rent, not cost of equity capital) opportunities.
A profit opportunity is a magnet drawing resources into an activity. If the magnet doesn’t work, the economist takes this as a sign not that people are dumb or have weird tastes or have ceased to be rational maximizers but that there are barriers to the free flow of resources. The barrier could be high information costs, externalities, inherent scarcities as in our rent-of-land example, or other economic conditions discussed in this book. If there are no such barriers, then in the market depicted in Figure 1.2 each seller will (as shown in Figure 1.3) confront a horizontal demand curve equal to $p$ even though the market as a whole faces a downward-sloping demand curve (which can be viewed as the sum of a very large number of individual-firm demand curves, each of which is only trivially downward sloping, i.e., approximately horizontal, but the aggregate of which is steeply sloped). The significance of a horizontal demand curve is that if the seller raises his price however slightly above the market price, his sales will go to zero. For by raising his price and thereby opening a gap between price and marginal cost, he will create a profit opportunity that another seller will immediately snatch away from him.

§1.2 Value, Utility, Efficiency

The previous section bandied about some pretty highly charged words—value, utility, efficiency—about which we need to be more precise.

The economic value of something is how much someone is willing to pay for it or, if he has it already, how much money he demands for parting with it. These are not

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12. It is not necessary to assume, however, that there is an infinitely large number of sellers in the market—only that entry is instantaneous if price exceeds marginal cost. This point is explained in Chapter 9. Notice in Figure 1.5 that the firm’s marginal cost curve is shown sloping upward, just like the industry’s curve in Figure 1.2. The same things that cause the industry’s marginal cost to rise will cause the individual firm’s marginal cost to do so as well, an additional consideration being the increased cost of information and control as a firm grows larger and more complex. See §14.1 infra. Notice that if a firm did not encounter rising marginal costs at some point, its output would be indeterminate. The relationship between costs and demand is discussed more fully in Chapter 12.
always the same amounts, and this can cause difficulties, which we shall consider later.

Utility is used in two quite different senses in economics. First, it is used to distinguish an uncertain cost or benefit from a certain one. Utility (more precisely, "expected utility") in this sense is entwined with the concept of risk. Suppose you were asked whether you'd prefer to be given $1 million or a 10 percent chance of $10 million. Probably you would prefer the former, even though the expected value of the two choices is the same: $1 million = $10 million. If so, you are risk averse. Risk aversion is a corollary of the principle of diminishing marginal utility of money, which just means that the more money you have, the less additional happiness you would get from another dollar. Diminishing marginal utility is more dramatically illustrated by less versatile commodities than money — it is easy to picture in the context, say, of chairs, or lamps, or pet gerbils. Nevertheless, it should be apparent on reflection that another dollar also will mean less to a person as his wealth increases. Suppose you had a net worth of $1 million: Would you be willing to stake it on a 50-50 bet to win $2 million? If not, it means that your first million dollars is worth more to you than a second million would be.

Risk aversion is not a universal phenomenon; gambling illustrates its opposite, risk preference (can you see why?). But economists believe, with some evidence (notably the popularity of insurance and what is called the "equity premium" — the higher expected return of common stock than of bonds [see Chapter 15]), that most people are risk averse most of the time, though we shall see that institutional responses to risk aversion such as insurance and the corporation may make people effectively risk neutral in many situations.

The use of "value" and "utility" to distinguish between (1) an expected cost or benefit (i.e., the cost or benefit, in dollars, multiplied by the probability that it will actually materialize), and (2) what that expected cost or benefit is worth to someone who is not risk neutral, obscures a more dramatic distinction: the distinction between (1) value in a broad economic sense, which includes the idea that a risk-averse person "values" $1 more than a 10 percent chance of getting $10, and (2) utility in the sense used by philosophers of utilitarianism, meaning (roughly) happiness.

Suppose that pituitary extract is in very short supply relative to the demand and is therefore very expensive. A poor family has a child who will be a dwarf if he doesn't get some of the extract, but the family cannot afford the price and could not even if it could borrow against the child's future earnings as a person of normal height, because the present value of those earnings net of consumption is less than the price of the extract. A rich family has a child who will grow to normal height, but the extract will add a few inches more, and his parents decide to buy it for him. In the sense of value used in this book, the pituitary extract is more valuable to the rich family than to the poor one, because value is measured by willingness to pay; but the extract would confer greater happiness in the hands of the poor family than in the hands of the rich one.

As this example shows, the term "efficiency," when used as in this book to denote that allocation of resources in which value is maximized, has limitations as an ethical criterion of social decisionmaking. The concept of utility in the utilitarian sense also has grave limitations, and not only because it is exceedingly difficult to measure when willingness to pay is jettisoned as a metric. First, most people don't believe — and there is no way to prove them wrong — that maximizing happiness, or contentment, or joy, or preference satisfaction, or the excess of pleasure over pain, or some
other version of utility is or should be one’s object in life. Happiness is important to most people, but it isn’t everything. Would you be willing to take a pill that would put you into a blissfully happy dreamlike trance for the rest of your life, even if you were absolutely convinced of the safety and efficacy of the pill and the trance?

Second, by aggregating utility across persons, utilitarianism treats people as cells in the overall social organism rather than as individuals. This is the source of a number of well-known barbarisms seemingly implied by utilitarian ethics, such as the deliberate sacrifice of innocents to maximize the total amount of happiness in the society (or the world, or the universe); or the “utility monster,” whose capacity for sadistic pleasure so far exceeds the capacity of his victims to experience pain that utility is maximized by allowing him to commit rape and murder. Defenders of utilitarianism seek to deflect such criticisms by pointing out that lack of trust in officials would defeat any effort to empower the state to attempt to maximize utility on a case-by-case basis. The only regime that would be utility maximizing in the real world would be a form of rule utilitarianism (that is, where the utilitarian criterion is applied at the level of rules, such as the rule requiring proof of criminality beyond a reasonable doubt, rather than at the level of application of the rule) that limited the power of government. But practical objections to the logical implications of utilitarianism strike critics as missing the point. They regard the logic itself as repulsive. Even if all the problems of implementation are assumed away, such results as the inducement of blissful trances by utterly benign, democratically responsive officials and the sacrifice of innocents for the sake of the greater good are deeply disquieting.

Third, utilitarianism has no boundary principles. Animals feel pain, as of course foreigners do as well, so that utilitarianism collides with powerful intuitions that our social obligations are greater to the people of our own society than to outsiders and greater to human beings than to (other) animals.

The objections to utilitarianism and thus to tying the concept of efficiency to utilitarian ethics have turned many economists to a definition of efficiency that confines the term to outcomes of voluntary transactions. Suppose A sells a wood carving to B for $100, both parties have full information, and the transaction has no effect on anyone else. Then the allocation of resources that is brought about by the transaction is said to be Pareto superior to the allocation of resources before the transaction. A Pareto-superior transaction (or “Pareto improvement”) is one that makes at least one person better off and no one worse off. (In our example, it presumably made both A and B better off, and by assumption it made no one worse off.) In other words, the criterion of Pareto superiority is unanimity of all affected persons.

Who can quarrel with unanimity as a criterion of social choice? Well, a liberal in the nineteenth-century sense—one who believes with John Stuart Mill that every person should be entitled to the maximum liberty consistent with not infringing anyone else’s liberty—can quarrel with it by pointing to the case of people who have preferences regarding other people’s consumption. Suppose A, a Protestant, doesn’t want B, a Catholic, to read the Catholic Bible. He would like the Catholic Bible to be banned. His second choice is that he, A, read the book, as he considers himself sufficiently inoculated against Catholic heresy. His last choice is that B read the book. B’s first choice is that A be required to read the Catholic Bible and his second choice is that only he himself, B, be allowed to read it. His last choice, obviously, is that the book be banned. So the only thing that A and B agree on is that it is better that A be allowed to read the book than that B be allowed to read
it. That is therefore the Pareto-superior choice: But it is also an illiberal choice, because it involves prohibiting B from reading a book that he wants to read.

A broader objection to the criterion of Pareto superiority is that it has few applications to the real world because most transactions (and if not a single transaction, then a series of like transactions) have effects on third parties, if only by changing the prices of other goods (how?) or by distressing observers (e.g., of gay marriage). (In what sense is such distress a “cost” in the economic sense?) In the less austere concept of efficiency mainly used in this book — called the Kaldor-Hicks concept of efficiency, or wealth maximization — if A values the wood carving at $50 and B at $120, so that at any price between $50 and $120 the transaction creates a total benefit of $70 (at a price of $100, for example, A considers himself $50 better off and B considers himself $20 better off), it is an efficient transaction, provided that the harm (if any) done to third parties (minus any benefit to them) does not exceed $70. The transaction would not be Pareto superior unless A and B actually compensated the third parties for any harm suffered by them. The Kaldor-Hicks concept is also and suggestively called potential Pareto superiority: The winners could compensate the losers, whether or not they actually do.

The fact that the conditions for Pareto superiority are almost never satisfied in the real world, yet economists talk quite a bit about efficiency, means that the operating definition of efficiency in economics cannot be Pareto superiority. And in fact when an economist says that free trade or competition or the control of pollution or some other policy or state of the world is efficient, nine times out of ten he means Kaldor-Hicks efficient.

Practicalities to one side, the dependence of Pareto superiority on the distribution of wealth — willingness to pay, and hence value, being a function of that distribution — further limits the normative adequacy of the efficiency criterion. A in our example may have valued the wood carving at only $70 and B at $120 not because A likes wood carvings less than B — he may like them much more — and not because there is any appealing concept of desert that B might invoke to validate his claim to be able to buy the wood carving; A may simply be destitute and have to sell his wood carving in order to eat, while B, rather than being passionate about wood carvings, merely wants to diversify his enormous wealth by holding a variety of collectibles. These circumstances (which make this a variant of the pituitary-extract case) are not inconsistent with the sale’s making both A and B better off; on the contrary, they explain why it makes both better off. But the circumstances undermine the moral foundations of a social system oriented to Pareto superiority, let alone potential Pareto superiority. The general point is that the pattern of consumption and production is determined by the distribution of wealth, so that if that distribution is unjust, the pattern of economic activities derived from it will not have a strong claim to be regarded as just either. And insofar as the distribution of wealth is itself largely determined by the market, the justice of the market cannot be derived from some independent notion of the just distribution.

Much inequality of wealth undoubtedly reflects sheer luck, even if one’s natural endowment of character and intelligence is considered an entitlement rather than a

1. If “a” means that only A reads the book, “b” that only B reads it, and “n” that neither reads it, A’s order of preference is n—a—b, and B’s is a—b—n; hence both agree — and agree only — that a is preferable to b.

product of the genetic lottery. There is the luck of being born in a wealthy versus a poor country, the luck of being a beneficiary or casualty of unpredictable shifts in consumer demands and labor markets, the luck of inheritance, the luck of the financial markets, the luck of whom you know, and the luck of your parents’ ability and willingness to invest in your human capital. Determinists think that it’s all luck, that deservedness has nothing to do with how rich or poor anyone is. The greater the role of luck in the distribution of wealth and economic opportunities, the more difficult it is to defend the distribution as just in a strong sense. (what might a defensible weak sense of “just” be in this context?).

A market system tends actually to magnify differences in innate ability, driving a wedge between the natural lottery and income. The cause is the “superstar” phenomenon. Consider two concert pianists, one of whom (A) is slightly better than the other (B). Suppose that most of the income of a concert pianist nowadays derives not from performing or teaching but from recording. Since recordings of the same piece of music are close substitutes, a consumer has no reason to buy recordings made by B rather than those made by A unless there is a significant difference in price, and there need not be. For even if A receives a higher royalty from his contract with the record company than B could command, the added cost to the record company may be offset by the economies of a larger output, enabling it to sell A’s recording for the same price that it or another record company could sell a recording of the same piece of music by B. A may thus end up with a very substantial income from recording and B with a zero income from it, though A may be only a 2 percent better pianist and the difference in quality discernible by only a small percentage of the music-loving public.

Kaldor-Hicks gives rise to a paradox when the subject matter of a transaction is a large fraction of a person’s wealth. Suppose I refuse a $300,000 offer for my house but then the government condemns it, paying me $200,000, which is its market value. The government would happily sell the house back to me for $250,000 — it is worth less than that to the government, though more than $200,000 — but I neither have nor can borrow $50,000. In whose hands is the house worth more — mine or the government’s? In considering this conundrum, remember that wealth as used by economists is not an accounting concept; it is measured by what people would pay for things or demand in exchange for giving up things they possess, not by what they do pay for them. Go back to Figure 1.2, and notice that if the quantity sold of the product were smaller, price would be higher; evidently consumers would be willing to pay more for some units of the product. So they must obtain value from being able to buy them at the competitive price. This value, called consumer surplus (see §9.3 infra), is also part of the wealth of society.

Because economics does not answer the question of whether the existing distribution of income and wealth is good or bad, just or unjust, although it can tell us a great deal about the costs of altering the existing distribution, the economist cannot issue mandatory prescriptions for social change. Yet this turns out to be less of a handicap to the normative use of economics than might appear. Economists can usually appeal to a generally accepted goal, such as maximizing the value of output, rather than having to defend the goal. By showing how a change in economic policy or arrangements would advance us toward that goal, they can make a normative statement without having to defend their fundamental premises. They can demonstrate for example that cartelization results in a reduction in the value of output

The Realism of the Economist’s Assumptions

(see Chapters 9 and 10), and since maximizing that value is a generally accepted goal of a commercial society, their demonstration provides, without more, a prima facie case for prohibiting cartels.

An important normative question, already alluded to, is whether and in what circumstances an involuntary exchange can confidently be said to increase efficiency. Even if efficiency is not defined as something that only a voluntary transaction can create — even if the Kaldor-Hicks concept is used instead — it is only when resources are shifted pursuant to a voluntary transaction that we can be confident that the shift involves an increase in efficiency. The transaction would not have taken place unless both parties had expected to be made better off by it. But many of the transactions either affected or effected by the legal system are involuntary. Most crimes and accidents are involuntary transactions, and so is a legal judgment to pay damages or a fine. How is one to know when such transactions increase, and when they reduce, efficiency? Kaldor-Hicks asks whether, had a voluntary transaction been feasible, it would have taken place. If, for example, the question were whether clean water was more valuable as an input into paper production than into boating, we might try to determine, using whatever quantitative or other data might be available to help us, whether in a world of zero transaction costs the paper industry would purchase from the boaters the right to use the water.

To reconstruct the likely terms of a market transaction in circumstances where instead a forced exchange took place — to mimic or simulate the market, in other words — is difficult. But to ban all forced exchanges would be grossly inefficient. It would amount to abolishing markets, since all market transactions have some uncompensated third-party effects. (So now can you relate the Kaldor-Hicks conception of efficiency to utilitarianism?)

§1.3 The Realism of the Economist’s Assumptions

The reader may be troubled by what appear to be the severely unrealistic assumptions that underlie economic theory. The basic assumption — that human behavior is rational — seems contradicted by the experiences and observations of everyday life. But the contradiction is lessened when one understands that the concept of rationality used by the economist is objective rather than subjective, so that it would not be a solemnism to speak of a rational frog. Rationality means little more to an economist than a disposition to choose, consciously or unconsciously, an apt means to whatever ends the chooser happens to have selected, consciously or unconsciously. In other words, rationality is the ability and inclination to use instrumental reasoning to get on in life. It does not assume consciousness (rational decisions are often intuitive). It certainly does not assume omniscience; positive information costs are assumed throughout this book. (They are of two kinds — costs of acquiring information and costs of processing and using information intelligently.1)

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4. We cannot be completely sure, however, because that would require that everyone affected by the transaction be a party to it, and (to repeat) this requirement is almost never satisfied.

§1.3 1. Some economists use the term “bounded rationality” to describe the rationality of rational persons who face positive costs of using the information available to them to make decisions.
Even with these qualifications, the assumptions of economic theory are one-dimensional and pallid when viewed as descriptions of human behavior — especially the behavior of such unconventional economic "actors" as the judge, the litigant, the parent, the rapist, and others whom one encounters in the economic analysis of law. But abstraction is of the essence of scientific inquiry, and economics aspires with some success to be scientific. Newton's law of falling bodies is unrealistic in its assumption that bodies fall in a vacuum (as well as superseded by the general theory of relativity), but it is still a useful theory because it predicts with reasonable accuracy the behavior of a wide variety of falling bodies in the real world. Similarly, an economic theory of law will not capture the full complexity, richness, and confusion of the phenomena — criminal or judicial or marital or whatever — that it seeks to illuminate. But its lack of realism in the sense of descriptive completeness, far from invalidating the theory, is a precondition of theory. A theory that sought faithfully to reproduce the complexity of the empirical world in its assumptions would not be a theory — an explanation — but a description.

This doesn't mean that the analyst has a free choice of assumptions. An important test of a theory is its ability to explain reality. If it does a lousy job, the reason may be that its assumptions are insufficiently realistic. But we need not try to evaluate the assumptions directly in order to evaluate it. Judged by the test of explanatory power, economic theory is a significant (although only partial) success; so perhaps the assumption that people are rational maximizers of their satisfactions is not so unrealistic as the noneconomist might at first think. Economic theory can explain a vast number of market and nonmarket phenomena, such as the inverse correlation, mentioned in the first section of this chapter, between price ceilings and queues; the inverse correlation between rent control and the stock of housing; the positive correlation in financial markets between risk and expected return; the relation between futures prices and spot-market prices; the dependence of college enrollment on the financial returns to a college education; the fact that the best goods tend to be shipped the farthest distances and the worst consumed at home; and many others.

Another (and stronger — why?) test of a scientific theory is its predictive power. Here, too, economics has had its share of successes, most dramatically in recent decades. The effects of deregulation, for example of the airline industry in the United States, and, more dramatically, of the communist economies of Central and Eastern Europe and of China, have had the effects predicted by economists. In particular, the aftermath of communism has provided repeated confirmations of the predictions of economic analysis, such as that price regulation leads to queuing, black markets, and shortages; that competition and free trade promote productivity; and that property rights encourage investment.

Still another test of a scientific theory is its ability to underwrite effective interventions in the world of action. The most dramatic example is the atomic bomb, which showed that modern atomic theory was not just another clever speculation about invisible entities. In this respect, too, economics has had successes, albeit more modest ones than the natural sciences have had. Economists have created new methods of pricing financial and other products, new financial trading strategies, new methods of employee and executive compensation, new techniques for controlling inflation and unemployment and averting depressions, and new regulatory methods such as airwave auctions and salable pollution rights. These interventions have worked, suggesting that economic theory is more than just pretty math.
§1.4 Irrationality and Hyperrationality; Herein of Behavioral Economics and Game Theory

The obvious fact that people do not always make rational choices (meaning what?) does not invalidate rational-choice theory: Economics is concerned with explaining and predicting tendencies and aggregates rather than the behavior of each individual; and in a reasonably large sample, random deviations from normal rational behavior will cancel out. But suppose that, perhaps because our brains evolved in a very different environment from that of modern society, human behavior exhibits systematic departures from rationality. Cognitive psychologists, economists, and economic analysis of law have presented evidence that most of us commit a variety of systematic cognitive errors. For example, we have a lot of difficulty dealing rationally with low-probability events, probably because, in the “ancestral environment” (the term used by evolutionary biologists to describe the period of human prehistory in which the human brain reached its present state), the ability to cope with such events had little survival value; survival required full-time attention to high-probability opportunities and threats.

Here are other examples of common cognitive limitations. We commit the “sunk costs” fallacy, or throwing good money after bad. That is, in making decisions, we frequently ignore the adage of letting bygones be bygones; we are unable to ignore costs that, having already been incurred, cannot be altered by the decision. We also succumb to the “endowment effect”—valuing what we have more than we would value the identical thing if we didn’t have it. For example, we might refuse to sell for $100 a wristwatch for which we would not have been willing to pay more than $90.\(^1\)

We engage in “mirror imaging”—assuming that other people have the same values, objectives, and reasoning processes that we do. We engage in “hyperbolic discounting”, that is, we weight present pains and pleasures more heavily than future ones to a degree that is irrational, as when we overeat (present pleasure) knowing that we will soon regret it (future pain).\(^2\) (This is also an example of “weakness of will”—what could that mean to an economist?) We give undue weight to immediate vivid impressions relative to what we merely read or hear about (the “availability heuristic”). (“A picture is worth a thousand words.”) We are excessively optimistic; in surveys, people greatly underestimate the probability of being divorced, and far more than 50 percent of drivers consider themselves above average. We are overly influenced by our preconceptions, and thus yield to “confirmation


\(^2\) More subtly, our discount rates are excessive in relation to our mortality risk. A rational individual chooses among possible actions by using a discount (interest) rate to reduce future costs and benefits, whenever they are expected to be realized, to a present value, thus enabling comparison among the future states and between each of those states and the present. Impartiality between present and future consumption implies discounting future costs and benefits at a rate equal to the probability of still being alive when the future state in question arrives. For most people at most ages, this probability of survival is much greater than is implicit in a discount rate of 2 to 4 percent; the usual range of estimates of the real (that is, inflation-adjusted) riskless discount rate. The present value of $1 to be received in 40 years is only 21 to 45 cents at discount rates of 2 to 4 percent. This would imply, on the assumption of impartiality between present and future consumption, that the average 30-year-old had only 21 to 45 percent probability of living to 70. In fact that probability is 75 percent. A possible explanation for this discrepancy is that the 40-year-old’s future-oriented self is unable to dominate his present-oriented self, is incompletely altruistic toward the individual’s future 70-year-old self, or is both. On the individual as a locus of different selves, see text below and Richard A. Posner, Are We One Self or Multiple Selves? Implications for Law and Public Policy, 3 Legal Theory 23 (1997).
bias"—interpreting evidence to support a preconception even when it does not. We are prone to “hindsight bias,” which means exaggerating ex post the ex ante probability of some event; we tend in hindsight to think something inevitable that in fact was unlikely.

Some of these apparent departures from rationality may be explicable in rational-choice terms, such as mirror imaging, which is generally a good guide to predicting the behavior of other people, though it breaks down when the other people belong to a different cultural community. Optimism is an antidote to debilitating depression. (Psychiatrists have coined the expressive phrase “depressive realism.”)

The endowment effect may be a consequence of (1) wealth effects: our preferences change when our wealth changes, and we are more or less wealthy depending on whether we own the good in question; (2) consumer surplus (see §1.2 supra); a glance back at Figure 1.2 will remind you that everyone who owns a good, except the marginal purchaser of it, values it above the market price; so owners of the good as a class value it on average more than nonowners do; and (3) rational adaptive preference: we adapt to what we have, and would incur new costs to adapt to something new. A person who is blinded in an accident must incur costs to adapt to being blind; but a blind person who through a doctor’s negligence fails to regain his sight has already adapted to being blind, so his loss of (prospective) sight is less costly than the sighted person’s loss of sight.

Hyperbolic discounting may be explicable by positing that the “individual” is actually a succession of separate selves, “time sharing” the same body; each self is rational, but each has its own interests and they are not identical across the selves (see §6.12 infra). And even the “sunk costs” fallacy may have some rational basis. Without it, a threat to retaliate would often not be a credible deterrent (can you see why?), and yet such threats are an important part of the social cement. Moreover, regret, which underlies the fallacy (we have difficulty simply “writing off” disappointments), spurs us to try to avoid repeating our mistakes.

Although the evidence that our cognitive limitations inhibit our ability to make rational choice is compelling and requires adjustments in the conventional economic analysis of law, there are two reasons to temper enthusiasm for “behavioral law and economics.” The first is that it leaves out self-selection. Most people are bad at dealing with low probabilities, but insurance actuaries are not a random draw from the population; they are self-selected from the subset of people that are good at dealing with low probabilities. Second, cognitive limitations affect judges, legislators, and other government actors as well as private individuals—and maybe more so, because they do not have as much at stake, since they are not as subject to the normal economic incentives and constraints. That limits the policy implications of behavioral law and economics.

Conventional rational-choice theory is challenged from the opposite direction by game theory. Traditional economics generally assumed (except when speculating about cartel behavior, and in a few other examples) that people made decisions without considering other people’s reactions. If the price of some product falls, consumers buy more without worrying that by doing so they may cause the price to rise again. The reason they do not worry is that the effect of each consumer’s decision on the price is likely to be negligible (the consumer is a “price taker”), while the costs to the consumers of coordinating their action would be prohibitive.

5. For still another rationality-compatible explanation of the endowment effect, see §8.14 infra.
In some situations, however, a rational person in deciding how to act will consider the probable reactions of others; he will, in other words, act strategically. This is the domain of game theory, which contrasts strikingly with behavioral economics because it assumes, at least in its purest form, a degree of rationality even higher than that assumed in orthodox economics.

Consider the following "game" (that is, a strategic situation). A monopolist is faced with the prospect of the entry of another firm. If he charges a price below his (and presumably the entrant's) cost, he will deter entry by forcing the new entrant to lose money. But he will lose a lot of money in the process—probably more money than if he did not cut his price but instead reduced his output and in effect divided the market with the new entrant (assume the market has room for only two firms). Knowing this, the prospective entrant will be emboldened to enter. Or will he? May he not reckon that the monopolist will reduce his price anyway? For the monopolist might reason: "If I charge a below-cost price, the entrant will know that I'm not bluffing, because he will realize that while I'll lose money in the short run, I will be making a worthwhile investment in developing a reputation that will discourage other challengers to my monopoly position." But will the monopolist reason so? Suppose that, though there is room for only one other firm in the market, there are ten candidates to be that firm. Even if the first nine were to abandon all thought of entering this market because of the monopolist's implicit threat of pricing below cost, the tenth would not. He would realize that when there is only one possible entrant the monopolist will be better off sharing the market than charging a price below cost. For remember that below-cost pricing made sense to the monopolist only when he was thinking of buying a reputation usable against future entrants. When there are no more future entrants to worry about, the monopolist has nothing to gain from investing in a reputation for deterring entry, so he will not charge a below-cost price; and knowing this, the last prospective entrant will enter. But this means that the first prospective entrant will enter. For the first knows that the monopolist, foreseeing the collapse of his scheme when the last entrant comes in, will have no incentive to employ his scheme against the ninth (for with the entry of the tenth guaranteed, the monopolist has nothing to gain from making a reputation by beating up the ninth), and hence against the eighth, and so on right down to the first. (This way of solving a game-theoretic problem, by starting with the last move in the game, is called "backward induction.")

What is striking about this example, and common in game theory, is its sensitivity to the assumption that everyone involved not only behaves with complete rationality but also assumes, and is right to assume, that everyone else involved behaves with complete rationality as well. Orthodox economic theory does not depend on such hyperrationality. But neither do all applications of game theory. Federal law forbids colleges to disclose a student's transcript to a prospective employer or another educational institution without the student's permission. Such permission is almost never refused. Game theory can help us see why without our having to assume hyperrationality. If no student gave permission, an employer considering a job application from a college student would assume that the student had average grades—what else could he assume? Students with above-average grades would be hurt by this assumption, so they would begin giving permission to their schools to release their transcripts. Eventually all students with grades above the midpoint would grant such permission. So now when an employer received an application from a student who had not released his transcript, the employer would assume that the student was in the middle of the lower half of the grade-point distribution,
because everyone in the upper half would have revealed his grades. So every student in the third quartile (that is, in the upper half of the lower half of the grade distribution) would be disadvantaged by nondisclosure and would reveal his grades. Eventually only the student with the very lowest grades would have nothing to gain from disclosure—and his failure to disclose would reveal his rank as unerringly as if he had disclosed it. Simple game theory thus shows why the law protecting the privacy of transcripts has been ineffective. The example illustrates what game theorists call a "pooling equilibrium," in which (in contrast to a "separating equilibrium") strategic behavior prevents people with different preferences from acting differently. The reasoning process required to achieve a pooling equilibrium in the student-transcript case is not so elaborate as to require hyperrationality.

Now go back to the below-cost pricing example and assume that each of the ten potential entrants is equally capable of entering first. Each will have an incentive to hang back, knowing that the incumbent seller may have an incentive to sell below cost when the first entrant enters, to show that he "means business." It's like the case of a person who has six shots in his gun and is facing ten assailants. None of the assailants may be willing to attack first, and if so there may be no attack at all, even though the attack would be certain to succeed. Actually this is a clearer case than that of below-cost pricing; the defender has nothing to lose from shooting the first six assailants, so anyone who attacks first knows that he'll be shot.

Game theory has many potential applications to law, because much of law deals with strategic behavior. This is true not only in the antitrust and student privacy examples but also in contract negotiations, litigation and settlement, and many other areas. This book uses simple concepts of game theory to enrich analysis and to prepare the reader for a more systematic study of this important analytical technique.

**Suggested Readings**

Problems

1. Would economics be worth studying if resources were not scarce? Can contemporary U.S. society be described as one of scarcity? It is said from time to time that there is a scarcity of doctors, or gasoline, or something else. How do these episodes differ from the scarcity of all valuable goods?

2. What determines human wants? Is that an economic question? Are human wants insatiable? How is this question relevant to economics?

3. Suppose all people were unselfish, benevolent, and altruistic. Would economics be less relevant to social ordering? How does the benevolent individual allocate resources? Might he use the market—that is, sell to the highest bidder—rather than give goods away? Why?

4. The market is only one method of directing the allocation of resources to various uses. Another might be administrative decisions by a governmental body. How would you expect these methods to differ?

5. One of the costs of punishing bribery is higher wages for government employees. Explain.

6. Explain how a buffet meal in a restaurant illustrates the concept of marginal cost.

7. It is often said both that litigation costs too much and that there is too much of it. Under what assumptions can both propositions be true without violating economic logic?

8. Assume there are 25 (rational) lions and one lamb on an island. All the lions know both the number of lions and the number of lambs, but they don’t know where the lamb is. Any lion who eats the lamb will fall asleep for an hour, during which time he can be eaten by any lion who chances upon him. Will the first lion to come upon the lamb eat the lamb? Would your answer be different if there were 11 lions rather than 25? If there were 24 rather than 25?

9. Continuing with animal questions, assume you are a devotee of roast suckling pig. One evening you’re at a restaurant that serves roast suckling pig and you order it. The waiter informs you that there are several live suckling pigs in the kitchen, and he would like you to pick the one you’d like killed and roasted for you. Assume the killing and roasting will take only 20 minutes. You decline the invitation, knowing that if you see the suckling pig alive you won’t have the heart to eat it. Are you being irrational in being willing to eat the pig provided you don’t have to see it alive? Would you be irrational if, having seen the pig, you indeed couldn’t eat it?