

## Chapter 2

# Anything Worth Doing Is Not Necessarily Worth Doing Well

**I**n the first chapter, we stressed the role cost plays in guiding human behavior. In this chapter, we offer specific examples of the influence of cost. We seek to show you how economic analysis can help us develop surprising conclusions about the way people behave.

### Anything Worth Doing

From early childhood, most of us have been taught that anything worth doing is worth doing well. If we were asked today if we still agree with the statement, many of us would say that we do.<sup>1</sup> It is only natural for a person to prefer a job that has been done well to one that has been done not so well. Indeed, such a preference for quality is fully consistent with the basic assumption in economics that more is preferred to less. It is also easy to see why people may not like to redo something they have already done, particularly if the combined time involved is greater than the time that would have been required to do it right in the first place.

Obviously, people do not behave the way they profess they should. There is probably not a minister around who has not written what he considered at the time to be a poor sermon, and one of the authors recently built a bookcase that was more or less thrown together. Wives and husbands have cooked dinners they knew in their hearts were seriously deficient in one respect or another. Students regularly choose to work for a grade of C (or a grade point average far less than 4.0) instead of going all out for an A, even when they prefer to get an A. How many, do you suppose, of the students who are reading this have written a paper that by their own standards fell far short of a well-done paper, and how many of them have sat through lectures for which the professor was ill-prepared? In fact, can you say at this point that you have read the last few pages well?

Admittedly, people do some things well, but the point we wish to emphasize is that they frequently do things less than well, not because they do not want to do better, but because of the additional (or marginal) cost involved in improving the

quality of whatever they are doing. Given the student's ability—which, as a matter of fact, is limited at any time—writing a good A paper generally requires more effort and time than writing a C paper. If the student spends additional time on the paper, he or she has less time for doing other things—less time to study the subject matter in other courses—which may mean doing less well in another course or even failing it. He or she cannot use the added time for physical exercise, cannot spend the time in bed, or out on dates. To reiterate, there is usually an additional cost that must be borne for a higher quality paper, and it is because of this cost that the student may rationally choose to turn in a paper that may just get by. (Even so, the student may still hope for an A. Can you explain why?)

If the cost is not greater for higher quality work, then one must wonder why the job would be done poorly. The student would be able to have a higher quality paper without giving up anything. The problem of the poorly done work may be one of perception; that is, the student may perceive the additional cost to be greater than what it actually is (in which case he or she should respond appropriately if provided with accurate information). Or the student may inaccurately assess the benefits of a better performance.

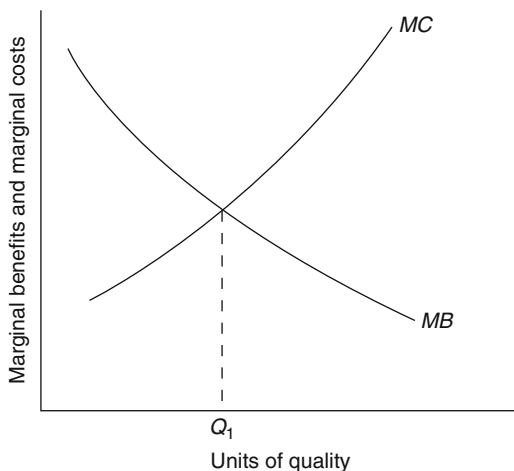
Quite often one person will admonish another to do a good job. For example, professors may be distressed at the quality of the papers they receive and may honestly feel that if their students are going to write a paper they should write a good one. The professors may be even more upset if they find out that their students spent the last few days doing very little or just having a good time.

The values the professors and the students place on various activities obviously differ. Professors may view the paper as being of greater value and the other activities as being of less value than do their students. Consequently, they believe it is in the students' best interest to do better papers. But because students view the value of the other activities as being higher, they in effect, view the cost of doing the better paper as being higher. Of course, it is clearly rational for professors to want the students to turn in better papers, but if they had to bear the costs, they might change their minds.

The same line of argument can be used to explain why the preacher's sermon is of low quality even though he or she may have the ability to do better. By writing a better sermon, the minister may have to bear the cost of not seeing the parishioners at the hospital or of giving up something else that is considered valuable. To cook a better meal, a person may have to forgo extra time at the office, a workout at the gym, or hauling Little Leaguers to practice.

What should be the quality level toward which a person should strive? The utility-maximizing individual should raise the quality of whatever he or she does until the marginal benefit received from an additional unit of quality is equal to its marginal cost. Suppose that the marginal benefit (marginal utility) for units of quality diminishes as the total quality of the work goes up. Assume also that the marginal cost of additional units increases as the quality level is raised. The diminishing marginal utility assumption is represented by the downward curve (which is equivalent to the demand curve) *MB* in Fig. 2.1. The upward sloping curve *MC* represents the increasing marginal cost. Notice that we have labeled the

**Fig. 2.1** Marginal Benefit vs. Marginal Cost



horizontal axis as units of quality. (The actual good or service involved can be anything.)

The utility-maximizing quality level is  $Q_1$ . Before  $Q_1$ , the marginal utility of an additional unit of quality is greater than the marginal (or additional) cost.<sup>2</sup> By expanding the quality toward  $Q_1$ , person can arise utility. If the person extends the quality level beyond  $Q_1$ , then the marginal cost of doing so will be greater than the marginal utility. The result is that the person's total utility level will be less than it would be at  $Q_1$ . An outside observer (such as a teacher) may view the quality of the student's work at  $Q_1$  as quite low—and it may even be low by the student's standards—but this does not make his behavior any less rational.

Of course, how well people, students included, tackle any assignment or task depends upon their opportunity cost (or the value of what they forego to undertake the assignment or task) they incur, and people's opportunity costs differ. If, for example, two students value an A on a paper for an econ class equally (a simplifying assumption to ease making an analytical point) but they differ in their opportunity cost of their time (student A values his time used to write the paper at \$8 an hour while student B values her time at \$40 an hour), we should not be surprised if student A works more hours to achieve the A on the paper. Student A simply gives up less of other goods that can be bought with the wages earned than student B. Indeed, the opportunity cost of student B devoting time to improving her paper can mean that she knowingly submits a paper she believes is subpar. Why? She gets more value from the dollars she earns than she would get from working for a higher grade—and she could be as happy, if not more so, with her lower grade and more of other goods than student A.

In other words, anything worth doing is not necessarily worth doing well! Some people will do things less well than others because their costs are higher, and not necessarily because they are less capable.

## Why the Young Go to College

College classes are predominantly made up of young adults between eighteen and twenty-two years old. A small percentage may be in their middle or late 20s, but people who are over fifty constitute an extremely small minority. Why do the young go to college whereas older adults, as a general rule, do not? The list of answers conventionally cited may include that the young (1) are more accustomed to the routine and peculiar demands of the educational process, having recently graduated from high school; (2) do not have the family responsibilities that the older people have; (3) as a rule, realize the value of education more than do their elders; and (4) are more intellectually alive than older adults.

All of these factors can have an influence in determining the composition of college classes, although our experience suggests the last two reasons are invalid.<sup>3</sup> Although rarely cited, the difference in cost to the two groups may be equally important in explaining the composition of college classes.

The cost of a college education is more than the direct monetary expenditures that the student makes at the start of each year or academic session. The total cost is the sum of all that the student must forgo. In addition to university charges, this total may include the loss of income one may experience while in the classroom and studying, the transportation expense associated with going to and from the campus, the additional postal and telephone expenditures one must make to stay in contact with friends and family, the cost of books and materials, and the cost of fitting in culturally with the college community.

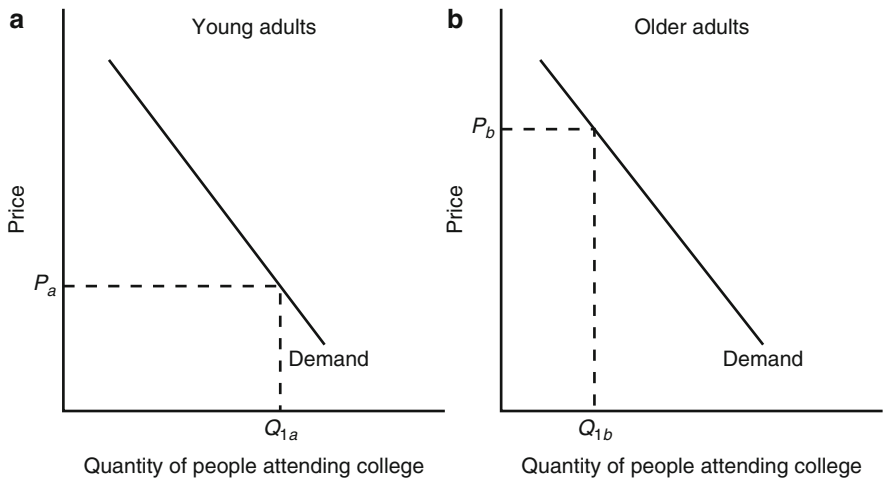
Although there may be several differences, the essential difference to the young and old is the opportunity cost of their time. This, of course, will mean that the total costs will differ. Suppose, for example, that total university charges are \$10,000 per year (close to the average for all public universities in the country in 2010) and that all costs other than opportunity cost of time are \$3,000 per year. (We realize that the older people may be inclined to spend less on such things as college decals.) A younger person just out of high school can, over the course of the following four years, probably earn, at the best job he can get, about \$40,000 for an average of \$15,000 per year.

On the other hand, the man who is forty-five years old can conceivably earn about three times as much, \$180,000, or even more. This means that the total cost to the young adult is about \$112,000 for four years of college education; the cost to the older person is approximately \$232,000 (see Table 2.1), or more than twice as much.

Even if we assume that the two groups have the same values and are equal in every respect with regard to college education, we would expect a larger quantity of education to be demanded by the young than by the old. For example—and only as an example—assume that the demand for college by the young is exactly equal to the demand by the old, as depicted in Fig. 2.2a, b. Because the price of a college education to the older person ( $P_b$ ) is far greater than the price paid by the young ( $P_a$ ), we would expect that the quantity of education demanded by the young would

**Table 2.1** Cost of 4 year of a public University at present-day prices

	Young adult	Middle-aged adult
University charges	\$40,000	\$40,000
Opportunity cost	\$60,000	\$180,000
Other costs	\$12,000	\$12,000
Total costs	\$112,000	\$232,000



**Fig. 2.2** Difference in Total Price of Education to Young and Old

be greater. In the example of Fig. 2.2, the quantity of education demanded by the young would be  $Q_{1a}$ , which is greater than the quantity demanded by the old,  $Q_{1b}$ .

In addition, the young have a much longer period of time to reap the benefits of a college education. The forty-five-year-old has only twenty to thirty years left prior to retirement, whereas the twenty-two-year-old college graduate has forty-three to fifty-three years left to work. Therefore, the investment expenditure by the young is likely to be much more profitable. Finally, we should note that the total cost to the young could be much less than we calculated because their parents may foot the university bills, something that is less likely to be so for much older persons.

## Why Students Walk on the Grass

Walking on the grass may not appear to have anything to do with economics or to be sufficiently important to warrant discussion. We suggest, on the contrary, that the decision to walk on the grass, for example on the campus mall, is an aspect of human behavior and, therefore, of economics. A study of the decision to walk on the grass can be revealing about the causes of pollution and human action in general.

Why do students walk on the grass? More to the point, why do people who may dislike seeing paths form on campus or courthouse lawns walk in places where paths exist or are likely to exist? To answer these questions, one must begin by recognizing that there are benefits to walking on the grass. It can be a shortcut across campus and can save time; the walk may also be personally gratifying, particularly in the spring and without shoes.

The individual who strongly favors campus beautification must, in making the decision to walk on the grass, weigh these expected benefits against the expected cost. Before stepping onto the grass, the student must quickly reflect on the benefits and then calculate the costs involved. She may calculate that if she walks on the grass she will be responsible for killing several blades of grass but that it is very unlikely that anyone would be able to notice even if she regularly walked in the same places. Even if the student dislikes paths on lawns, she may reasonably expect the cost of her walk to be approximate zero since each individual walk does not materially affect the environment under normal circumstances. Consequently, the calculated benefits exceed the cost, so she walks on the grass and does it rationally!<sup>4</sup>

The problem is that everyone independently making similar calculations may make the same rational decision. The results are that a path forms and an eyesore is created. But this result does not mean that it is rational for any individual to avoid walking across the grass, even after the path has formed: Because one person cannot control where others walk and no one can detect the results of one person's walks, the rational choice is to take the benefits of cutting across the lawn. One can reason that if the path is there, then choosing not to use it will be not make any difference—that is, the nature of the path will not be affected. So one walks, and everyone else walks, and the path remains and continues to deepen and possibly spread. This example, in miniature, illustrates the evolution of a form of pollution.

Following this line of argument, one can deduce that if the individual incurs a private cost, then the logical thing to do may be to take the sidewalk or another route. If the lawn or path is prone to become a quagmire when it rains, then private costs are imposed for walking. The student who walks on the grass will have to clean her shoes, and since time is involved in doing that, there is a cost. The cost for some may still not be as great as the benefits, but, significantly, when such conditions exist, there is less walking on the lawns than on sunny days.

The connection between walking on the lawns and pollution of other forms should be clear. A person or firm may litter because calculations indicate certain benefits to getting rid of a piece of paper. One may reason that a piece of paper by itself will not significantly affect the environment or materially affect anyone's sensibilities, and will, therefore, discard the paper. The problem, again, is that if everyone follows suit, an environmental problem will develop. If the individual can control the behavior of all others, she may not pollute herself, but given her inability to control others, polluting may be rational. Also, cleaning up can be irrational; one may reason she cannot do enough to affect the general environment, particularly since others will be littering as she cleans up. (See footnote 4.) In fact, her attempts to clean up can reduce the cost of polluting to everyone else—the environment is

less affected—and therefore, one might anticipate, without an intervening change in people's values, more littering by some. As a result she does not receive the full benefits of her actions and to that degree is less likely to clean up.

The analysis can be extended to conversations at a crowded cocktail party. Anyone who has attended such a gathering probably remembers that the sound level often starts low and then increases, even though the number of people in the room has not changed. The reason for the crescendo in conversation volume is that at the start people may be able to understand one another at a low volume, but, as everyone else begins to talk, the general volume begins to rise; this means that the volume that any one individual must use to be understood by the next person must be increased. As the volume increases, talking louder can be rational. The result may be (as it has been time and time again) that all persons in the room end up virtually shouting at one another. If each were to lower his own individual volume, then all could have a more pleasant conversation. But lowering one's volume is not a rational choice. The person who chooses to speak more softly could not be heard because he cannot control the volume of the others in the room. In addition, he may not significantly affect the general volume level. Therefore, no one changes the volume.<sup>5</sup>

These problem areas point to the usefulness of some form of collective action which would impose private costs on the actions of individuals so that they may be expected to act in the general interest shared by all (which can also be in their own interest). In the case of walking on the grass, the government (or university) can plant hedges or thorny bushes along the edge of the sidewalks. If students want to walk on the grass, they will have to incur the cost of jumping the bushes. Industrial pollution can, of course, be regulated, by which we mean some environmental authority can tell polluters exactly how much they can pollute and back up the stipulated regulations with fines for excess pollution or threats of closure of offending plants. Such regulations require polluters to incur pollution-abatement costs, which has the effect of increasing the costs of producing the final product and raising its price. The higher price for the product will curb consumer purchases that, in turn, will cause a reduction in pollution (if production falls, resource use and offending emissions must also fall).

In the case of regulation, polluters are in effect given, free of charge, the rights to emit pollutants. Alternatively, the government can auction off the "pollution rights." To be able to pollute, polluters must have pollution rights, which they must buy at auction at a price. The price polluters pay for their acquired rights becomes a cost, which can feed into higher production costs and product prices. The higher resulting product prices can curb consumer purchases, which means the sale of pollution rights can have the same effect of regulation, less pollution.

Interestingly, the government need not auction off the pollution rights; they can give them to polluters (or just distribute them throughout the population by some random mechanism). Because there would be a larger number of rights demanded than the quantity of rights made available (or else there would be no curb on pollution), the rights would carry a market price. That price would have the same

effect as the government's auction price; it would curb market supply of the product, drive up its price, and curb sales and (consequently) pollution.<sup>6</sup>

## The Economic Calculus of Panics

To panic in a burning theater, falling stadium, or sinking ship often appears to be a dumb, irrational thing to do. If all people in the theater or stadium or on the ship remained orderly, far fewer lives would be lost. Instead, often in such situations, people panic and dash for the exits or the lifeboats, sometimes in a wild frenzy. Unable to get to safety at more or less the same time, panicky people stack up at the doors or turn over or overload the lifeboats. Needless deaths occur. Unfortunately, in many fires, more people die from not being able to get out than from the fire itself.

Certainly, panics are frequently thought to be totally outside economic analysis. After all, it is commonly believed that people could be caught up in panics only if they lose their "cool," or worse, their brains—meaning their ability to calculate the consequences of what they are doing. Indeed, panics are explained as the spontaneous, unthinking behavior of people responding to survival instincts, which may be true in some situations. To us, however, many panics (but certainly not all) can be understood in terms of the economic calculus of costs and benefits. Panicky behavior can be quite rational.

Admittedly, if everyone remained calm and collected in the presence of a crowded and burning theater, then all *may* be able to exit without harm. People could walk single file out the limited number of exits. But each person in the theater has little or no control over the entire group. Each has to reflect on what to do, given what others are expected to do when no one can control the entire group. Each person can reason that the chances of getting out of the theater alive are very good *if everyone else acts orderly and walks out calmly*. But each can also reason that running to the exit will increase one's survival chances even more, regardless whether or not others choose to run.

The person in the middle of a theater looking up at the burning roof may rightfully reason that he has the poorest chance of getting out alive and, therefore, has the most to gain from "panicking." However, those closest to the exits are not without cause for panicking. They too can improve their chances of survival if they run; they get out more quickly. In addition, they can quickly conclude that others far removed from the exit have rational reasons to run for the exit and can run over the people closest to the exits. Indeed, many people in the theater can be expected to contemplate a pileup at the doors, which is all the more reason to panic: they must attempt to get out before the doors are clogged with trampled bodies.

If there were some personal cost to running for the exit, then all within the theater would be less likely to run. The cost itself would reduce their interest in running directly (downward sloping demand curves still exist in burning theaters). Furthermore, each person can reason that others will be less inclined to run, which



reduces the incentive of everyone to run. The threat of a pileup at the doors is reduced. This line of reasoning explains why panics are reduced when someone—the police, the manager of the theater, or the captain of the ship—takes charge when panics are real possibilities. The person taking charge effectively says that a significant toll will be extracted from people who get out of hand. The captain of a sinking ship may go so far as to say that he will blow the brains out of anyone who tries to improve his position in the cue for the boats. In effect, the captain says I will make running for the lifeboat a bad deal: “If you try to improve your chance of survival by panicking, I will worsen it with the gun in my hand!”

Unfortunately, many panics occur because no one is in a position to take charge. For example, no one has a gun to threaten everyone. In addition, many may refuse to take charge because taking charge can be an irrational thing to do. Stopping to try to persuade the crowd that they should walk orderly to the exits may only worsen one’s chance of survival. Besides, each person can reason that no one (or an insufficient number) will listen, making the calls for order worthless. The moral of the analysis: if you intend to control a potential panic, you had better have a very big stick—but a gun might be better!

Is there any way of telling whether the economic explanation does explain the type of behavior observed in panics? Or should we deduce that panics reflect a breakdown of the economic calculus we call rationality? Evidence is difficult to come by, simply because it is hard for researchers to intrude on panics to gather data. Tentative evidence, based on an experiment in the early 1950s, casts a great deal of light on the matter, although it does not conclusively settle the issue. A professor of sociology tied a knot on one end of each of a large number of pieces of string. He placed these knots, one by one, in a bottle in such a way that the end of each string stuck out. The neck of the bottle was such that it was easy to pull the strings out, including the knot, if only one or two were passing through the neck at a time. However, the knots were sufficiently large that if all of the strings were pulled at more or less the same time, the knots would clog the neck of the bottle.

The professor then gave the free ends of the strings to his students and told them he was running an experiment and that all of the students who pulled their strings completely out of the bottle (that is, pulled the knot out) within thirty seconds would receive a nickel. Clearly, there was no cause for panic here—the students were not in any way in danger; but on the other hand, the economic arguments regarding panics would apply. Those who did not pull on the strings and let other people pull theirs out first had less chance of getting a nickel. On the other hand, if everyone pulled on the strings, none of them would get their strings out, and no one would get paid.

As we suppose the reader has already guessed, all of the students pulled on their strings immediately.<sup>7</sup> In effect, the neck of the bottle resembled the door of a burning theater when panic had set in.

Of course, the best evidence on our logic of panics come from the long string of runs on banks through history, with the most recent runs on banks in the United States and elsewhere occurring at the start of the housing and financial market downfalls, and the emergence of the “Great Recession.” The inclination of depositors to run on their banks in crises in the United States has been greatly

tempered by full deposit insurance, but not so in the United Kingdom where, before 2007, deposits were only partially insured. With the threat of the failure of the United Kingdom's Northern Rock Bank, nightly news reports showed long lines of depositors lined up outside their Northern Rock branches before they opened. Many depositors were in line because they truly worried that their bank was endangered of failure because they were caught with a lot of bad mortgages as housing prices fell and foreclosures rose, but, no doubt, other depositors were in line for fear that their banks would fail because of so many other depositors withdrawing their funds. The "bank panic" was abated when the Bank of England publicly committed to backing all deposits and then the British government effectively nationalized the bank.<sup>8</sup>

## **The Social Dilemma: Conserving Energy**

In the 1970s, most people were concerned about the developing shortage of energy. Many attempted to conserve by turning down their thermostats a few degrees and perhaps driving a little more slowly. The effects of such voluntary actions were, however, not sufficient to eliminate the shortage. Drastic government action in the form of rules on speed limits, thermostats, and fuel consumption in automobiles was necessary to partially remedy the situation.

Why did people who were concerned about the energy crisis leave their lights burning and continue to zip along the highways at high speeds? Was it solely because people did not care (as many did not)? Why were price increases on energy necessary to get people to cut back on their energy use at home and in their automobiles?

Imagine, for the moment, John sitting in an overstuffed chair watching television. He knows that a light has been left on in an adjoining room, but he does not get up and turn it off. Leaving the light on for an additional half hour until he happens to walk by the room will increase his electric bill, but we must also recognize that getting up requires effort and diminishes the entertainment value of the television program. In other terms, turning the light off is costly. Moreover, given relatively low electricity rates, John may calculate that the cost of turning the light off is greater than the increase in his electric bill.

If John is concerned about the total community consumption of fuel through the generation of electric power, he may still reasonably assume that his decision to leave the light on, or even leave on every light in his house, will not appreciably affect the total amount of fuel the power company consumes. Similarly, during the winter of 1977 and 1978, natural gas supplies were in critically short supply, and many workers were being laid off because of the shortage. All during this period, the gas streetlights in a townhouse development in Blacksburg, Virginia (as well as elsewhere in the country), were left on day and night! The townhouse residents met to consider turning them off; however, they decided to leave them on because an "insignificant" quantity of gas was being used.

The problem in all of these episodes of energy crises is that many people, viewing the situation only in individual terms, may decide to leave their electric and gas lights on, in which case, the generating facilities will consume significantly more fuel. The reader should understand that we do not necessarily condone this behavior; we are merely attempting to explore the logic of what can be considered a deplorable circumstance.<sup>9</sup>

If you question the legitimacy of this explanation, suppose then that John knew that leaving lights on for the duration of the television program would cost him \$50. Would you expect him to get up and turn it off? Suppose the price of natural gas had been three or four times higher, what would the townhouse residents have decided to do?

When the shortage of gasoline began emerging in the spring and summer of 1973, Exxon and other petroleum companies advertised a saving in gas consumption if a driver were to drive at fifty miles per hour instead of seventy. The Exxon commercial demonstrated that a car going seventy miles per hour would use a twenty-gallon tank in 253 miles; if the car went fifty, the 253 miles could be covered with 4 gallons of gas to spare. Should Exxon or anyone else have expected the ad to make a significant dent in total gasoline consumption? Not really, because it would take the driver approximately one and a half hours longer to travel the 253 miles at fifty than it would at seventy. The value of the gasoline saving (at the time) was \$0.60 per gallon, approximately \$2.40. This means that the driver would have had to value his time at \$1.60 per hour (or far less than the minimum wage at the time) to justify (on purely economic grounds) slowing down. If he had had the public interest at heart, he might have slowed down, but he would have done so without materially affecting the long-run fuel problem of the United States. Also it is very difficult for anyone to slow down in the public interest while others, including public officials, are cruising along at higher speeds.

If the price of gasoline were to rise to, say, \$5 per gallon, several effects can be predicted. First, and as a generality, a greater private cost will be incurred for energy consumption. Second, the savings from going fifty miles per hour (instead of seventy) would be \$20 (four gallons times \$5). This means that anyone who would then value his time at less than \$5.32 per hour would find going slower economical; economists would expect more to do so. (Why?)

Third, economists would also expect that, since the demand curve for travel is downward sloping, people will drive fewer miles, buy smaller cars, use more car pools, and make greater use of mass transportation. All this would be expected to further reduce the amount of energy consumed. (And consumers responded to the gas price increase in the 1970s in all of these ways, and all of the subsequent price spikes since the 1970s.)

Fourth, as people also would be expected to go slower and the highway fatality rate declines with lower speed, there should be fewer deaths on the highways. The dollar value of damage per wreck would also be expected to fall, causing a reduction in insurance rates. Not having made a detailed study of the possible effects, we cannot say how great the effects would be expected to be in the aggregate, but we would predict with confidence the favorable direction of the

effects and that the “shortage” would be eliminated with some increase in price. (Why?) By 1980, the price of a gallon of gasoline rose in some areas from \$0.60 a gallon to \$1.50 and above, and all the above consequences had been observed. When the price of gasoline spiked in 2008 to close to \$5 a gallon, all of economists’ predictions on gasoline consumption were realized, along with other effects. People began buying smaller cars (instead of SUVs). The used-car prices of large, gas-guzzling cars plunged. America looked as though it was on an energy conservation binge, until the price of gasoline once again plunged the following year to less than \$2 a gallon, causing resurgence in sales of large cars.

No one likes to see an increase in prices, but when the quantity demanded exceeds the quantity supplied, how is the shortage to be eliminated? How is the available quantity of gasoline, natural gas, and fuel oil going to be distributed among the potential buyers? The pricing system has drawbacks. The real income of many people is going to be reduced: many people will be unable to buy as much. The question is not, however, whether the pricing system is perfect for allocating supplies but rather how its advantages and disadvantages stack up against alternative systems.

The pricing system may not be fair, but is a formal gas coupon rationing system (which was frequently proposed during the energy crises of the 1970s) fairer by your own definition? How would the coupons be distributed? Do we distribute the coupons according to the number of cars that a person has? If we do, wealthy people (who tend to have more cars) will be getting disproportionate shares of the gasoline. Do we give the people who live two miles from work less than the people who live twenty miles away? Do we give the family with six children and one car less gasoline than the person with two children and two cars? Do sales representatives get more gasoline than college students who commute to and from school? Can we really say that a middle-aged worker’s being able to drive to work is more important, in some sense, than an afternoon ride for an elderly couple who may have no other principal form of entertainment?

These questions have no easy answers, but if the pricing system is not employed, these questions and many, many others like them must be addressed. If we do adopt a nonmarket rationing system, then it follows that the price of the good will be kept lower than otherwise but that there will still be people who are willing to violate the rules and sell the product on the black market at a higher price. Control of black markets is likely to be necessary.

Whenever an economist suggests that gas prices should be raised to reduce the quantity demanded, others will argue that the rich will be able to continue to buy all the gas that they need, but the poor will not, and the poor need the gasoline to go to work. We are inclined to believe that both rich and poor will cut back on their gasoline consumption. In addition, under a coupon system, the poor may not end up with the gasoline. If the price of gasoline goes to \$5 per gallon and the poor are unwilling to buy at that price, will they not be willing to sell their coupons at that price? If they do, they will have more money, but they will not have the gasoline, which, as suggested, they need.<sup>10</sup>

## The California Electricity Crisis

In 2001, the wholesale price of electricity in California, then newly deregulated, jumped from the convergence of several supply-and-demand forces:

- There was an absence of new generating plants coming on line
- There was a spike over the previous year in the price of natural gas (which is widely used in the state to fire generators)
- There was also an ongoing drought in the Northwest, which caused the water flow in the Columbia River basin, a major source of hydropower generation in the region, to fall by half
- The booming California economy caused a doubling of the growth rate in electricity demand from projections of three or four years before
- And the now-defunct Enron Corporation, as well as other energy traders, began to drive up the wholesale price of electricity by, in effect, cornering the market (according to critics of California's electricity deregulation record)<sup>11</sup>

All of these market forces threatened the vitality of the world's fifth largest economy—California—because of the then-pending shortages of a critical resource, electricity.

During the early stages of the crisis, the vice president for administration at the University of California, Irvine (where author McKenzie is a faculty member), emailed the faculty and staff regularly about pending "rolling blackouts," suggesting in one email that university employees and students should drive carefully because traffic lights might go out without notice. And they did one day early in the emerging crisis, causing the death of a driver in San Diego.

Nevertheless, judging from people's behavior in the author's immediate area, you would not have believed that there was an electricity crisis at all, unless you read the morning papers. In his university building, one out of every three hallway (florescent) lights were turned off late in the afternoon, but only for the last hour or so of the workday. The modest hallway "dim-out" suggested the turned-off lights did not appear to be needed anyway.

Otherwise, it was hard to detect changes in behavior. Few people seemed to be truly concerned enough to make real sacrifices. But then why should they? Most people seemed to take the view, "Anything we might do to conserve would be of no consequence." The "free rider problem," which economists have spent careers talking about in their classes, was on full display.

At Christmas time 2000 (about the time the electricity shortfall was reported to be peaking), largely empty Newport Beach office buildings surrounding the upscale shopping center, Fashion Island, were aglow on practically every floor into the evening hours as if nothing were wrong. Nightly, throughout the Christmas season, Fashion Island, illuminated the "World's Largest Decorated [and Lighted] Christmas Tree." The massive 110-ft-tall displayed lights the size of soccer balls, and you can bet there were lots of them. Dozens of palm trees at the entrances of businesses remained wrapped in Christmas lights. The nearby international headquarters of the

Trinity Broadcasting Network, whose religious television sets drip with ornate gold leaf props, had its multiacre campus ablaze with what appeared to be several million Christmas lights. Then, the university lit up a new one-hundred-yard-long grand entrance to the campus with a few thousand watts of lighting, probably offsetting any savings from the dimmed hallways of the office buildings.

But why should things have changed? Electricity waste has been a way of life in California. It was transparently clear that electricity was then, and remains to this day, relatively cheap in the state, given the widespread use, a fact that stands in contrast to what you hear from the talking heads on the tube in local studios, who, by the way, made their dire points about the crisis in front of a few thousand watts of television lights. During the crisis, the author found it remarkable that his electric bill for his four-bedroom California home averaged less than \$75 a month—two-thirds, if not one-half of what he paid in South Carolina a decade before. Everyone cites Californian's relatively "high" electricity rates, but few note how little electricity is needed in such a moderate climate.

Economists have spent many hours discussing the "tragedy of the commons" that emerges when prices are not allowed to seek their market-clearing level. Typically, the talk is about how, say, cattlemen will invariably overgraze pastures when the property is held in common, meaning no one owns the property and no charge is exacted for access. The "tragedy," underfed cattle because of the overgrazed pastures, is an outcome none of the cattlemen wanted.

If there ever were a tragedy of the commons, Californians stood witness to its making during the electricity crisis. But the tragedy was made by those who were least suspected. Few consumers (or policymakers) seemed to understand that every time they turned on a light, they "overgrazed" the power grid and increased the junk debt of the local power distributors, and the "overgrazing" continued because the retail price of electricity remained regulated, capped throughout the crisis, while the deregulated wholesale prices of electricity rose. Who cares? Indeed, as life went on in amidst the crisis, Californians were adding to it—and the electric power companies' indebtedness and the threat of their bankruptcy—but by so little that no one needed to bother to change lifestyles. Therein lies the source of a real-life commons tragedy. Economists in other parts of the country only have to appreciate the argument intellectually. Californians had to live with the consequence of the tragedy that was unfolding around them.

The state rapidly ran through billions of tax dollars to subsidize all the energy waste, and only belatedly came to realize how attempts to hold the retail price of electricity down, in the face of the mounting shortage, curbed any incentives to conserve electricity use all the more.

Never mind; those palm trees could not have looked more regal at night, and hot tubs remained heated, at their toasty legal limits, 104°F. Yes, the hot tubs are heated with natural gas, but may realize that the high demand for natural gas was a source of the state's electricity crisis, because electricity is produced with furnaces heated with natural gas. Southern Californians—hot tub bathers and all—could have been made to realize the social consequences of their use of electricity and natural gas

through a simple change in policy—a substantial hike in the prices of electricity and natural gas.

## Reckless Driving: Air Bags and Daggers

There are many drivers on streets and highways who are, for all practical purposes, numskulls. They do not know how to drive, are drunk when they do, or generally do not think about what they are doing behind the wheel. Others take out their pent-up aggressions when driving their cars.

We can attribute a large percentage of the deaths that occur each year from automobile accidents to that type of driver. There are, on the other hand, many conscientious people who are careful and continually think about the consequences of their driving behavior. They are the ones who purposefully stay on their side of the road, observe speed limits, do not tailgate, or in general, do not do things that may be deemed reckless because they calculate the costs of having an accident to themselves and others. They are careful because the costs of being less careful are greater than the benefits that can be achieved.

Actually, the cost of driving recklessly is not necessarily equal to the cost incurred from any given accident but, rather, is equal to the cost of the accident discounted by the probability of having the accident. Granted, the probability of having an accident under such conditions is very close to one; however, under other conditions (for example, driving eighty-five miles an hour on a freeway), the probability of having an accident can be far removed from unity. The calculated costs of reckless driving are correspondingly lower. The reader should think in terms of the probability of having an accident as well as the cost of the accident if it occurs. When discussing reckless driving, too often people tend to think only in terms of the cost of the accident *if it occurs*; consequently, they tend to overestimate the cost and fail to understand why, so many people drive recklessly.

Those people who weigh the costs and benefits of driving recklessly should respond in a predictable way to changes in the expected costs and benefits. If the benefits of going faster, making U-turns in the middle of the street, and driving on the wrong side of the road were to increase, then obviously driving of this nature among drivers as a group would increase. For example, if a child were to have a serious head injury requiring immediate medical attention, would you not expect the parents to break speed limits, ignore stop signs, and generally take more chances attempting to get the child to the emergency room than they otherwise would? This is a clear example of an increase in benefits from reckless driving; we suggest that similar responses will occur even if the change in the benefits were less dramatic. Take, for example, a person who may be late for an important meeting. How would she behave, relatively speaking, behind the wheel? At least, would you not expect drivers as a group to respond in the way an economist would predict?

In a similar manner, we would expect people to respond to changes in the expected costs of reckless driving. There should be less reckless driving when the

expected cost of doing so goes up and more when the cost goes down. If these statements are reasonable, the reader should agree that one reason for the large volume of accidents on highways is that the expected cost to the drivers is relatively low.<sup>12</sup> This is simply another application of the law of demand.

Admittedly, not everyone will respond to changes in cost—for example, those who do not think about what they are doing, and those who do not consider the cost as a factor—but so long as there are people who do consider cost as a factor, the downward sloping demand curve should hold. The number of people who think or act randomly will determine the position of the demand curve and not the slope.

To illustrate this basic point, would the reader not agree that students have more collisions in the hallways of their classroom buildings than they do on the streets when they are in their cars? It appears clear to us that, although students are involved in large numbers of automobile accidents, the number of hallway accidents is far greater. One explanation for the difference in the accident rate is possibly that bumping in the halls does not cost the persons bumping very much, whereas automobile collisions can be considerably more costly. If the student knew that if he bumped into someone in the hall, he would be fined \$50, would you expect the same amount of bumping or less? Would your answer not apply to people's behavior in traffic?

Finally, there is an ironic implication of our argument for automobile safety policy. In 1987, the then secretary of transportation, Elizabeth Dole, came out in favor of the mandatory installation of air bags in cars. The secretary's concern was that people were losing their lives because of their failure to buckle up. But the secretary should have considered the predicted economic consequences of the recommended policy. Safety devices such as seat belts, padded dashes, and air bags reduce considerably the probability of death and the severity of injury in the event of an accident. By making such equipment mandatory, the government is in effect reducing the expected total cost of an accident to those in the car, thereby reducing the cost of reckless driving.

Therefore, required seat belts and other similar internal safety devices should, contrary to the good intentions of those who supported the legislation, increase the amount of reckless driving. The effect may not be very great (just how great it is will depend on the elasticity of demand), *but it should still be positive*. This means that there will be a tendency for people who have such devices to inflict a greater cost on the drivers around them. This was not, undoubtedly, what the secretary had in mind when the air bag policy was recommended.

We have suggested that mandatory seat belts and air bags will reduce the private cost incurred from reckless driving and increase the *social cost*, that is, the cost of one's own reckless driving borne by others. If the government is interested in reducing the social cost from automobile travel, then it might consider (the costs and benefits of) developing requirements for proper headlights, brakes, and annual safety inspections. Ironically, making the inside of the car less safe can increase the private cost to the driver of having an accident. As an extreme example: suppose the government were to require that a dagger be mounted on the steering column pointed at the driver's chest. Would the driver not be inclined to drive more safely?



We are not proposing that such devices actually be required. We are merely attempting to make the more general point concerning how people may respond as a result of automobiles being made more or less safe inside.

## Concluding Comments

Our central point in this chapter has been relatively simple: people respond to cost in a predictable way, which is represented by the demand curve. The concept of demand is so ingrained in economists that they call it a law—the law of demand. This does not mean to suggest that the law of demand holds in all situations, but economists hold to the concept so firmly that their first reaction is to assume it applies.

A subsidiary point of the chapter is that the actions of individuals are often inconsequential. Consequentially, *pollution* (undesirable collective behavior) of many forms may emerge without some form of control. Most students assume that unwanted behavior must be controlled directly by government rules. A major point of this chapter is that the pricing system is an important alternative control mechanism in many situations. It might not work in panics, but it can work very well in the use of, for example, energy. At the root of the country's oil and natural gas crisis in the 1970s and 1980s and California's electricity and water crises in the 2000s were the underlying price controls that encouraged people to do what comes naturally in large groups where their individual consumption levels has little impact on anything—to consume more of those scarce resources. At the time of the controls, these resources were more scarce than usual, given limitations in the supplies of those critical resources.

From the seemingly disparate topics of this chapter we can derive an important principle (which will be applicable to topics considered throughout this book) that is at the core of so much modern economic analysis: people can more readily be expected to act in the common interests (or according to shared values) in small group settings (family, cliques of friends, gangs, and social clubs) than in large group settings (from mass markets for products and services to state and national elections).<sup>13</sup> The explanation is straightforward: In small groups, what individuals do, or do not do, is easily detectible because their contributions to group goals are consequential. Moreover, in small groups individuals often know each other and (and sometimes even) care about each other. Individuals can readily monitor one another and impose sanctions or even ostracize individuals who are not holding up their end of the group bargain. In large groups, all too often the individual's contribution to the group's common goals is, by definition, far less consequential, which means far less detectible in the context of the whole. In large groups, sanctions are less likely, and ostracism is more difficult. From this line of argument, we can draw another principle that we will rely on throughout the book: as the size of the group increases, the incentive individuals have to *voluntarily* contribute to group goals dissipates. This means that as the group size grows, incentives that are

meaningful to individuals will tend to rise in importance to achieve cooperation relative to appeals for cooperation. Understandably from this perspective, prices in markets, which are large group settings, are essential for achieving cooperation among dispersed individuals whose ties are, for the most part, commercial.

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